

Oliver Catalog 22

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CATALOGUE
No. 22

OLIVER MACHINERY CO.
GRAND RAPIDS, MICHIGAN, U.S.A.

CATALOG No. 22

Quality Woodworking Machinery and Factory Supplies

for

GOVERNMENT NAVY YARDS, DOCKS,
SHIP YARDS, AEROPLANE FACTORIES,
ARSENALS, BUREAUS, COLLEGES,
TECHNICAL SCHOOLS, STEEL
PLANTS, PATTERN SHOPS, CABINET
WORKS, PIANO FACTORIES, AUTO-
MOBILE PLANTS, RAILROADS, HIGH
GRADE FURNITURE FACTORIES, AND
ALL OTHERS WHO USE EFFICIENT
WOODWORKING MACHINERY

also

Engine Lathes, Die Filers for Metal Workers

Manufactured by

OLIVER MACHINERY CO.

GRAND RAPIDS, MICH., U. S. A.

BRANCH OFFICES IN U. S. A.

New York City.....	50 Church St.	Los Angeles.....	1403-7 Santa Fe Ave.
Chicago.....	549 W. Washington Blvd.	San Francisco.....	Menadnock Bldg.
St. Louis.....	Bank of Commerce Bldg.	Seattle.....	209 First Ave., S.
Minneapolis.....	Lincoln Bank Bldg.	Salt Lake City.....	Walker Bank Bldg.
Denver.....	Central Savings Bank Bldg.	Cleveland.....	1474 Mars Ave., Lakewood
Detroit.....	649 W. Milwaukee Ave.	Berkeley.....	2636 Etna St.
Boston.....	21 Wellington Rd., Medford		

FOREIGN BRANCHES

Oliver Machinery Co., Ltd..... 201 Deansgate, Manchester, England
The Canadian Fairbanks-Morse Co., Ltd., Montreal, Toronto, St. John, Winnipeg and
Vancouver, Dominion of Canada

AGENCIES IN ALL PRINCIPAL CITIES OF THE WORLD

Received 10/1/24.

Telegraph Code

We are users of the "Liebers Code," "ABC-5th Edition," or "Western Union Code" and domestic or foreign messages transmitted by this cipher will receive prompt attention.

Cable Address—"Trimmer, Grand Rapids."

Prices and Terms

Craot	At what price can you furnish?
Craox	How soon can you furnish?
Crapo	At what price and how soon can you furnish?
Craut	Free on board.
Craux	Free alongside steamer.
Crave	Give us the best price.
Cuba	Quote your lowest price for.
Cubac	Quote price by telegraph on the following.
Cubfo	Send specifications in detail.
Cuca	Telegraph lowest prices and delivery of _____.

Orders

Cuga	Enter our order for _____.
Cugib	Enter order for _____ specifications by mail.
Cugly	Has our order been shipped?
Cuhef	Have you received our order?
Cuimi	Ordered in our letter of _____.
Cuis	Sent order by mail.
Cuka	Ship entire order in one lot.
Culad	Will confirm order by mail.
Cue	Advise if order is accepted.
Cufmo	Duplicate our order.

Delivery and Shipments

Cuxfa	Get ready for immediate shipment.
Cuxme	Have you on hand ready for immediate shipment?
Cuxna	How soon can you ship if ordered at once?
Cuxy	Must guarantee delivery.
Cyu	Prompt shipment will determine order.
Cyude	Ship via express.
Cyuen	Ship via rail.
Cyuo	Ship via steamer.
Cyubi	Ship via sailing vessel.
Cyuh	Ship via cheapest route.
Cyullo	Ship via New York.
Cyump	Ship via Boston.
Cyuno	Shipment not yet arrived.
Cyp	Ship any portion of our order at once.
Cyupa	Trace by wire.
Cyovo	When will you ship?

Miscellaneous

Dabna	When did last carload leave factory?
Dabnab	When will next carload leave factory?
Dabnik	Cable delivery on _____.
Dabnot	Message not clear, please repeat.

DEDICATION

To the users of woodworking machinery throughout the world: To the cause of industrial and vocational training in the hope that the ideas expressed herein may receive endorsement.

MEDALS

It isn't so much to win a medal—the desire to do it is what counts.



Highest Award Gained at Paris, France, in 1900
Continued Progress Ever Since

NEW YORK MEDAL

for
SAFETY GUARDS AND
SAFETY APPLIANCES

Our exhibit, for which this medal was awarded, was chosen by the Aetna Life Insurance Co. (Accident Department) for display at Panama-Pacific Exposition, San Francisco, and at Panama-California Exposition, San Diego. Highest Award.



"QUALITY" Our Watchword
"SATISFACTION" Our Guarantee
"SUCCESS" Our Ambition

Plants of the Oliver Machinery Company



Oliver Machinery Co. (West Side Plant), 6th and 7th Streets, Grand Rapids, Michigan



Oliver Machinery Company (Main Plant) Coldbrook and Clancy Streets, Grand Rapids, Michigan

Manufacturers of Wood and Metal Working Machinery, Machine Tools and Specialized Equipment for Furniture Factories, Government Arsenals, Navy and Ship Yards, Car Shops, Industrial and Engineering Plants, Pattern Shops, Technical, Trade and Vocational Schools and Colleges, Woodworkers, Etc.



Oliver Machinery Co. (Foundry) Bond and Trowbridge Streets, Grand Rapids, Michigan
Gray Iron and Semi-Steel Castings

Introduction

The Oliver Machinery Company owns and operates three plants comprising a foundry for the production of light and heavy machine tool castings with pattern shop in connection, both very completely equipped; and two machine shops, in one of which, the medium and smaller type machines are produced in a highly specialized way, and in the other of which, the main plant, the larger and heavier type wood and metal working machinery is produced.

Foundry production is limited to machinery castings of the highest quality.

The pattern shop is equipped exclusively with "Oliver" machinery and serves as an exhibition work shop for customers.

The machine shops are equipped with highest quality, precision machines, tools, jigs and fixtures for production purposes.

All machinery is motor driven.

The buildings are of brick, reinforced concrete or steel frame construction, splendidly lighted, affording several hundred thousand feet of floor space and surrounded by a large acreage of city parks.

With a department of Design and Engineering, equipment and facilities that are unsurpassed, a sales department made up of men that have been for a long period in the service of the company, experienced, capable, and obliging, whose information and recommendations may be accepted with maximum confidence, men in high places, heads of departments, able engineers and high class mechanics, may confidently turn to us for their requirements or a consideration of their problems, and upon such men we depend for the unqualified endorsement of our manufacture.

The machinery we produce is subjected to the closest possible scrutiny, inspection of material, and workmanship, and each department is instructed to spare no expense in developing perfection of output.

"Oliver" machinery has for many years been marketed not only to the progressive, representative plants throughout America, but also for export to foreign governments, machinery import houses and plant operators in more than 40 principal industrial countries in all parts of the world. The most exacting requirements in the matter of packing and forwarding for export, are always observed.

Industrial and Woodworking Plant Operators, Superintendents of Schools, Manual Training Directors and Instructors, Engineers, Pattern Makers, Machinery Merchants, Exporters and Importers, and all others interested in any of the metal or woodworking machinery and equipment produced in Oliver factories, will be welcomed and given the best attention within our power at all times.

Patronage is invited with the assurance that we will exert every effort to serve the interests of our customers with utmost fidelity.

Every one likes to feel, with reference to his equipment, that nothing better can be had.

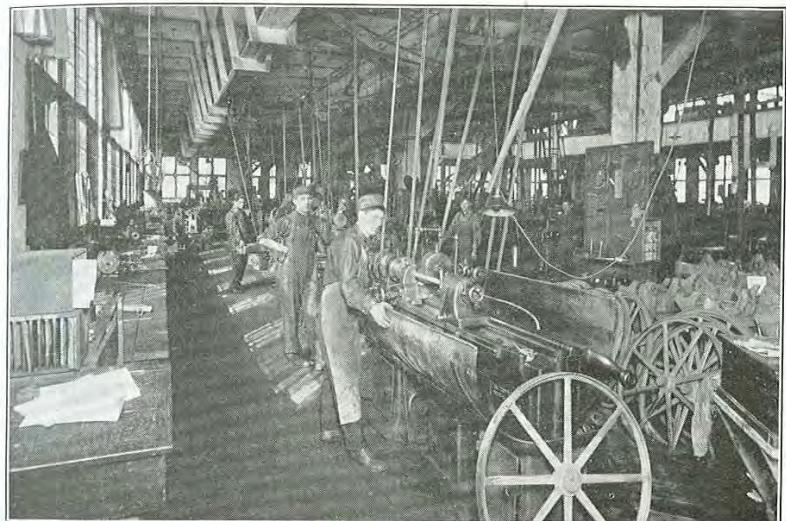
It is this way with equipment purchased from the Oliver Machinery Company.

INTERIOR VIEWS OF "OLIVER" PLANTS
AT GRAND RAPIDS, MICHIGAN



A Heavy Molding Floor in Foundry

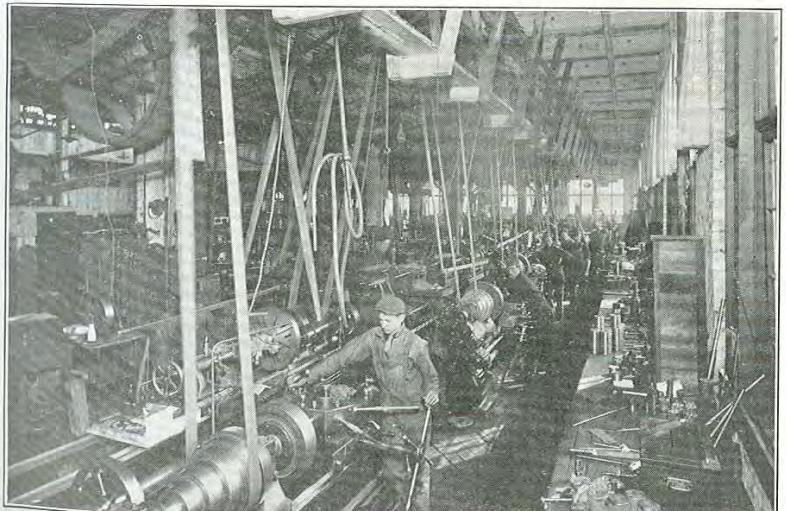
INTERIOR VIEWS OF "OLIVER" PLANTS
AT GRAND RAPIDS, MICHIGAN



Screw Threading Corner of Machine Room



Assembly Floor for Heavy Machinery



Engine Lathe Department

INTERIOR VIEWS OF "OLIVER" PLANTS
AT GRAND RAPIDS, MICHIGAN



Automatic Turret Lathe Department

INTERIOR VIEWS OF "OLIVER" PLANTS
AT GRAND RAPIDS, MICHIGAN



Boring Machine and Wood Lathe Assembly



Corner of Jig and Fixture Storage Room



Speed Lathe Assembly

INTERIOR VIEWS OF "OLIVER" PLANTS
AT GRAND RAPIDS, MICHIGAN

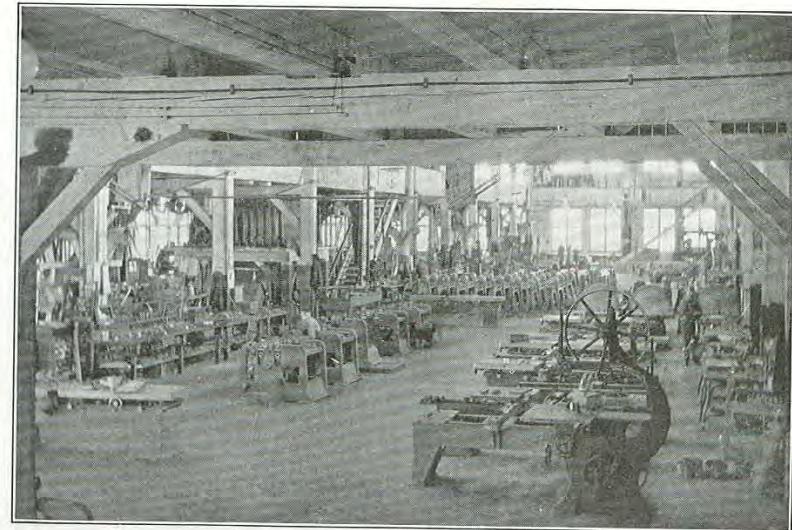


Jointer Assembly

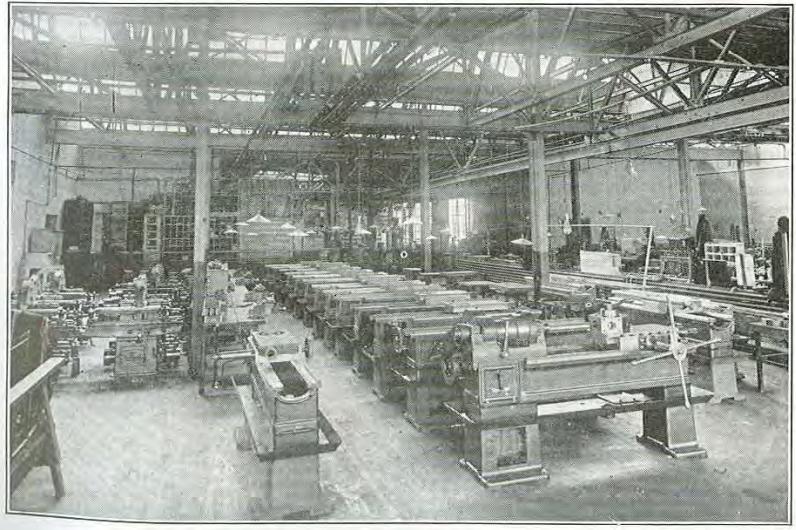
INTERIOR VIEWS OF "OLIVER" PLANTS
AT GRAND RAPIDS, MICHIGAN



Engine Lathe Assembly



Surfacer Assembly



Turret Lathe Assembly

No. 60 "Oliver" Universal Saw Bench

General Construction

In the construction of this machine we have adopted that refinement characteristic of high class machine tools. Self-locking devices, self-oiling features, fine micrometer adjustment for the various gauges, machine cut gears, and correct workmanship, serve to give it durability, ease of operation and adjustment, accuracy and efficiency that is not found on the ordinary wood working tools not constructed on the metal tool principle.

Frame

This is made in the cored form, well ribbed and with a strong flange at the base for ample floor support. At the front the casting is curved to give the operator the required foot room. A cast partition divides the inside into two chambers, separating the rotating mechanism from the saws and directing the saw dust from the working parts.

Table

We supply a metal table composed of a stationary and a rolling section. It is strongly ribbed with a double rib around the outside edge for the dual purpose of preventing warp and acting as a clamping surface for special forms that may be required. An extension bracket on the stationary side receives and supports the ripping fence to permit ripping stock of extra width. Beginning at the saw line, this section of table is graduated its entire width into eighths.

Rolling Section of Table

This is cross ribbed for strength and is mounted on roller bearings that eliminate friction in moving it past the saw. A lateral adjustment is provided to permit drawing the table away from the saw to aid in substituting dado heads and thick grooving saws. Adjustments are provided for retaining the table at the proper bearing on the rollers.



Table Tilting Mechanism

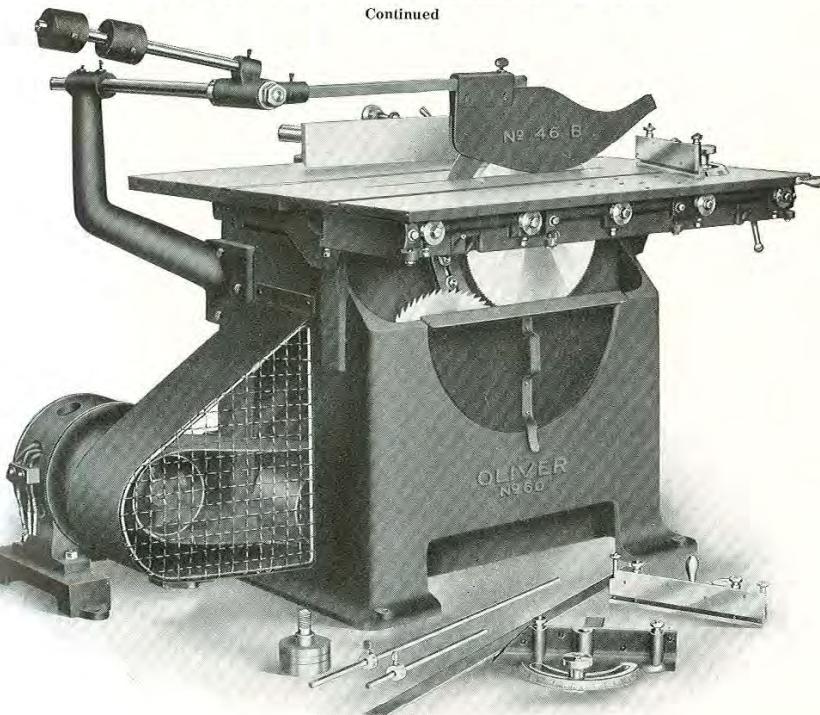
This is operated by hand wheel and worm and gear enclosed in cast iron box and is self locking, holding the top firmly at any angle up to 45 degrees, as indicated on the dial provided. The rocker cap is adjustable for wear.

Saw Arbors

These are two in number, of crucible steel and machine ground. They are fitted into perfect self-oiling bearings that are made to compensate for wear. End thrust is taken up by threaded thrust collars drawing pulley against finished end of bearing. The arbor pulleys are of the pneumatic type, machined all over and properly balanced.

No. 60 "Oliver" Universal Saw Bench

Continued



No. 60 "OLIVER" UNIVERSAL SAW BENCH
Showing Self Contained Motor Drive

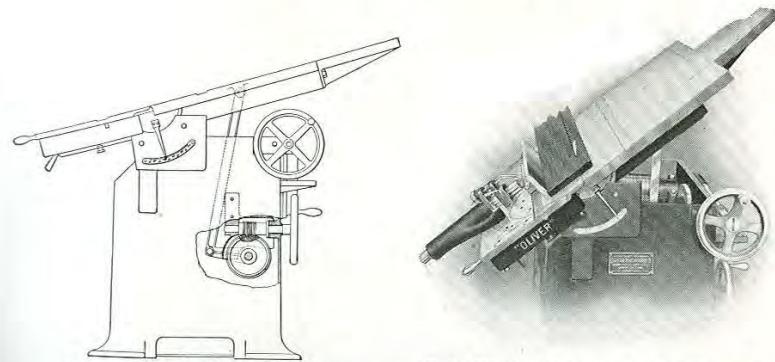


Table Tilted to 45 Degrees and the Universal
Ripping Fence in use at the left of the Saw

No. 60 "Oliver" Universal Saw Bench

Continued

Finished Bearings

Very accurately finished sleeve bearings may always be obtained from us for replacements, so it does not mean trouble to you to re-babbitt—just slip in what we send you at small cost.

Saw Arbor Yoke

This supports the two saw arbors. Its front end is held by a disk bearing 19" in diameter. Its rear end is held in a shoulder bearing of large diameter. End motion is prevented by the worm gear securely bolted to the outer end of the shoulder bearing, thus locking the entire yoke to the frame. The yoke is revolved readily when the saws are stationary or in motion and is accomplished by a hand-wheel engaging worm and worm gear mechanism encased in a dustproof cover.

The revolving mechanism is clamped in any desired position by a lever clamp acting on the worm shaft.

Automatic Idler

This forms one of the vital parts of the machine, and is located to automatically provide a leverage on both the tight and slack side of the belt. The idler pulleys are secured to steel shafts which run in babbitted self-oiling bearings.

Universal Ripping Fence

This may be used on either side of the saw, or secured at any angle not in line with the saw, on either the stationary or rolling table. It has a quick adjustment of 12" without changing the locating pins to the next set of holes. A micrometer device is supplied which will adjust the fence to and from the saw for fine and extremely accurate adjustment. It may be tilted to an angle of 45 degrees and it has a parallel adjustment whereby it may be set to or from the operator 10". A metal block is provided for attachment to the fence to serve as a stop and give clearance when cross cutting.

Miter Cut-off Gauge

This is supplied for use on the rolling table and has capacity for cutting at angles from 30 to 135 degrees. It is used when cutting off very wide stock. It has an auxiliary rod and stop which adjusts in the groove in face of the fence for cutting to various lengths. Two stop rods, one 18" and one 36" long, are supplied and these may be used on the universal gauges.



Universal Gauges

These are two in number and operate in the table grooves as shown in the accompanying halftones. They are graduated from 30 to 150 degrees and may be set accurately. When the gauges are not used, the grooves in the table are fitted with steel strips provided.

No. 60 "Oliver" Universal Saw Bench

Continued

Countershaft This is secured to the floor on which the machine rests or hung below the floor. Hangers are of ring oiling type. The loose pulley has a self-oiling bronze sleeve which runs loose both on the shaft and inside the pulley.

Motor Drives We recommend the use of 5 H. P., constant speed, fully enclosed motor, either attached to the machine by means of a bracket or placed upon the floor.

Equipment This consists of one 16" rip saw, one 16" cross-cut saw, one universal ripping fence, one miter cut-off gauge, two universal miter gauges, one clearance block, two filling strips for table grooves, one dado sleeve with collars, full universal saw guard.

GENERAL DIMENSIONS

Frame Base 30" x 40". Height of Main Casting from the Floor 32".

The Table Working Surface 41" x 44". Extension Bracket 12" x 16½". Stationary Table 24" x 44". Rolling Table 17" x 44". Total Height from Floor 36". Tilts to an Angle of 45 degrees. Throat in Table can be opened to 4".

The Yoke Front Arbor Bearings 5½" long, 1½" diameter. Rear Arbor Bearings 4½" long, 1¾" diameter. Main Yoke Bearing 6½" diameter, 1¾" wide. Auxiliary Yoke Bearing 19" diameter, ¾" wide.

Saw Arbor Machine Ground to 1¾" diameter in bearings and 1" diameter where saws are applied. Pulley 4¾" diameter, 6¾" face. Speed 2435 R. P. M. A 16" saw will project 4¾" above the Table.

Idler Self-oiling Pulleys, 6" diameter, 6½" face.

Countershaft 1½" diameter, 42" long. Two hangers 14" drop. Bearings 6" long, 1¾" diameter. Tight and Loose Pulleys 10" diameter, 6½" face. Driving Pulley 18" diameter, 6½" face. Speed 575 revolutions per minute.

Floor Space Machine alone 4' 6" x 4' 3". Machine with Countershaft 4' 6" x 8' 0". Machine with Motor Bracket 4' 6" x 5' 6".

Horse Power Does not exceed 5.

Capacity Will rip to 26" wide. Will cut off to 36" wide up to 1½" thick. 16" Saw projects through the table 4¾". Can use saws 20" diameter but only one at a time. 16" Saws are sent with machine.

CODE, WEIGHT AND CUBIC MEASUREMENT

Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Dabber	60-A	Machine with Countershaft	2350	2600	75
Dabbing	60-B	Machine without Countershaft	2050	2400	64
Dabble	60-C	Machine with Motor Bracket	2200	2450	65

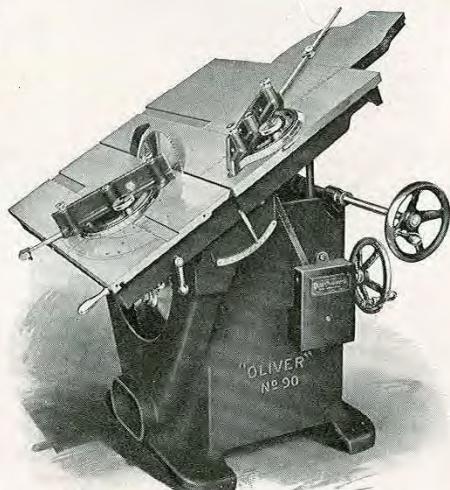
EXTRAS AND DEDUCTIONS

Dablo Endless Leather Belt, if omitted from No. 60-C, deduct.
Dahmi One Special Dado Head, 12" diameter, to work grooves from $\frac{1}{8}$ " to 2" wide, extra if desired. ¹⁵

No. 90
"Oliver" Universal Saw Bench

Frame We supply this in the cored form, ribbed for strength, with a wide flange at the base. A metal partition divides the saws from the balance of the working parts and prevents the saw dust from penetrating to them. The side of the frame where the saws are applied is cast to form a natural chute for the saw dust and carries it to the pipe connection at the base. A column guard fills the space opposite lower saw.

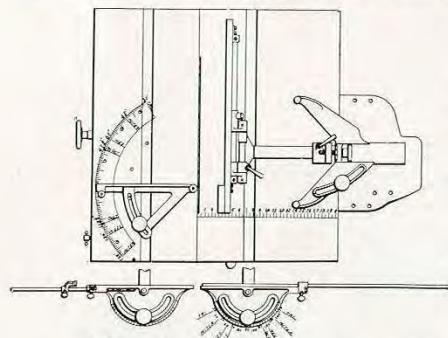
Table A metal table of ample proportions is supplied in two sections, one stationary and the other to slide past the saw. It is well ribbed and is very rigid. An extension bracket at the right supports the fence when ripping stock the maximum width. Table tilts to an angle of 45 degrees by means of hand wheel engaging worm and gear.



No. 90 "Oliver" Universal Saw Bench Showing Table Tilted to 30 degrees

Sliding Table This is mounted on a tongued cross slide and moves past the saw for use in cutting off and for dado work. The cross slide is gibbed to the main table frame and has provision for drawing 4" away from the saw line, so dado heads and grooving saws may be used. The sliding table will not lift up or tip when drawn to its maximum limit.

Table Graduations The stationary section of the table is graduated its entire width in eighths, and the sliding section is graduated into degrees that cover all the possible acute and obtuse angles.

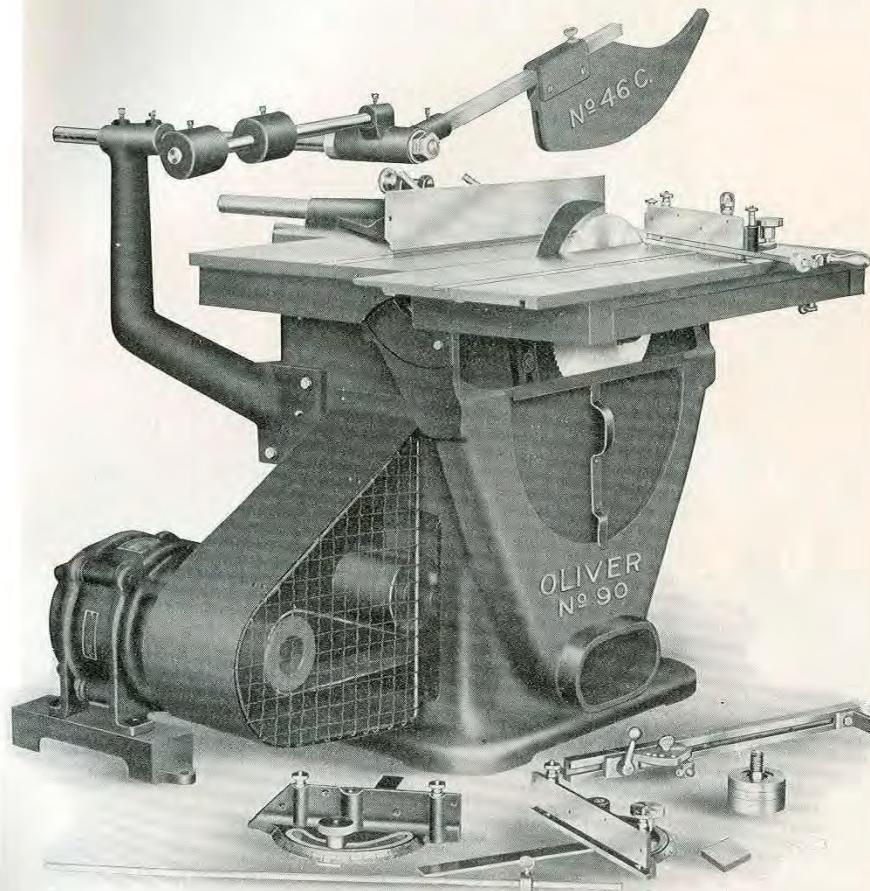


Etching Showing Table Graduations

Saw Arbors Two crucible steel machine ground arbors are accurately fitted into bearings that are lined with interchangeable sleeves with oil wells and wick conveyors that keep them flooded with oil continuously. End thrust through wear is taken up by means of a threaded thrust collar drawing the arbor pulley against the end of the bearing. Arbor pulleys are of the pneumatic type, machined all over and balanced.

No. 90 "Oliver" Universal Saw Bench

Continued



General View of Motor Driven Machine.

This Saw Bench fills a demand for a somewhat smaller machine than our No. 60 Saw Bench. The two principal points of difference being a smaller table top and 14" instead of 16" saws.

The general accuracy of the machine as a whole is apparent in even the smallest detail and for general everyday use, with its various appointments, lends itself to quick change from one class of work to another. The indexing of the gauges, the graduations on top of table, the degree of pitch when the table is tilted are all true; the saws "track right." The gauges will cut square with the saw; it won't run hot and no substitutions of poor for good workmanship or material have been resorted to. It's a quality tool of the "Oliver" kind.

No. 90 "Oliver" Universal Saw Bench

Continued

Finished Bearings

Accurately finished sleeve bearings may always be obtained from us for replacements, so it does not mean trouble to you to re-babbitt—just slip in what we send you at small cost.

Arbor Yoke

This is supported on the front end by a disk bearing $16\frac{9}{16}$ " diameter accurately fitted into a seat in the metal partition of the frame. The rear end is held in a shoulder bearing, thus locking the yoke firmly but freely in the frame. The yoke revolves easily by means of a hand wheel engaging a worm and gear.

Automatic Idler

This is a valuable feature, so located as to automatically provide a leverage on both the slack and tight side of the belt. The idler pulleys are secured to shafts that run in self-oiling bearings.

Universal Ripping Fence

This may be used on either side of the saw, or secured at any angle not in line with the saw, on either the stationary or rolling table. It has a quick adjustment of 12" without changing the locating pins to the next set of holes. A micrometer device is supplied which will adjust the fence to and from the saw for fine and extremely accurate adjustment. It may be tilted to an angle of 45 degrees and it has a parallel adjustment whereby it may be set to or from the operator 9". A metal block is provided for attachment to the fence to serve as a stop and give clearance when cross cutting.

Miter and Cut-off Gauge

This gauge is used on the sliding table and swings to angles of 30 to 135 degrees. It has 18" and 36" auxiliary rods and stop which are used for determining lengths to cut off. They are held by a yoke attached to the end of the fence.

Universal Gauges

Two are supplied operating in the table grooves, each side of the saw. They are graduated from 30 to 150 degrees. When the gauges are not used, the grooves are fitted with steel strips. They receive same rods and stops as are used on the Cut-off gauge.

Counter-shaft

This is detached from machine. Hangers are of wick oiling type. Loose pulley is fitted with a self-oiling bronze bushing and wears a lifetime.

Equipment

We furnish one 14" rip saw, one 14" cut-off saw, one clearance block, two filling strips for table grooves, dado sleeve, one universal bevel ripping gauge, one miter cut-off gauge for sliding table section, two universal miter gauges, two stop rods, full universal saw guard.

Capacity

Machine will rip 22" wide, cut off 34" wide up to $1\frac{1}{2}$ " thick. 14" saws project through the table 4". Can use one saw 18" diameter not revolving the yoke. Will work a dado 4" wide.

Motor Drives

We can furnish electric drive when desired, eliminating the countershaft. There are a variety of drives applicable to it and we will be glad to furnish special estimates upon request.

No. 90 "Oliver" Universal Saw Bench

Continued

GENERAL DIMENSIONS

Frame

Base 28" x 31". Height to table 32".

Table

Length 38", width 36".
Stationary Section 38" x 20 $\frac{3}{4}$ ".
Sliding Section 38" x 15".
Height from floor 35".
Tilts to an angle of 45 degrees.
Throat in table opens 4".

Saw

1 $\frac{3}{8}$ " diameter in the bearings and 1" diameter where saw is applied.

Arbors

Arbor pulley is 4" diameter $5\frac{1}{4}$ " face and should make 2725 revolutions per minute.

Arbor Yoke

Front Bearings are 4 $\frac{1}{2}$ " long and rear bearings 3 $\frac{1}{2}$ " long, all 1 $\frac{3}{16}$ " diameter.
Main Yoke Bearing is 16 $\frac{9}{16}$ " diameter.
Auxiliary Yoke Bearing 4 $\frac{1}{2}$ " diameter.

Idler Pulleys

6" diameter, 5" face.

Counter-shaft

Length 42", diameter 1 $\frac{1}{2}$ ".
Bearings 6" long, 1 $\frac{5}{8}$ " diameter.
Hangers, 14" drop.
Tight and Loose Pulleys 10" diameter 5" face.
Driving Pulley 18" diameter 5" face.
Speed 600 revolutions per minute.

Floor Space

Machine alone is 4' 1" x 3' 9".
Machine with Countershaft on floor 4' 2" x 7' 6".
Machine with Motor Bracket is 4' 1" x 5' 6".

Horse Power

Five.

CODE, WEIGHT, ETC.

Code	No.	Machine	Weight in Crated Pounds	Pounds Boxed	Cubic Feet
Dacat	90-A	With Countershaft.....	1900	2200	60
Dace	90-B	Without Countershaft.....	1800	1950	52
Dad	90-C	With Motor Bracket.....	1800	1950	52

EXTRAS AND DEDUCTIONS

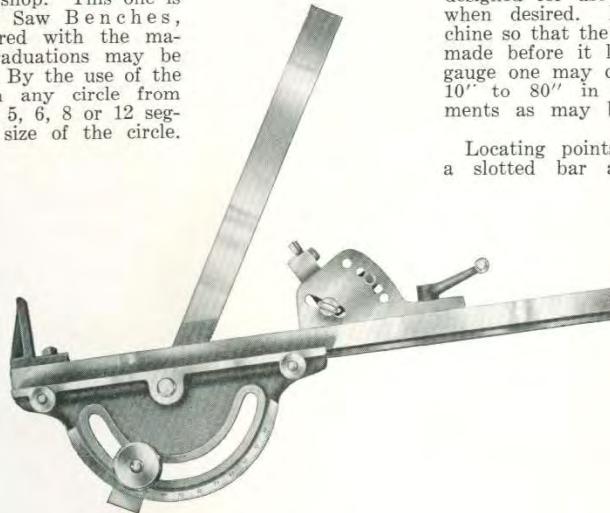
Daddle Daft

Endless Leather Belt, if omitted from No. 90-C, deduct.
One Special Dado Head, 12" diameter, to work grooves from $\frac{1}{8}$ " to 2" wide, extra if desired.

No. 135 "Oliver" Improved Circular Segment Gauge

For use on "Oliver" No. 60 and No. 90 Universal Saw Benches

A circular segment gauge is of great advantage on a sawing machine in a pattern shop. This one is "Oliver" Saw Benches, be ordered with the matable graduations may be works. By the use of the ment in any circle from using 4, 5, 6, 8 or 12 seg- for the size of the circle.

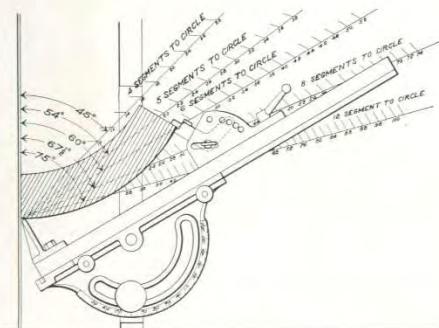


Locating points held in a slotted bar are made

adjustable to meet the necessary changes. The segments can be placed at points on the ends for locating the outside of the circle. This does away with all inaccuracies.

Instructions for properly handling the gauge accompany each one, rendering it easily understood by the operator.

When not using the parts (bar and locating points), the miter gauge remains for use with all its important functions. It being graduated on the front, can be set accurately to any angle desired from 30 to 150 degrees.



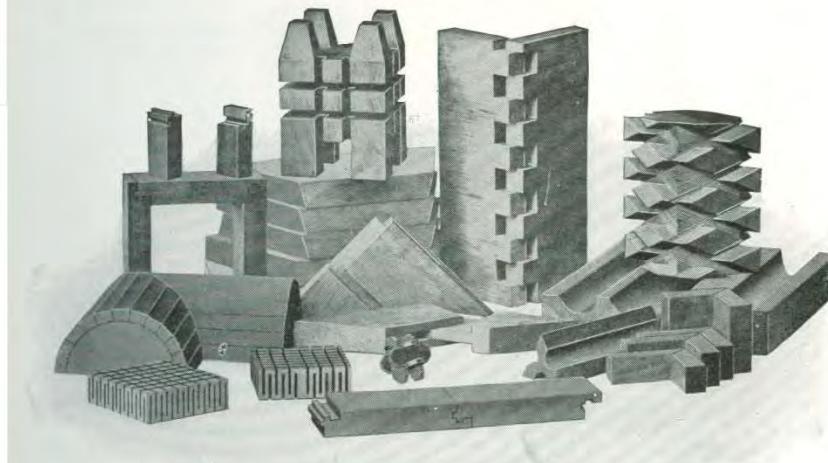
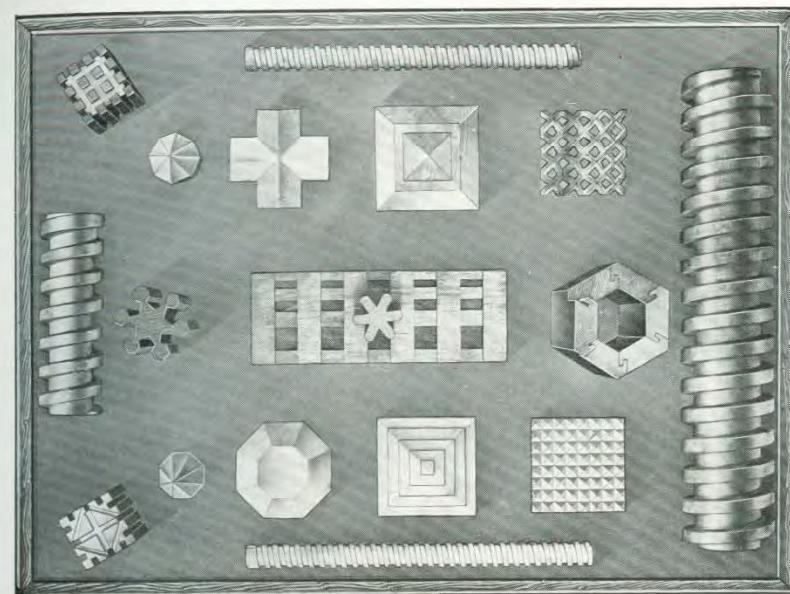
Code
Dairz

Description

Gauge complete with miter gauge, bar and locating points....20 lbs.

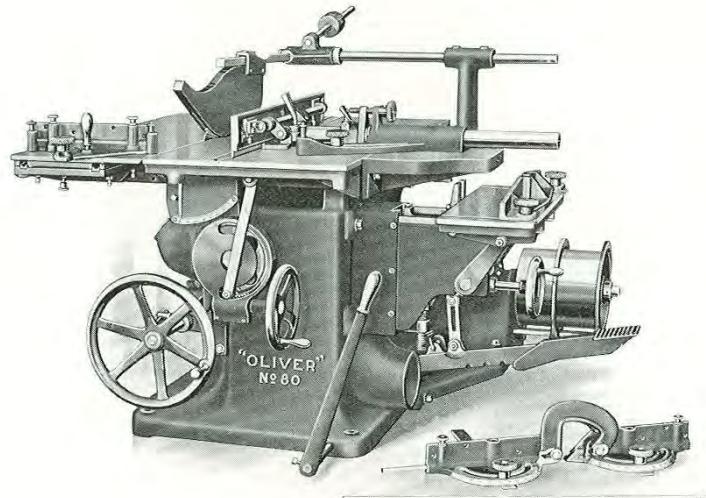
Weight

Work Done On "Oliver" Universal Saw Benches



Samples of Special Work done on "Oliver" No. 60 and No. 90 Universal Saw Bench.

No. 80
"Oliver" Variety Saw Bench



Front View of Belt Driven Machine with Mortising and Boring Attachment.

Application

Meets modern demands in production of variety woodwork, wood patterns, furniture, automobile bodies, carriage bodies, agricultural implements, talking machine cabinets, and other high grade wood work. It is a favorite in technical and manual arts schools. It will rip, cross cut and dado. It will cut a perfect miter, measure any angle instantly and accurately, cut off to length or rip to width—all without the operator doing any previous calculating or referring to a rule. All parts are interchangeable.

Capacity

Machine will rip to 23" wide and cut-off 32" wide by use of universal ripping table; will rip 27" wide and cut-off 15" wide by use of plain table; will cut up to 3" thick with 14" saw, or 4" thick with 16" saw. Will work dados up to 4" wide and carry saws to 18" diameter. With mortising and boring attachment will bore holes 6" deep up to 2" diameter, will mortise holes up to $\frac{3}{4}$ " square and 4" deep.

Table

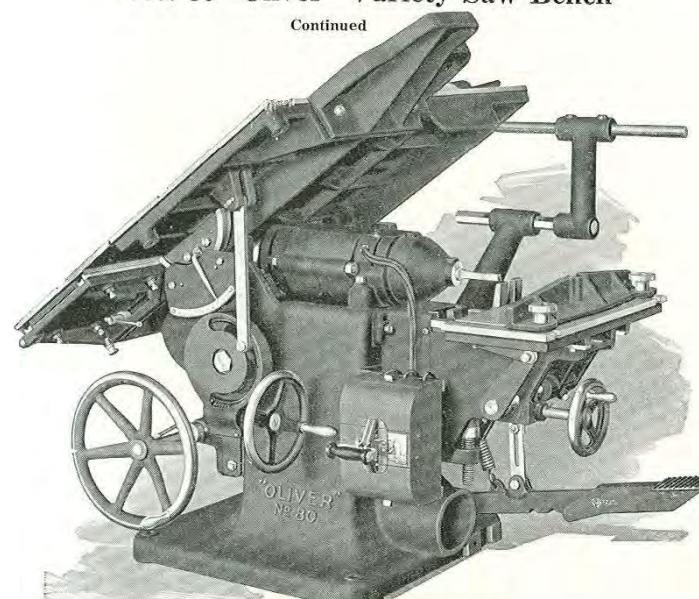
Deep ribbed, planed and scraped. 38" x 44"; tilts 45 degrees to the left, has 4" vertical adjustment; height 32" at lowest position. Table may be furnished—plain or universal. The latter has a 15" rolling section to the left of saw, which rolls on ball bearing ways having vertical adjustment for alignment and wear. Rolling table moves 4" from saw permitting use of dados and special heads. Rolling table permits accurate cross cutting, mitering and grooving.

Table Yoke

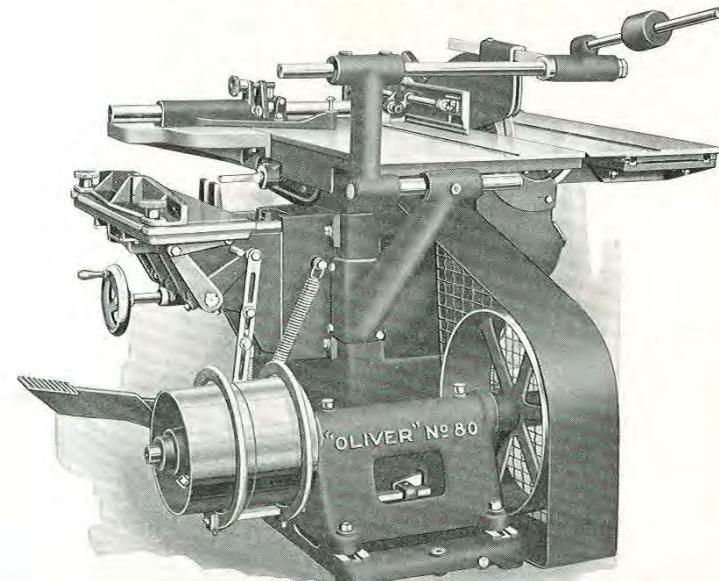
The yoke carrying the table rides on gibbed dove-tailed ways of the frame measuring 4" across the gibs, 21" high, 1 $\frac{1}{4}$ " deep, 2" face, 4" vertical adjustment by self-locking hand wheel (15" diameter), spiral gears, and adjusting screw with ball bearing thrust. A positive clamp fixes table for special work.

No. 80 "Oliver" Variety Saw Bench

Continued



View of Self-Contained Motor-On-Arbor Machine



Rear View of Belt Driven Machine

No. 80 "Oliver" Variety Saw Bench

Continued

Tilting Device

A hand wheel, worm and gear device, housed in dust-proof casing attached to yoke with connecting link to table. It is positive and self-locking. A clamp screw also furnished.

Saw Arbor

Arbor is 1" where saw is applied. Arbor bearings are frictionless ball bearing type, mounted in a rigid one-piece housing bolted and tongued to main frame. This housing is interchangeable as a unit with the motor head arbor housing when direct mounted motor is desired.

Universal Ripping Fence

May be used on either side of saw, or secured at any angle not in line with saw, on either stationary or sliding table. Has quick adjustment of 12" without changing locating pins to next set of holes. A micrometer device adjusts the fence to and from the saw for fine and accurate adjustment. May be tilted to an angle of 45 degrees; has a parallel adjustment whereby it may be set to or from operator 9"; a metal block is provided for attachment to the fence to serve as a stop and give clearance when cross cutting.

Miter Cut-off Gauge

Supplied for use on sliding table and has capacity for cutting at angles from 30 to 135 degrees. Used when cutting off very wide stock. An auxiliary rod and stop adjusts in grooves in face of fence for cutting to various lengths. Two stop rods, 18" and 36" are supplied and may be used on both universal and miter cut-off gauges.

Universal Gauges

Two Universal Gauges operate in table grooves on right hand and left hand sides of saw for miter and cross cutting. They are graduated from 30 to 135 degrees and may be accurately set. When the gauges are not in use the grooves in table are filled with steel strips provided for the purpose.

Counter-shaft

Roller bearings. Supported by one-piece cast housing secured to a base plate bolted rigidly to the frame giving a self contained drive. Screw adjustment for take up of belt. Shield covers saw arbor belt.

Tight and loose pulleys are 10" diameter by 5" face. Speed 600 R. P. M. Driving pulley is 18" diameter by 5" face.

Horse Power

We recommend 5. H. P. for belt or belted motor drive, 3 to 4 H. P. for motor-arbor drive.

Motor Drive

Where two or three phase, 60 cycle, alternating current is obtainable, a compact motor-on-arbor machine can be provided by mounting the motor directly on the saw arbor in place of the ordinary pulley. A 5 H. P. motor, about 1800 R. P. M. may be mounted on a sub-base bolted securely to the frame, providing a self-contained motor drive with adjustment for taking up stretch of belt. Motor pulley and belt are guarded.

No. 80 "Oliver" Variety Saw Bench

Continued

Mortising and Boring Attachment

When ordered, machine is fitted with hollow chisel mortising and boring attachment with capacity up to $\frac{3}{4}$ " square chisels. Table adjusts vertically 3" in gibbed ways, moves 4" in and out for mortising and 6" for boring, by means of foot treadle. Ordinary machine bits with $\frac{1}{2}$ " straight shanks used for boring.

Equipment of Machine with Universal Table

One 14" miter saw with cleaner teeth, one universal ripping fence, two universal miter gauges, one miter cut-off gauge, two filling strips for slots in table, one yoke for connecting two universal gauges, one automatic universal saw guard, one belt guard, one steel blade splitter following the saw, one dado sleeve, two stop rods with locating stops, self contained countershaft and necessary wrenches.

Equipment of Machine with Plain Table

One 14" miter saw with cleaner teeth, one plain ripping fence, two universal miter gauges, one yoke for connecting the two universal gauges, two filling strips for slots in table, one automatic universal saw guard, one belt guard, one steel blade splitter, two stop rods with locating stops, one dado sleeve, one self contained countershaft and necessary wrenches.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Dakad	80-A	Plain Table Belt Driven Machine with countershaft.....	1700	1900	60
Daked	80-B	Plain Table Belt Driven Machine without countershaft.....	1500	1800	55
Dakif	80-C	Plain Table Machine with motor bracket for belted motor drive.....	1650	1850	60
Dakok	80-D	Plain Table Machine with motor-on-arbor, including switch.....	1650	1850	55

EXTRAS

Daku	Universal Sliding Table with ball bearing ways, fitted with miter cut-off gauge and graduations for same, instead of plain tilting table.....	150	150	—
Dakub	Universal Tilting Ripping Fence instead of plain ripping fence.....	60	60	—
Dakuc	Mortising and Boring Attachemnt with one $\frac{3}{8}$ " square Hollow Chisel with Bit and one $\frac{1}{2}$ " Plain Boring Bit	200	200	5
Daky	Dado Head 12" diameter up to 2" face.....	20	20	—
Dakyn	One Endless Leather Belt for No. 80-A or No. 80-C.....	20	20	—

No. 32
"Oliver" Variety Saw Bench



Motor Driven as Shown or Belt Driven with Self-Contained Countershaft

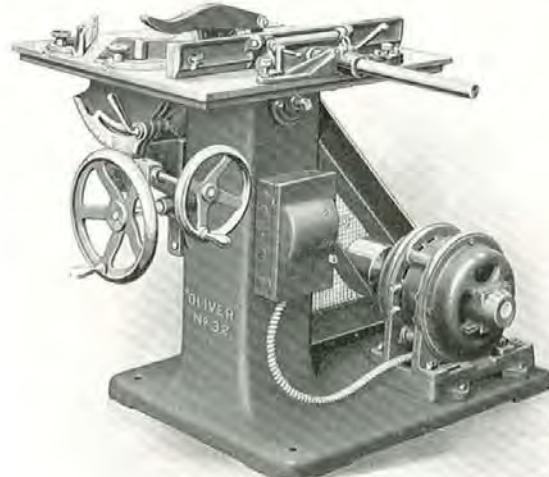
Introduction This machine is a prime favorite in both educational and industrial fields. The various grade manual training centers in the Pittsburgh district regard it as possessing special merit.

The design is very clever, simple in construction, not easily put out of order, thoroughly well made, accurate and convenient. It is not altogether a boy's tool, as the various industrial shops take more than one-half of a large output.

Frame Cast iron molded in cored column form with floor support of ample proportions, being 28" x 35". Entire working mechanism is mounted on it, making the machine self-contained.

No. 32 "Oliver" Variety Saw Bench

Continued



Electric Equipment shown is merely suggestive; we will furnish any Motor, Starter, Switch, and Wiring that you may desire.

Table

Cast iron strongly ribbed, correctly planed and fitted, dimensions 28" x 30". Two grooves equi-distant from the saw line and 8" apart are milled into its top to serve as slide ways for cutting off and angle gauges. A recess is cast about the saw for applying and removing the blade and this is filled with a removable throat. A vertical rise to the table of 4" maximum is provided by mounting it in a machined dovetail slideway 7" wide and controlling it by hand wheel and bevel gearing actuating a substantial screw and nut. It will tilt to any angle of 45 degrees through the slotted rockers that connect the top portion of the table to the elevating yoke. It is held at the desired position by means of a locking lever. At its minimum height, the top of the table is 32" from the floor.

Saw Arbor

Is 1" diameter where the saw is applied and 1 $\frac{3}{16}$ " diameter in the bearings. It is of fine crucible steel, ground to accurate form and revolves in ball bearings of the highest type. Saw Blade is held between collars 3 $\frac{1}{2}$ " diameter by a hexagonal nut. End motion is removed by a nut at the rear. Arbor pulley is 3" x 4" and runs at 3200 R. P. M.

Ball Bearings

These are made of the essential dimensions to insure best results at high speed, are practically impervious to wear, run in a lubricating grease that prevents cutting, and are encased so completely that no dirt can come in contact with them.

No. 32 "Oliver" Variety Saw Bench

Continued

Saw Guard

This is attached to the column and is easily removable when desiring to rip extra thick stock. A clamping nut secures the vertical bar or splitter at any position for raising or lowering the entire guard. The hood is made of wood of ample width, and can be adjusted to within $\frac{1}{16}$ " of the material being sawed, thus reducing hindrance to the operator to a minimum.

Ripping Gauge

This is entirely of metal, tilts to an angle of 45 degrees, can be set to rip 13" wide, is of suitable height and length, and has a simple adjustment for paralleling the saw for clearance, regularly furnished as shown in illustration on preceding page.

Miter Gauges

Two in number, made entirely of metal and fitted to slide in the table grooves each side of the saw. Permit cutting right and left angles with but one handling of the stock. By means of the graduations in front the angling of the guide is instantly accomplished from 30 to 150 degrees.

Counter-shaft

Located on the machine base at the rear and mounted in ring oiling, adjustable bearings, and carries a driving pulley 12" x 3½" and a pair of tight and loose pulleys 8" by 3½" that should make 800 R. P. M. Loose pulley is bushed with bronze and self-oiling. Countershaft is not furnished if machine is to be motor-driven, unless especially ordered.

Capacity

Largest saw that can be used—12" in diameter. Will project 3½" above table. Can rip to 13" wide. Using the miter gauges will cut off 11" wide, material being 1" thick. A dado head 12" diameter and 1½" wide may be used (not regularly furnished).

Equipment

Consists of one 12" miter saw with cleaner teeth and fitted for both ripping and cutting off—arbor wrenches—and one endless belt for saw arbor.

Horse Power

Three.

Floor Space

3' 8" x 4' 2".

CODE, WEIGHT, ETC.

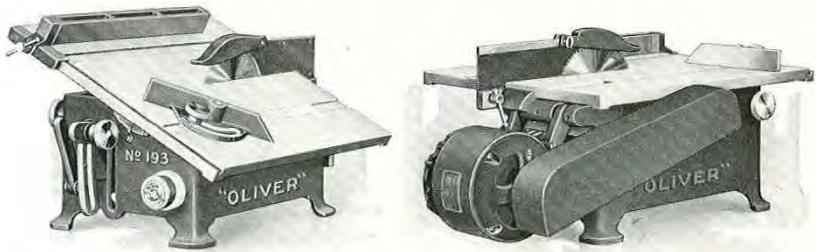
Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Damsi	32-A	Machine with self-contained countershaft for belt drive.....	825	900	30
Damson	32-B	Machine without countershaft; but with base for motor drive.....	720	850	30

EXTRAS

Damt One Special Dado Head to work grooves up to 1½" wide.

Damto Dado Sleeve for dados up to 1½" wide. (Not needed for dado heads up to 1" wide which can be carried on the saw arbor.)

No. 193 "Oliver" Motor Driven Saw Bench



Capacity

Will cut 2" deep with a 7" diameter saw, dado heads $\frac{3}{8}$ " wide can be used, which should be 6" diameter.

Table

Cast iron 21" x 24", with metal throat piece easily removable; has grooves on either side of saw for cut-off gauges and milled out slide in front for ripping gauge; tilts up to 45 degrees and is instantly locked by hand knob.

Saw Arbor

Crucible steel, machine ground, $\frac{1}{2}$ " diameter where saw is applied, runs in BALL BEARINGS. Speed about 5000 R. P. M. Is carried in a vertically adjustable yoke.

Power

$\frac{1}{2}$ H. P. motor, about 1800 R. P. M. mounted on a swinging bracket and has arrangement for keeping the proper tension on the belt.

Switch

Heavy type snap switch, mounted on machine in convenient place for operator.

Cross Cut Gauge

Can be used on either side of the saw; quick set at any angle and clamped rigidly in position for cutting off at any desired angle.

Ripping Gauge

Machined on both sides, can be used on either side of saw, tightened by means of hand lever which automatically lines it up perfectly with the saw at the same time.

Height

Bench type 10"; with base, 32" from the floor.

Equipment

One 7" diameter combination rip and cross-cut saw, saw guard, splitter-guard, double faced ripping gauge, one positive clamp cross cut gauge, endless leather belt, cast iron belt guard, electric motor of proper kind and size, switch, cord and plug for light socket attachment or switch only for power current.

CODE, WEIGHT, ETC.

Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Dana	193-A	Motor Driven Saw, Bench Style..	200	300	5
Danab	193-B	Motor Driven Saw on Floor Base..	300	400	10

Belt Driven machines instead of Motor Driven.

No. 45
"Oliver" Heavy Duty Rip Saw



Front View of Regular Machine with 24-inch Saw

Type

This machine has been designed especially for general utility purposes. Its adaptability for either light or heavy work is its main feature. It will be found invaluable in the shops of large industrial institutions where the requirements of a carpenter shop are to take care of every job that comes along whether it is a case of one inch boards, planks or timbers.

Capacity

Will take saws up to 26" diameter that will saw up to 9" in thickness. An 18" saw projects 5 $\frac{1}{4}$ " through the table. Will rip to 21 $\frac{1}{2}$ " wide with saw next to rigid collar, and 26 $\frac{1}{2}$ " wide with saw next to loose collar.

Table

It is mounted on two cylindrical guides, vertically adjusted by a toggle joint operated by a screw. It has a removable plate at the saw.

Saw Arbor

It is of crucible steel, machine ground and runs in long self-oiling bearings. Arbor pulley is the pneumatic type, giving increased belt contact and power. Where saw is applied the arbor is extended 6", so can rip extra width. Is provided with filling collars.

Fence

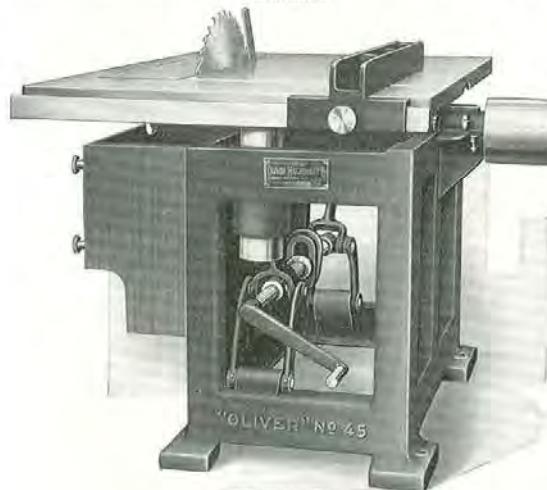
This is made of metal, held parallel to the saw. Can be instantly set to graduations and locked by a lever cam.

Guards

Back of the saw we furnish a steel blade splitter or "back guard"; under the table we furnish a removable saw guard; above the table no guard is regularly furnished but "Oliver" No. 46A Full Automatic Saw Guard with its own floor stand can be furnished when so ordered.

No. 45 "Oliver" Heavy Duty Rip Saw

Continued



End View showing Toggle Joint for Vertical Adjustment of Table

Motor Drive

We recommend that the motor be placed on a bracket bolted to the base of the machine in a self-contained manner and coupled to end of saw arbor in place of the ordinary pulley. However, the motor may be mounted on the floor, ceiling, or wall and belted to the saw arbor pulley.

Equipment

It consists of one 24" diameter rip saw, one double faced lever-locked ripping fence, adjustable splitter guard back of saw, removable saw guard under the table and filling collars for saw end of arbor.

Frame

Base is 25" x 46". One piece rigid casting.

Table

37" x 56". Vertical adjustment 5 $\frac{1}{2}$ ". Guides 4" diam., 15" long.

Saw Arbor

1 $\frac{3}{8}$ " diameter in bearings, 1 $\frac{3}{8}$ " diameter for saw. Front bearing 8" long, rear bearing 7". Pulley 7" x 7". Speeds 2143

Fence

and 1800 R. P. M. for 18" and 24" saws.

Countershaft

T. and L. pulleys 10" x 6 $\frac{1}{2}$ ". Speed 840 and 700 R. P. M. for

Horse Power

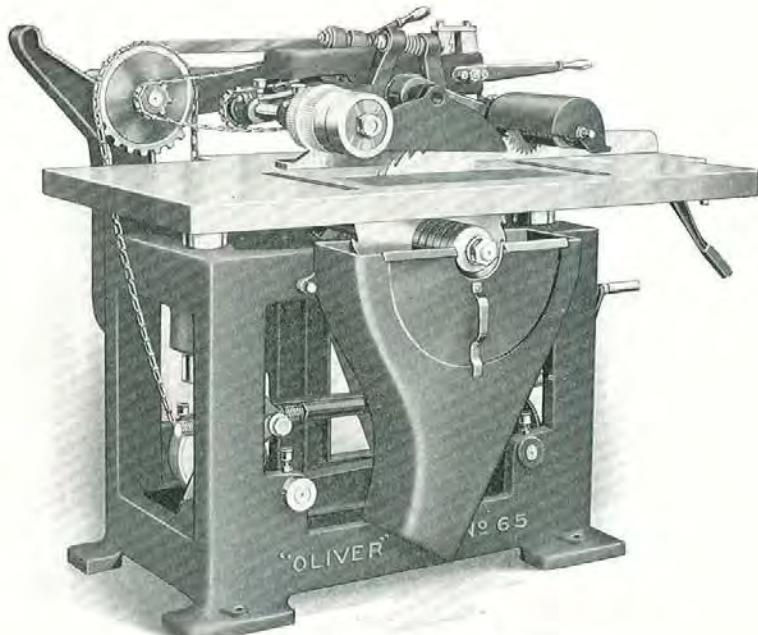
18" and 24" saws.

From 5 to 10; average conditions 7 $\frac{1}{2}$ H. P.

CODE, WEIGHT, ETC.

Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Danci	45	Rip Saw with regular equipment for belt drive including a 24" Rip Saw, but no countershaft.....	1700	1900	78
Danco	46A	Coupled Motor Drive Arrangement, not including motor.			
Dango		46A Full Automatic Saw Guard, complete with floor stand.			
Dangob		One Speed Countershaft with hangers and pulleys.			
Dangol		Two Speed Countershaft with hangers and pulleys.			

No. 65
"Oliver" Self Feed Rip Saw



Front view showing rigidity and simplicity of the machine.

Application

Designed for ripping all kinds of lumber and is adaptable to the ripping of rough stock as well as finished stock and is recommended to the operators of mills and shops handling stock in quantity.

Capacity

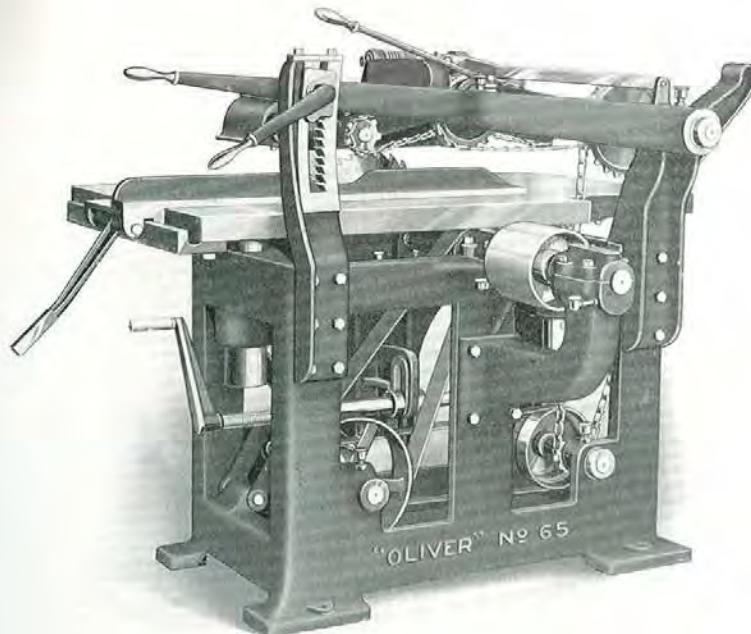
Will take saws up to 18" in diameter, 1 $\frac{1}{8}$ " hole, 18" saw will cut 5" thick; 16" saw will cut 4" thick and will rip up to 24" wide. A gang of six saws with 1" space collars between them may be used at one time. Three rates of feed, 80', 110' and 140' per minute.

Safety

Lower portion of saw is thoroughly guarded by means of the dust chute and the cover; upper portion of saw runs in a guard carried by the feed mechanism. The star feed saw and the infeed roll are covered by a metal guard.

No. 65 "Oliver" Self Feed Rip Saw

Continued



Rear View showing Easy Control of Feed Mechanism and Three Bearings of Saw Arbor

Power Feed

The positive and strong feed is variable through cone pulleys and receives power from the saw arbor. Feed shafts have suitable collars and feed spur and splitter that track with saw. Out-feed shaft is supplied with smooth roll 5" diameter and corrugated roll 5 $\frac{1}{4}$ " diameter in detachable sections with splitter disk. Driving power is communicated to the feed shafts through sprocket chains, which gives a uniform and positive feed. Entire feed works may be swung back and out of the way, presenting a clear table for hand ripping.

Table

Cast iron, very heavily flanged for rigidity, size 33 $\frac{1}{2}$ " x 56", mounted on two cylindrical guides 4" diameter and 15" long, vertically adjusted by a toggle joint operated by nuts, screw and crank handle. Table has idler rolls 2 $\frac{1}{4}$ " diameter in front and rear of saw and also has removable saw throat plate.

No. 65 "Oliver" Self Feed Rip Saw

Continued

Fence	Held parallel to saw by a finished guide on the front end of table and can be instantly set to graduations on table by the quick acting lever locking cam; 42" long, 2½" high, has 18" travel on table.
Saw Arbor	Made of crucible steel machined, 1¾" diameter and is 1¾" where saw is applied and runs in babbitt bearings 1¾" diameter by 8" long having self-lubricating chambers. Arbor pulley 7" diameter by 7" face. Speed 2285 R. P. M.
Frame	Cast in one piece, rigid in design and carries the table, feeding mechanism and the saw arbor, forming a complete machine.
Motor Drive	May be accomplished by eliminating the countershaft and introducing a motor in its place; or motor may be coupled to saw arbor mounted on bracket attached to frame of machine. Motor in this case should be 3400 R. P. M.
Counter-shaft	Bearings 6" long, 1¾" diameter. Drive pulley 20" diameter, 6½" face. Tight and loose pulleys 10" diameter, 6½" face, speed 800 R. P. M. Loose pulley is of self-oiling type.
Equipment	One 16" saw, 1¾" hole, saw guard, feed spur, spur guard, splitter, one sectional outfeed roll group plain, and one sectional outfeed roll group corrugated; fence; filling collars and saw-dust chute.
Horse Power	7½ to 15 H. P. dependent on kind of work.
Floor Space	With countershaft 56" x 114"; without countershaft 50" x 64".

CODE, WEIGHT, ETC.

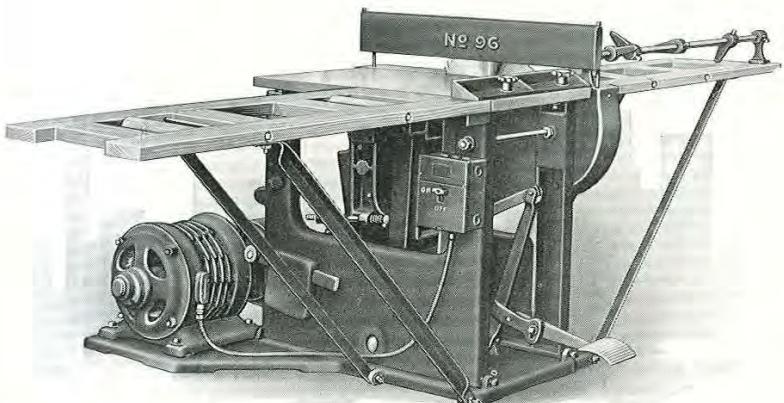
Code	No.	Machine	Weight in Crated Boxed	Cubic Feet
Dapper	65-A	Self-Feed Rip Saw, regular for belt drive	2500	3000

EXTRAS

Daram	Coupled Motor Drive consisting of placing 3600 R. P. M. motor on a bracket bolted to base and direct connecting to arbor by flexible coupling (motor not included).
Daring	Countershaft for the above if desired, add.
Darja	Countershaft for the above if desired.
Darky	Internal Belting consisting of feed belts only.
Darle	Belt for driving saw arbor from motor or countershaft on floor (single).
Darlo	Wire Mesh Belt Guard for main belt.
Darlot	Extra Collars for saw or feed arbors, each.
Darlox	Extra Star Feed Saws for gang sawing, each.

No. 96 Under-Swing Cut-Off Saw

Self-contained and Complete



Either Motor Driven as shown or with Self-Contained Countershaft for Belt Drive

Capacity	A 16" saw cuts off 2" stock up to 22" wide, 4" stock up to 16" wide. Saws up to 18" may be used, but 16" saw is usual.
Table	Main part is cast iron 22" x 36", 33" high. The two extensions are of maple, each with two rollers. Total table length 121".
Saw Arbor	High Carbon steel 1¾" in the bearings, 1½" where saw is applied. Bearings 4¾" long, self-oiling, lined with high grade babbitt. Pulley 4" x 4½", 2600 R. P. M.
Swing Frame	Controlled by means of a foot treadle, a patented system of levers and a special double acting counterweight having double spring cushion; the machine is almost automatic, leaving operator's both hands free to handle material.
Stop Rod	Is provided with spring cushioned, adjustable collars to enable the operator to shorten or lengthen the stroke of the saw, or to clamp the saw in a stationary position, as his work requires.
Belt Idler	Keeps the drive belt tight at all positions of the saw. Has adjustable weight to obtain any desired belt tension.
Counter-shaft Motor Drive	Self-contained. Driving pulley 14" x 4½". Tight and loose pulleys 10" x 4½". Speed 740 R. P. M. for 16" saw.
Equipment	A 3 or 5 H. P., 1800 or 1200 R. P. M. Motor may be mounted on the extension of the sole plate and belted through idler to the arbor.

Code	No.	Machine	Weight in Crated Boxed	Cubic Feet
Darab	96-A	Belt Driven Machine.....	1000	1200
Daram	96-B	Self-contained Motor Driven.....	1100	1300

Darag	Wire Mesh Guard for belt and motor pulley on No. 96-B.
Darem	Miter Gauge, including the table groove for same.
Darer	Ripping Fence, including table clamp for same.

No. 36
"Oliver" Swing Cut-Off Saw



Frame

It is made in the cored form, with a single arm centrally located. It supports the countershaft above and the saw arbor frame in a tongue and groove bearing below. Total length between hangers is 44" assuring a good support.

Saw Arbor

This is made of crucible steel, machine ground to accurate size. It is mounted in two self-oiling split bearings, 4 $\frac{3}{4}$ " long, 1 $\frac{7}{16}$ " diameter, and carries a grooved pulley 5" x 6 $\frac{1}{4}$ ". End play is cared for by sure-set collar in the rear bearing; speed of arbor 2120 R. P. M. Length 24" and diameter 1 $\frac{1}{4}$ " where the saw is applied. Adjustment for tightening the belt is 1 $\frac{1}{2}$ ".

Arbor Frame

This is detachable from the main frame, held securely in position by heavy bolts. It is adjustable vertically 1 $\frac{1}{2}$ ", for taking up stretch of the belt, and may be removed from frame for rebabbing the bearings. A strong handle bolted to this frame is very convenient for the operator.

Counter-shaft

This is 44" long, 1 $\frac{3}{4}$ " diameter and supported in babbitted bearings 5" long with removable caps, and they are well lubricated by constant flow of oil through capillary attraction. Pulleys are machined and balanced properly. The loose pulley is provided with a self-oiling bushing having a double wearing surface. A belt shifter for the driving belt is carried on the machine frame convenient to the operator. Tight and loose pulleys 10" diameter, 6" face; driving pulley 18" diameter, 7" face; speed for 18" saw 530 R. P. M.

Hangers

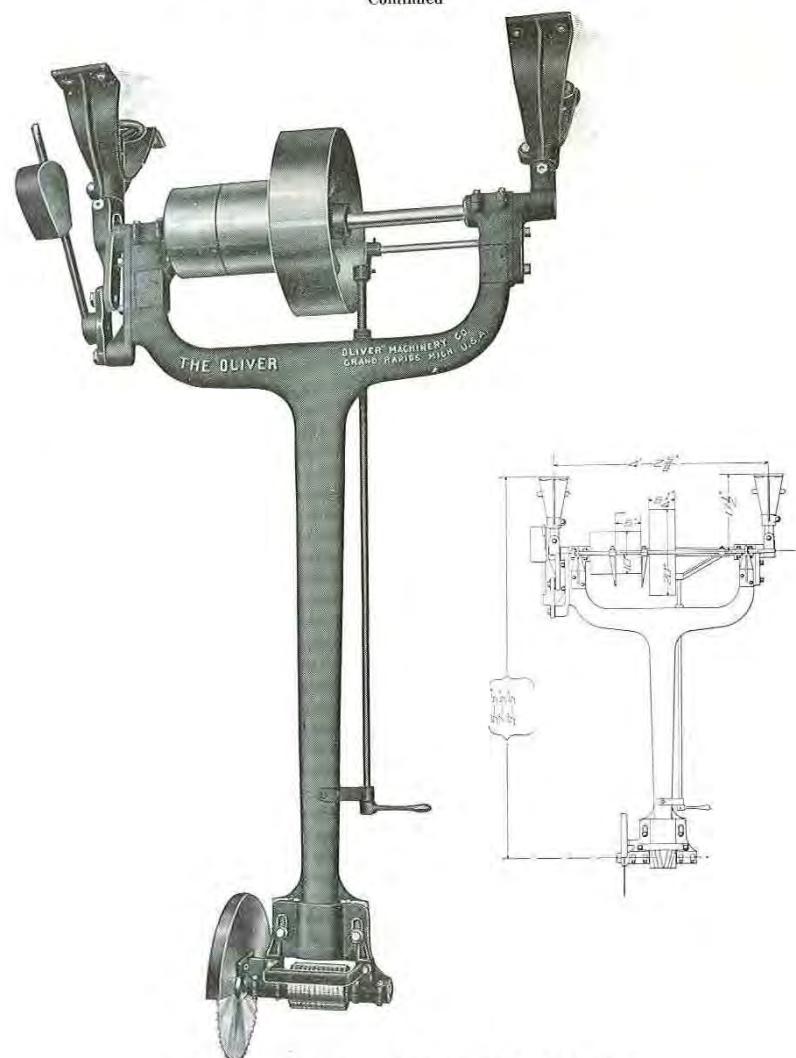
These have 17 $\frac{1}{2}$ " drop and are fitted with trunnion bearings, which receive and sustain the main frame. Hand wheels and screws are provided for vertical adjustment of 5", thus maintaining the same cutting line as the saw wears to smaller diameter.

Horse Power

Maximum with 18" saw, 5; with 24" saw, 7 $\frac{1}{2}$.

No. 36 "Oliver" Swing Cut-Off Saw

Continued



No. 36 "OLIVER" IMPROVED SWING CUT-OFF SAW
In three lengths—5 ft. 5 in., 7 ft. 5 in., and 9 ft. 5 in. long

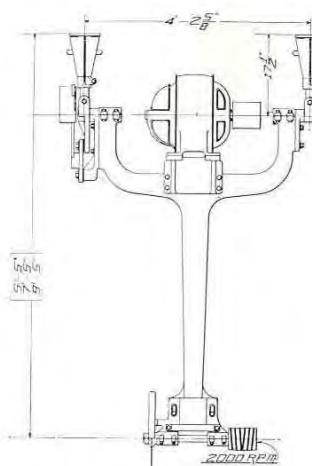
This machine is successful not only for rough cutting, but also in producing accurate results in hardwood for interior finish, cabinet and pattern work.

Capacity

18" saw will cut planks 12" wide, 6" thick; 16" saw will cut planks 12" wide up to 4 $\frac{1}{2}$ " thick; 24" saw will cut planks 12" wide up to 9" thick.

No. 36 "Oliver" Swing Cut-Off Saw

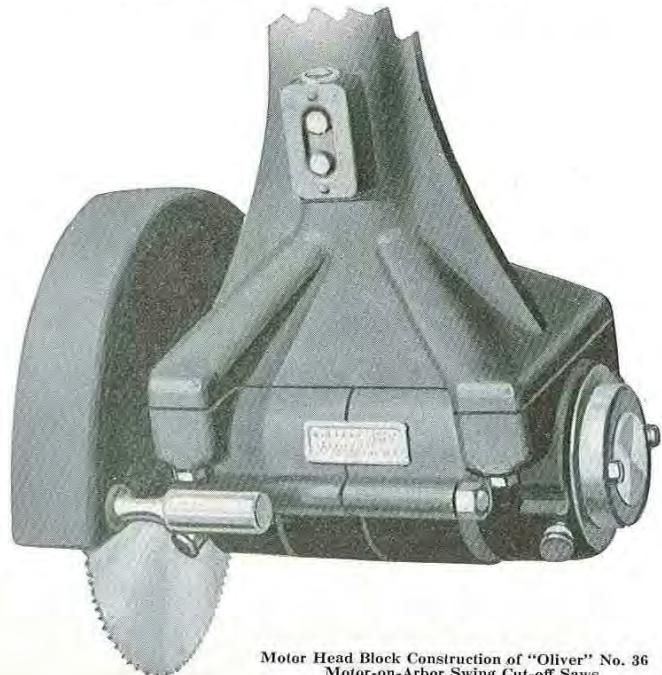
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No. 36-A Belted Motor Driven
Swing Cut-off Saw



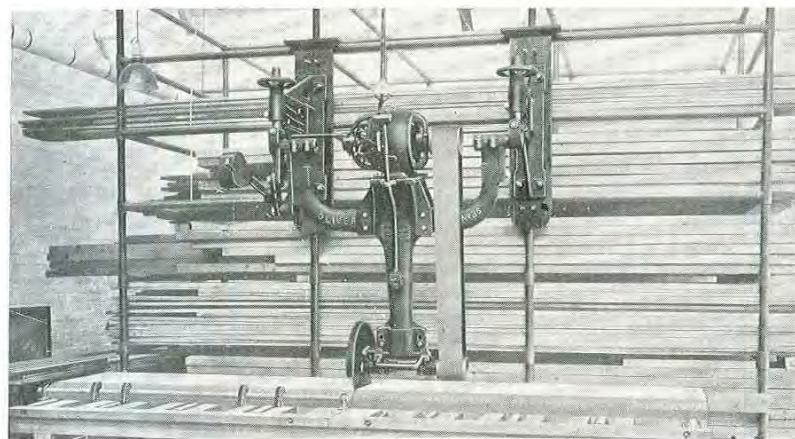
No. 36-A Motor-on-Arbor
Swing Cut-off Saw



Motor Head Block Construction of "Oliver" No. 36
Motor-on-Arbor Swing Cut-off Saws

No. 36 "Oliver" Swing Cut-Off Saw

Continued



"OLIVER" No. 36-A Swing Cut-off Saw Mounted on "Wall Brackets"
in use at the South High School, Grand Rapids, Michigan

Motor Drive

Two types of electric motor drive can be furnished—Belted Motor Drive and Motor-on-Arbor type. Belted Motor Drive consists of mounting a 5 H. P., about 1800 R. P. M. motor on a bracket in the yoke of the machine in place of the countershaft and belting down to the saw arbor. Motor-on-Arbor can be furnished only for 2 or 3 phase, 60 cycle, 220 or 440 volt A. C. and consists of a 3 to 5 H. P., 3600 R. P. M. shaftless motor built-in directly on the saw arbor, fitted with ball bearings and 16" diameter saw with guard and handle. This motor-on-arbor drive is extremely efficient, very dependable, absolutely safe, and requires minimum care.

Equipment

With belt driven machines, one 18" diameter saw and with motor-on-arbor machines, one 16" diameter saw is furnished.

CODE, WEIGHT, ETC.

Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Dean	36-A	Swing Saw, 5' 5"	890	1000	53
Dear	36-B	Swing Saw, 7' 5"	915	1020	55
Dearth	36-D	Swing Saw, 9' 5"	970	1070	76

EXTRAS

Deaso

Motor-on-Arbor and Switch consists of a 3 to 5 H. P., 3600 R. P. M., 2 or 3 phase, 60 cycle, 220 or 440 volt ball bearing motor built on the saw arbor and suitable safety-first enclosed switch mounted on the column of any of above machines and fitted with 16" diameter saw (motor arbor is 1" where saw is applied.)

Debam

Motor Bracket bolted to frame in yoke of machine and arranged for self-contained motor drive including fitting of motor but not the motor for any of above machines.

Debar

Endless Leather Belt, 5" wide, for driving saw arbor.

Debase

Machine arranged with pulleys, shield and 24" diameter saw.

Debax

Special Wire Mesh Belt Guard.

Deban

Special Automatic Aluminum Saw Guard, for 18" saw.

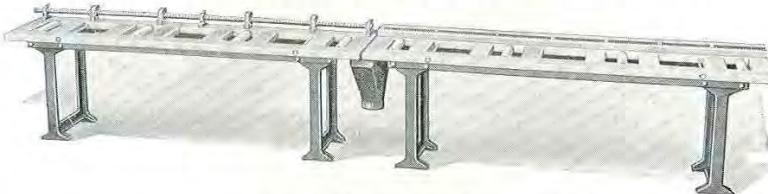
Debap

Wall brackets in place of ceiling brackets.

No. 179

"Oliver" Swing Saw Table With Automatic Gauge

A Splendid Combination. A Big Time, Labor and Stock Saver



Design

Top made of kiln dried rock maple with angle iron girths, preventing table from warping. Legs of one piece cast iron. Rollers inserted in both sections of table in every other opening. A dust chute is fastened between the two sections of table for exhaust connection.

Table

Composed of two sections each 8' long, 19½" wide, 30" high. Right hand section has scale rail graduated in eighth inches from 0" to 96". Left hand section has "Oliver" No. 419 Patent Automatic Swing Saw Gauge, consisting of square rod, graduated in eighth inches from 0" to 96", four automatic malleable iron stops, one center and two end rod holders.

Code Dealz

No.	Description	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
179	Swing Saw Table, 16' long	725	800	30

No. 419

"Oliver" Automatic Swing Saw Gauge



Utility

The "Oliver" Automatic Swing Cut-Off Saw Guage is made in any length up to 20' and equipped with any number of stops to enable cutting, without readjustment, the exact lengths most commonly required. Malleable iron stops, adjustably mounted on polished steel square rod, marked in feet and inches with graduations to eighths. Stops operate automatically, requiring no attention from sawyer, who merely guides and stops lumber to exact length required; no guesswork; no waste of time or stock; no recutting.

How to Order

State: (a) Longest cut; (b) location of saw, R. H. or L. H. end of arbor; (c) hand of gauge, R. or L.; (d) length of gauge; (e) number of stops; (f) marking, whether to be ruled in inches only, or in feet with inches repeated in each foot. Remember that if gauge is to extend through to saw under mandrel, 5" clearance is needed between mandrel and saw table, otherwise give distance from saw to opposite end of mandrel, where the gauge must start.

Code Deam

Description
No. 419 Automatic Swing Saw Gauge, with graduated steel rod, and malleable iron stops; specify length and number of stops desired.

No. 149

"Oliver" Saw Guard



Thousands of these guards are in daily use, giving satisfaction. A clamping plate, steel spreader and hardwood duck make up this guard. The spreader or "splitter" prevents pinching and throwing lumber back.

Made in three sizes.

These guards are made to fasten either to the R. H. or L. H. side of table (fastening plate underneath table). Cut illustrates a R. H. guard. In ordering state which hand you require. When saw revolves toward you, your right hand is R. H. side of table. We ship R. H. unless otherwise directed.

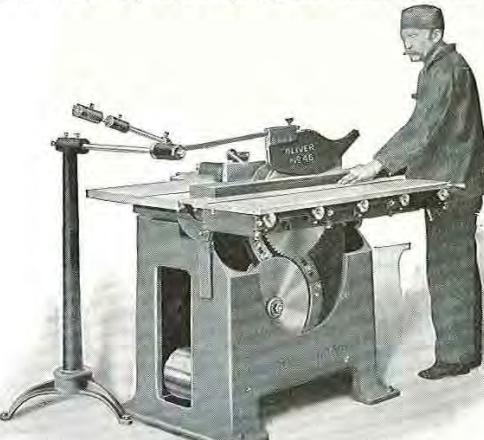
Code	No.	Description	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Deep	149-A	For saws 6" to 12"	10	10	1
Deepen	149-B	For saws 10" to 16"	15	15	1½
Deer	149-C	For saws 14" to 20"	20	20	2

No. 46

"Oliver" Automatic Saw Guard

The "Oliver" No. 46 Saw Guard is full automatic in every respect, and universal in application. It consists of hard wood, duck shaped, guard which slides on a square bar, counterbalanced by adjustable weights, supported by a shaft which is rigidly held in position by heavy tripod screwed to the floor. This guard is suitable for almost any sort of saw, of any make.

The shaft upon which is hung the saw guard and the counterbalance, is provided with collars, between which are placed friction washers, regulated by a nut on the end. The guard proper gently rises to allow the work to pass under it and then reverts to the table, always covering the saw.



Code	No.	Machine	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Defny	46	For saws up to 18" diam.	200	265	10
Defnz	46-A	For saws 18" to 24" diam.	225	300	12

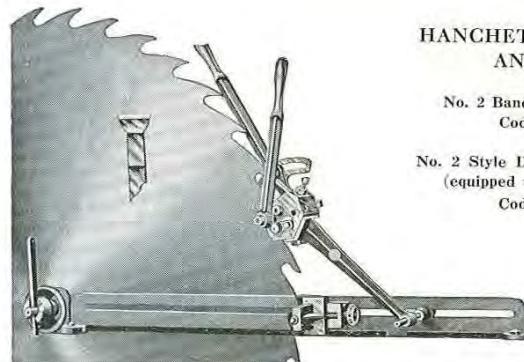
No. 409
Adjustable Circular Saw Filing Vise



This is suitable for either straight or bevel filing, and is especially adapted for saws requiring a nice, deep bevel, such as Huther Dado Heads, Matcher Cutters, Miter Saws, etc., up to 18" diameter.

It is very substantial, rigid, firm and can be used in either vertical or tilting position and the adjustment from one position to the other is made very quickly.

Code, Defend Weight, 35 lbs.

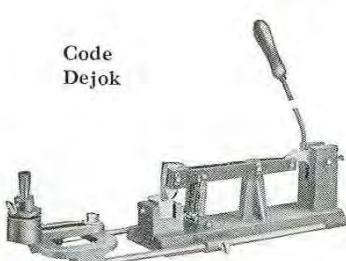


HANCHETT SWAGES FOR BAND AND CIRCULAR SAWS

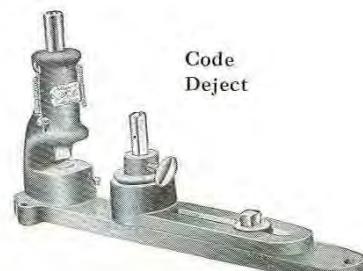
No. 2 Band for 76 to 20 gauge band saws,
Code, Deigba; weight 15 lbs.

No. 2 Style D for 11 to 16 gauge circular saws
(equipped with bench casting and jointer).
Code, Deign; weight 40 lbs.

CIRCULAR SAW SETTERS

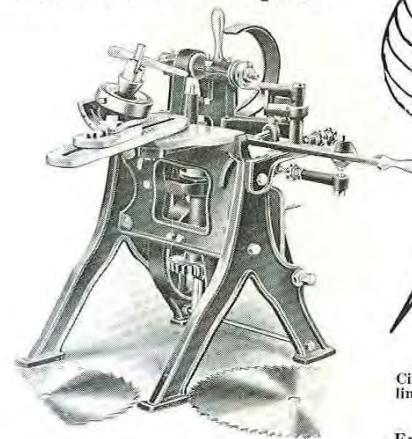


No. 416-B Circular Saw Setter with automatic trip hammer, for saws up to 38" dia.
Weight 60 lbs.



No. 416 Circular Saw Setter with Plunger
for use with a hand hammer, for saws up to
30" dia. Weight 27 lbs.

No. 420
Circular Saw Sharpener

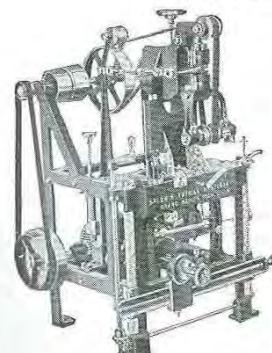


Circular Rip Saw Gullets.
Circular Cross-Cut Saw Gullets. Full size outlines of saw teeth showing wide range of sharpeners illustrated. Larger sharpeners on request.

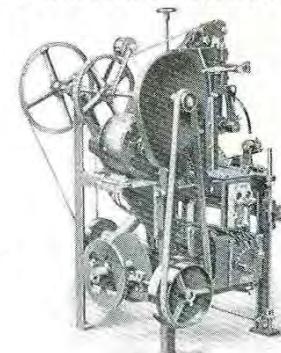
Experimental Sharpening: Free to show the adaptation for your particular needs. Send sample saw.

No. 423 FULL AUTOMATIC CIRCULAR SAW SHARPENER

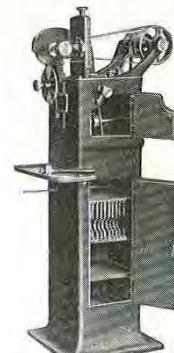
No. 424 SLITTING SAW SHARPENER



No. 423 Motor Driven



No. 423 Belt Driven



No. 424
Slitting Saw
Sharpener

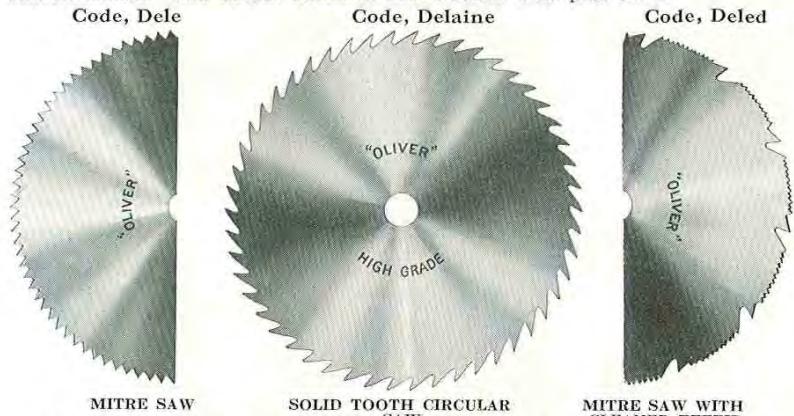
No. 423 Automatic Sharpener will automatically sharpen cross-cut saws 6" to 30" diameter and rip saws 8" to 30".

No. 424 Slitting Saw Sharpeners with index spacing plate for metal cutting or slitting saws. Capacity automatic 2" to 10"; 8" to 36"; 36" to 60" diameter, for thinnest or thickest saws up to $\frac{1}{2}$ ".

Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Deka	420-A	Circular Saw Sharpener.....	250	350	15
Dekaf	423-A	Automatic Cir. Saw Sharpener.....	500	625	30
Dekal	424-A	10" Slitting Saw Sharpener.....	450	625	28
Dekam	424-B	60" Slitting Saw Sharpener.....	1000	1150	35

"Oliver" Circular Saws, Dado Heads, Groovers

Our experience in the building of high class woodworking machinery enables us to furnish saws which are entirely satisfactory for all classes of work. The name "Oliver" on a saw is a guaranty of its perfection and your protection against an inferior article. You cannot afford to take chances with poor saws.



MITRE SAW

Hollow ground. Sizes from 4" diameter to 24" inclusive.

SOLID TOOTH CIRCULAR SAW

Sizes from 8" diameter to 36" inclusive.

MITRE SAW WITH CLEANER TEETH

Hollow Ground. Sizes from 4" diameter to 24" inclusive

When ordering, specify kind (or work to be done), gauge, diameter, size of mandrel hole and any other information needful. Write us for prices.

PATENT ADJUSTABLE DADO HEAD

We recommend this as a perfect Groover, Dado or Gaining Head. It will cut a perfect groove either with or across the grain and will not leave a rough edge. The outside cutters are $\frac{1}{8}$ " thick, the inside cutters are made $\frac{1}{16}$ ", $\frac{1}{8}$ " and $\frac{1}{4}$ " thick, so that the outside cutting can be used singly, together or in connection with as many or as few inside cutters as required to cut the necessary width grooves measurable in sixteenths.



Outside Cutter

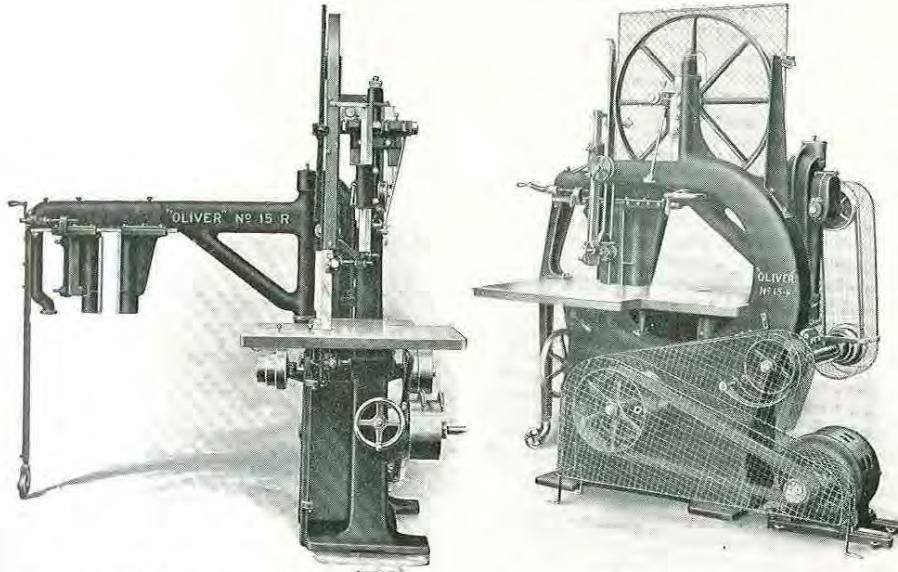
Inside Cutter

Dado Head in Use

Furnished 8", 10", 12", 14" or 16" diameter to fit any size saw mandrel.
 No. 3 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{7}{8}$, $\frac{9}{16}$, $\frac{3}{4}$,
 No. 4 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $\frac{15}{16}$, 1,
 No. 5 Set, cutting grooves, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $\frac{15}{16}$, 1,
 1 $\frac{1}{16}$, 1 $\frac{1}{8}$, 1 $\frac{3}{16}$, 1 $\frac{1}{4}$, 1 $\frac{5}{16}$, 1 $\frac{3}{8}$, 1 $\frac{7}{16}$, 1 $\frac{1}{2}$.
 No. 6 Set, cutting grooves, $\frac{1}{8}$ " to 2" by 16th.

No. 15-R

"Oliver" Combination Band Re-Saw and Scroll Saw



Outboard Bearing of Lower Shaft Omitted
Preparatory to Motor Drive

View Showing Wire Mesh Belt Guards
and Belted Motor Drive

Introduction We recommend this as a general utility tool of more than the ordinary merit. Its adaptability to every job that presents itself makes it well nigh indispensable. With its $2\frac{1}{2}$ " re-saw blade, expensive lumber, such as white pine, cherry, mahogany, etc., can be made thin without making shavings of over half of it. The common practice today is to plane down a 1" board (or 2" if haven't a 1" in stock) to get $\frac{3}{8}$ ", $\frac{1}{2}$ " or $\frac{5}{8}$ " thickness, and with pattern or other lumber at one hundred dollars or more per thousand feet, the economy is enormous if the waste may be avoided.

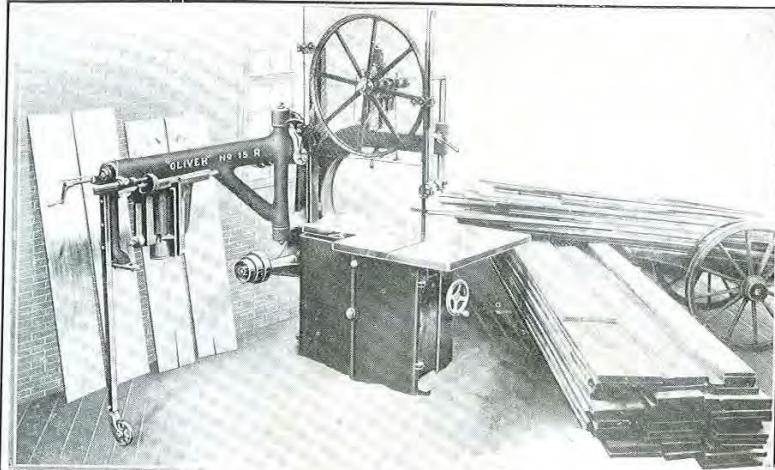
Three Speeds 10', 15', 20' per minute is its capacity. From 600 to 1000 feet of lumber per hour is its saving by having the reduction in thickness represented by lumber instead of shavings. No further argument should be needed to convince anyone of the money saving qualities of this machine.

**Economy
Change from
Re-sawing to
Ordinary
Band Sawing** Is instantly effected by swinging the arm carrying the one corrugated and one plain power-driven rolls out of the way and changing saws. All the little refinements of detail that have made "Oliver" reputation for quality world wide, are here, such as proper proportion, correct diameters of spindles and journals, genuine babbitt, a great abundance of material to absorb vibration, and good workmanship, are the points that make our machines last a lifetime.

Catalog No. 22 Band Saws

No. 15-R "Oliver" Band Re-Saw and Scroll Saw

Continued



Safety

A Power Driven Band Re-Saw is the only safe way. Many a man has gotten into trouble by trying to re-saw by hand upon an ordinary band saw, and, as a general rule, they don't try to save the lumber that way but once. Note that all the gearing and saws are absolutely guarded and danger from this source eliminated.

Frame

The frame is cast in cored form with a base 46" x 23". It is 7' 6" high. Floor space 60" x 47".

Table

It is 40" x 36" and 40" from the floor, tilts 45 degrees one way and 5 degrees the other. It is heavy double ribbed and supported on rockers for angle adjustments. The tilting is done by means of a worm, gear and hand wheel at the right of the operator. The rockers are machined all over and tongued and grooved firmly to seats. The angles are indicated in degrees, upon the dial at the front of the machine.

Auxiliary Table

The auxiliary table is 21" x 22" and is bolted to the frame. It increases the surface of the work table almost half. It is vertically adjustable.

Outboard Bearing

This supports the end of the lower wheel shaft and is self-oiling. The tight and loose pulleys are located between this and the main bearing if machine is belt driven. If direct connected to motor, it is dispensed with.

Dimensions

Same as No. 15 Band Saw. (See following pages.)

Capacity

Will re-saw 16" wide, 8" thick. Takes saws up to 2½" wide, 18' to 20' long.

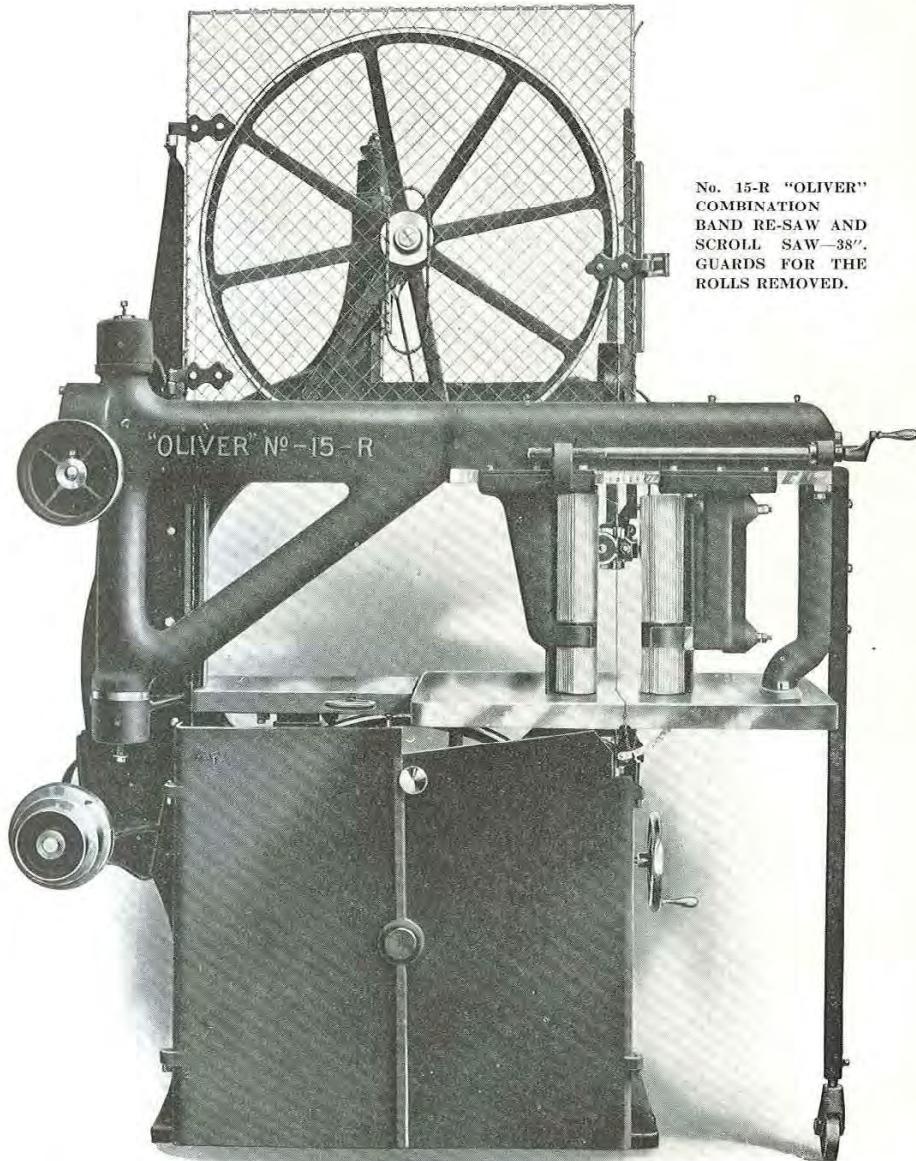
Countershaft

Tight and loose pulleys, 14" x 5". Speed, 500 R. P. M.

Horse Power

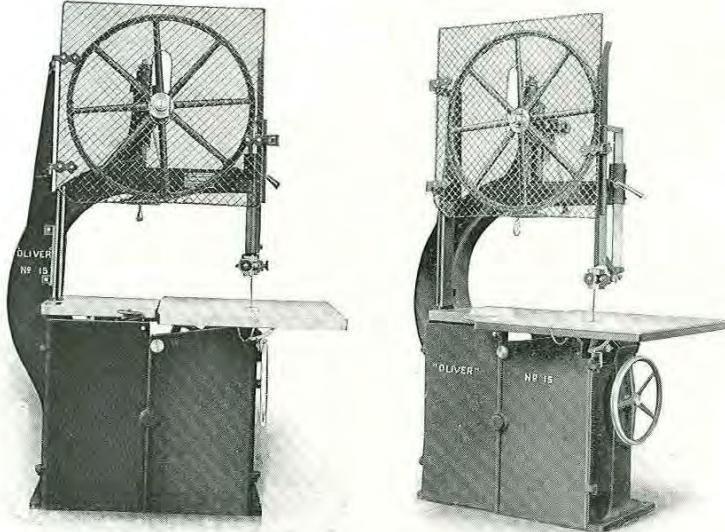
7½ to 10. 5" belt.

Code	No.	Description	Weight Crated	Pounds Boxed	Cubic Feet
Dellie	15-R	With countershaft for belt dr.	4100	4600	128
Dellish	15-S	Machine with motor bracket	4100	4600	128

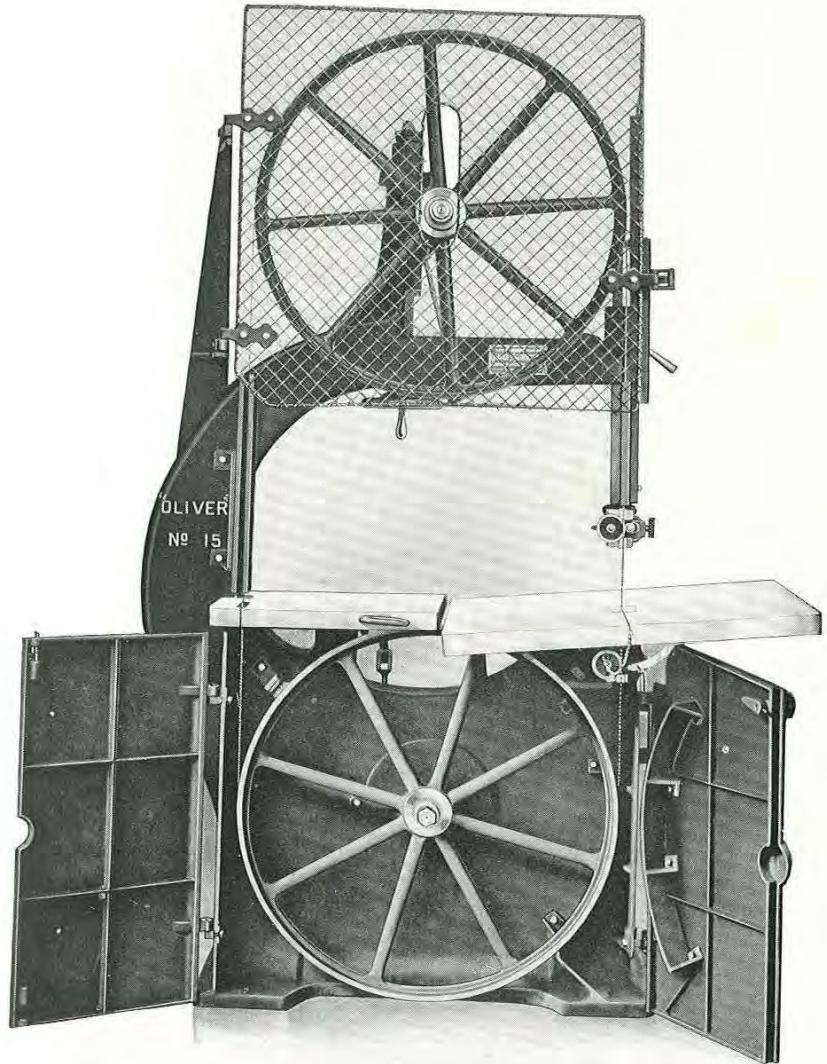


No. 15-R "OLIVER"
COMBINATION
BAND RE-SAW AND
SCROLL SAW—38".
GUARDS FOR THE
ROLLS REMOVED.

No. 15
"Oliver" Band Saw
38-inch Wheels



No. 15 "Oliver" Band Saw 38-inch
Continued



View Showing Encasing Doors Open

Introduction

The construction of this Band Saw is along lines of greatest economy to the users, not in its first cost (for it is not cheap in that sense), but in its strength, abundance of material in the right places, correct design, convenient adjustments, fine workmanship, perfect details and steadiness in running.

Base

This comprises the entire frame—column, arm, etc.—cast in cored section on symmetrical lines, and the most desirable for great strength.

Table

This is heavy, strongly ribbed and carried on rockers for the angle adjustments; has necessary throat and slot to disengage saw. A double rib around the edge of table serves as a grip for hand screws for clamping special forms to the table. Device for tilting both ways by means of worm, gear and hand-wheel, located at the right of operator. The angles are indicated in degrees, upon the dial at the point of the machine. Table is always locked at any point without the use of hand clamps or bolts of any kind. A device for preventing the sagging of the table where it is cut through to receive the saw is provided.

Rockers

These support the table and have all surfaces machined to fit and are tongued and grooved firmly to their seats with accurate results. The rocker caps may be taken up to eliminate wear.

Auxiliary Table

This is between the column and the work table, and bolted to the frame. It increases the surface of the work table almost half. It is vertically adjustable.

No. 15 "Oliver" Band Saw 38-inch

Continued

Wheels

They are of cast iron, 38" in diameter, are machined all over and have the web between the spokes milled concentric with the rims. This removes all unnecessary weight, and gives a running balance. Rubber bands of the best quality are cemented to the wheels. They are very sensitive and so adjusted in connection with the steel spring cushion that sudden strains are instantly cared for.

Lower Wheel

This is enclosed in a metal casing having two doors. These open in the center and swing each way, allowing the operator to put on or remove the saw. It is provided with a device whereby the dust is collected and thrown to the front of the machine. When necessary to attach this machine to an exhaust fan all that is necessary is to bring the pipe to the opening in the frame and attach it.

Upper Wheel

This is fitted to a taper bearing on a large shaft carried in a long split box lined with guaranteed babbitt. End thrust is taken up by end of collar.

Wheel Shafts and Bearings

These are of our special spindle steel with journals machine ground and receive the wheels on taper bearings and they are held by hexagonal nuts. The bearings are designed with oil wells, and are fitted with caps to machined surfaces. The upper shaft and bearing is vertically adjustable to suit varying lengths of blades. It is also tilted by hand-wheel for tracking the saw. The lower main bearing is cast to and forms a part of the frame, insuring rigidity.

Outboard Bearing

This supports the end of the lower wheel shaft and is bolted to the frame. It has a babbitted box with oil chamber below. The tight and loose pulleys are located between this and the main bearing. It assists in counteracting the tendency of the belt to pull the shaft out of alignment.

Saw Tension

This is accomplished by a telescope spring of correct strength and elasticity, automatically adapting itself to the varying tension required for light or heavy saws. It is very sensitive.

Guide Post

It is made of square steel and counterbalanced by an encased coil spring. It is readily locked to a fixed position.

Guides

The post carries a frictionless roller guide, adjustable for varying widths of saws and another similar guide is located below the table.

Encasing Doors

These cover the lower wheel and serve to confine the saw-dust, and prevent danger from contact with the wheel. The dust is carried to an opening at the base fitted to receive an exhaust pipe.

Saw Guards

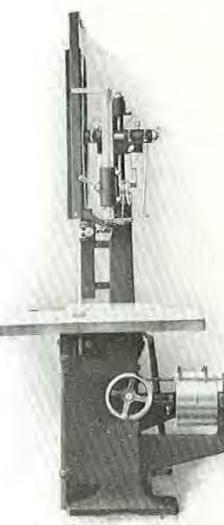
A grooved wood saw guard is located on the column receiving the saw and protecting it on both sides. A front guard made of steel with a wood facing is carried on the guide post and covers the saw above the guide.

Loose Pulley

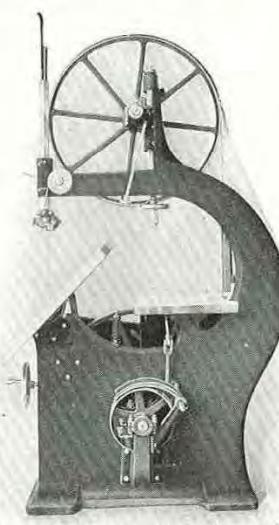
This is bushed with bronze, free to turn on the shaft or in the pulley and fitted with oiling devices that automatically keep it well lubricated.

No. 15 "Oliver" Band Saw 38-inch

Continued



No. 15 "OLIVER" BAND SAW, 38-INCH
Side View of Machine



No. 15 "OLIVER" BAND SAW, 38-INCH
View showing Rear of Machine

Capacity

Will take 18" under the guide; will saw 38" between saw and column; will saw to 45 degrees to the right and 5 degrees to left. Saws from 18' 8" to 20' 6" long may be used and up to 2 1/2" wide.

Equipment

This consists of one saw 1 1/2" wide, pair of brazing tongs and clamps, saw guard for both front and back saw, and belt shifter.

SPECIAL DATA

Table	36" x 40"—tilts 45 degrees to the right and 5 degrees to the left.
Auxiliary Table	21" x 22", finished the same as main table.
Pulleys	Tight and Loose are 12" diam. x 4 1/2" face. Speed, 500 R. P. M.
Horse Power	3 to 5.
Floor Space	68" x 54".

CODE, WEIGHT, ETC.

Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Delete	15-A	R. H. for Belt Drive.....	2800	3500	117
Delight	15-B	L. H. for Belt Drive.....	2800	3500	117
Dell	15-C	R. H. for Motor Drive.....	2800	3500	117
Deltaic	15-D	L. H. for Motor Drive.....	2800	3500	117

No. 16 "Oliver" Band Saw 36-inch

Quality

The "Oliver" No. 16 Band Saw is in design, construction, finish and efficiency, the most perfect 36" Band Saw obtainable. We invite careful scrutiny of its details which have many essential points of advantage found only in "Oliver" Band Saws. It is made either right or left hand. Right hand machine is always shipped unless left hand is specifically ordered.

Frame

It is made in the cored form, is strong, durable and free from vibration when machine is in operation.

Table

This is metal, well ribbed and machined, and is mounted in a substantial rocker, that is milled on all surfaces and tongued to its seat and is provided with take up for wear. It tilts either to the right or left by means of a large hand wheel, worm and worm gear self-locking device. It remains at any angle one may put it. It is provided with a device for leveling the top, where it is slotted to receive the saw. A double rib around the edge of the table serves the dual purpose of stiffening it and providing a means for readily clamping forms to table.

Auxiliary Table

This is located between the column and main table mounted on a pillar and adjustable vertically for alignment.

Upper Wheel

This is metal and forced on the shaft on a taper bearing and secured by hexagonal nut. It is machined to a running balance, has vertical adjustment and may be tilted for tracking the blade.

Lower Wheel

This is metal, fitted to taper bearing and is rigidly held in a fixed position. It is given a running balance.

Bearings

Ball Bearings of the most approved type are used for both upper and lower wheel shafts of this band saw, assuring smooth, easy running.

Wheel Shafts

They are of fine steel, ground accurately in the journals. Upper shaft is supported in a housing that is provided with devices for regulating the saw tension and for making the blade track on the wheel properly and controlled by hand wheels and screws.

Tension

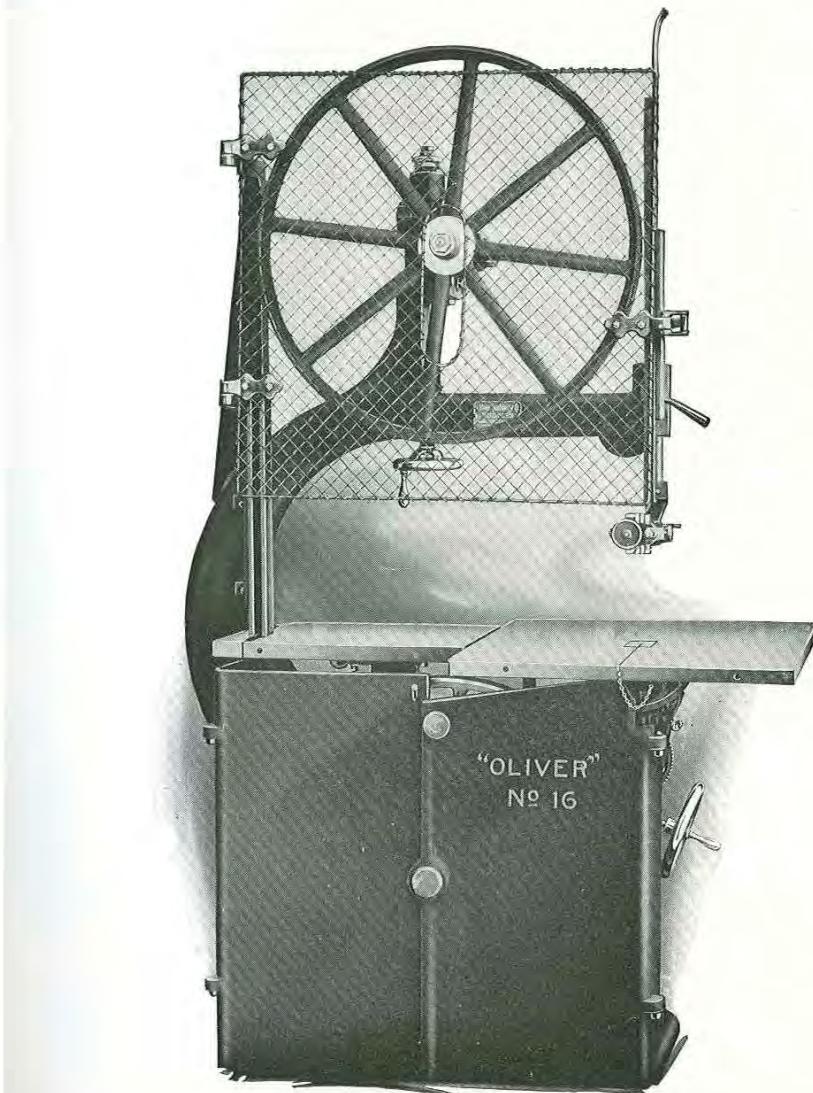
For the saw is regulated by means of a telescope spring. The larger of the two springs regulates the tension for light saws, and when the smaller spring within the large one exerts its resistance, the combined strength gives sufficient pressure for larger saws.

Guide Post

Is finished square steel, counterbalanced by an encased coil spring. A very substantial clamping device is provided. The guides are of the frictionless roller type, latest pattern—one above and one beneath the table.

No. 16 "Oliver" Band Saw 36-inch

Continued



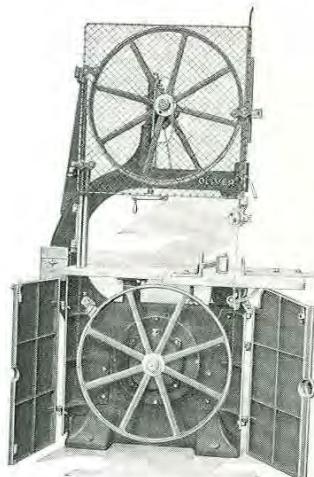
No. 16 "OLIVER" BAND SAW—36-INCH WHEELS

"Oliver" Machines Safely Guarded

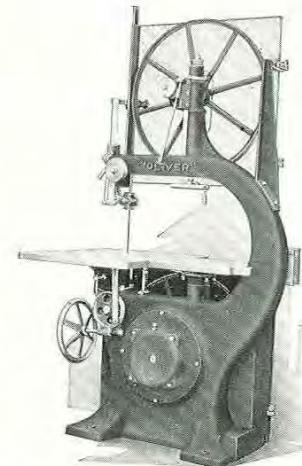
Fitted with Ball Bearings for Both Upper and Lower Wheel Shafts

No. 16 "Oliver" Band Saw 36-inch

Continued



Front View—doors open. Note the various guards, lower and upper roller guides and index dial.



Rear View. Note large hand wheel and worm and worm gear tilting device.

Index Dial Is located conveniently for the operator.

Guards Wire mesh guard for the upper wheel, also two safety saw guards are supplied; one at the rear, made of grooved wood protecting it both sides, and the other on the guide post, made of steel with wood facing and covering the saw above guide.

Encasing Doors The lower wheel is encased and sawdust prevented from scattering, and danger of contact with the wheel is avoided.

Capacity Will take 16" under the guide; saw 36" between the blade and column; saw to 45 degrees to the right and 10 degrees to the left. Saws from 17' 5" to 19' 3" long may be used from $\frac{3}{8}$ " to $2\frac{1}{2}$ " wide.

Equipment This consists of one blade $\frac{1}{2}$ " wide, pair of brazing tongs and clamps, saw guards and belt shifter.

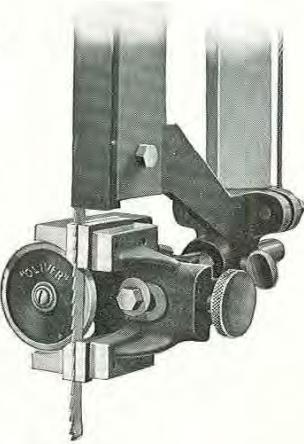
Motor Drives We furnish any type of motor drive desired—belted, geared, coupled, silent chain, motor hung at the rear, or our newly created, fully enclosed, built-in, "Motor-on-Shaft" Drive. When 1700 or 1800 R. P. M. motors are used we recommend the "Attached Belted Drive" which supports the motor on a self-contained bracket bolted to the frame on a finished square pad and fitted with wire mesh belt guard, endless leather belt and slide base with screw take-up for belt stretch. When 600 R. P. M., 2 or 3 phase Alternating Current motors can be used, we very strongly recommend our newly created, ball bearing, fully enclosed, "Motor-on-Shaft" drive, wherein the motor is built-in directly on the lower wheel shaft, giving the most efficient, enclosed, silent, practical, durable, and self-contained motor drive possible.

No. 16 "Oliver" Band Saw 36-inch

Continued

GENERAL DIMENSIONS

Base	40" long, 22" wide, 6' 7 $\frac{1}{2}$ " high.
Table	36" long, 30" wide, 40" high, tilts 45 degrees to the right and 10 degrees to the left.
Auxiliary Table	18" long, 23" wide.
Wheels	36" diameter and 1 $\frac{3}{4}$ " wide on rim, carry saws to 2" wide.
Guide Post	1 $\frac{1}{4}$ " square with bearing 6 $\frac{1}{2}$ " long, maximum between guide and table 16".
Wheel Shafts	1 $\frac{5}{8}$ " and 2 $\frac{1}{6}$ " diameter, fitted with Ball Bearings.
Saw Blades	19' 3" long—maximum.
T & L Pulleys	12" x 4". Speed 500 R. P. M.
Floor Space	4' x 5'.
Horse Power	Maximum 3 to 5.



"Oliver" Frictionless Band Saw Guide
as regularly furnished on all "Oliver"
Band Saws

CODE, WEIGHT, ETC.

Code	No.	Machine	Weight in Crated Pounds Boxed	Cubic Feet
Delude	16-A	With T & L pulleys for belt drive.....	2120	2400
Delue	16-E	Motor-on-Shaft Band Saw.....	2125	2400

EXTRAS

Delug	Attached Belted Motor Drive, mounting of motor on bracket bolted to base and belted to lower wheel shaft.
Deluk	Coupled Motor Drive, mounting a 600 R. P. M. motor on a bracket and coupling direct to end of lower wheel shaft.
Delum	Geared Motor Drive, mounting of motor on bracket bolted to base and gearing to lower wheel shaft.
Delup	Webbed Lower Wheel may be furnished if so ordered.
Delut	Left Hand Machine instead of the regular right hand.

No. 35 "Oliver" Band Saw 36-inch

Introduction This band saw is a lighter machine than those described on the preceding pages, yet made with faithfulness to the "Oliver" quality. A "good" Band Saw is a machine of great importance and is a novelty to find, in a medium priced machine, the elements that make our phenomenal success in the larger machines.

Frame It is cast iron, in the cored form, strong and durable, with wide base.

Table This is of iron, strongly ribbed and tips to an angle either to the right or to the left. The rockers supporting it are perfectly machined and it is held in any position by the self-locking worm and worm wheel tilting device. The auxiliary table, next the column, supports long stock and is kept in perfect alignment with the main table in its normal position.

Wheels The wheels are made of cast iron, machined all over for a perfect balance, are rimmed with the best rubber bands cemented thereto. The tilting device for upper wheel is sensitive, under control of the operator, and the saw can be made to track properly.

Wheel Shafts The wheel shafts are made of fine steel, run in long self-oiling bearings, and receive the wheels over a taper journal, secured by a heavy nut. All the bearings are lined with genuine babbitt, and the caps and bolts made after our most approved method. On special order Ball Bearings may be furnished.

Guide Post The Guide Post is of square steel, supported in a perfect babbitted bearing, split to take up lost motion, and is held in position by a heavy encased spring mechanism located at back of column.

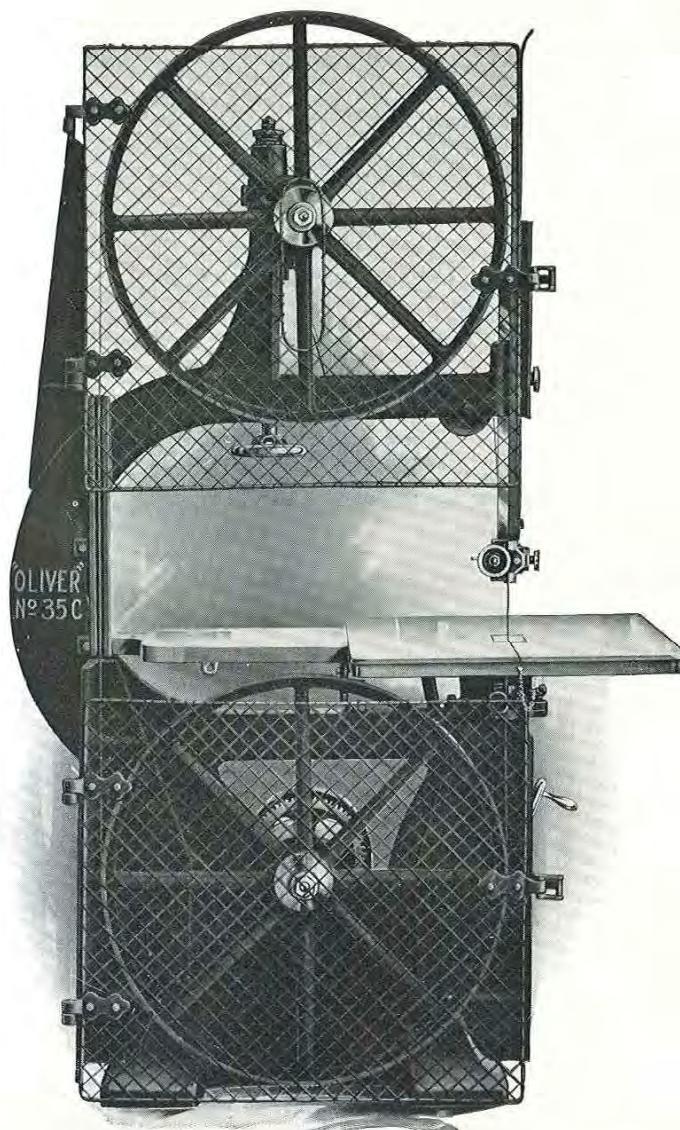
Guides These are of the frictionless roller type and used above and below the table. They are adjustable.

Saw Guards We supply two guards, one of grooved wood at the back and one of steel faced with wood placed at the front and covering the saw above the guide.

Sliding Yoke This supports the upper wheel shaft, is very sensitive and automatic in operation, retaining the proper tension to the saw under all the varying conditions. This is done through the telescope spring device at the top of the column.

No. 35 "Oliver" Band Saw 36-inch

Continued



No. 35 "OLIVER" BAND SAW—36-INCH WHEELS
"Oliver" Machine Safely Guarded

No. 35 "Oliver" Band Saw 36-inch

Continued

**Tracking
Saw**

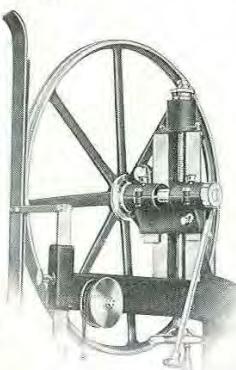
We accomplish this by means of a hand nut and screw and pivot device on the housing that supports the upper wheel shaft and tilts the wheel.

Equipment

This consists of one $\frac{1}{2}$ " saw, pair of brazing tongs and clamps, saw guards and belt shifter.

Capacity

Will take 16" under the guide, saw 36" between the blade and column, saw beveling 45 degrees to the right and 10 degrees to the left. Saws 17' 5" to 19' 3" long can be used.



Upper Bearing, Wheel, Etc.

GENERAL DIMENSIONS

Frame	36" long, 20" wide, 6' 8" high.
Table	34" long, 28" wide, 40" high, tilts 45 degrees to the right and 10 degrees to the left.
Auxiliary Table	14" long, 18" wide.
Wheels	36" diameter, $1\frac{3}{4}$ " wide at rim; carry saws to $1\frac{3}{4}$ " wide.
Wheel Shafts	$1\frac{1}{2}$ " diameter; upper bearing 11" long; lower bearing 11" long.
Guide Posts	$1\frac{1}{4}$ " square, post bearing $6\frac{1}{2}$ " long.
Saw Blade	Maximum 19' 3" long and $1\frac{3}{4}$ " wide.
T & L Pulleys	12" x 4", Speed 500 R. P. M.
Floor Space	60" x 40".
Horse Power	3.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight Crated	Pounds Boxed	Cubic Feet
Denit	35-A	With T & L pulleys for belt drive.....	1625	1900	88
Deniv	35-E	Motor-on-Shaft Band Saw.....	2400	2700	90

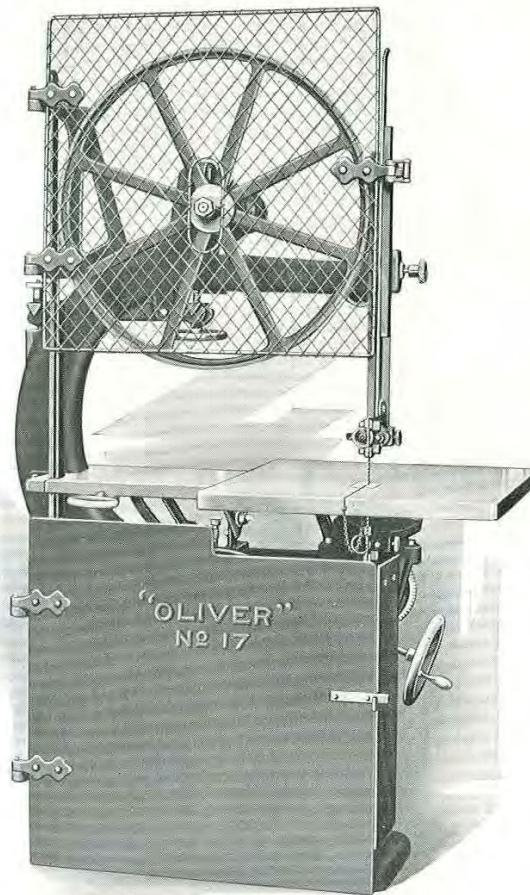
EXTRAS

Denke	Attached Belted Motor Drive, mounting motor on bracket bolted to base and belting to lower wheel shaft.
Denki	Coupled Motor Drive, mounting a 600 R. P. M. motor on bracket bolted to base and coupling to end of lower wheel shaft.
Denko	Geared Motor Drive, mounting motor on bracket bolted to base and gearing to lower wheel shaft.
Denla	Webbed Lower Wheel can be furnished when so ordered.
Denli	Left Hand Machine instead of regular right hand.

No. 17

"Oliver" Ball Bearing Band Saw 30-inch

"Oliver" Machines are Safely Guarded



'OLIVER' No. 17 BALL BEARING BAND SAW—30-INCH WHEELS

I would rather run the "OLIVER" Safely Guarded Kind

No. 17 "Oliver" Ball Bearing Band Saw 30-inch

Continued

Design	This machine is lighter in construction, with smaller wheels, etc., but is designed and manufactured with the same regard for quality that characterizes our larger band saws.
Frame	This is cast iron, molded in the cored form, with wide base. It is stiff and strong.
Table	It is metal, strongly ribbed and planed true, is supported in a machined rocker and held in position by a lever clamp. The rocker is held firmly in its seat. Tilts to both right and left by means of worm and worm gear self-locking tilting device operated by large hand wheel.
Auxiliary Table	This is of metal and is held securely to the column. A stop below prevents it from sagging.
Wheels	They are of iron, milled and balanced correctly and held on taper bearings. The upper wheel is vertically adjustable to compensate for short saws and may be tilted for tracking blades. Both wheels are faced with rubber bands and secured to the wheel shafts on taper bearings by a hexagonal nut.
Shafts and Bearings	The shafts are of steel, the proper diameter, tapering for the wheel bearings and ground true in the journals. Bearings are of the highest grade frictionless Ball Bearing type.
Guide Post	This is a square steel bar mounted in a babbitted box, and has a clamp knob for holding firmly in the required position.
Guides	Improved frictionless roller guides are used, both above and below the table.
Saw Guards	These cover the saw at front and next the column. The front guard is steel, faced with wood and covers the saw above the upper guide. It lifts with the guide post. Also safety first guards for both wheels as illustrated.
Tracking Saw	This is accomplished by hand wheel and screw and pivot device which tilts the upper wheel.
Equipment	It consists of one $\frac{1}{2}$ " saw, pair of brazing tongs and clamp, saw guards and belt shifter.
Capacity	Will take 14" under the guide, and 30" between the saw and column; table tilts 45 degrees to right and 10 degrees to the left. Saws 14' 8" to 15' 6" long can be used up to $1\frac{1}{2}$ " wide.

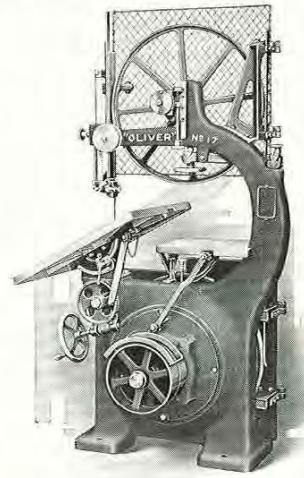
No. 17 "Oliver" Ball Bearing Band Saw 30-inch

Continued

Motor Drives We can furnish any type of motor drive desired—belted, geared, coupled, silent chain, motor hung at the rear, or our newly created, fully enclosed, built-in, "Motor-on-Shaft" drive. When 1700 or 1800 R. P. M. motors are used we recommend the "Attached Belted Drive" which supports the motor on a self-contained bracket bolted to the frame on a finished square pad and fitted with wire mesh belt guard, endless leather belt and slide base with screw take up for belt stretch. When 600 R. P. M., 2 or 3 phase Alternating Current motor can be used we very strongly recommend our newly created, ball bearing, fully enclosed, "Motor-on-Shaft" drive, wherein the motor is built-in directly on the lower wheel shaft, giving the most efficient, enclosed, silent, practical, durable, and self-contained motor drive possible.

GENERAL DIMENSIONS

Frame	34" long, 17" wide, 5' 7" high.
Table	28" long, 26" wide, 38" high, tilts 45 degrees to the right, and 10 degrees to the left.
Auxiliary Table	16" wide, 14" long.
Wheels	30" diameter; carry saws to $1\frac{1}{2}$ " wide.
Wheel Shafts	Tapered at front end and run in ball bearings.
Guide Post	1" square. Post bearings 4" long.
Saw Blade	Maximum 15' 9" long.
T & L Pulleys	12" x $3\frac{1}{2}$ ", speed 600 R. P. M.
Floor Space	30" x 50".
Horse Power	Maximum 3.



Rear View Showing Table Tilting Mechanism

CODE, WEIGHT, ETC.

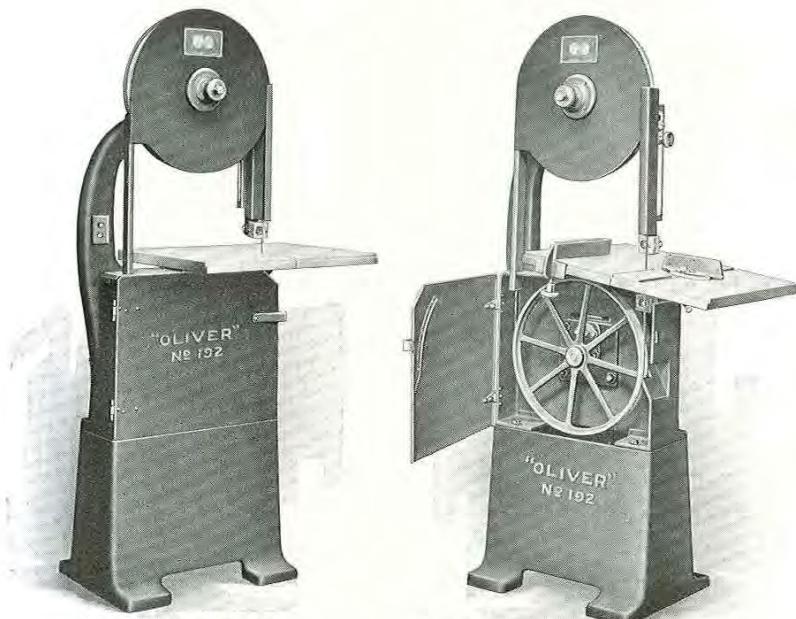
Code Denude	No. Machine	Weight in Pounds Crated	Pounds Boxed	Cubic Feet
17-A	R. H. Machine, belt drive.....	1350	1600	65
17-E	Motor-on-Shaft Band Saw.....	1550	1800	65

EXTRAS

Denuk	Attached Belted Motor Drive, mounting motor on bracket bolted base and belting to lower wheel shaft.
Denul	Coupled Motor Drive, mounting a 600 R. P. M. motor on bracket bolted to base and coupling to end of lower wheel shaft.
Denup	Geared Motor Drive, mounting motor on bracket bolted to base and gearing to lower wheel shaft.
Denut	Left Hand Machine instead of the regular right hand.

No. 192 "Oliver" Band Saw 18-inch

Most Complete Portable Band Saw Ever Made



No. 192 "Oliver" Band Saw
Front View, Mounted on Floor Base

Door Open, Table Tilted and Both Ripping
Gauge and Cross-Cut Gauge in Place

Design

The No. 192 is a self-contained, portable machine, regularly fitted with motor, cord and switch ready for use, but it can also be furnished with tight and loose pulleys for belt drive. A special feature of this machine is its exceptionally large cast iron table with miter cross-cut gauge and parallel ripping fence which decidedly increases the usefulness of the machine.

Capacity

It takes 18" between saw and column, 8" high under upper guide can use saws up to $\frac{1}{2}$ " wide; by using gauges will rip up to 11" wide and will cross-cut and miter up to 8"; table tilts 45 degrees to right.

Wheels

Cast iron, 18" diameter, $1\frac{1}{4}$ " face, covered with rubber; run in Ball Bearings; both wheels completely guarded with steel doors; speed 770 R. P. M. Upper wheel has 4" vertical adjustment.

Table

It is cast iron, well ribbed, accurately machined; 24" wide, 20" long, carries a ripping fence and a miter cross-cut gauge; tilts 45 degrees to the right; height from base 20"; height from floor when supported on floor base, 38".

Guide

Frictionless roller guides, of the most simple and latest improved type, are furnished both below and above the table.

No. 192 "Oliver" Band Saw 18-inch

Continued

Gauges

Two regularly furnished for use on the table—a miter cross-cut gauge and a parallel ripping gauge.

Bearings

Ball Bearings used throughout.

Blades

We stock $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", and $\frac{1}{2}$ " blades. Length of blades 9' 8".

Floor Base

Regularly mounted on base 18" high, making height of table 38" from the floor.

Column

A one-piece cored casting, carries the table at 20" from the base. Height of machine without base, 48".

Floor Space

Actual floor Space, 22" x 34".

Adjustment

The lower wheel has a positive non-changing alignment with the frame of the machine. The upper wheel has a very simple 4" vertical screw adjustment for tensioning the saw and an exceedingly delicate micrometer screw tilting device for tracking the saw on the wheel. All adjustments are controlled by hand wheels.

Safety Guards

A hinged steel door covers lower wheel; two circular steel guards completely cover both sides of upper wheel; a U shaped steel guard encases the rear portion of the saw; and a U shaped cast iron guard, adjustable with guidepost, covers front portion of saw not actually cutting.

Motor

Ball Bearing enclosed motor is $\frac{1}{3}$ H. P., 1800 R. P. M., either alternating or direct current, 110 to 220 volts, may run from lamp socket on lighting circuit or may be furnished for power circuit.

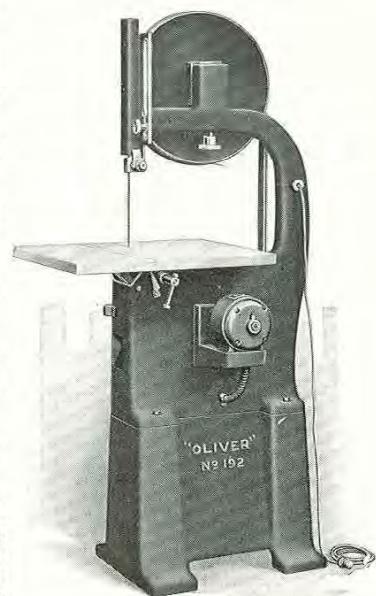
Switch and Cord

For direct current and single phase motors we furnish a push button switch conveniently mounted on machine and fully wired with cord and plug for attaching to light socket. For three phase current power circuit, cord is omitted and switch is of rotary snap type.

Equipment

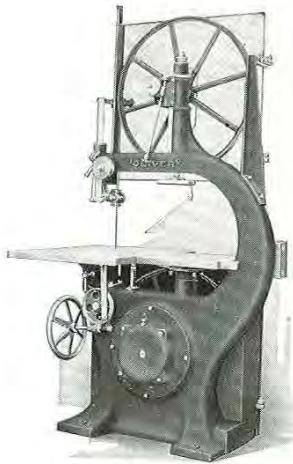
One saw blade $\frac{1}{4}$ " wide, one ripping fence, one miter cross-cut gauge, one filling strip for table groove.

Code	No.	Machine	Weight in Crated Pounds	Cubic Feet
Depa	192	Band Saw—motor driven.....	625	750
Depab	192	Band Saw—belt driven.....	600	725
Depad		Floor Base (if omitted, deduct).....	125	150

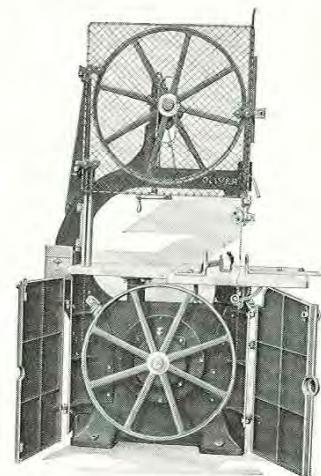


Rear View of Regular No. 192 Band Saw
on Column

Band Saw Motor Drives

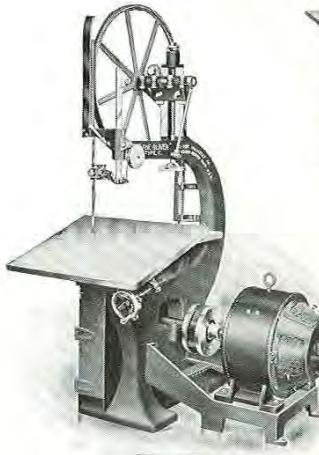


Motor-on-Shaft Drive
Rear View
Motor 600 R.P.M.

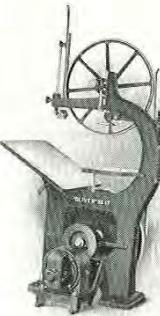


Motor-on-Shaft Drive
Front View
Motor 600 R.P.M.

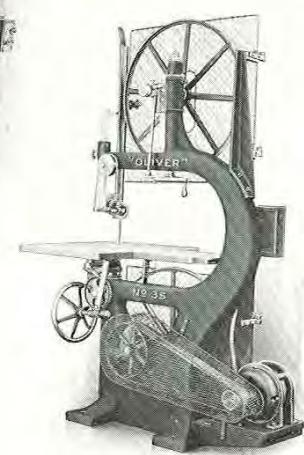
We can furnish any kind of motor drive desired.



Coupled Motor Drive
Motor 600 R.P.M.



Geared
Motor
Drive



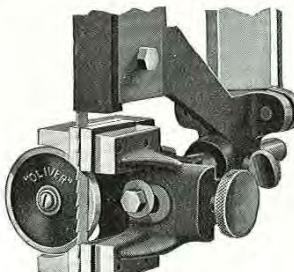
Attached Belted Drive
Motor 1800 R.P.M.

Band Saw Accessories

FRICTIONLESS BAND SAW GUIDE

The Guides used on all "Oliver" Band Saws are extremely effective because of the Ball Bearing End Thrusts for Spindle—Less Friction, Less Saw Breaks.

Code	No.	Description	Weight Each
Derm	00	"Oliver" Band Saw Guide for Saws up to 1"	2½ lbs.
Derma	0	"Oliver" Band Saw Guide for Saws up to 1¼"	3¼ lbs.
Descant	1	"Oliver" Band Saw Guide for Saws up to 1½"	5¼ lbs.
Despair	2	"Oliver" Band Saw Guide for Saws up to 2½"	6½ lbs.



"Oliver" Band Saw Guide in Use

NUMBER AND NAME OF PARTS

- 51 Disk with Spindle.
- 52 Socket or bushing (see Ball and Spring below).
- 52A Short Socket (2¾" long) for No. 0 Guide below table.
- 53 Hand Adjusting Screw.
- 54 Screws to hold Jaws, per set of 4.
- 55 Thumbscrew.
- 56 Jaws plain, with screws, per pair.
- 57 Jaws Bevel, with screws, per pair.
- 58 Screw.
- 59 Main Casting.
- 60 Sliding Block.
- 61 Bevel Washer.
- 62 Spring (Not used in Wright Guides).
- 63 Steel Ball (Not used in Wright Guides).
- 64 Straight Shank, ¾" (state length).
- 65 Special Eccentric Shaft Shank (send exact sketch).



Band Saw Guide Parts

In our frictionless saw guides the back of the saw runs against the face of a tempered tool steel disk, ground true and smooth preventing the heating and crystallization of the blade and the consequent tendency to cracking or breaking of saws from this cause.

The disk spindle has a long, accurately fitted bearing socket, is self-oiling, requiring attention say once a month. The oiling is accomplished by means of the machine screw plug in front end of the disk spindle.

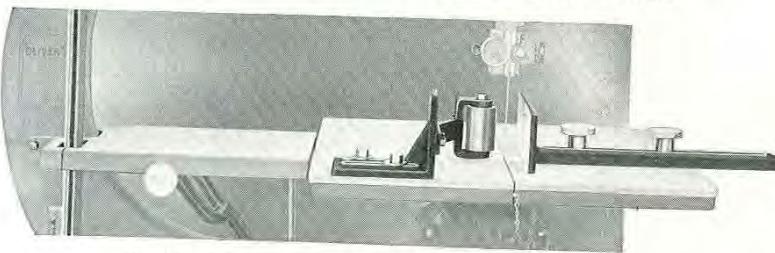
The end of the disk spindle bears against a hardened steel ball and the pressure on back of saw is regulated by a spiral spring. This construction affords a frictionless thrust which regulates the varying pressure ordinarily exerted upon the guides and at the same time keeps the saw true to cut and does away with the tendency of saw to buckle on the back.

The smooth ground face of the disk is well adapted to keep the back edge of the saw perfectly true, without burr or upsetting.

If the band saw construction requires a very short guide, the spiral spring may be omitted, the ball alone affording the same frictionless thrust. The omission of the spring from the smaller guides in no way impairs the efficiency because of the light pressure exerted by narrow saws.

The side guides or jaws are of tool steel, hardened and polished; and practically frictionless, interchangeable, that is, either R. H. or L. H., and all guides are equipped with knurled screw adjustment for opening the jaws.

Hand Resawing and Ripping Attachment



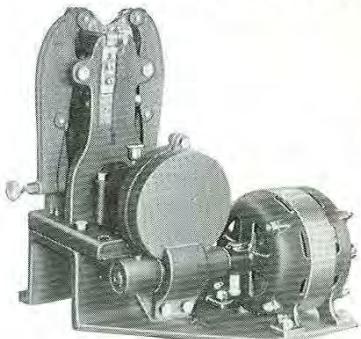
View Showing Application of Spring Roll and Hand Ripping Fence in Connection with any Band Saw, thus making up a Hand Re-Sawing Attachment of Good Capacity

When users of band saws have need to re-saw material in small quantities which do not warrant the purchase of a special Band Re-Saw, we can provide a spring roll device for attachment to the band saw table whereby the material will be held in a vertical position against ripping fence while being fed by hand.

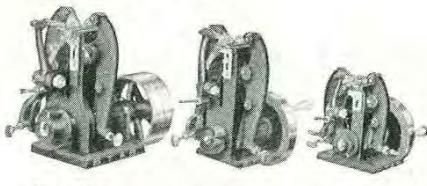
The Spring Roll is adjustable to width and thickness of boards to be re-sawed. The Ripping Fence may be used independently for straight ripping or in connection with the Spring Roll illustrated.

Code	No.	Description	Boxed Weight	Measurement in Cubic Ft.
Deport	137	4" high 12" long	12	1
Deprave	138	6" high 12" long	15	1½
Derby	139	Special Spring Roll device	15	2

AUTOMATIC BAND SAW SETTERS



No. 450 Setter, Motor Driven



Manufactured for Hand, Belt or Motor Drive.

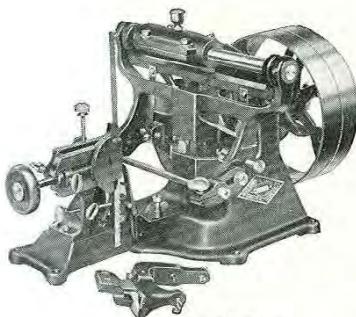
Each revolution feeds and sets two teeth, oppositely, affording a uniform set, reducing strain on saw, saving much time and affording smooth sawing. The amount of the set and pawl movement in feeding are adjustable.

Code	No.	Capacity	Pulley	R. P. M.	Weight in Pounds Boxed	Cubic Feet
Dessert	450	1/8" to 3"	6" x 1 1/4"	50 to 100	65	75
Destiny	451	1/8" to 1"	(Hand)	.....	27	35
Deta	452	1/8" to 3"	(Hand)	.....	50	80

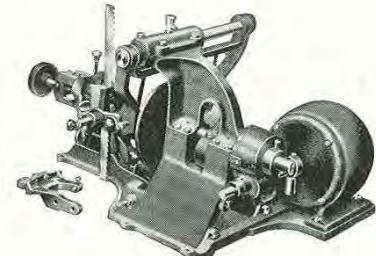
Motor Bracket, Gear and Gear Guards for Motor Drive.

Band Saw Accessories

No. 453 Combined Band Saw Filer and Setter



Belt Driven Machine

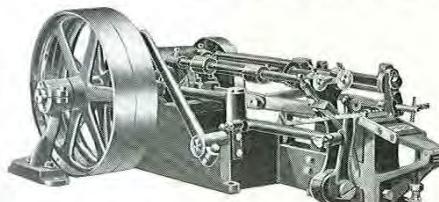


Motor Driven Machine

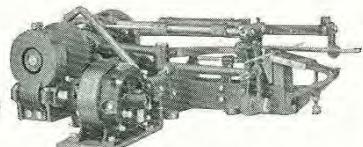
Two machines in one. Saw hangs from a peg overhead. Feed accurate and positive. Requires no attention after saw is adjusted. Uses slim taper, ordinary taper or special machine files.

Code	No.	Capacity	T. & L.	R. P. M.	Speed	Weight Motor Type	Weight	Cubic Feet
Deten	453-A	1/8" to 1 1/2"	9" x 1 1/4"	80	55 lbs.	75 lbs.	2	
Detent	453-B	1/8" to 2 1/2"	9" x 1 1/4"	80	55 lbs.	80 lbs.	2	

No. 454 Improved Automatic Band Saw Filer



Belt Driven Machine



Motor Driven Machine
Complete, Compact and Easy to Install

It will file the saws sharp, keeping the teeth in perfect alignment, thus equalizing the strain.

It is quickly adjusted to any size saw or tooth spacing within its rated capacity. A special feature is the pawl pushing the tooth just filed. This evens the spacing and joints the saw—possible only with our No. 454 Filer.

Automatic in all its movements, the saw is fed tooth by tooth to the file, which is pushed across the saw with the exact movement of hand filing, having every stroke identical in pressure and depth of cut. The saw is automatically clamped at each stroke of the file and released as the saw is fed forward by the feed pawl.

Code	No.	Saw Capacity	Spacing for Teeth	Weight	Cubic Measurement
Deterge	454-A	1/8" to 1"	1/2" or less	155	4
Detinue	454-B	1/8" to 2"	1/2" or less	160	4
Deton	454-C	1/8" to 3"	1/2" or less	165	4

Detop One set of motor brackets, gears and gear guards for any size.

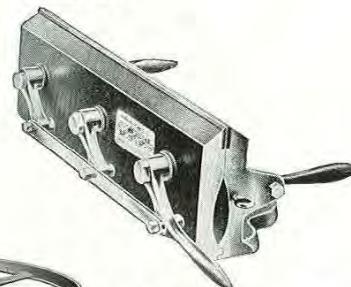
Band Saw Accessories

No. 456 Band Saw Filing Vise

This is a heavy and efficient 20" vise with hardened steel jaws designed for saws $\frac{1}{8}$ " to $2\frac{1}{2}$ " wide. Clamps instantly.

Weight crated 75 lbs.

Code, Detrop.



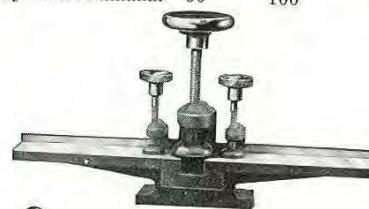
mounted for use one is stationary and the other has 12" adjustment. They are fine to use in supporting a band saw blade when filing or setting it.

Code	No.	Description	Crated	Boxed	Cubic
Detto	458	Fitting-up Wheels only	60	100	2



No. 460 BRAZING TONGS

Code	No.	Description
Deutzi	460	Tongs for 1" Saws.
Deutzia	460-A	Tongs for 2" Saws.
Devest	460-B	Tongs for 3" Saws.



No. 459 BRAZING CLAMP AND IRONS
For Saws up to 3" wide.
Code, Deuce. Weight 31 lbs.

Brazing Compound for Band Saw Brazing

Brazing Compound is used for cleaning laps and solder preparatory to brazing log bands and band re-saws. Its adoption by saw makers and operators was instantaneous. Its use is general. No one can afford to be without it and none who have once used it will be without it.

Code	Description
Devesv	One Large Bottle Brazing Compound, 4 ounce size.
Devesy	One Small Bottle Brazing Compound, $\frac{1}{2}$ ounce size.

Silver Solder for Band Saw Brazing

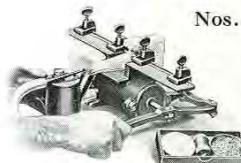
We have for many years specialized in the sale of strictly first quality silver solder. It is the "best," not the "just-as-good" kind. The price per ounce is rather less important than the making of perfect brazes that hold, and since an ounce of solder will serve for from 6 to 15 brazes, according to the width of the saws in use, the saving of a cent a braze by buying a cheap brittle alloy is not an economy when it involves the risk of losing the braze and all the labor put on it.

Widths regularly carried in stock: $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ " and $1\frac{1}{4}$ ". Special widths rolled to order.

Code	Description
Devet	Silver Solder, one ounce in brass box.
Devex	Spelter Solder, one pound.

Band Saw Accessories

Nos. 461 and 462 BAND SAW BRAZERS



These brazers are inexpensive and simple to operate, and an inexperienced person can file the laps, braise the saw and dress the joint and have a saw as straight and strong as before the break. An ordinary file is necessary to complete the outfit. A supply of wire and spelter sent with outfit.

These brazers have a capacity for saws up to $1\frac{1}{2}$ " wide, but for saws from 1" to 3" in width we recommend our No. 459 Brazing Clamp, equipped with brazing irons. This tool, with the use of silver solder, will make a permanent braise easily.

Code	No.	Machine	Weight in Pounds Crated	Cubic Feet Boxed
Devil	461	Band Saw Brazer	14	14
Devob	462	Electric Band Saw Brazer	50	55
Deuce	459	Brazing Clamps and Irons	40	60

Band Saw Files—Code, Dexter

These are made from high grade steel, are sharply and uniformly cut and have the special shape that is desirable for hand sharpening band saws.
Lengths $4\frac{1}{2}$ ", 5", 6", 7", 8".

Leather and Rubber Bands for Band Saw Wheels

We furnish these to fit any band saw wheel, using nothing but the highest grade of leather and rubber. In ordering give diameter and width of wheel.

Narrow Band Saw Blades

In ordering narrow Band Saws state plainly whether plain or bevel back, give length, width, gauge and number of points to the inch, bearing in mind the difference between points and teeth. When measuring points count the points at each end of the inch as per illustration. Five points are 4 teeth, 6 points 5 teeth, etc.



When points and gauge are not specified we always send standard sizes, that invariably give satisfaction, but our customers may specify just what they want; also state whether to be brazed, filed and set ready for use.

Following Sizes are always in Stock—Brazed, Set and Filed Ready for Use

Code	Length	Width
Dibber	$15\frac{1}{2}'$	$\frac{1}{8}''$ $\frac{3}{16}''$ $\frac{1}{4}''$ $\frac{3}{8}''$ $\frac{1}{2}''$ $\frac{5}{8}''$ $\frac{3}{4}''$ $\frac{7}{8}''$ 1" $1\frac{1}{4}''$.
Dicing	$19'$	$\frac{1}{8}''$ $\frac{3}{16}''$ $\frac{1}{4}''$ $\frac{3}{8}''$ $\frac{1}{2}''$ $\frac{5}{8}''$ $\frac{3}{4}''$ $\frac{7}{8}''$ 1" $1\frac{1}{4}''$ $1\frac{1}{8}''$.
Dicky	$20'$	$\frac{1}{8}''$ $\frac{3}{16}''$ $\frac{1}{4}''$ $\frac{3}{8}''$ $\frac{1}{2}''$ $\frac{5}{8}''$ $\frac{3}{4}''$ $\frac{7}{8}''$ 1" $1\frac{1}{4}''$ $1\frac{1}{2}''$ $2''$ $2\frac{1}{2}''$.

Other lengths and widths may be furnished with slight delay in shipment.

We also supply them any length tooth and tempered, but not jointed, set or sharpened.

Band Knives

We are in position to furnish Band Knives of various widths and lengths. State length, width, gauge required and the kind of work contemplated.

Bevel Back Band Saw Blades

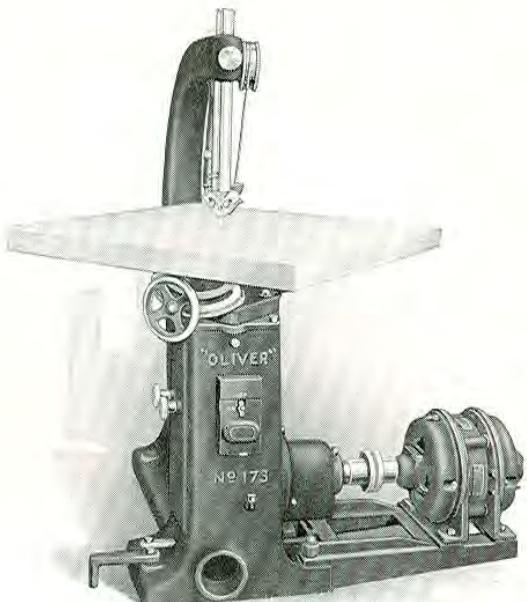
Especialy adapted for fine scroll sawing, such as carvings, wood ornaments and furniture work in general. For smooth work and short curves they are unequalled. Being ground thin on the back they require but very little set, simply enough to form a perfect corner on the tooth.



No. 173
"Oliver" Self-Contained Jig Saw
 BELT OR MOTOR DRIVEN



No. 173-B "Oliver" Jig Saw
 Self-Contained in All Respects



No. 173-B "Oliver" Self-Contained Jig Saw
 Front End View Showing Coupled Motor Drive

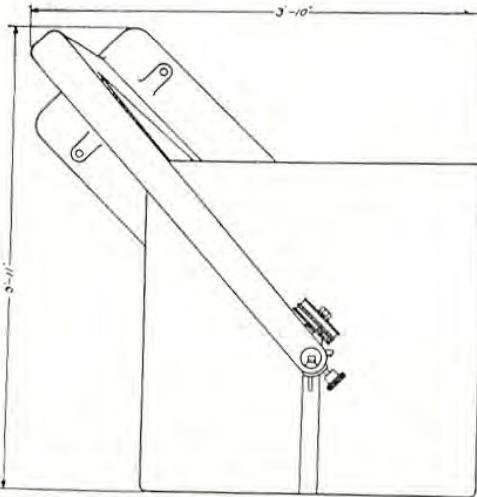
Purpose	Designed for use in all kinds of interior and exterior scroll work. It eliminates the evils in other types of scroll saw design and construction.
Capacity	Work of almost any length and any practical width may be sawed, exactly the same as in the ceiling supported jig saw. Maximum height under guide 10"; stroke 3"; saws up to 18" long may be used; distance between saw and column $36\frac{1}{2}$ ".
Column	The column is a one-piece rigidly constructed casting carrying the table, counter-case, pitman, crosshead gibbs, starting and stopping device, saw guides, and blower.
Table and Dumping Device	The table is of cast iron, strongly ribbed, planed and scraped perfectly true, and mounted one-eighth way or 45 degrees around. It is 34" square and 37" from the floor, mounted on rockers so as to tilt 30 degrees both to the right and to the left of the saw, and may be locked in any position by means of a clamp screw and handwheel. A slide dumping device is fitted in the table which may be drawn away from the saw to permit the cuttings to drop through, preventing interference with intricate interior scroll work.

No. 173 "Oliver" Self-Contained Jig Saw

Continued

Countercase and Counter-shaft

The countercase is a one-piece casting bolted to the main frame, and encases the clutch, the lever, the brake, and the blower. The countershaft runs in high grade self-oiling roller bearings. At one end of the countershaft is mounted the pitman pulley and at the other end an 8" diameter by 3½" face pulley when the machine is belt driven, or a flexible coupling for motor drive. Countershaft speed 1200 R. P. M.



Floor Plan of No. 173 "Oliver" Jig Saw

Guide Heads

The lower crosshead is made of bronze and carries the saw holder which is an automatic eccentric cam clamping device. The crosshead gibs are of steel and are adjustable for wear. The upper guide head is counterbalanced by an encased coil spring mechanism and may be locked in a fixed position. It has vertical adjustment of 10". An adjustable saw holder in the upper guide head permits the use of different lengths of saws and, together with the automatic saw clamping device in the lower guide head, provides a quick and simple method for inserting the saws.

Saw Guides

These are two in number—one above and one below the table. The lower guide consists of a glass hardened adjustable steel plate. The upper guide consists of an adjustable head supporting a hardened circular adjustable plate and two hardened steel adjustable angle plates.

Control Easy and Efficient

Control of the machine is by means of a foot lever, conveniently located for the operator, which in one operation releases the brake on the pitman wheel and engages the clutch when starting the machine, and in stopping it simultaneously releases the clutch and applies the brake.

Continuous Air Blast

The air blower is of the rotary type made entirely of metal. It causes a steady flow of air instead of an intermittent air blast and keeps the work lines always visible.

Equipment

One dozen assorted blades and one double end wrench.

Floor Space

48" x 48"; total height of machine about six feet.

Motor Drive

Two types of motor drives are applicable to this jig saw. One method consists of a 2 H. P., 1200 R. P. M. motor mounted on a base plate attached to the column and coupled to countershaft. Another method would be to have a 2 H. P., 1800 R. P. M. motor mounted on the floor or on a bracket attached to the rear of the column and belted to the countershaft pulley.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Dida	173-A	Belt Driven Machine.....	1200	1400	26
Didib	173-B	For Direct Motor Drive.....	1250	1450	26

No. 29 Patent Scroll Saw

8,000 in daily use

General Information The Scroll Saw that does not work perfectly is a source of constant annoyance to the operator and of expense to its owner. The experience of years teaches us that in the machine illustrated we are offering the best overhead straining scroll saw that is obtainable. It is made with or without the tilting table, arranged for belt or motor drive.

Frame This is a rigid plate casting with broad floor support.

Table This is 38" x 40", usually made of narrow strips of thoroughly seasoned maple, cleated with iron. A metal plate at the center prevents excessive wear. When made to tilt it is mounted on a machined and graduated rocker.

Straining Device This is the essence of the machine and deserves special attention. The working parts are mounted on a metal tube and are supported in such a manner that they adjust vertically for different lengths of blades. A spring counter balances the weight of the parts, thus facilitating adjustment. An adjustable stop holds down the work and carries steel bearings for supporting blades at sides and back. The tension is obtained from coiled springs and may be regulated as desired. The levers and connections are so arranged that the strain on the blade is constant at all points of the stroke. The lever bearings are hardened, self-oiling and very durable. An air pump furnishes a strong blast and has no working joints.

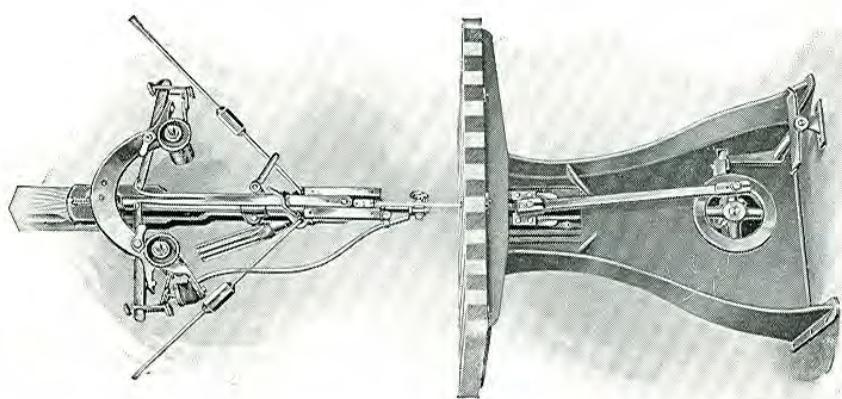
Drive A friction pulley is used for driving the machine. It is simple in construction and adjustable for wear. The foot lever operates the clutch, and when thrown out, applies a brake to the crank wheel. An oil chamber in the shaft thoroughly lubricates the pulley. Bronze and steel gearing are often furnished for driving the machine.

Lower Crosshead The lower crosshead runs in planed guides set square with the table. Should heating occur the expansion loosens it slightly and overcomes the difficulty.

Saw Clamps The saw clamps are practically self-acting. A slot in the lower end of blade is engaged by a hardened steel jaw. A pin in the upper end is held by a hook in the upper crosshead, which is pulled down by the lever when putting a blade in place.

Equipment With each machine is furnished one dozen assorted blades, also wrench for adjusting the strain springs.

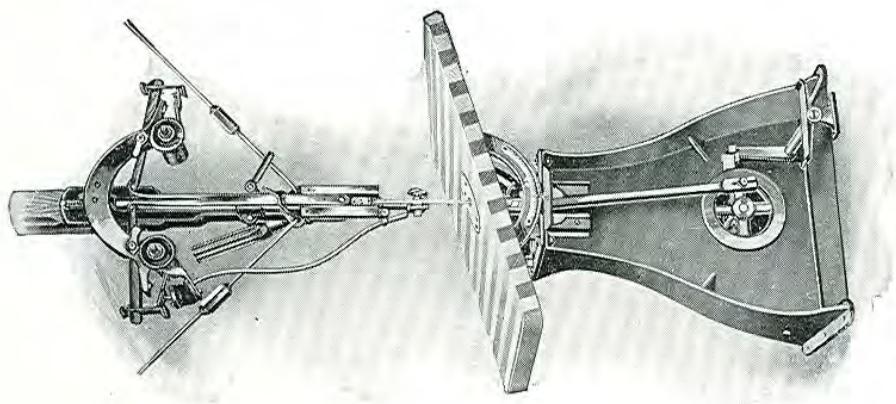
Code	No.	Style	Speed of Crank Shaft	Friction Pulley	Weight Crated	in Pounds Boxed	Cubic Feet
Differ	29-A	Tilting Table	825	8 $\frac{3}{4}$ x3"	500	725	24
Diffuse	29-B	Rigid Table	825	8 $\frac{3}{4}$ x3"	450	675	24



No. 29-B SCROLL SAW
With Stationary Table



MOTOR DRIVE RECOMMENDED
Gears Fully Guarded when so Ordered



No. 29-A SCROLL SAW
With Tilting Table

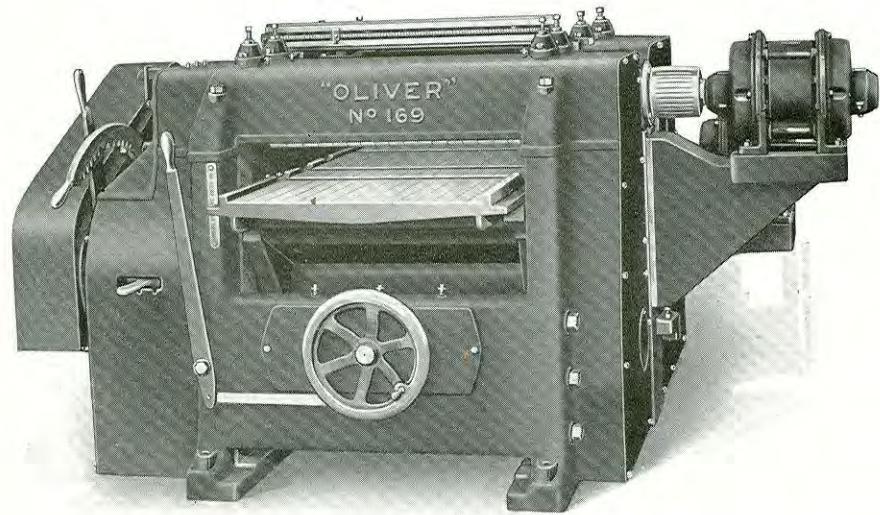
No. 169

"Oliver" Production Double Surfacer

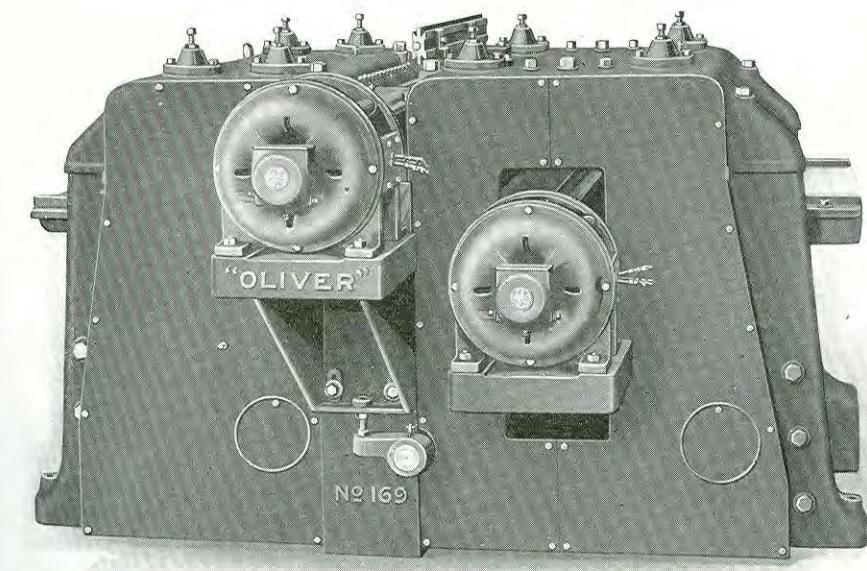
Purpose	The Oliver No. 169 Production Double Surfacer is the result of a careful study into the requirements for a production surfacer which will give continuous service under high speeds as a finishing cabinet surfacer, as well as a heavy duty high speed roughing surfacer.
Capacity	Built in two sizes to surface simultaneously two sides of work up to 30" or 36" wide and up to 8" thick, at four rates of feed, namely, 26', 46', 72' and 108' per minute, producing a perfect, smooth surface. Pieces as short as 6" when feeding continuously and as short as 21" when feeding one at a time may be surfaced without dubbing the ends. Sectional in-feed rolls and sectional chip breaker are regularly furnished with 2" sections to enable many narrow strips to be surfaced simultaneously increasing the production of the surfacer many fold.
Frame	Massive and rigid, having floor bearing the entire length, with cored sides bolted in finished tongue and groove fittings to the two girts and having top in-feed and out-feed roll housings bolted to the top of the slides with vertical bolts, assuring rigid support.
Sides	The sides are cored castings planed at the bottom to assure even floor support and planed with vertical and bottom horizontal tongue on the inside to form accurate guides for the wedge and the bed.
Girts	Both girts are of the cored form with finished wide ends having vertical locating tongue. Front girt supports the mechanism for raising and lowering the bed; the rear girt has cast-in shaving chute to divert the shavings from the bottom cylinder towards the rear of the machine with easy exhaust connections.
Wedge	The wedge is a one-piece casting finished on all four sides, which assures permanent alignment; also uniform rigid support to the bed. The wedge slides horizontally on the right angle finished ways located at the lower inside of the two sides.
Power Hoist	The bed is hoisted by power by sliding the wedge forward by two parallel screws propelled by gearing from a friction clutch which is engaged when the operator holds in the conveniently placed lever at his left. An automatic release instantly stops the raising of the bed as soon as the operator releases the hoist lever. Scale and pointer at the front indicates thickness of work after the top cylinder cut.
Bed or Table	The bed or table is of the inclined wedge type. It is a one-piece casting, finished on all sides. It rides on the wedge and is guided vertically by finished vertical ways of the sides. The top or table part is made up of separate platens or plates located on the finished top of bed in between the feed rolls and the bottom cylinder and at each end. The plate under the top cylinder is hardened and chilled. The chipbreaker plate before the bottom cylinder has hardened steel inserted lip. The pressure plate back of the bottom cylinder is hardened and chilled. All the plates are replaceable, independently finished and bolted in place on the top of bed, giving permanent alignment.

No. 169 "Oliver" Production Double Surfacer

Continued



"OLIVER" No. 169 PRODUCTION DOUBLE SURFACER—Front View



"OLIVER" No. 169 PRODUCTION DOUBLE SURFACER—Right Side View

Belt Driven Machine is the same except Motors and Motor Brackets are Omitted

No. 169 "Oliver" Production Double Surfacer

Continued

Bottom Cylinder Housing

One-piece casting, contains the bottom cylinder yoke and bottom outfeed roll. It is carried in a pocket at the rear of the bed and is vertically adjusted on two inclined wedges by means of screws, spiral gears and a cross shaft operated by hand-wheel. Vertical adjustment $\frac{1}{4}$ ", with pointer and indicator to show bottom cylinder cut. At the right hand end is fastened the bottom cylinder motor bracket.

Bottom Cylinder Yoke

Carries the bottom cylinder and the pressure bar after the cut. It is fitted inside of the bottom cylinder housing in a groove finished way with a wedge lock operated by a lever at the left end to securely clamp the yoke in place. The rear pressure bar is also carried in cylinder yoke, hence the knives can be easily set to this bar and the bar can also be aligned to the cylinder. When the yoke is pulled out for taking care of the knives, the right hand end remains in the housing while the balance rests on the self-contained bracket.

Top Cylinder Housing

Top cylinder housing consists of a sectional chip breaker, pressure bar and two ball bearing housings. The housings are tongued and grooved and bolted to the top of the sides and have at the inside ends concentric ways to receive the chipbreaker bar at the front and the pressure bar at the rear in an adjustable sliding fit.

Top In-feed and Out-feed Housings

The top in-feed and out-feed housings are each a one-piece casting with flat finished base to bolt on the two sides and with extensions at both ends to form the covers over the feed works. In these housings are located the two top in-feed and out-feed rolls with their bronze bushed adjustable bearings with improved spring pressure yield at each end of the rolls. The out-feed housing also carries the chilled and hardened plate over the bottom cylinder, which is adjustable for alignment and pressure.

Feed Works

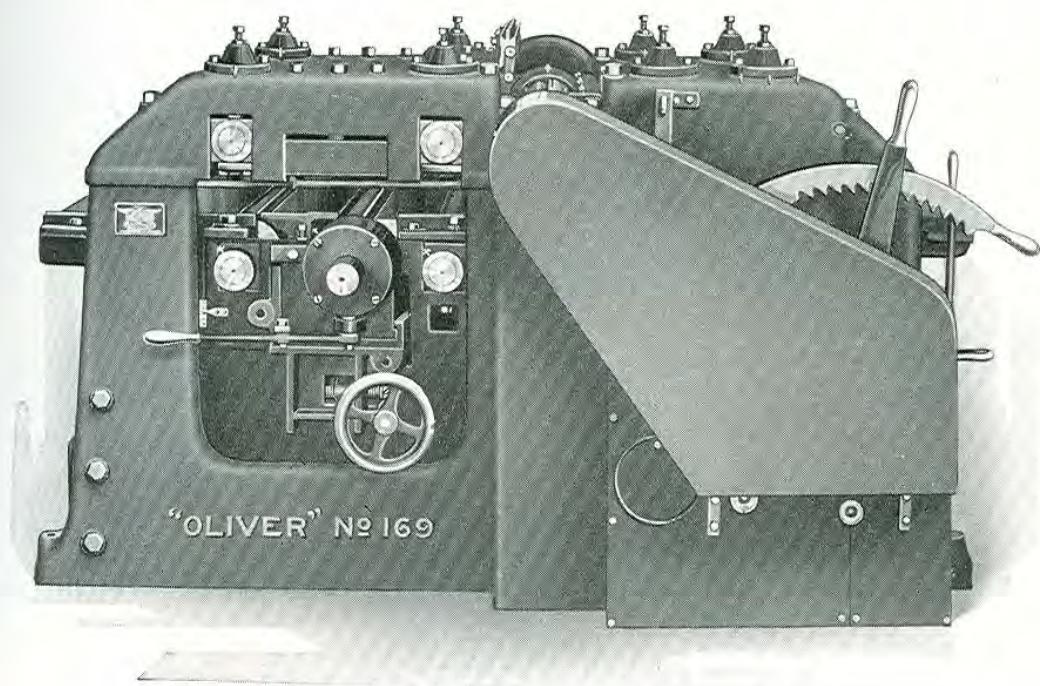
Driven from the left hand end of the top cylinder by means of one endless belt and a powerful idler driving the feed shaft through a sliding gear transmission, easily securing any one of the four rates of feed—26', 46', 72' or 108' per minute. Powerful anti-friction continuous roller chain and solid steel hardened sprockets keyed to the feed roll journals drive the various feed rolls from the feed shaft. The entire feeding mechanism is encased in housings with steel removable guards.

Feed Rolls

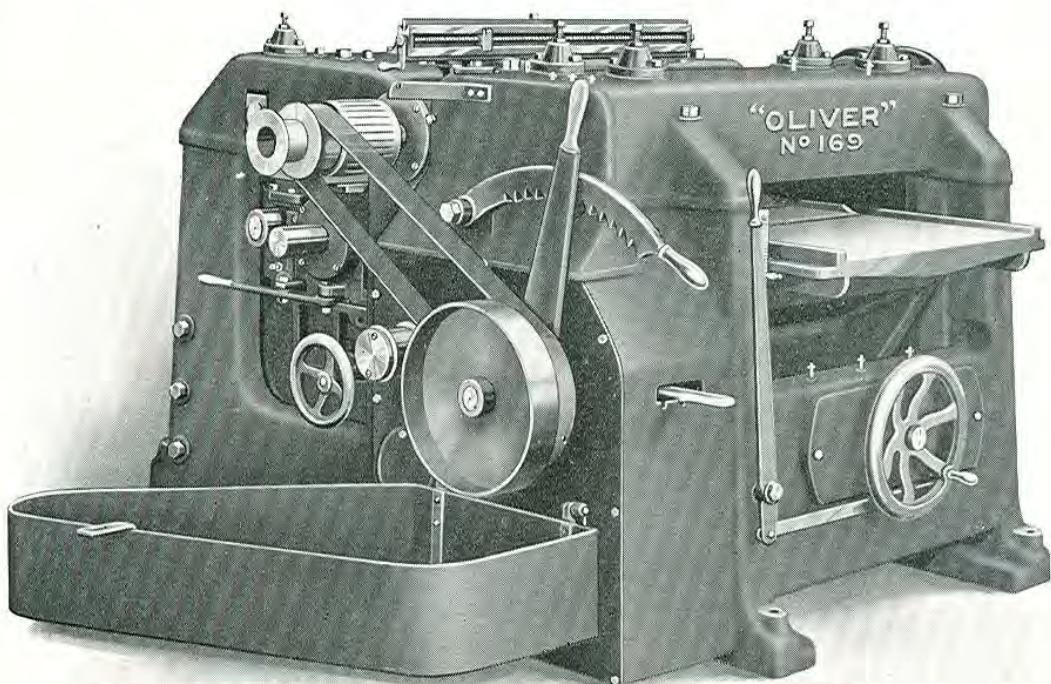
Four in-feed and four out-feed rolls, all 8" diameter with accurately ground steel journals $2\frac{1}{2}$ " diameter, $7\frac{1}{2}$ " long, running in replaceable, anti-friction bronze bearings with Alemite forced lubrication. These bronze bearings are pressed in rectangular cast iron boxes with finished sides supported in vertical finished ways, having adjusting screws for alignment. Pressure on the stock is obtained by two large coil springs acting on each roll with tension adjusting screw and lock nut. The four in-feed rolls are power driven at both ends and the four out-feed rolls are driven at the right hand end by means of steel sprockets and continuous anti-friction roller chain.

No. 169 "Oliver" Production Double Surfacer

Continued



"OLIVER" No. 169 PRODUCTION DOUBLE SURFACER—Left Side View



"OLIVER" No. 169 PRODUCTION DOUBLE SURFACER
Front Left Side View with Feed Belt Guard Lowered

No. 169 "Oliver" Production Double Surfacer

Continued

Sectional Rolls

The two upper in-feed rolls are sectional. The driving spider or core, of these rolls have six radial driving plates of semi-steel cast on to a high carbon steel shaft having ground journals $2\frac{1}{2}$ " diameter, $7\frac{1}{2}$ " long. On this core are superimposed the sections, which are corrugated and 2" wide; each section has six radial concentric driving lugs for power and six uniform tension radial springs for yielding concentrically to the center of the shaft. Each section has $\frac{5}{16}$ " independent yield and each sectional roll, as a whole, has a yield of $\frac{3}{4}$ ".

Bearings

Lubricated by Alemite forced feed system. Dust-proof, easily accessible, clean and efficient. The bearings of the top and bottom cylinders and the idler pulley, are self-aligning and ball bearing. All feed works bearings are replaceable bronze bushings; and all thrust bearings are ball bearing.

Cylinder Bearings

At the ends of both top and bottom cylinders are located the ball bearing housings which are 12" long for the top cylinder and 6" long for the bottom cylinder. In each of these bearing housings are located two double row self-aligning ball bearings, one at each end, separated by a distance collar which prevents the cylinder springing under heavy cuts.

Cylinders

Cylinders are made of high carbon steel forgings. When belt driven, the top cylinder is double belted and the bottom cylinder is single belted from the left end. 3600 R. P. M. Cylinders are finished 8" cutting diameter, having perfectly ground journals $3\frac{3}{8}$ " diameter. Each cylinder fitted with six Tungsten-Chromium thin high speed knives with hard steel chip breakers clamped in place by hardened double end screws exerting direct pressure between the body of the cylinder and the chip breaker. A hand-wheel knife puller for setting the knives makes it very convenient to move the knife forward as desired before final clamping. The body of these cylinders is massive and because of its extreme weight and large cross sectional area, eliminates any tendency for vibration of the cylinder or flutter of the knives. The large cutting diameter assures a straight line, smooth cut, with no pick up of fibre of the stock or any chance for dubbing the ends.

Chip Breakers

Sectional, having 2" sections with $\frac{3}{8}$ " independent yield working concentric to center of cylinder. Chip breaker as a whole also slides concentric to the center of the cylinder and has $\frac{3}{4}$ " yield. The ends of the chip breaker bar ride in turned ways on the inner side of the ball bearing housings of the top cylinder. This concentric action of the sections gives more pressure to the hold down of the stock passing through the machine, which helps to overcome wavy cuts and dubbing of the ends. The lower chip breaker is a solid hardened and chilled bar faced with hardened steel inserted lip.

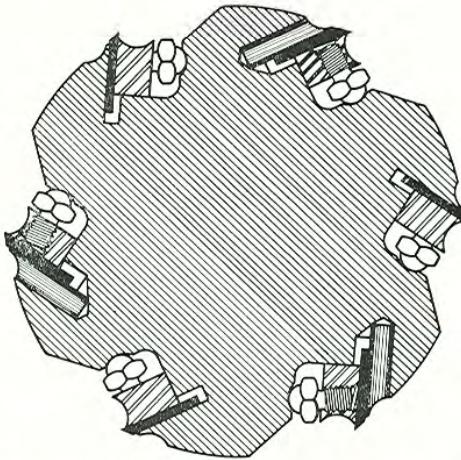
Pressure Bars

Top pressure bar of chilled semi-steel rides in concentric ways on the inner side of the cylinder bearings. This bar is $1\frac{5}{8}$ " thick with face $2\frac{1}{2}$ " wide and slightly relieved to obtain maximum pressure as close to the cut as possible. It is adjustable for height and alignment and has variable spring hold-down.

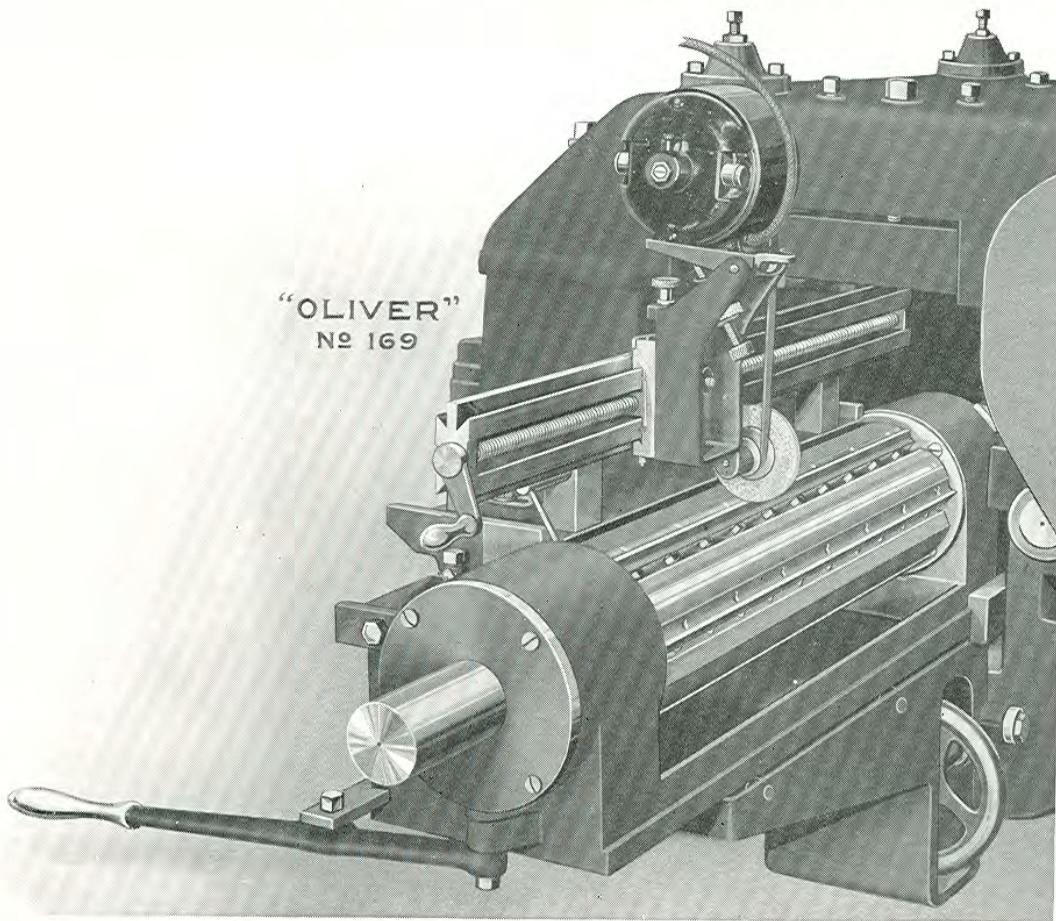
No. 169 "Oliver" Production Double Surfacer

Continued

Knife Setting Jointing and Grinding Attachment In the natural position of the top cylinder and by merely pulling the bottom cylinder out on the self-contained bracket, the knives can be easily set, jointed and ground in a comparatively very short time. The same bar receives the knife setting gauge, the jointing attachment or the motor knife grinding head. This arrangement economizes the operator's time and assures more production hours per day.



Cross sectional view of top and bottom cylinders which are 8" cutting diameter and are fitted with six knives with hard steel chip breaker for each knife



View of Bottom Cylinder Yoke pulled out on the Self-Contained Bracket and the Knives being sharpened, by the Motor Knife Grinding Attachment, right on the cylinder.

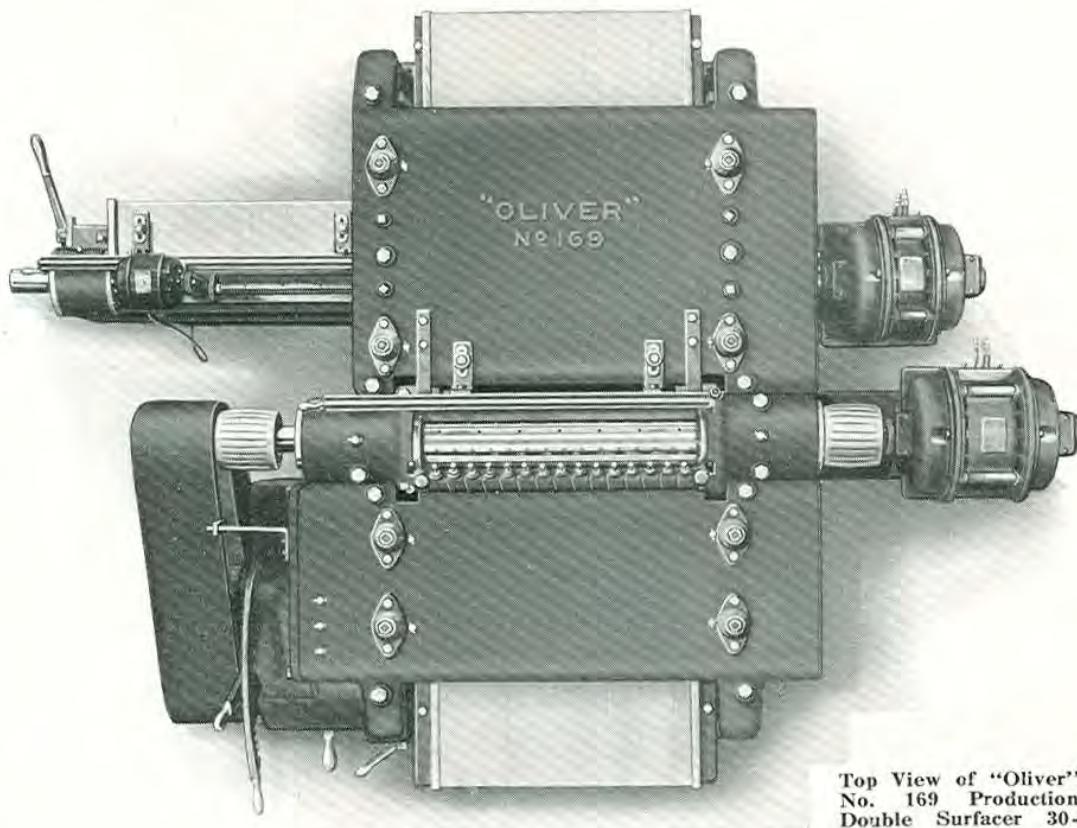
No. 169 "Oliver" Production Double Surfacer

Continued

Stock Size Setter	A novel device with micrometer adjusting screw and lock nut and locating pointer enables operator to set exact elevation of the bed for a certain run. This is very useful on long runs when the operator finds it necessary to change the set up of the bed and then desires to resume original work.
Safety Guards	All running parts are thoroughly guarded either by cast iron or steel guards. Feed rolls are completely housed in. Power hoist of bed has a safety stop and automatic release. Feed mechanism has a ratchet lever quick release of idler. Bottom cylinder has stops to prevent being moved too far out or in.
Motor Drive	We recommend 3600 R. P. M. motors placed on brackets and coupled to right hand end of both top and bottom cylinders by means of special pin and leather plate type of flexible couplings. The cylinder half of the couplings are regular pulleys on cylinders in belt driven machine. Both motor brackets have universal adjustment vertically and horizontally. Top cylinder motor bracket is bolted in a tongue and groove fitting to right side of the machine. Bottom cylinder motor bracket is bolted with a ledge fitting to right end of bottom cylinder housing and rests against finished side of bed. Belt driven surfacers are arranged so that motor brackets may be attached later without any machining. Motor driven surfacers can be changed to belt drive by merely sliding back the motor plates, because cylinder pulleys and couplings are one and the same.
Horse Power	25 H. P. motor for the top; 15 H. P. for the bottom cylinders.
Hopper or Endless Bed Feed	When so ordered, endless bed type of continuous hopper feed is furnished. This is endless leather belt running over two drums—a power drum and an idler drum and a table. Power drum is fixed in the bed close to feed rolls and is driven from the feed works by a silent anti-friction roller chain through a slip clutch. Clutch has a quick stop lever located at the left side of the machine. Idler drum has take-up to compensate for any stretch of belt. No adjustments are necessary to handle various lengths of stock, as the travel of belt is faster than the speed of feed rolls.
Exhaust Hoods	Top cylinder housing presents a rectangular top opening on which may be furnished a galvanized iron exhaust hood with a slip joint pipe and shut off damper. Bottom cylinder has a built-in chute which exhausts into the built-in exhaust outlet in rear end girt, for which may be furnished a galvanized iron connection to divert shavings either below the floor or towards either side of the machine. Exhaust piping should be 8" diameter for each cylinder.
Counter-shaft	Countershaft, in case of belt drive, consists of main countershaft having tight and loose pulleys and two driving pulleys each belted to the two ends of top cylinder and driving pulley which belts to a jack shaft from which a belt runs to bottom cylinder. All bearings of countershaft, jack shaft and loose pulley are of ball bearing type. Tight and loose pulley 14" diameter, 8" face and run at 1200 R. P. M.
Floor Space	30" size surfacer requires 5' 4" by 8' actual floor space. Over all measurement of 30" surfacer is 7' 10" by 8'. Total height, all sizes, 57". Floor space of other sizes differ in width only.

No. 169 "Oliver" Production Double Surfacer

Continued



Top View of "Oliver"
No. 169 Production
Double Surfacer 30-
inch Showing Grinding
Process

Equipment

Sectional in-feed roll, sectional chip breaker, six-knife circular cylinders, power hoist to table, knife setting and jointing attachments, hand-wheel, knife puller, necessary wrenches, gun for Alemite lubricating system and either countershafts for belt drive or motor brackets and couplings.

CODE, WEIGHT, ETC.

			Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Dibac	Code No. 169-A	Machine Double Surface Planer, to plane work up to 30" wide and up to 8" thick. Complete with Ball Bear- ing double countershaft with Ball Bearing loose pulley and jack shaft	17000	18500	400
Dibad	169-AD	Double Surface Planer, same as above except countershaft is omitted and machine is ar- ranged with motor brackets for direct coupled motor drive	16500	18000	430
Dibec	169-B	Double Surface Planer, same as No. 169-A, except 36" wide	18000	19500	430
Dibef	169-BD	Double Surface Planer, same as No. 169-AD, except 36" wide	17500	19000	460

EXTRAS

Dibek	Motor Knife Grinder Head consisting of grinding head with Ball Bearing grinding wheel, belt, belt guard, motor and cord with socket attaching plug.
Dikel	Hopper Feed Attachment of endless bed type.

No. 61

"Oliver" Single Cylinder Four-Roll Cabinet Double Belted Surfacer

24 and 30-inch Wide, 8-inch Thick

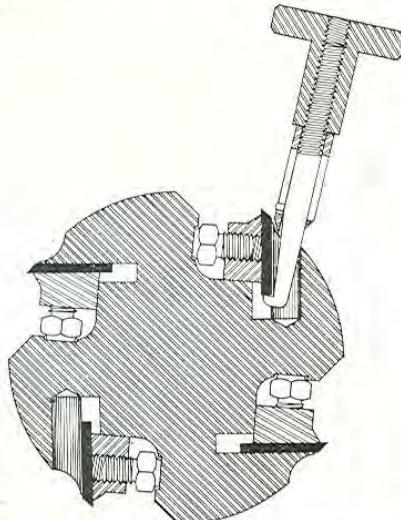
Construction We are constructing these planers along metal tool lines. Only the best of material is used and all parts are individually submitted to thorough tests before using.

Capacity The machine is made in two sizes to plane 24" or 30" wide, and up to 8" thick at 14', 18', 24' and 31' per minute.

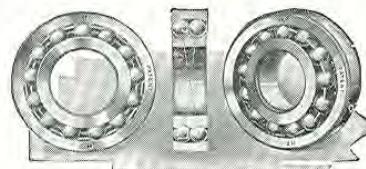
Framing The sides are of cored form, the girts are heavily ribbed, machine jointed and bolted. Ample material, properly distributed, eliminates strains and vibration.

Cylinder This is a crucible steel forging of uniform texture, circular in form, carries four thin air hardening, high speed, steel knives, is belted from both ends on pneumatic pulleys and revolves in ball bearings that absorb the strain and eliminate rough planing. The steadiness under speed and active service is desirable. The chip breaking lips are shaped to repel the shavings and chips. The journals are unusually large and machine ground to perfect size.

Cylinder Bearings At the ends of the cylinder are located the ball bearing housings which are 9" long at the left end and 6" long at the right hand end. In each of these bearing housings are located two double row self-aligning ball bearings, one at each end of the housing, separated by a distance collar which prevents the cylinder springing under heavy cuts.



Cross Section of Cylinder Showing the use of the Knife Puller while Setting the Knives



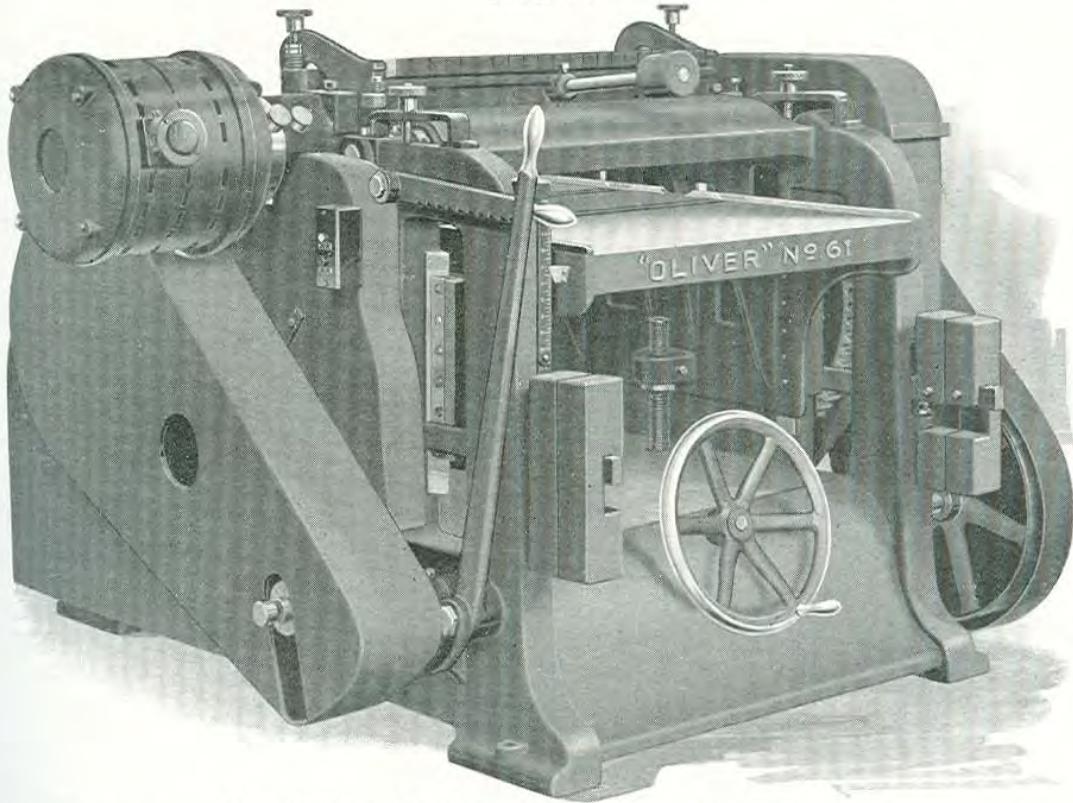
Type of Ball Bearings used for the Cylinder

Lubrication All high speed bearings are lubricated by Alemite system of forced feed lubrication, which is dust-proof, easily accessible, very clean and decidedly efficient.

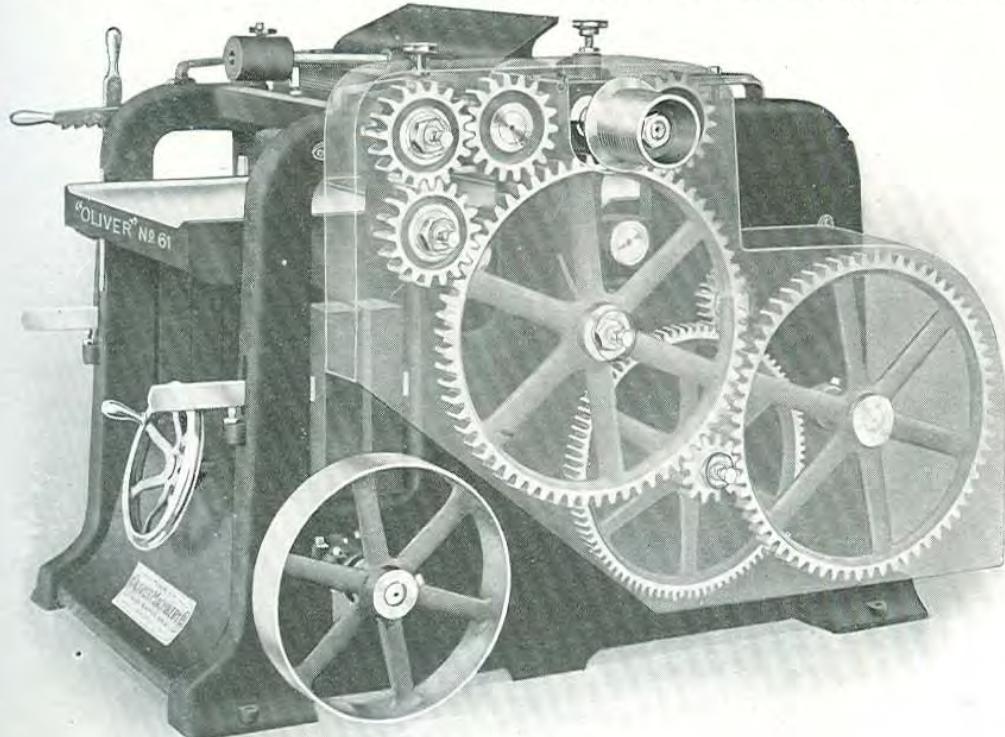
Back Pressure Bar This bar follows the cylinder and is held by adjustable screws for regulating the hold-down pressure on the lumber as it leaves the cut. The throat between the front and rear pressure bars is only 2½" for service in planing smooth and without end clipping on very short stock.

No. 61 "Oliver" Single Cylinder Surfacer

Continued



View from Left Hand Side of Motor-on-Head 30" Surfacer
All No. 61 Surfacers are regularly fitted with Sectional In-Feed Roll and Sectional Chip Breaker



View from Right Hand Side

No. 61 "Oliver" Single Cylinder Surfacer

Continued

**Chip
Breaking
Pressure
Bar**

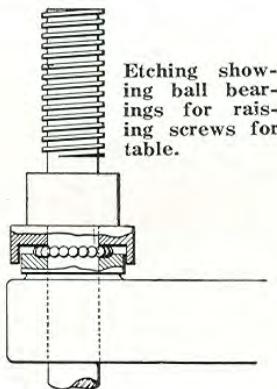
The bar before the cut holds the lumber firmly to the bed as it is planed, and prevents the chips from tearing its surface. It is attached to the main frame in such position that it raises concentrically with cylinder, thus preventing the bar raising into the knives. A steel spring shoe is secured to the lower part of the bar, which not only holds the stock firmly on the bed but yields to any ordinary inequalities in rough stock. An adjustable weight regulates the pressure.

The Feed

A planer with a weak feed is worthless as a money-saving proposition so we have evolved a feed that is strong and positive and one that can be crowded to the satisfaction of the most exacting operator. Four speeds are regularly provided with each machine. The feed is under instant and positive control of the operator. The feeding power is transmitted through belts from the cutting cylinder.

Bed

It is of suitable dimensions and gibbed properly, is raised in a wide central slide that is deep to give the bed the proper rigidity. A guide is located at each end to prevent material from leading away from the bed and striking the frame or gearing. The bed is supported on heavy square thread screws with ball bearings, reducing friction and permitting the raising of the bed without exertion. The bevel gears used in elevating the bed are machine cut and are protected from dirt by a wide shelf that covers the inner space below the table and keeps the shavings from within the frame and makes it very easy to clean around the machine. Directly underneath the cylinder is a center plate adjustable to wear, removable from the bed when worn. It may be redressed and refitted or discarded for a new one as the occasion demands.



Feed Rolls

These are four, one pair back of the cylinder to feed the material free from the knives and assist in carrying it through the machine. They are large in diameter, made of forged steel and are supported in self-oiling roll boxes. The upper feed-in roll is sectional and corrugated for gripping stock firmly. All the rolls are driven by a train of heavy gearing, three pitch, the teeth machine cut, insuring a smooth and positive feed. The feed-in rolls are weighted and the delivery rolls have spring tension. The upper delivery roll has a cover over it and is provided with a scraper which keeps the rolls free from shavings.

**Sectional
Chip Breaker**

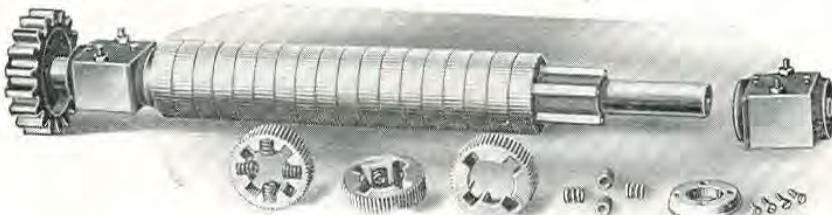
This consists of $1\frac{1}{2}$ " sections pivoted in connection with section weights, on two horizontal bars attached to two plates. They yield concentric to the cylinder independently of each other.

No. 61 "Oliver" Single Cylinder Surfacer

Continued

Sectional Feed Roll

May be provided when desired. It consists of sections $1\frac{1}{8}$ " wide and 4" diameter. While giving a horizontal drive as positive as a solid roll, they yield vertically independently of each other to the extent of $\frac{3}{16}$ ". Each section is composed of an outer ring enclosing four sections or seats placed radially to the center of the roll shaft and carrying a helical spring.



Sectional Upper Infeed Roll
Note the Positive Drive and Feel-Proof Construction

Grinding Attachment

To meet the growing demand for a grinding, jointing and setting attachment, we offer a motor driven attachment which will quickly and accurately grind the knives of planers and jointers without the trouble of taking the knives off the machine. The attachment can be quickly mounted on the machine or removed therefrom. The motor is mounted in grinder head; current is taken from an ordinary lamp socket. When ordering state the properties of your electric current.

Motor Drive

We can furnish all known methods of surfacer motor drives. Where 3600 R. P. M. polyphase A. C. motors may be used, we highly recommend the "Motor-on-Head" type or drive where shaftless motors are mounted directly on the end of the cutter head or cylinder. Where D. C. 3600 R. P. M. motors are used we recommend the "Coupled-to-Cylinder" type of drive which carries the motor on a bracket attached to the machine and couples it to the cylinder. Where 1800 R. P. M. or slower speed motors, either A. C. or D. C. are used, we recommend the "Coupled-to-Countershaft" drive.

GENERAL DIMENSIONS

Cylinder

Cutting diameter, $4\frac{1}{2}$ ". Pulleys, 5" x 5", 3800 R. P. M.

Feed Rolls

4" dia., journals $4\frac{1}{2}$ " long 2" dia. Feeds 14', 18', 24', 31', per minute. Roll Gears, 6" dia., 3" pitch. Main driving gears 22" dia., 3" pitch.

Bed

48" long and 4" wider than size.

Depth of slide, $12\frac{1}{2}$ "; depth of table, $14\frac{1}{4}$ ".

Raising screws $1\frac{1}{2}$ diameter, 4 threads per inch.

Countershaft

Pulleys for driving cylinder 20" diameter, 5" face.

Tight and loose pulleys 10" diameter, $6\frac{1}{2}$ " face.

Speed 950 R. P. M.

Floor Space

With Countershaft. Without Countershaft.

24" machine 8' 4" x 5' 2" 5' 2" x 5' 2".

30" machine 8' 4" x 5' 8" 5' 2" x 5' 8".

Horse Power

$7\frac{1}{2}$ to 10.

CODE, WEIGHT, ETC.

Code	No.	Size Planes	Kind of Drive	Weight in Crated	Pounds Boxed	Cubic Feet
Digab	61-A	24" x 8"	Belt Driven	4000	4300	100
Digac	61-B	30" x 8"	Belt Driven	4400	4600	115
Digfa	61-AD	24" x 8"	Motor-on-Head	4200	4600	100
Digfe	61-BD	30" x 8"	Motor-on-Head	4400	4800	115

EXTRAS

Dighi Digho

Coupled Motor Drive arrangement to couple motors to cylinder.
Countershaft arranged to couple motor to its end.

No. 199

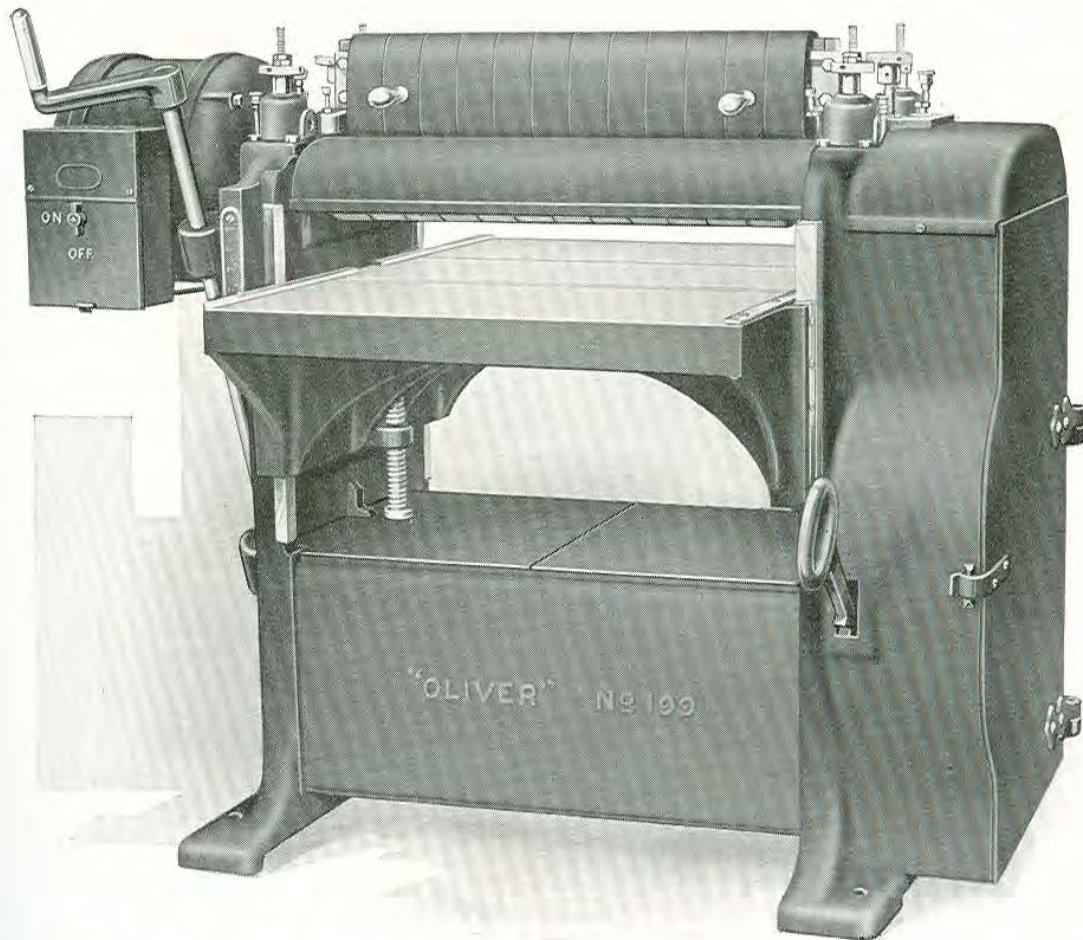
"Oliver" Single Surface Planer

24-INCH BY 6-INCH
EITHER BELT OR MOTOR DRIVEN

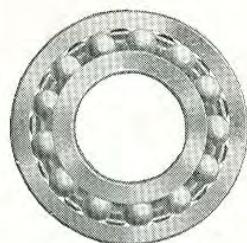
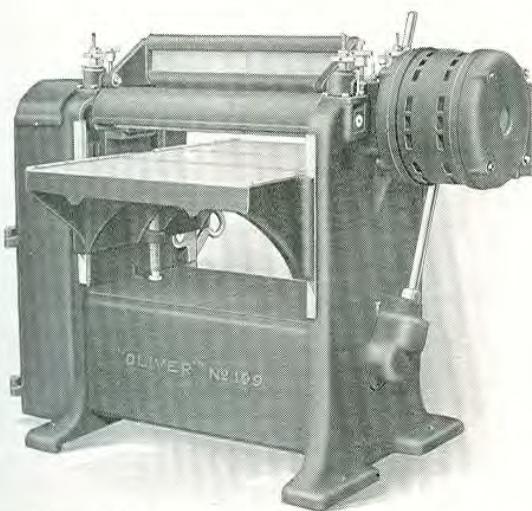
Capacity	Will surface up to 24" wide and to 6" thick at the rate of 32' per minute, producing a perfect, smooth surface. Pieces as short as 3" when feeding one after the other, and as short as 10½" when feeding one at a time, may be surfaced without dubbing the ends. Sectional in-feed roll and sectional chip breaker are regularly furnished so that up to twelve narrow strips of varying thickness can be surfaced simultaneously, increasing the capacity of this surfacer many fold.
Frame	Is made of cast iron sides and ribbed girts, nicely machined, jointed and bolted. Ample material and flanges at the base eliminate vibration, also provide rigid floor supports.
Bed	Is very heavy, cast in one piece, 36" long, 24¼" wide. Fitted to main frame by means of four bearings 10" long, arranged with dovetailed gibbs for taking up any wear. Bed is supported by two screws of large diameter, which rest on dust-proof, frictionless ball bearings. Raising screws easily operated by means of enclosed bevel gears and crank conveniently placed.
Bearings	Oversize frictionless double row ball bearings of the highest type are used with lubricating chambers fed by large pressure cups, thus less friction and greater efficiency are assured.
Cylinder	Made of forged crucible steel accurately ground and balanced. It is three knife circular type fitted with three thin high speed knives and three hardened steel chip breakers. Produces much finer grade of work than the ordinary heads. Cutting diameter is 3⅞"; bearing ends are 2" diameter; speed is 3600 R. P. M., giving more than ten thousand cuts per minute; pulley 4" diameter, 4½" face.
Feed Rolls	Are made of forged steel, 3½" diameter, ground true and set very close, only 10" apart, making it possible for single pieces as short as 10½" to feed through. Upper in-feed roll is corrugated radially and made sectional, each section having ¾" independent yield. All rolls run in bronze bushed replaceable bearings. Lower rolls are adjustable with the bed. Upper rolls are held down by helical encased springs and are aligned by hand wheels at each end. Lock nuts above the hand wheels regulate the pressure of the springs which control the vertical yield of the rolls from 0 to ¾".
Feed Drive	The entire feed mechanism is enclosed in a box with a steel swinging door for easy access. The drive consists of a powerful downward drive by a continuous anti-friction roller chain and hardened steel sprockets cut from the solid. The chain is driven by a train of compound reduction gears which in turn is driven by a belt from the cylinder through a lever-controlled belt tightener. This gives a total reduction ratio of 16 to 1, assuring a most powerful, positive drive with quick release for safety. All bearings of the feed mechanism are bronze bushed and fitted with grease pressure cups for lubrication.

No. 199 "Oliver" Single Surface Planer

Continued



Front View of Motor-on-Head Machine Fitted with Sectional In-Feed Roll, Sectional Chip Breaker,
Knife Setting, Jointing and Grinding Attachments

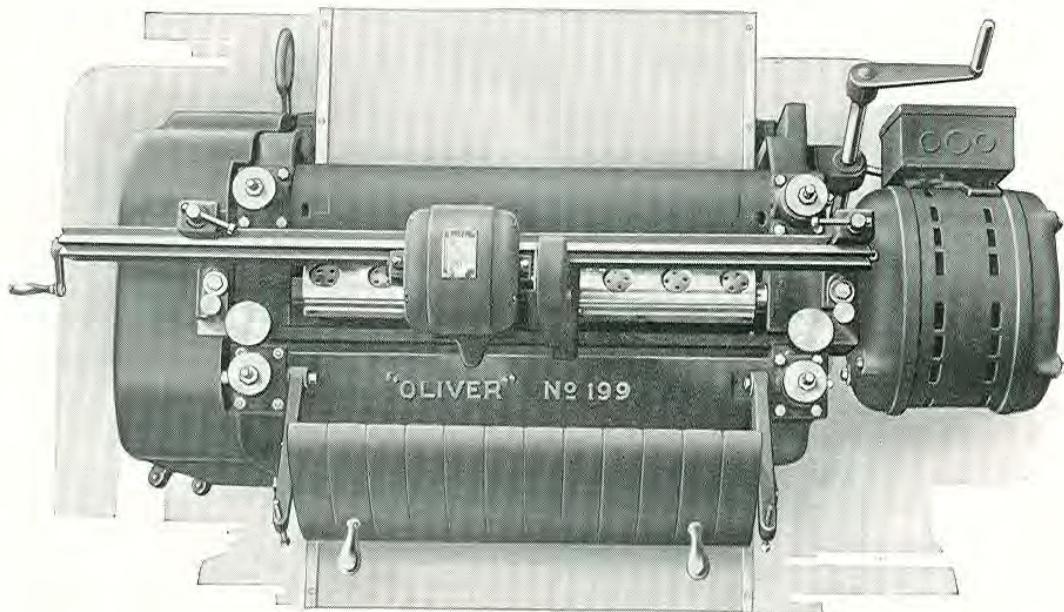


Ball Bearings of the highest grade are used for the bearings of this machine. Less friction—
More Power for the work

Rear View of Motor-on-Head Self-Contained Machine

No. 199 "Oliver" Single Surface Planer

Continued



Top View of "Oliver" No. 199 Single Surfacer with the Sectional Chip Breaker Swung Back Out of the Way and the Motor Knife Grinder in Place Ready to Grind

Sectional Chip Breaker	Consists of 2" sections supported on a flat steel bar and fitted with helical springs giving $\frac{1}{4}$ " independent yield to each section. The entire unit swings back on concentric pivots clearing the space directly above the cylinder for easily applying the Knife Setting, Jointing or Grinding Attachment.
Pressure Bar	Located immediately back of the cylinder, exerts a holding-down pressure on the work directly following the cut. Helical spring pressure with hand wheel adjustment and lock nut tensioning device at each end provides hold down to the bar.
Motor Drive	We furnish all methods of motor drives. Where 3600 R. P. M. polyphase motors may be used, we recommend the drive where shaftless motors are mounted directly on the end of the cylinder. Where D. C. 3600 R. P. M. motors are used we recommend motor on bracket coupled to the cylinder. Where 1800 R. P. M. or slower speed motors are used, we recommend mounting the motor with its own base rails and pulley on the floor or on the ceiling and belting directly to the cylinder.
Horse Power Counter-shaft	We recommend a 5 H. P. motor for all general work. For belt drive we furnish a ball bearing countershaft. Driving pulley 18" x 5". Tight and bronze bushed loose pulley 10" x 5". Speed, 800 R. P. M.
Floor Space	36" x 50" for belt drive; 36" x 60" for "Motor-on-Head" driven machine.
Equipment	Includes sectional roll and sectional chip breaker, three knife circular cylinder, Knife Setting and Jointing Attachment and Ball Bearing Countershaft for single belted drive. Motor knife grinding attachment, and motor drive are extras.

Code	No.	Description	Weight in Crated Pounds	Weight in Boxed Pounds	Cubic Feet
Dijne	199-A-24"	Surfacer for belt drive.....	2400	2700	80
Dijno-	199-E-24"	Surfacer with "Motor-on-Head" drive.....	2500	2800	80
Dijnok		Motor Knife Grinding Attachment for above, extra	50	50	—

No. 99

“Oliver” Double Belted Single Cylinder Surfacer

Planes 20 and 24-inch Wide and 6-inch Thick

Introduction The splendid success of this surfacer is due to its semi-circular cylinder and its powerful feed, and those who desire a machine of moderate cost and not too light, will find this adapted to their needs.

No machine we manufacture gives more universal satisfaction. All the parts are mechanically arranged and accessible. It is beautifully made. All gearing is safely guarded and has machine-cut teeth. Every precaution has been taken, resulting in a very sensible machine.

Capacity This machine will plane 6" thick, 20" or 24" wide according to size of machine. Will feed at the rate of 24 lineal feet per minute.

Frame Is made of cast iron sides and ribbed girts, nicely machined, jointed and bolted. Ample material and flanges at the base eliminate vibration, also provide rigid floor supports.

Bed Is very heavy, cast in one piece, 32" long, 22 $\frac{1}{4}$ " or 26 $\frac{1}{4}$ " wide, respectively, for 20" or 24" machine. Fitted to main frame by means of four bearings 10" long, arranged with dovetailed gibbs for taking up wear. Bed is supported by two screws of large diameter, which rest on dust-proof, frictionless ball bearings. Raising screws easily operated by means of bevel gears and crank conveniently placed.

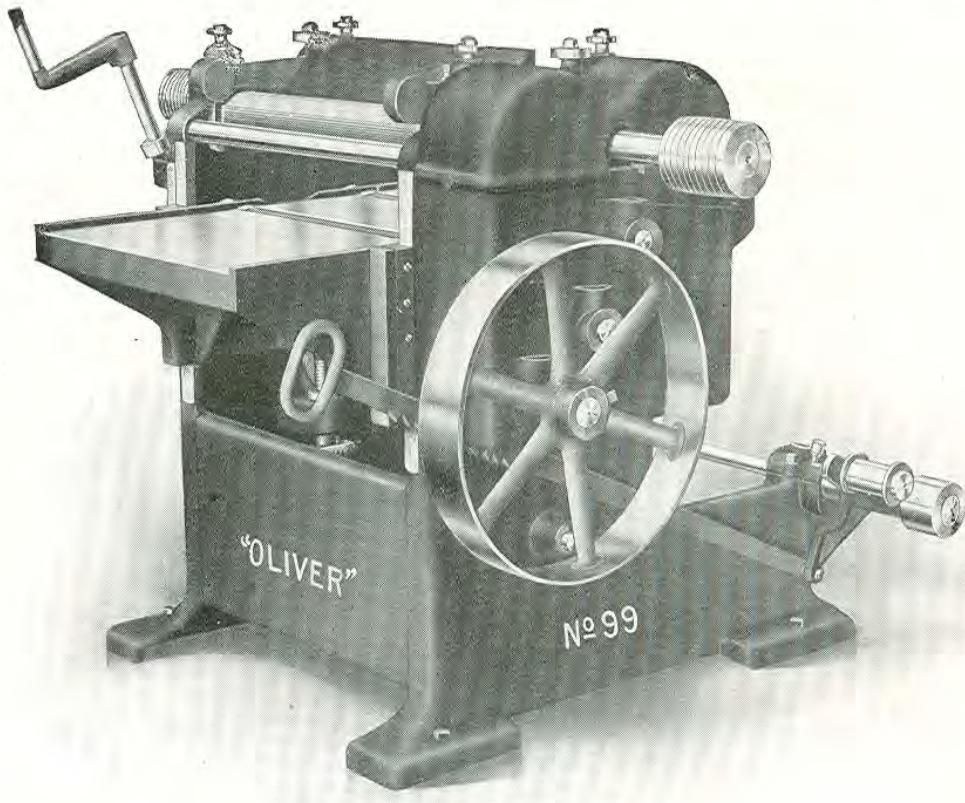
Cylinder “OLIVER” improved type made of forged crucible steel. Carries two knives and steel chip breakers. Produces finer grade of work than the old fashioned square type. Journals machine ground 1 $\frac{5}{8}$ " diameter, 6" and 7" long, self-oiled by wicks from oil wells. Cutting diameter is 3 $\frac{1}{2}$ ". Pulley 4" diameter, 4 $\frac{1}{2}$ " face, grooved for air space. Speed 4500 R. P. M.

Cylinder Journals and Bearings The journals are of large diameter, ground true and revolve in long bearings that are cast to the frame. These bearings have oil chambers that serve to lubricate the journals through wicking.

Pressure Bar Are two in number—one after, one before the cylinder, acting only 1 $\frac{1}{8}$ " apart. The front bar or chip breaker yields to inequalities of cut.

No. 99 "Oliver" Double Belted Single Cylinder Surfacer

Continued



No. 99 "OLIVER" DOUBLE BELTED SINGLE CYLINDER SURFACER
View of right hand side, Gears covered

Feed Rolls Are made of forged steel $3\frac{1}{2}$ " diameter and 10" apart. Lower rolls are adjustable with bed. Upper rolls held down by volute springs, are driven by a train of gears enclosed in a gear box. Gears are fastened rigidly upon shafts which run in oiled bearings, may rise $\frac{1}{2}$ " without going out of mesh. Feed is very positive, being driven from cylinder through a lever-controlled belt tightener.

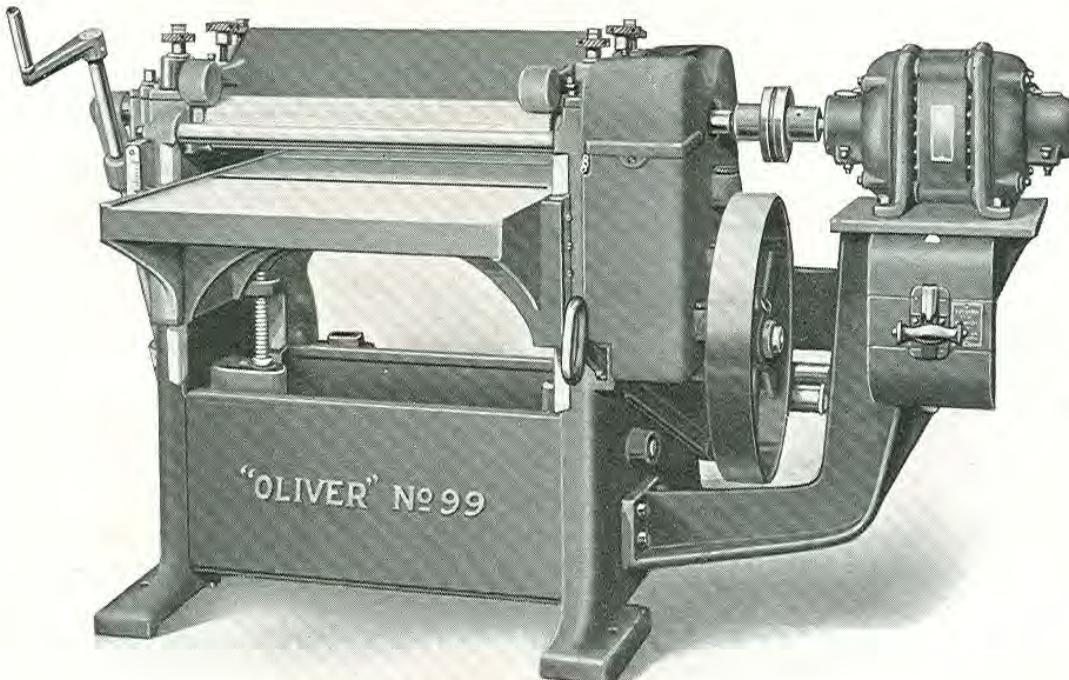
Feed Gears These are large and strong, with teeth machine cut. They are mounted on steel shafts that run in self-oiling bearings. Power is given from the cylinder through a belt tightener controlled by a lever. This feed is very positive. The gears are protected by a metal cover.

Counter-shaft Bearings self-oiling, $1\frac{3}{4}$ " diameter, 6" long. Driving pulley 20" x $4\frac{1}{2}$ " face. Tight and bronze bushed loose pulley 10" x 5" face. Speed 900 R. P. M.

Equipment We supply one pair of cylinder knives, and the necessary countershaft pulleys and wrenches.

No. 99 "Oliver" Double Belted Single Cylinder Surfacer

Continued



No. 99 "Oliver" Single Surfacer. Front View of Machine with Self-Contained Motor Drive having Motor coupled to End of Cylinder

Motor Drive

Wherever 3600 R. P. M. motors may be used we strongly recommend the "Direct coupled to cylinder" drive, which is the simplest, safest and most efficient motor drive obtainable. Where 1800 R. P. M. or lower speed motors must be used the motor may be "Coupled to end of countershaft" and with it mounted either on an adjustable cast iron sub-base or on the floor and thence double belted to the cylinder; or when space must be saved the "single belted motor drive" may be used, consisting of a regular motor with its own base rails belted only to one pulley at either end of the cylinder.

Horse Power 5 horse power motor is recommended for all general work.

Equipment Regular equipment consists of the machine as described above, one pair of knives, one countershaft complete and necessary wrenches. Knife setting, jointing and grinding attachment; sectional in-feed roll; three or four knife head and other extras may be furnished when so ordered.

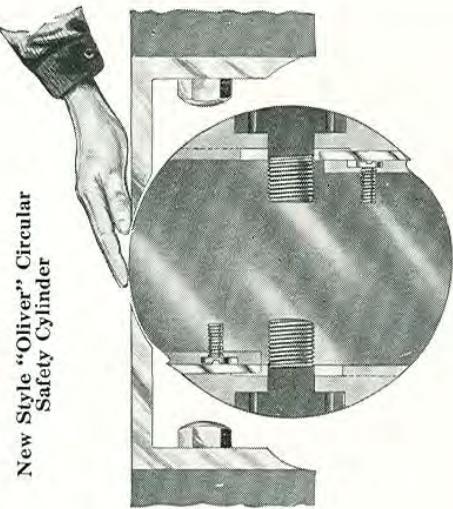
CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Dike	99-A	20" Single Surfacer.....	2200	2350	90
Dilate	99-B	24" Single Surfacer.....	2400	2680	95

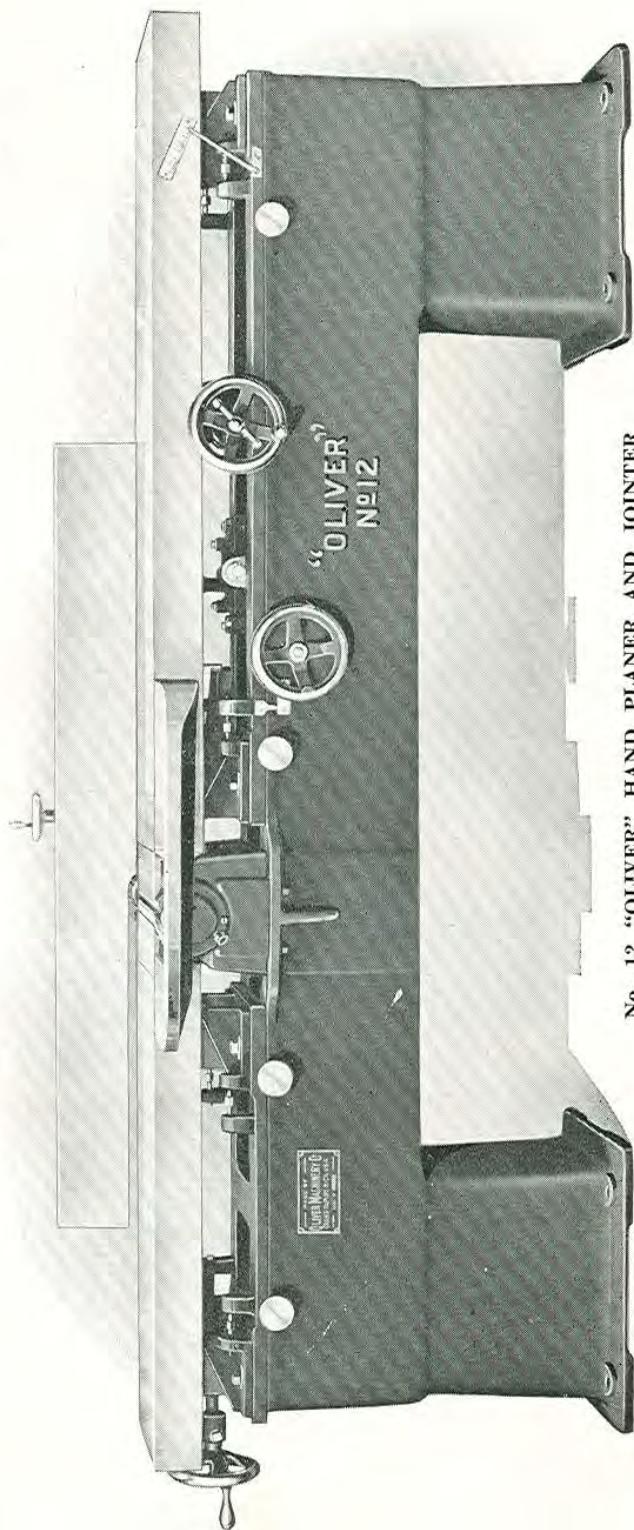
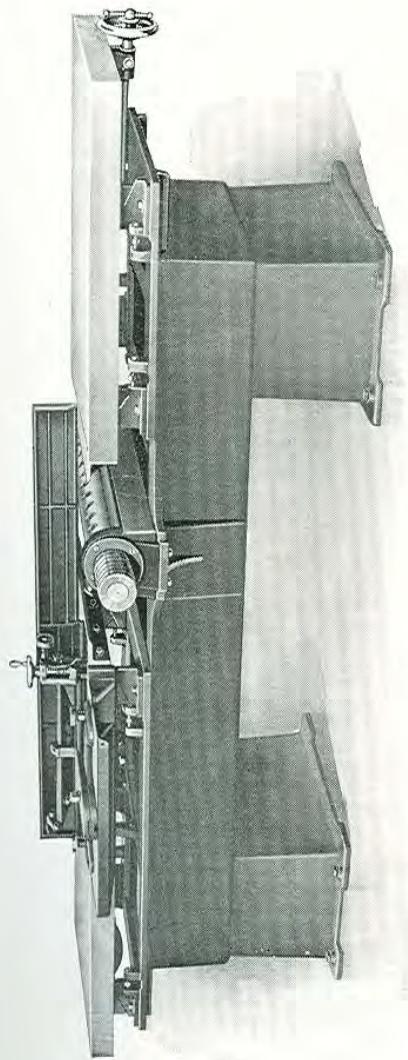
No. 12

"Oliver" Hand Planer and Jointer

Introduction	This machine meets the demands of purchasers who recognize that the best is cheapest . To produce it we have spared neither skilled labor nor material. It is used to plane smoothly, or true-up long or short pieces of lumber or timber, taking them out of wind, making glue joints, planing draft on pattern lumber, etc. Where high grade work is the requirement they are most profitable.
Capacity	Made in four widths, 16", 20", 24" and 30" wide and the tables may be adjusted to take a cut $\frac{3}{4}$ " deep when desired.
Bed	This is very heavy, mounted on two cabinet columns, which places it on a very firm foundation, eliminating all vibration and allowing greatest foot room for the workman.
Tables	Tables are rigid, proportionately made, and provided with all the conveniences for promptly adjusting them to perform their functions. Front or in-feed table is 5' 4" long and 2" wider than length of knife. Rear or out-feed table is 3' 4" long and 1" wider than length of knife. Vertical adjustment of tables 1" and each table draws away from the cylinder 18" to provide ample working space when changing knives.
Table Tilting Device	This is one of the distinctive features. By means of this the pattern maker can obtain the draft upon every straight piece of wood that passes through his hand. This one point alone adds exceptional value to the machine. It operates the rockers upon which the rear table rests and by means of a hand-wheel and screw the table may be adjusted to give the required taper, or draft, to the work. In order to obtain draft over full width of table it is necessary to gradually lower the rear table upon the shoes and plane the material several times until the full length of the knives are in use. Upon stock less than one-half of the width of the table this is not necessary. Very sharp or acute angles of any degree desired may be obtained by simple repetition of the above operation.
Table Throats	These tables are faced at the throat next the cutting cylinder with steel plates, which may be replaced at any time should the edges become badly nicked or worn from the use of special projecting knives or other causes.
Sliding Frames	These carry the work tables and move in dovetailed ways planed in the bed. They are easily withdrawn for convenience in sharpening or removing knives. To them are bolted the shoes for the adjustment of the work tables, the rockers upon which the table rests, and also the screws and hand wheels which raise and lower for depth of cut.
Shoes	These are tongued and grooved to the sliding frame and securely bolted. They also have large flat bearing surfaces and are gibbed by separate gibbs running in slots which hold the work table securely to the sliding frame. These surfaces are all milled and accurately scraped and keep correct plane, or level, of the table at all times.



New Style "Oliver" Circular
Safety Cylinder



No. 12 "OLIVER" HAND PLANER AND JOINTER
Front View.

No. 12 "Oliver" Hand Planer and Jointer

Continued

Cylinder Yoke

This carries the cylinder and is made in one solid piece and bolted to the bed. This is a very desirable feature.

Cylinder

Cutting diameter 5", speed 4500 R. P. M., pulley $4\frac{1}{2}'' \times 5\frac{1}{2}''$ face. We furnish with this machine Patent Circular "Safety Cylinder," which has all the advantages of the square cylinder and it saves hands. It is made of forged crucible steel and as regularly furnished carries three knives but may be furnished with four or six. It makes less noise than the old square cylinder, maintains a better balance and uses all steel knives made from air hardening high speed steel.

Cylinder Bearings

Ball bearings of the highest grade and oversize capacity are used. We guarantee our ball bearing construction as the very best and most efficient type of bearings for hand planers and jointers.



Fence

This is held in position on the slide which is bolted to the table. It may be moved backward or forward the full width of the table. It may also be set at any angle from square to 45 degrees by means of a worm and wheel. When the fence is not used it rests on the table extension bracket out of the way of the operator, leaving the table clear. Fence is 5' long, 5" wide.

Guard

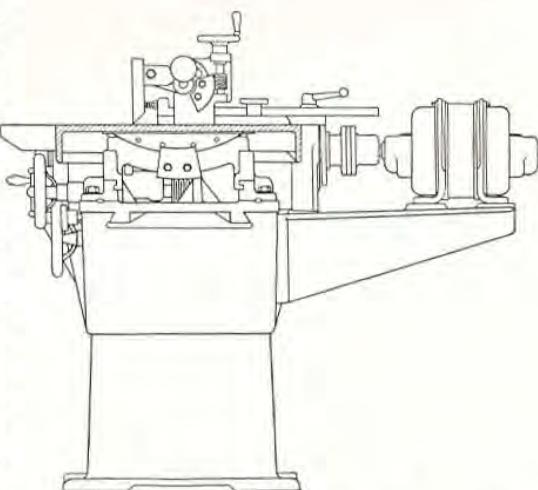
An "Oliver" Aluminum Automatic Guard is regularly furnished with all "Oliver" Hand Planers and Jointers.

Countershaft

This is proper length, carrying 10" x 6" tight and loose pulleys and 18" x $5\frac{1}{2}''$ driving pulley. The loose pulley is bushed with a loose bronze sleeve which doubles the wearing surface as it may either revolve around the outer diameter of the sleeve, or both pulley and sleeve may revolve around the shaft. Suitable shifter fingers and drip cups are attached. Speed 1125 R. P. M.

Motor Drive

Three types of motor drive are possible: "Motor-on-Head" motor drive for polyphase A. C. "Coupled" motor drive for 3600 R. P. M. motors either A. C. or D. C., and "Belted" motor drive for any kind of 1800 R. P. M. motors. State the phase, cycles, and voltage of your electric current and we will recommend the best motor drive for you.



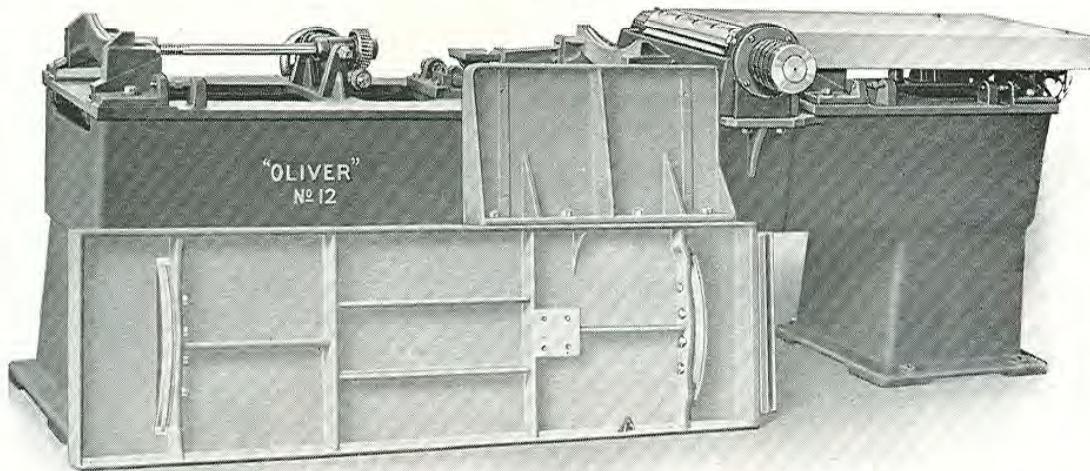
Coupled Motor Drive with Section Showing Table Supports and Tilting Mechanism

Equipment

We furnish one circular safety cylinder fitted with three air hardening steel knives, automatic aluminum jointer guard, special cylinder wrench and the regular wrenches.

No. 12 "Oliver" Hand Planer and Jointer

Continued



Rear View, Operating Table Removed to Show Finished Rockers and Hand Wheel Worm and Gear Tilting Device

CODE, WEIGHT, ETC.

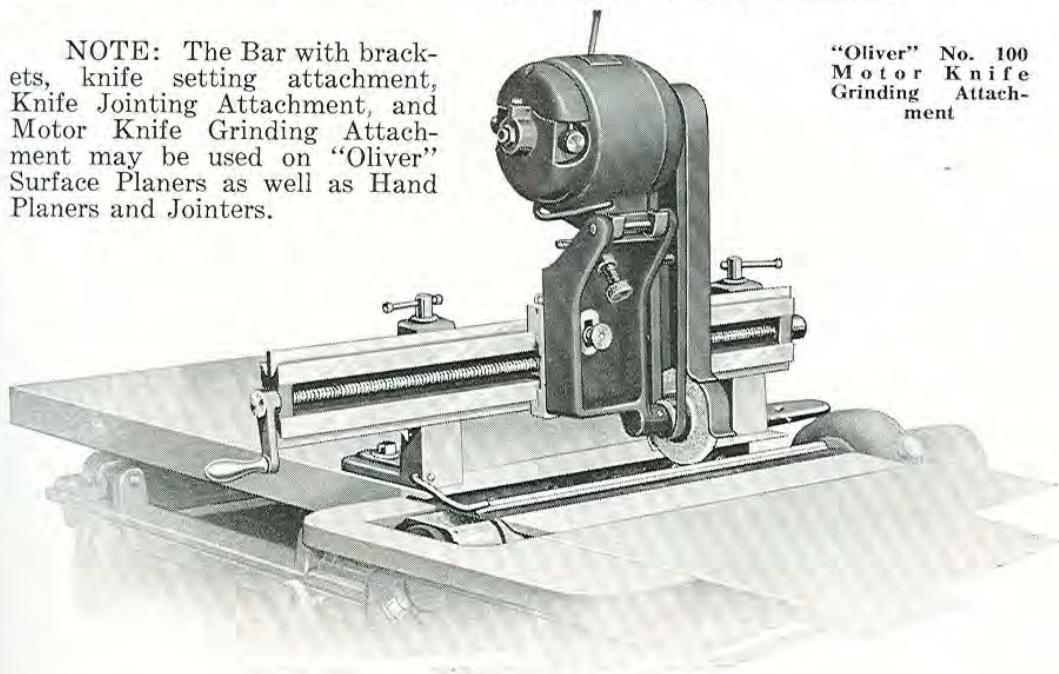
Code	No.	Machine	Horse Power	Weight in Crated Pounds	Pounds Boxed	Cubic Feet
Divest	12-A	to plane 16" wide	3	3000	3600	134
Divide	12-B	to plane 20" wide	5	3300	4000	146
Divine	12-C	to plane 24" wide	7½	3500	4350	158
Diving	12-D	to plane 30" wide	10	3900	4750	170

EXTRAS

- Divini Motor-on-Head Drive, including motor and switch.
- Divino Coupled Motor Drive arrangement only.
- Divip Countershaft for Belt Drive.
- Diviq Knife Setting, Jointing and Grinding Attachment.

NOTE: The Bar with brackets, knife setting attachment, Knife Jointing Attachment, and Motor Knife Grinding Attachment may be used on "Oliver" Surface Planers as well as Hand Planers and Jointers.

"Oliver" No. 100
Motor Knife
Grinding Attach-
ment



No. 166

"Oliver" New Hand Planer and Jointer

Ball Bearings

Introduction This "Oliver" Ball Bearing Jointer meets the demand made by those who insist upon correct design, superior workmanship and high grade material. In its development we have adhered strictly to "Machine Tool Construction" as the only true basis for a good product. For planing smoothly straight or tapering, taking out of wind, cornering, chamfering, making glue joints, etc., it will be found very profitable.

Capacity Made in six widths, viz.: 9", 12", 16", 20", 24" and 30" wide, and tables permit of a cut up to $\frac{3}{4}$ " in depth.

Bed This is heavy and strongly ribbed. The bridge design absolutely eliminates all vibration and allows ample foot room for the operator. Directly below the cylinder, there are two partitions cast in the bed directing shavings straight downward and providing easy connection to exhaust systems when desired.

Tables These are well ribbed, properly machined, draw filed and scraped true; also provided with conveniences for adjusting. Each table is fitted with steel lip next to the cutting cylinder, which may be removed and replaced at any time. This important feature avoids nicked edges to tables. Front table has scale and pointer showing depth of cut.

Sliding Frames These carry the tables and move to and from the cylinder in dovetailed ways planed in the bed. They can be readily drawn away from the cylinder 18" when sharpening, setting or removing knives. The shoes are tongued and grooved to the sliding frame, and securely bolted. They have wide bearing surfaces and control the correct plane of the tables at all times.

Cylinder This is made of forged crucible steel and machine ground to a perfect running balance; of the circular "Safety" type, through the use of which danger of a serious injury to the hand is entirely eliminated giving operator a feeling of absolute safety. Regularly equipped with three high speed, thin, steel knives; may be equipped with four or more knives if desired.



"Oliver" Patented Circular Safety Cylinders, the kind with the high speed thin knives. Regularly furnished with all "Oliver" Jointers.

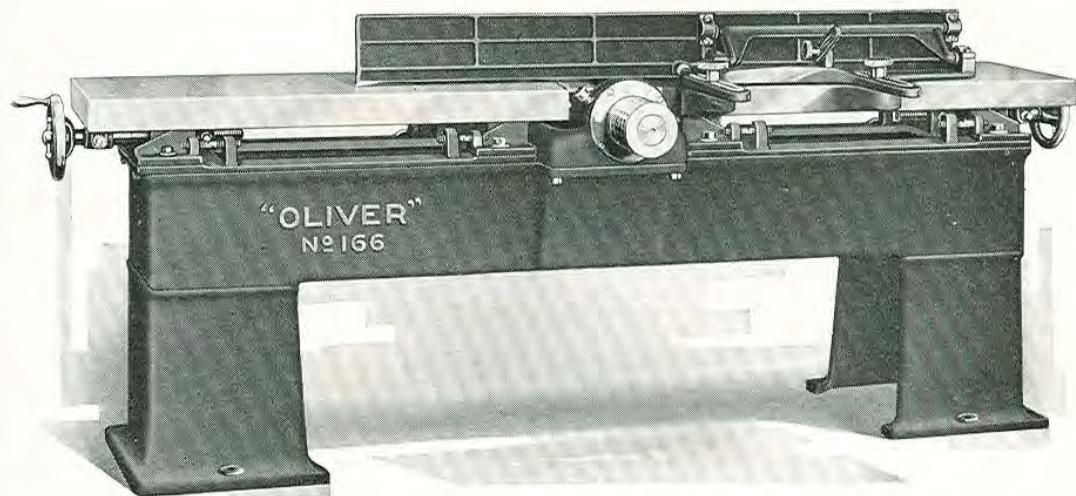
One of the most effective mechanical safeguards that can be installed on a jointer is the Circular Safety Cylinder. This form of head fills up the gap between the tables to such an extent, and the knives project so little from the head, that if any operator's hand should come in contact with the knives, they cannot be mangled as they would be with a square head.

No. 166 "Oliver" New Hand Planer and Jointer

Continued



Front View Showing "Oliver" Aluminum Automatic Guard Mounted in Place



Rear View Showing Location of Fence on Rear Table

Note the Bridge Design of Bed with Column at the Ends assuring absolute rigid support as well
as clear foot room and shavings space directly below the cylinder

No. 166 "Oliver" New Hand Planer and Jointer

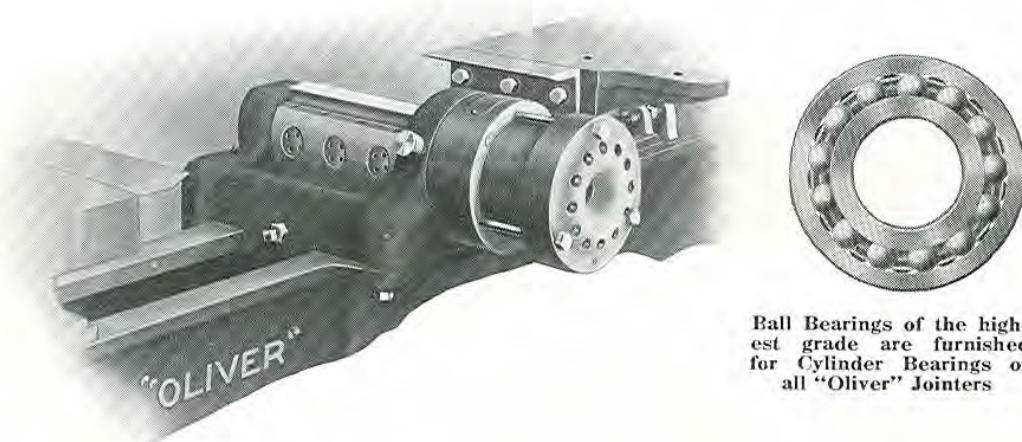
Continued

Cylinder Bearings The bearings are of the self-aligning, frictionless, ball bearing type, require very little attention and are bound to give satisfaction.

Fence This is rigidly held in position and may be moved across the table its full width. It is made to bevel to any angle down to 45 degrees. The fence, when not in use, rests on extension brackets out of the way. Note especially that the fence on this jointer is mounted on the rear table. Has scale showing exact thickness of finished stock.

Guard An "Oliver" Aluminum Automatic Guard is regularly furnished with all "Oliver" Hand Planers and Jointers.

Rabbeting Attachment This device is supplied with each machine. It is made so as to be removed at any desired time. It presents a wide supporting surface for stock being rabbeted and is preferred to the old style rabbeting groove in the receiving table.



Shaftless Motor Drive, Motor Mounted Directly on End of Cylinder

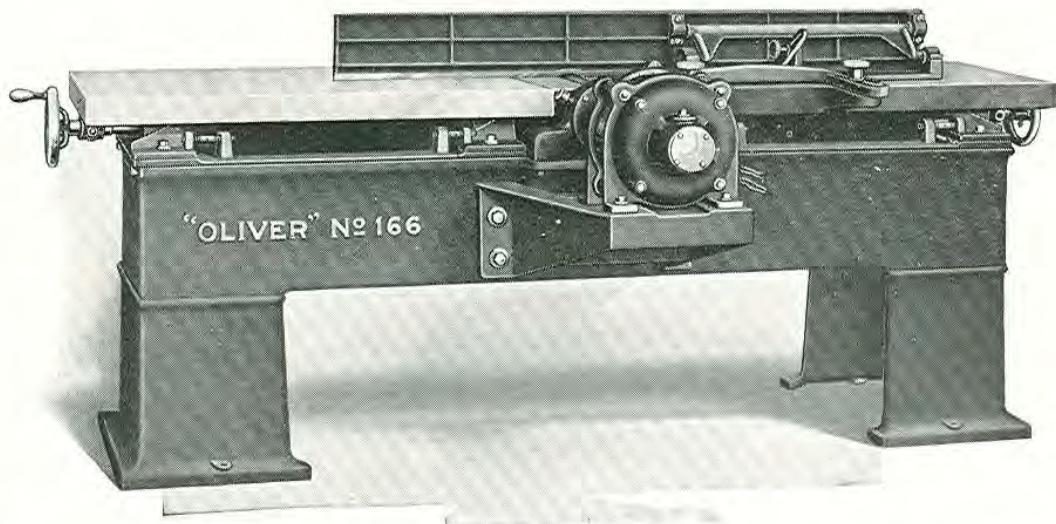
Ball Bearings of the highest grade are furnished for Cylinder Bearings of all "Oliver" Jointers

Motor Drive Three types of motor drive are possible: "Motor-On-Head" motor drive for polyphase A. C., "Coupled" motor drive for 3600 R. P. M. motors either A. C. or D. C., and "Belted" motor drive for any kind of 1800 R. P. M. motors. State the phase, cycles and voltage of your electric current and we will recommend the best motor drive for you.

Equipment We furnish one circular safety cylinder with one set of high speed steel knives, special cylinder wrench and the regular wrenches.

No. 166 "Oliver" New Hand Planer and Jointer

Continued



Showing Rear View of Direct Coupled Motor Driven Machine. Note the Bridge Design of Bed with Columns at the Ends assuring absolute rigid support as well as clear foot room and shavings space directly below the cylinder

GENERAL DIMENSIONS

Bed	78" long, 32" high, 9" deep, width according to size of machine.
Tables	Each section 42" long, front table is 2" and rear table 1" wider than the length of knife. Draw away from the cylinder 18" either end. Vertical adjustment, $\frac{3}{4}$ ". Throat between tables, $1\frac{3}{8}$ " wide.
Cylinder	"Oliver" Circular Safety Cylinder type fitted with self-aligning frictionless ball bearings. Cutting diameter 5"; pulley $4\frac{1}{2}$ " diameter, 4" face for 9" size, 5" face for 12" and 16" sizes, $5\frac{1}{2}$ " face for 20" and 24" sizes; speed 4500 R. P. M.
Rabbeting Arm	21" long and 5" wide; will rabbet up to $\frac{3}{8}$ " deep.
Fence	Length 54", width 6", bevels 45 degrees. Permits full width of table to be used.
Countershaft	Tight and Loose pulleys 10" diameter, 5" face, driving pulley 18" diameter, 5" face, speed 1125 R. P. M.

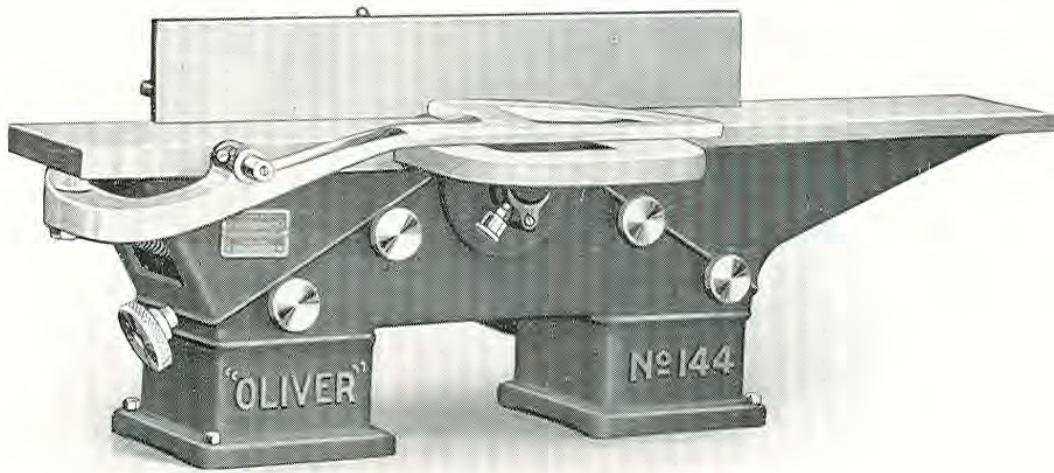
CODE, WEIGHT, ETC.

Code	No.	Machine	Horse Power	Weight in Crated	Pounds Boxed	Cubic Feet
Disno	166-A	Size 9"	1 1/2	1475	1575	48
Divan	166-B	Size 12"	2	1600	1875	56
Dobet	166-C	Size 16"	3	1700	2000	68
Docel	166-D	Size 20"	5	2200	2300	77
Docet	166-E	Size 24"	7 1/2	2400	2550	86
Doceu	166-F	Size 30"	10	3100	3300	108

EXTRAS

Doci	Motor-on-Head Drive including motor and switch.
Docic	Coupled Motor Drive arrangement.
Docig	Countershaft for Belt Drive.
Docik	Knife Setting, Jointing and Grinding Attachment.

No. 144
 "Oliver" Hand Planer and Jointer
 Ball Bearings



Front View of No. 144-A Hand Planer and Jointer. Note the ball bearing arrangement and Aluminum Jointer Guard

Introduction This machine is a quality producer in any workshop where hand planing is done either by the workman at his bench or by the other methods in vogue. While it has but a 6" head, it has the other features found on our heavy hand planers, performs every function, and can be relied upon for perfect planing.

Bed This is cast solid with columns and bearings and carries on 60 degree accurately machined dovetailed bearings, the inclined ways which support the tables.

Tables These are made of cast iron with steel lips at the cutting throat. They are 6½" wide and 10½" high from base of columns. Front table is 24½" long, back table 15½" long, both are dovetailed on 30 degree inclined ways. Are raised or lowered by means of hand wheel and screw for cuts up to ½" deep. Easily moved to and from cylinder. Throat opens 1" for cut ⅛" deep.

Cylinder This is the "Oliver" Circular Safety Type made of forged crucible steel. Carries one set of self-hardening knives and adjustable steel chip breakers. Insures safety to operator. Produces higher grade of work. Saves time. Journals are machine ground. Cutting diameter 3⅓". Knives 6" long. Pulley is 2¼" diameter, 2¾" face, grooved for air space. Speed 5000 R. P. M.

Cylinder Bearings Ball bearings of the highest grade and oversize capacity are used. We guarantee our ball bearing construction as the very best and most efficient type of bearings for hand planers and jointers.

Fence This is 24" long, 3½" wide and very rigid; easily held at any angle from 90 to 45 degrees; moves anywhere across the tables.

Countershaft Driving pulley 11" diameter, 3" face. Tight and loose pulleys are 8" x 3". Speed 1023 R. P. M.

Rabbeting Attachment This device is furnished with each machine. It may easily be removed at any time and as it presents a wide supporting surface for stock being rabbeted it is preferred to the old style rabbeting groove in the receiving table.

No. 144 "Oliver" Hand Planer and Jointer

Continued

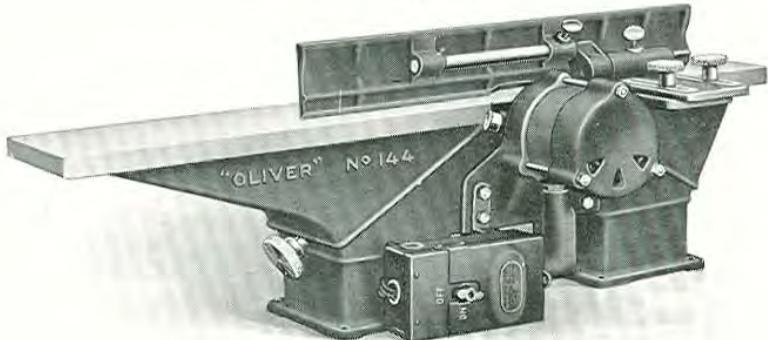


No. 144-B "OLIVER" BENCH HAND JOINTER ON CAST IRON FLOOR COLUMN
With Coupled Motor Drive

Motor Drive Three types of motor drive are possible: "Motor-On-Head" motor drive for polyphase A. C., "Coupled" motor drive for 3600 R. P. M. motors either A. C. or D. C., and "Belted" motor drive for any kind of 1800 R. P. M. motors. State the phase, cycles and voltage of your electric current and we will recommend the best motor drive for you. H. P., $\frac{1}{2}$ to 1.

No. 144 "Oliver" Hand Planer and Jointer

Continued



Rear View of Motor-on-Head "Shaftless" Motor Drive

CODE, WEIGHT, ETC.

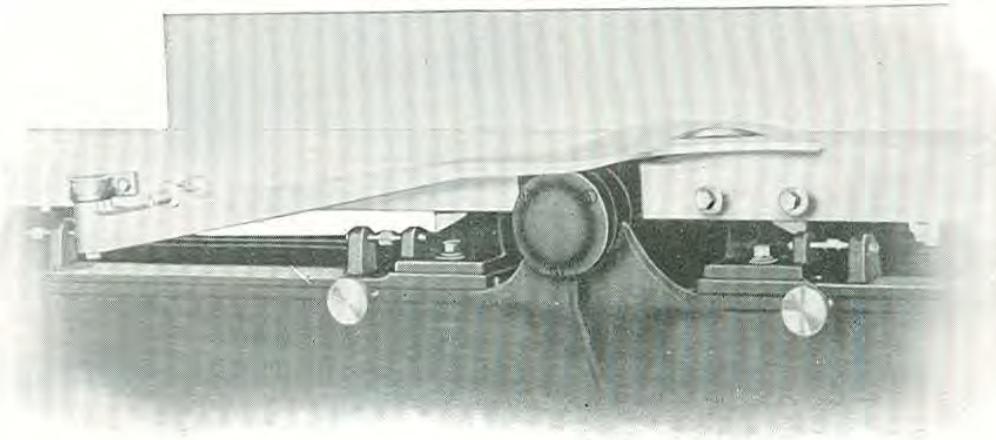
Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Dodder	144-A	For Bench.....	425	465	11
Dodge	144-B	On Column, belt drive.....	590	760	26
Dodo	144-C	On Column with Bracket.....	595	720	22

EXTRAS

- Dofa Countershaft for No. 144-A or 144-B.
 Dofab Motor-on-Head drive with motor and switch.
 Dofac Coupled Motor Drive arrangement only.

No. 101

"Oliver" Full Automatic Jointer Guards



"OLIVER" FULL AUTOMATIC JOINTER GUARD
 View of Guard mounted on a 16-inch Jointer

Adaptation This aluminum guard meets the requirements of a "Safety First" Guard. It is full automatic—always covers that part of knives not actually cutting.

Code	No.	
Dofg	101-A	Guard suitable for 6" Jointers, similar to No. 144.
Dofk	101-B	Guard suitable for 8" or 9" Jointers.
Dofm	101-C	Guard suitable for 12" or 16" Jointers.
Dofo	101-D	Guard suitable for 20" or 24" Jointers.

No. 133**"Oliver" Hand Planer and Jointer****4" and 6" Sizes****Features**

The "Oliver" No. 133 Hand Planer and Jointer meets the insistent demands from all kinds of woodworking shops for a well-built, portable, compact motor driven Hand Planer and Jointer to replace the hand plane for jointing and fitting almost all classes of small work in wood construction. It is extremely practical, thoroughly safe-guarded, accurate, efficient, fitted with ball bearings, and may be run from any electric light socket or from power circuits.

Capacity

Planes $6\frac{1}{4}$ " wide on the 6" machine and $4\frac{1}{4}$ " wide on the 4" machine; both sizes rabbet up to $\frac{1}{2}$ ".

Frame

The frame, or base, is a rigid one piece iron casting. It carries the tables, the cutter-head, the motor, the fence, and the guard, all in a self-contained manner so that the machine as a unit may be moved instantly from place to place and always be ready for use.

Tables

The tables are mounted on inclined dovetailed ways, are raised and lowered by means of hand wheel and screw, and are easily locked firmly in any position. Each table has steel lip next to the throat opening. On the 6" machine, front table is $6\frac{1}{4}$ " wide, $19\frac{1}{2}$ " long, rear table is $6\frac{1}{4}$ " wide, $11\frac{1}{4}$ " long; on the 4" machine, front table is $4\frac{1}{4}$ " wide, $15\frac{1}{2}$ " long, rear table is $4\frac{1}{4}$ " wide, $9\frac{1}{4}$ " long. Total height, either size, 6".

Fence

The fence can be quickly adjusted anywhere across the tables, also tilted and locked to any position up to 45 degrees. It is 16" long, $2\frac{1}{2}$ " high, very rigid, rests against the rear table; when not in use, may be shoved back and swung out of the way of the Knife Jointing and Setting Attachment.

Safety Guard

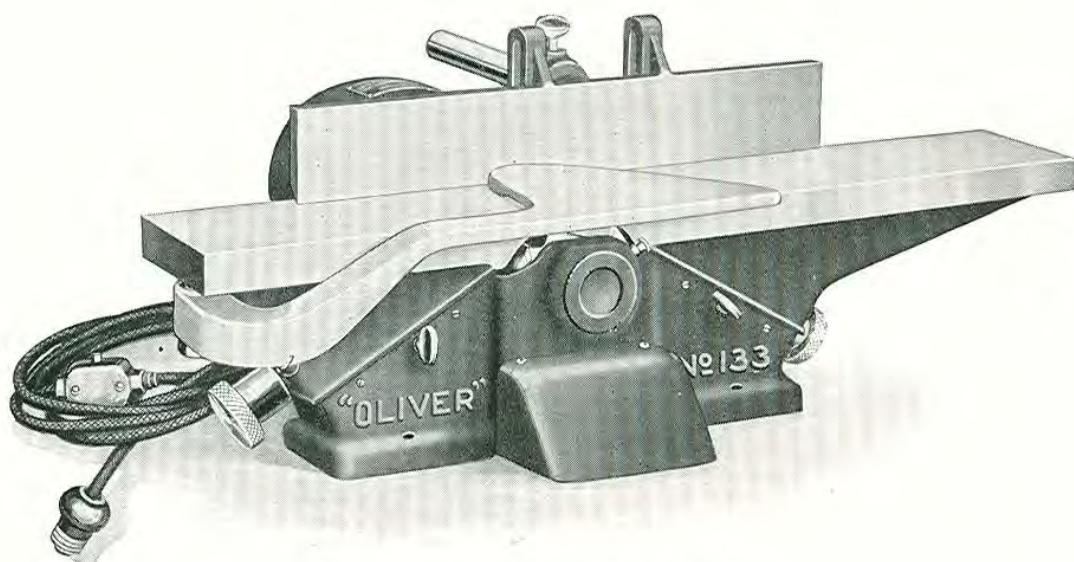
"Oliver" Full Automatic Aluminum Jointer Guard, regularly furnished with these machines, is the most practical jointer guard known; it keeps the unused portion of the knives covered at all times and never interferes with the efficient operation of the machines up to their full capacity.

Cutter Head

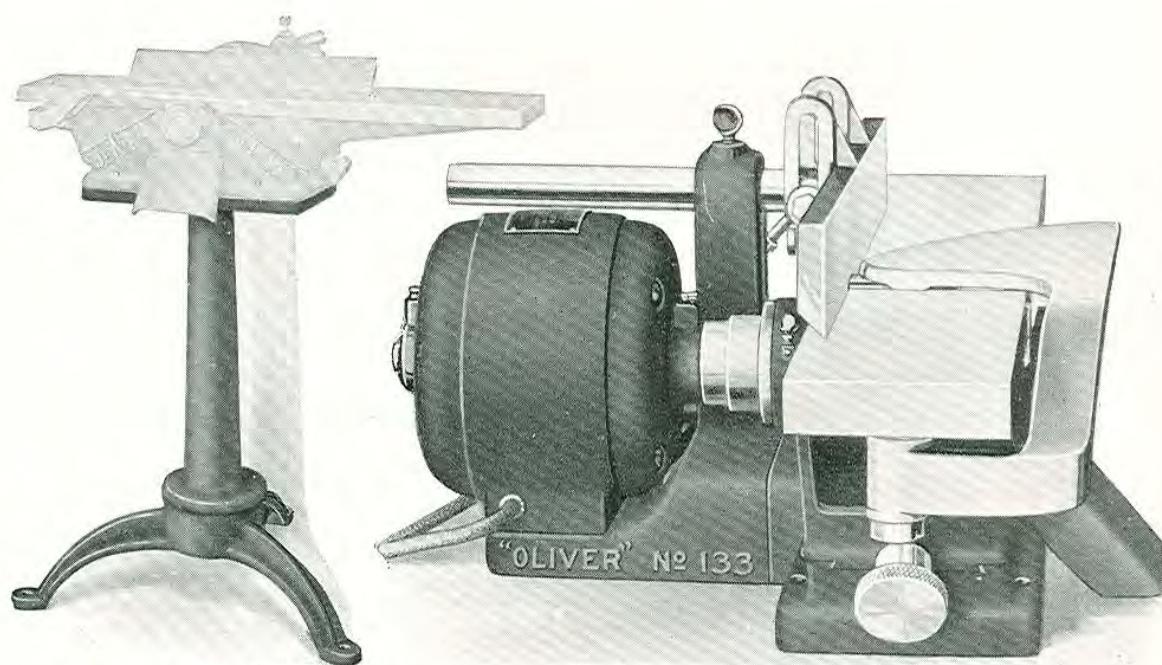
The Cutter Head is the three-knife circular safety type fitted with three "Tungsten-Chromium" thin steel knives which are full $\frac{1}{8}$ " thick and 1" wide. Cutting diameter $3\frac{1}{2}$ ". Direct connected to motor by means of a universal flexible coupling. This head provides maximum possible safety to the operator, makes less noise, eliminates vibration, takes less power and does smoother planing.

No. 133 "Oliver" Hand Planer and Jointer

Continued



Front View of Complete Regular Machine



Floor Stand with Tripod Base
Furnished When Desired

End View Away from the Operator

No. 133 "Oliver" Hand Planer and Jointer

Continued

Ball Bearings The cutter head runs in highest grade, self-aligning, frictionless, completely enclosed, dust-proof ball bearings which are carried in the main frame, operate in lubricating grease, are practically impervious to wear and insures a vibrationless machine.

Motive Power By coupling the motor direct to the cutting head, by eliminating belts and pulleys and by the use of high grade ball bearings throughout, power consumption is reduced to the minimum and full efficiency is obtained. The motor is fully enclosed, well ventilated, fitted with ball bearings, 3600 R. P. M., $\frac{1}{4}$ H. P. for 4" machine, $\frac{1}{3}$ H. P. for 6" machine, either alternating or direct current 110 or 220 volts; may be run from any electric light socket or may be connected to power circuits. Guaranteed to operate the machines up to their fullest capacity. When ordering state the volt, phase and cycle of your electric current.

Switch Cord and Plug A well insulated cord with a lamp socket screw plug and a start and stop push button switch, conveniently mounted, are furnished on all direct current and single phase alternating current machines; but with two and three phase A. C. machines which run on power circuits, cord and plug are omitted, and the switch furnished is a rotary snap switch.

Rabbeting Arm When so ordered these machines are furnished with a rabbeting arm easily attached or removed from the infeed table.

Knife Setting and Jointing Attachment This attachment is furnished when desired as an extra. It consists of a right angle way with a slide block, jointing stone and aluminum guard. It serves as a guide for setting the knives and by sliding the jointing stone forth and back while the cutter head revolves, it will sharpen and joint the knives so that all three knives cut equally.

Floor Column As a convenience when bench space is not available, a cast iron floor column with tripod legs as illustrated, may be furnished as an extra.

Bench Space For 6" size, extreme length 32", extreme width 18"; for 4" size extreme length 26", extreme width 16".

Equipment Regular equipment includes Circular Safety Cutter Head with three "Tungsten-Chromium" thin steel knives, Aluminum Automatic Jointer Guard, adjustable bevel fence, motor, switch, cord and plug for light socket attachment. (With 2 or 3 phase A. C. Motors, cord and plug are omitted as same cannot be used on any power circuit).

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Docu	133-A	4" Motor Driven.....	160	200	5
Docuc	133-A	4" Belt Driven.....	150	195	5
Docud	133-B	6" Motor Driven.....	175	210	6
Docuda	133-B	6" Belt Driven.....	165	200	6

EXTRAS

Rabbeting Arm, Knife Setting and Jointing Device, Set of Three Knives, Floor Stand with Tripod Base for any machine furnished on order.

“Oliver” Patented Circular Safety Cylinders and Cutter Heads

For any kind of wood planing or shaping machine

Introduction The “Oliver” Circular Safety Cylinder was the first “safety head” invented and patented in this country. Its introduction represented a drastic change from the old style and exceedingly dangerous “square head” and this “Oliver” device has probably done more for the working man in the betterment of working conditions, saving of human life, and prevention of mutilation of hands or fingers than any other device of similar character. It was a forerunner of present day labor laws, safety standards, and “safety-first” campaigns designed to safeguard operators of woodworking machinery.

Design Numerous exclusive patented features embodied in the design and construction of our heads make for smoother operation of machine, finer quality of work, less power consumed, etc.

Adaptation We can furnish Circular Safety Cylinders or shaftless Cutterheads with 2, 3, 4, 6 or more knives, of suitable cutting diameter, and in any desired length of knives, shafts, etc. Special departments employing experts in the design and manufacture of cylinders, cutterheads, etc., suitable for any make Hand Planer and Jointer, Surface Planer, Shaper, Woodworker, Molder, etc., enables us to offer efficient service and expert knowledge on special requirements.

Construction Made of high grade crucible steel, forged to shape, finished throughout and ground absolutely true on dead centers. Two-knife cylinders and some three-knife cylinders secure the knife in place by means of plate caps and apply pressure directly back of the cutting edge of knife. Certain three-knife and all four and six-knife cylinders are made with solid circular block and inserted knives secured by means of bolts pressing against the thick hardened steel chipbreakers. Bolts that hold the knives are special steel, heat treated.

Knives Are made of special Tungsten-Chromium thin steel of superior temper. They may be removed, ground, honed and replaced in fifteen minutes; then used continuously for two or more days without sharpening again. Special molding knives, etc., can be used by leaving off the outside caps of cylinders and simply bolting the knives in place on the body of head, taking care to see that head is properly balanced. Knife setting tool furnished for convenience in setting knives when necessary.

Chipbreakers These are underneath the knives, made of tool steel, adjustable and shaped to conform with knife throat for proper clearance of shavings. They take an important part in producing good work.

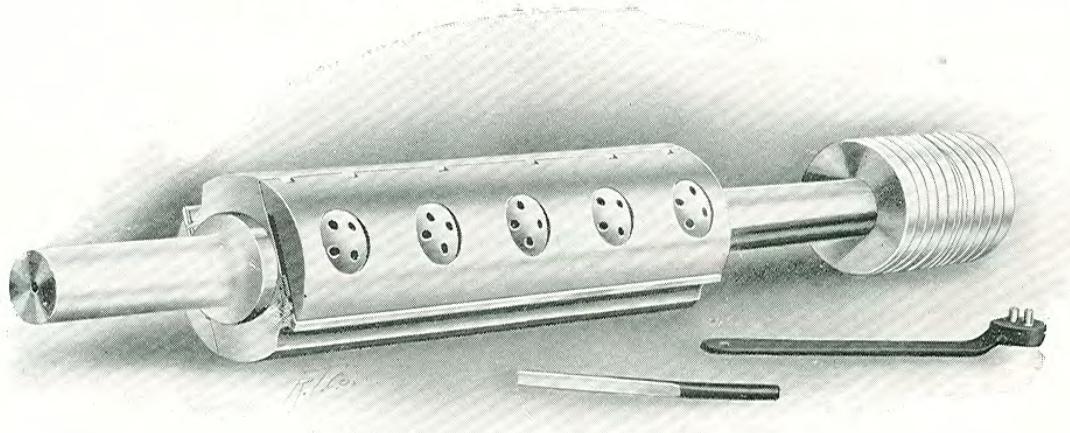
Safety Features The Circular Safety Cylinder presents a regular surface, fits the gap caused by the separation of tables and prevents the fingers getting below table top between cutters and the table causing serious injury.

Capabilities In the use of “Oliver” Cylinders the following are possible: Planing exceedingly short pieces; planing against end of stock; taking heavy cuts; corner, chamfer and any irregular work. This cylinder will do any cutting possible on other safety heads and a great deal more.

"Oliver" Circular Safety Cylinder

Continued

All "Oliver" Safety Cutter Heads are Fitted with "Oliver" Tungsten-Chromium Thin Knives which are by far the best Knives yet Produced for Wood Working Machines



(Patented January 21, 1908)

Halftone showing a complete Cylinder with Wrench and Knife Setting Tool

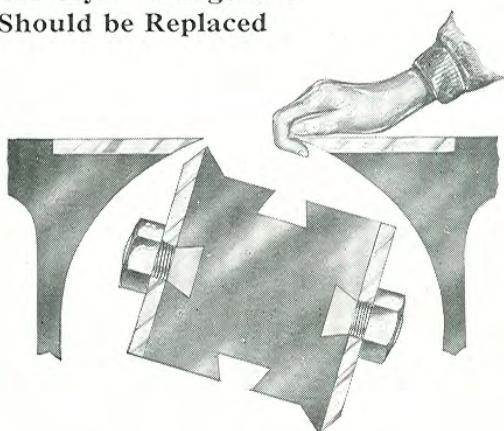
May be supplied with two or four knives

Can be furnished with divided caps for using moulding knives

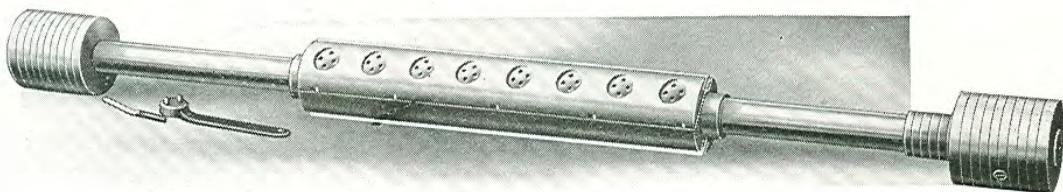
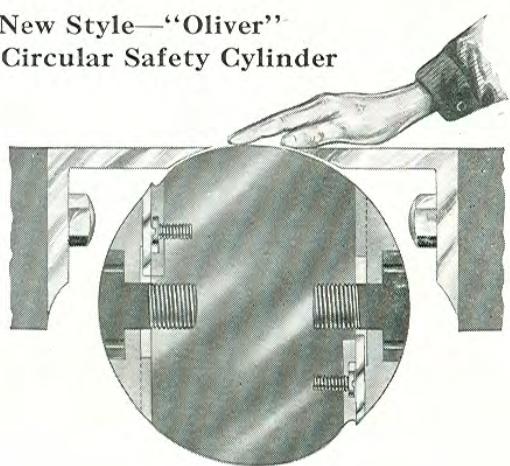
The "Oliver" is the Original Safety Cylinder. Don't Select Substitutes!

Complete description on request

Old Style—Dangerous
Should be Replaced



New Style—"Oliver"
Circular Safety Cylinder



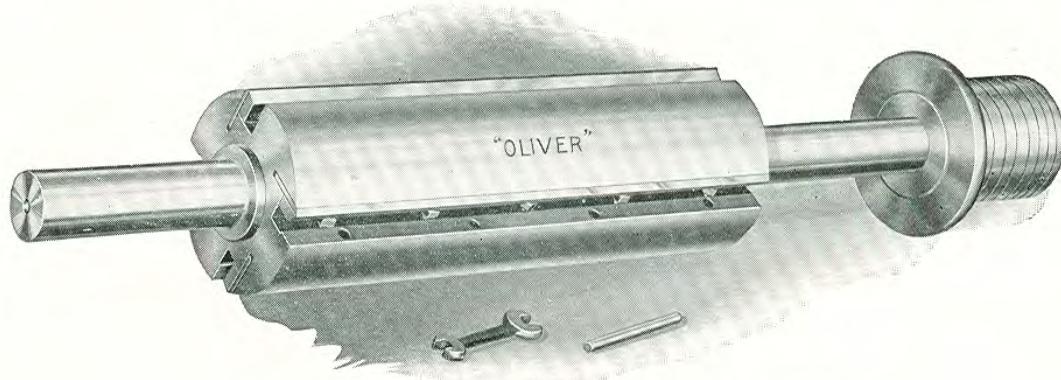
"Oliver" Double Belted Circular Safety Cylinder for Surface Planers

"Oliver" Circular Safety Cylinder

Continued

Approved

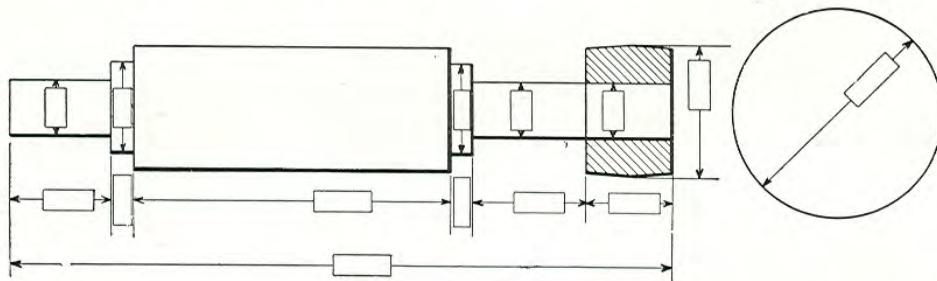
The laws of all states relative to safety appliances, and the requirements of liability insurance companies are so well observed when "Oliver" Safety Cylinders are used in Jointers, Scrapers, Moulders, etc., that factory inspectors and industrial boards heartily approve of the "Oliver" Safety Cylinders.



FOUR KNIFE "OLIVER" CIRCULAR SAFETY CYLINDER
We Make Safety Cylinders for All Kinds of Planers

How to Order Cylinder

When desirous of installing one of these cylinders for a hand planer and jointer or a surface planer in use, it is necessary for us to have a drawing showing the actual dimensions of the old style cylinder, and the name of the maker of the machine.



Extra Knives

We suggest it as good policy to always have an extra set of knives on hand. One set may be made sharp while the other is in use.

Our Guarantee

Every Cylinder is guaranteed to be free from flaws, made correctly and perfectly satisfactory when properly operated. We have 6,500 of these cylinders in daily use.

CYLINDERS FOR CARRYING MOULDING CUTTERS

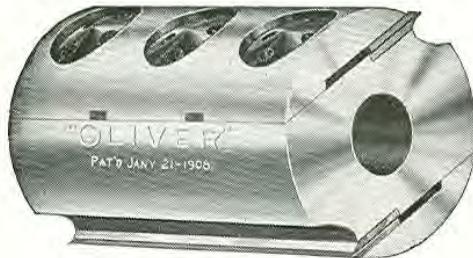
When it is desired to do moulding on the Jounter where the Circular Head is used, remove the caps and use the ordinary moulding cutters in the usual manner.

Cylinders for Universal Wood Workers and Surface Planers of OTHER MAKES a Specialty. It will pay you to get more detailed information.

"Oliver" Safety Cutter Heads



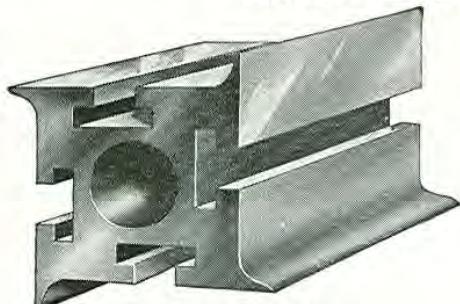
One Kind of "Oliver" Four Knife Safety Cutter Head.



Very Popular "Oliver" Two Knife Safety Cutter Head.

Along with Circular Safety Cylinders for Jointers and Planers, we have for years specialized in the manufacture of Safety Cutter Heads for matchers, molders, wood workers, shapers, etc. Their great value lies not only in the Safety feature but also in the fact that the "Oliver" thin Tungsten-Chromium knives used in them stay sharp longer, require less care, and being gripped firmly just back of the cutting edge, actually do superior work. These Cutter Heads are made either two and four knife type, any diameter, any length, and any size hole; give them a trial.

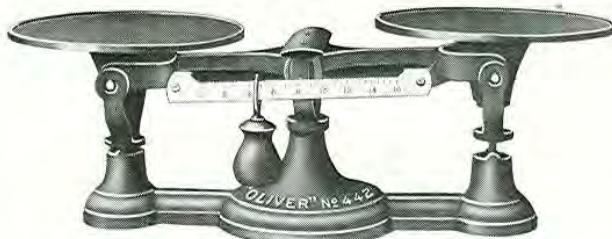
"Oliver" Four Sided Slotted Head



Four Side Slotted Head

We build on order any kind of special heads for moulders, woodworkers, shapers and extra heavy planers. Send us a sketch and description of your needs in this line. We will gladly submit our recommendations and estimate.

"Oliver" No. 442 Knife Balance



steel, and the other parts are made of steel, malleable or cast iron, as the case demands.

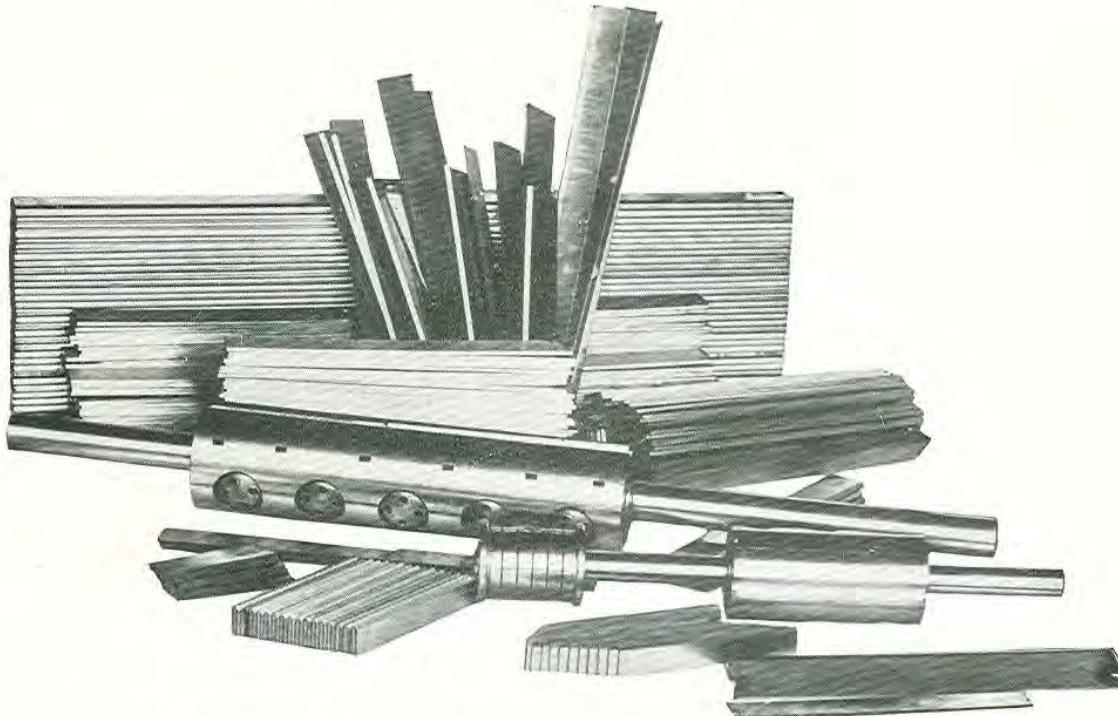
Code Dotam	No. 442	Description Knife Balance for Thin Knives	Weight, Lbs. 30
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CYLINDER BOLTS

These are carried in stock in $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{11}{16}$ ", and $\frac{3}{4}$ " sizes and suited for either Circular or Square Cylinders, and may be had with or without nuts and washers In ordering, send a drawing with all dimensions, or a sample bolt.

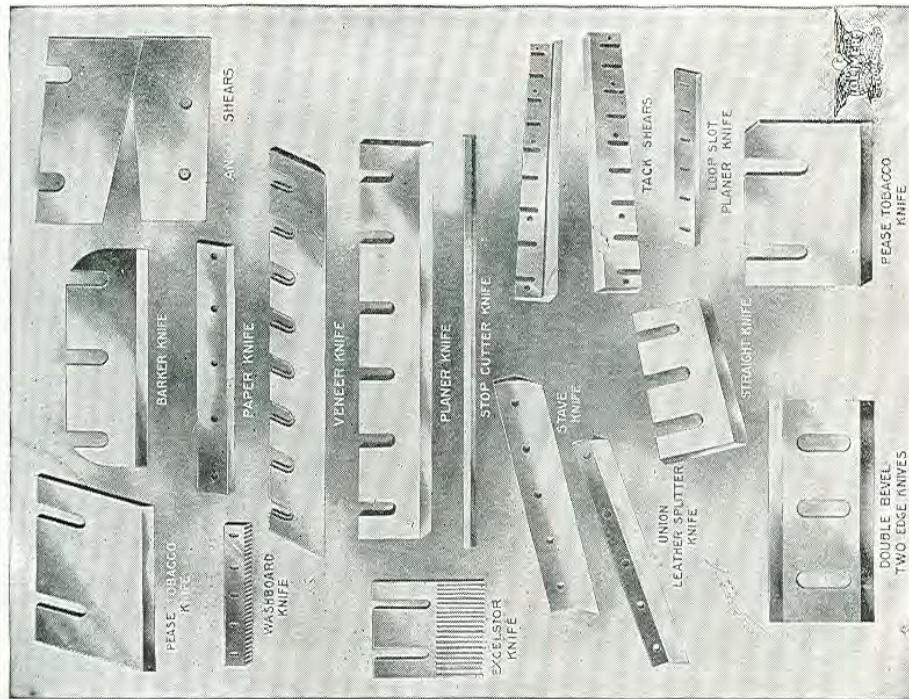
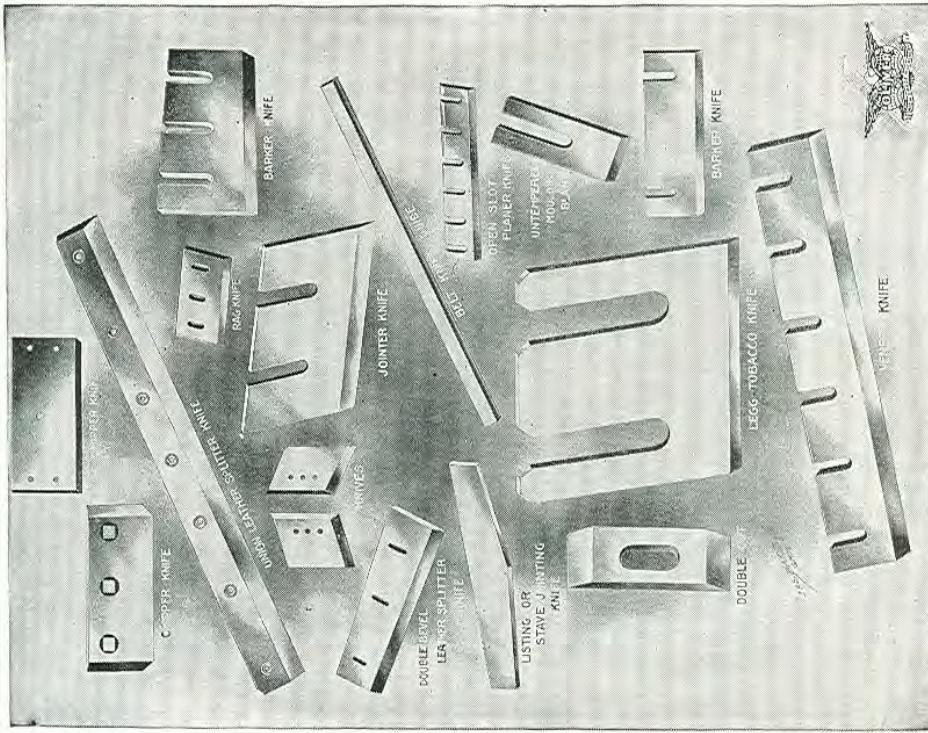
"Oliver" Tungsten-Chromium Thin Knives THIN HIGH SPEED PLANER KNIVES

GROUND ALL OVER, BALANCED, PERFECTLY FINISHED
FOR WOODWORKING MACHINERY HAVING
CIRCULAR SAFETY CYLINDERS



Thin high speed steel machine knives range in thickness from $\frac{1}{8}$ " to $\frac{1}{4}$ " and in width from $1\frac{1}{8}$ " to 2" as commonly employed

- Invention** Twelve years ago, Oliver Machinery Co. originated the use of Circular Safety Cylinders in Woodworking Machinery, and thus really introduced the use of thin knives.
- Specialty** Since then, recognizing the great responsibilities and high ideals of leadership, Oliver Machinery Co. has maintained a separate knife department in charge of specialists whose life work is the study and manufacture of knives.
- Perfection** Constant scientific research and modern positive methods of manufacture, have produced "Oliver" Tungsten-Chromium Knives that possess inherent uniform temper and exceptional toughness.
- Size** These knives are ground all over, balanced, rigidly inspected and perfectly finished; usually $\frac{1}{8}$ " thick, $1\frac{3}{8}$ " wide; but any size up to $\frac{1}{4}$ " thick and 2" wide may be furnished.
- Trial Order** Order one or more sets of these wonderful Tingsten-Chromium Knives; they deserve your confidence. Don't wait, give us length, width, and thickness of knives you use and we will do the rest.



We manufacture and supply not only thin high speed knives for circular cylinders, but all types of Machine Knives employed in all industries. All knives are guaranteed. We should have a paper pattern of such knives as are wanted—giving length, thickness, shape of bevel and positions, number and dimensions of slots, if there are any at all. Also state the make and kind of machine for which knives are desired.

No. 22

"Oliver" Extra Heavy Universal Lathe

96" Swing on Bed Plate, 104" Swing over Floor.
Larger Swings at Rear end in a Pit. Any Length of Bed.

Introduction

The demand for a heavy universal pattern turning lathe has been responsible for the introduction of this lathe. Its great range, correct construction, strength and unqualified utility make it of particular value to those whose patterns are of a widely diversified character or are unusually large and heavy. The makers of wheel patterns for generators, engine wheels, large pulleys, etc., have in this lathe a tool that has heretofore been represented only by the "home-made" lathe that is generally too light and always restricted.

Advantages

The machine has all the advantages of the face lathe, with added facilities through the Back Gear Drive, and the enlarged scope of the tool column and carriage. It has a wide range on heavy turning, and effects a great saving in time on turning in general. In the general construction of the machine we are careful to observe our policy of following the methods of the builders of high class metal working tools, and incorporating in it such material and workmanship and such devices that stand for maximum economy and minimum cost of maintenance.

Sole Plate

This is made from heavy castings and supports the various columns. In its surface "T" slots are planed lengthwise and cross-wise for the proper alignment of the tail stock and movable carriage column. The section that receives the carriage column is extended across the front of the head column to permit the use of tool carriage on face work that overhangs the column. With this sole plate embedded in the floor, the space occupied by the lathe column is no greater, and most of the time not so great as it is with the larger types of ordinary lathes. When turning short work, the amount of space is limited to that necessary for the actual work to be performed.

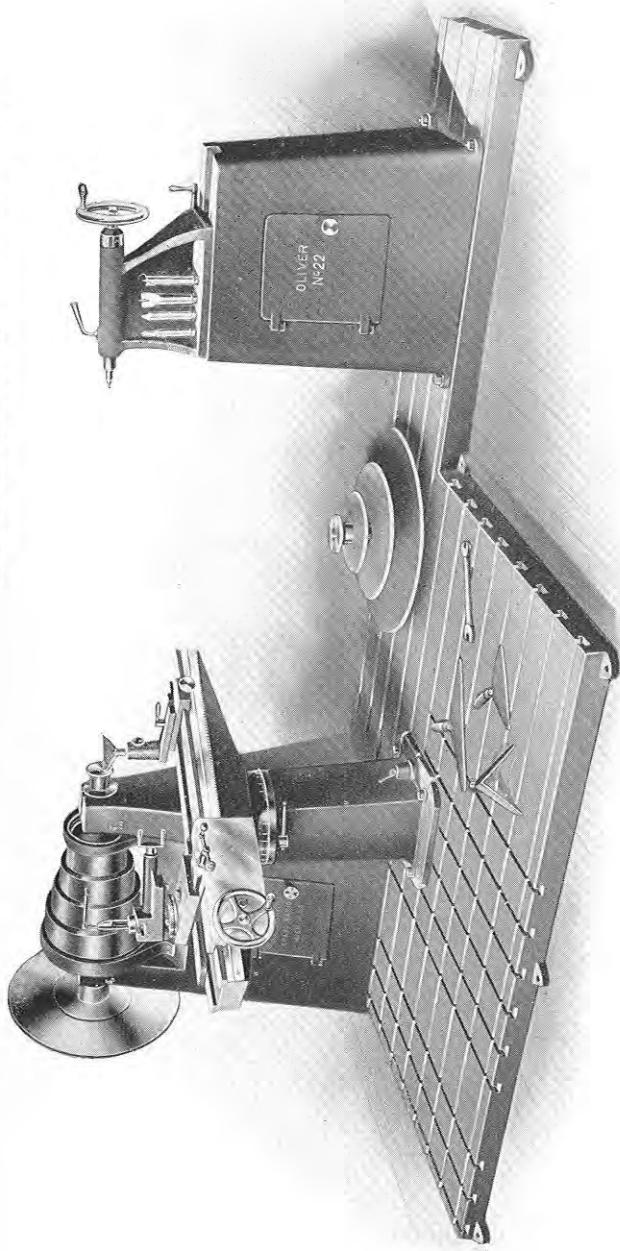
Head Stock

It is mounted on a heavy column bolted to the sole plate. A crucible steel hollow spindle, machine ground, is supported in large, self-oiling bearings lined with guaranteed babbitt and adjustable to wear. The cone is machined all over. End thrust in spindle is adjusted by means of thrust collars threaded to the spindle. A loose bronze thrust collar bears against each end of the rear journal boxes and plays between the solid collar and spindle on one end and the thrust collars upon the other.

Back Gear Drive

This augments the driving power and reduces the speed of the head stock spindle to a minimum, facilitating the turning of patterns of very large diameter, using a pit at the left hand of the head stock. It is constructed similar to back gearing on the regular Engine Lathe for turning iron, the ratio being four to one.

SOLE PLATE
Length, 12 $\frac{1}{2}$ '. Height, 4". Width, 38" at head stock,
24" at opposite end. T-slots, 6 $\frac{1}{2}$ " between centers. Extension
for carrying carriage and tool post, 7' 11".



"OLIVER" No. 22 EXTRA HEAVY 104-INCH UNIVERSAL WOOD TURNING LATHE
View from Operating Side

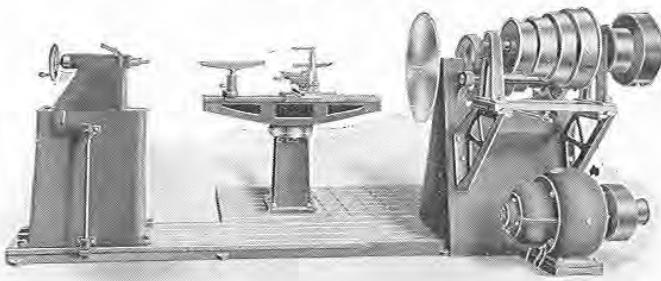
No. 22 "Oliver" Extra Heavy Universal Lathe

Continued

Head Stock Cone	This cone has four steps, mounted on bronze sleeves, that are self-oiling and revolve on the spindle. At each end of the cone are located the driving gears, the one at the rear end keyed to the spindle. When the lathe is driven at the high speeds, this gear is connected to the cone by means of a substantial spring plunger, and the back or connecting gears are displaced. The gear at the opposite end is keyed permanently to the cone and through it the power is applied to the back gear driving mechanism.
Gear Support	The back gears are supported on a large hollow shaft, through which the eccentric shaft extends, and to which is attached the lever device for throwing the mechanism in or out of gear.
Movable Carriage and Tool Post	This is a device that is a very important factor in the performance of an infinite variety of work. It may be located quickly and correctly in any desired position on the sole plate. The alignment of the pillar is accomplished by loose keys which fit the various slots in the sole plate, and may be adjusted to operate upon the largest diameters; or set directly underneath the center of the spindles to act as a bed for hand turning on small work; or set close to both head and tail stock, parallel with them, in such a position as to admit of the centers coming together and still have a bed for convenient use upon extremely short work that requires two centers.
Hand Feeding Carriage	This is actuated by means of cut gear and rack. Cross slide has an exceptionally long traverse, as also has the compound rest which is mounted upon it. This rest is accurately graduated and swivels to any angle. This swivel, in connection with the one shown between the carriage slide and the top of column, makes it possible to secure all of the angles necessary in various bevel work. In the turning of large drums the end of the carriage slide may be inserted within the work being turned.
Tail Stock	This is mounted on a heavy column which may be adjusted to and from the head stock by means of a rack and pinion at its base. The top of this column, however, admits of a certain lateral motion of the tail stock. Sometimes it is necessary, in centering work, to move the tail stock instead of the center, and this adjustment is equal to a longer traverse of the tail spindle. Tail stock is of open side design.
Counter-shaft	This consists of a heavy steel shaft of suitable length, supported in ceiling hangers having self-oiling and babbitted bearings. We supply two pairs of tight and loose pulleys to give eight speeds to the head stock cone. The loose pulleys are bushed with bronze and self-oiling. The cone pulley has four steps, is machined inside and outside, and adjusted to a running balance.

No. 22 "Oliver" Extra Heavy Universal Lathe

Continued



Rear View Showing Motor Drive and Back Gear

A FEW CONCERN'S THAT USE THIS LATHE

Marion Steam Shovel Co.
Otis Elevator Co.
American Locomotive Co.

Penna. Steel Casting Co.
American Brake Shoe Co.
Canadian Locomotive Co.

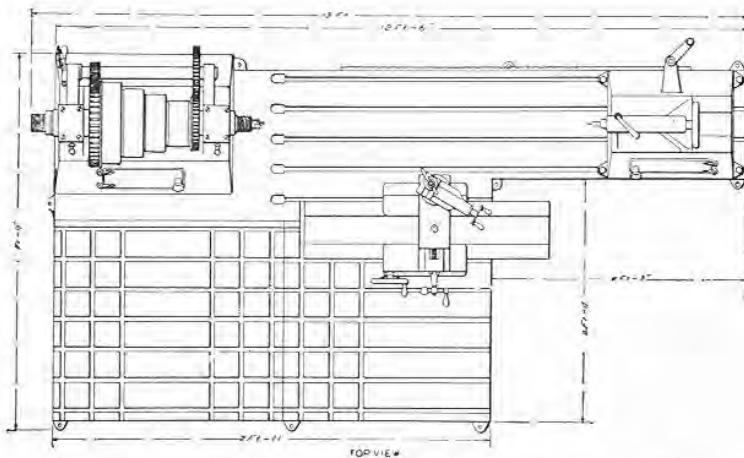
American Steel and Wire Co.
Emerson Steam Pump Co.
Morgan & Wright Rubber Co.

GENERAL DIMENSIONS

Head Stock	Length, 38½"; width, 15½". Height of spindle center from sole plate, 48". Spindle bearings, 8" long; front, 3¾" diameter; rear, 3½" diam. Spindle 47½" long; 3½" diameter; 1" hole through it. Spindle bored to receive No. 4 Morse Taper. Cone on spindle, four steps, width of belt, 4½".
Tail Stock	Length, 17½"; width, 12½". Spindle, 16" long; 3" diameter. Traverse of spindle, 8".
Carriage	Length of bed, 54"; height from base, 35". Traverse of cross feed, 12". Traverse of cross feed on compound rest, 9". Travel of carriage on bed, 44".
Sole Plate	Length, 12½'. Height, 4". Width, 38" at head stock, 24" at opposite end. T slots, 6½" between centers. Extension for carrying carriage and tool post, 7' 11".
Counter-shaft	Length, 63½"; diameter, 1¾". Speeds, 185 and 750 R. P. M. Tight and loose pulleys, 10" x 6" and 18" x 6". Cone pulley, four steps, width of belt 4½". Small T & L pulleys give 560 to 1480 R. P. M. Large T & L pulleys give spindle 130 to 365 R. P. M. Back gearing gives spindle 30 to 90 R. P. M.
Horse Power	Maximum 5.
Capacity	Will swing 96" over the base and 104" at the rear of the head stock. Will turn 6' 6" between centers on a standard length of machine. Can furnish it any desired length.

No. 22 "Oliver" Extra Heavy Universal Lathe

Continued



No. 22 "OLIVER" EXTRA HEAVY UNIVERSAL LATHE
Etching showing Sole Plate, Back Gearing, Tool Carriage, Etc.

Motor Drives Motor Drives are furnished when called for and to suit the requirements of the purchaser. The most popular method of driving by motor we have endeavored to properly indicate by a half-tone on preceding page. This method has the effect of having the lathe self-contained and dispenses with the overhead belts that sometimes prove obnoxious.

Equipment Two spur centers, one each $1\frac{1}{4}$ " and 2" diameter.
One cup center, $\frac{3}{4}$ ".
Two conical centers.
Four face plates for spindle 12", 24", 30" and 38" diameter.
One rest holder made to fit the tool carriage.
Three rests, 6", 12" and 18" long.
One right angle rest, 6" long.
One floor stand with off-set rest.
One countershaft, hangers and pulleys.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Dough	22-A	Machine with extension sole plate and tail stock.....	9800	10600	210
Douma	22-B	Machine without extension sole plate and tail stock.....	8000	8800	160

EXTRAS

Douse Special motor drive mechanism consisting of a special counter-shaft mounted on a bracket attached to the head stock column, and a motor bracket at the base of the column.

Dove Extra lengths of sole plates in two feet sections.

No. 21

"Oliver" Combination Pattern Lathe

92" Swing Over Bed Plate

100" Swing Over Floor

Any Length of Bed

Introduction This lathe is one that is unique, not only in design, but in construction, since in its manufacture we have adopted the lines pursued by the makers of modern metal working tools, thus insuring a greater degree of satisfaction to the operators in its manipulation and a higher quality of product. Heretofore pattern-makers have been at a loss to find a machine that combined the functions of ordinary turning with those of turning large diameter, long cylindrical patterns, gearing, etc. Realizing these necessities we have developed and perfected a machine, subject to various modifications, which has proven to be admirably adapted to meet these exacting demands.

Sole Plate We build this any length. Upon it are mounted the various columns supporting the head and tail stock and the movable carriage. The casting is very heavy and in its surface "T" slots are planed, both lengthwise and crosswise, for the proper alignment of the tail stock and movable carriage column.

Floor Space The objection to most large Lathes, particularly in the ordinary pattern shop, is that they take up a great deal of valuable space. The "Oliver," with its movable parts bunched close to the headstock, and its sole plate embedded in the floor, is a point well worth considering.

Head Stock This is mounted on a very heavy column. Carries a stiff, strong, hollow spindle, machine ground and supported in self-oiling bearings.

Bearings are of guaranteed babbitt metal and are adjustable to wear.

Cast iron cone is machined both inside and out and adjusted to a running balance.

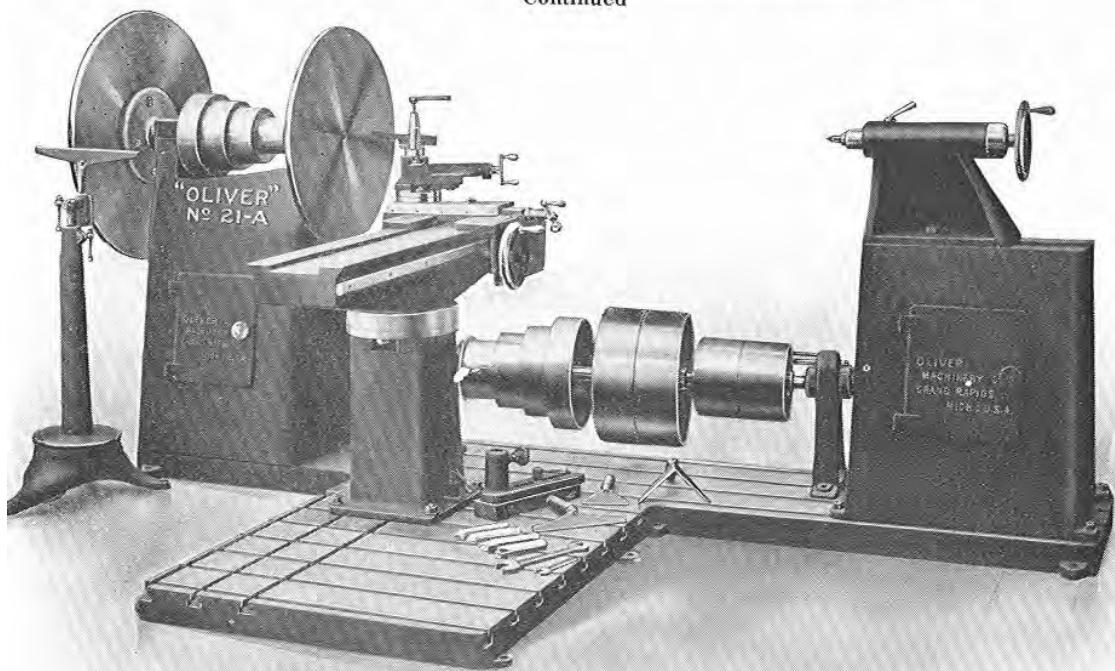
End Thrust This is adjusted at the rear by means of thrust collars threaded to the spindle. A loose bronze thrust collar bears against each end of the rear journal boxes and plays between the solid collar and the spindle on one end, and thrust collars upon the other.

Tail Stock This is mounted on a column which may be adjusted to and from the head stock by means of a rack and pinion at its base, controlled by hand wheel. The top of this column, however, admits of a certain lateral motion of the tail stock. Sometimes it is necessary, in centering work, to move the tail stock instead of the center, and this adjustment is equal to a longer traverse of the tail spindle.

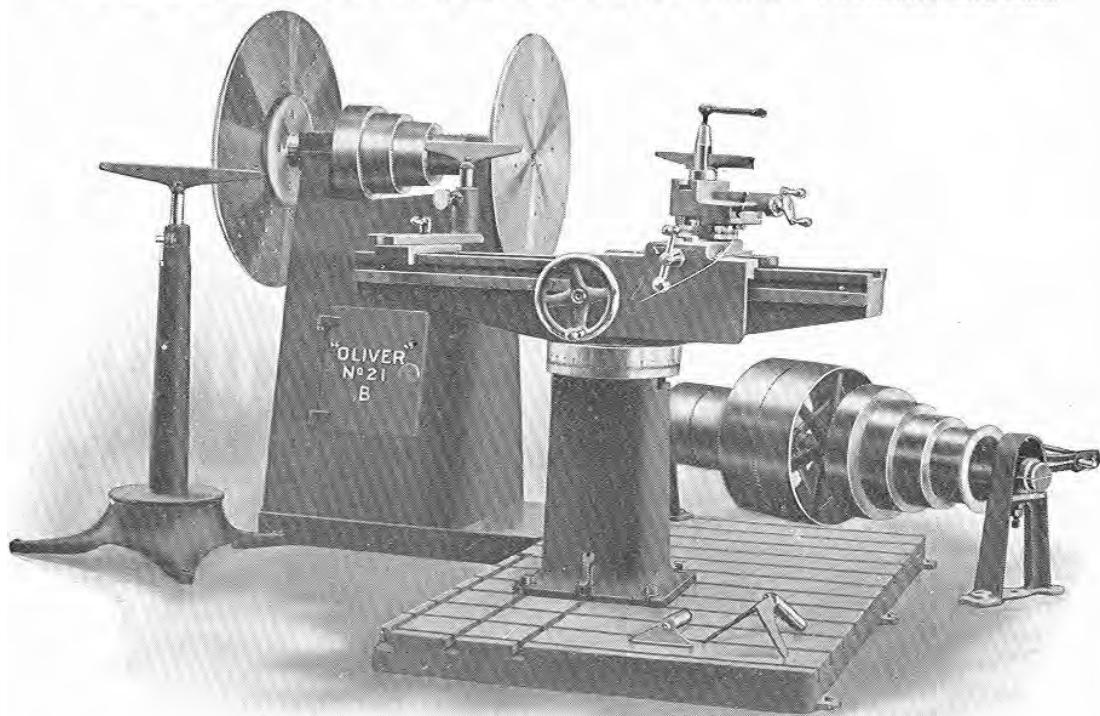


No. 21 "Oliver" Combination Pattern Lathe

Continued



View of the Operating Side of the Complete Lathe with Tail Stock and Extension Sole Plate

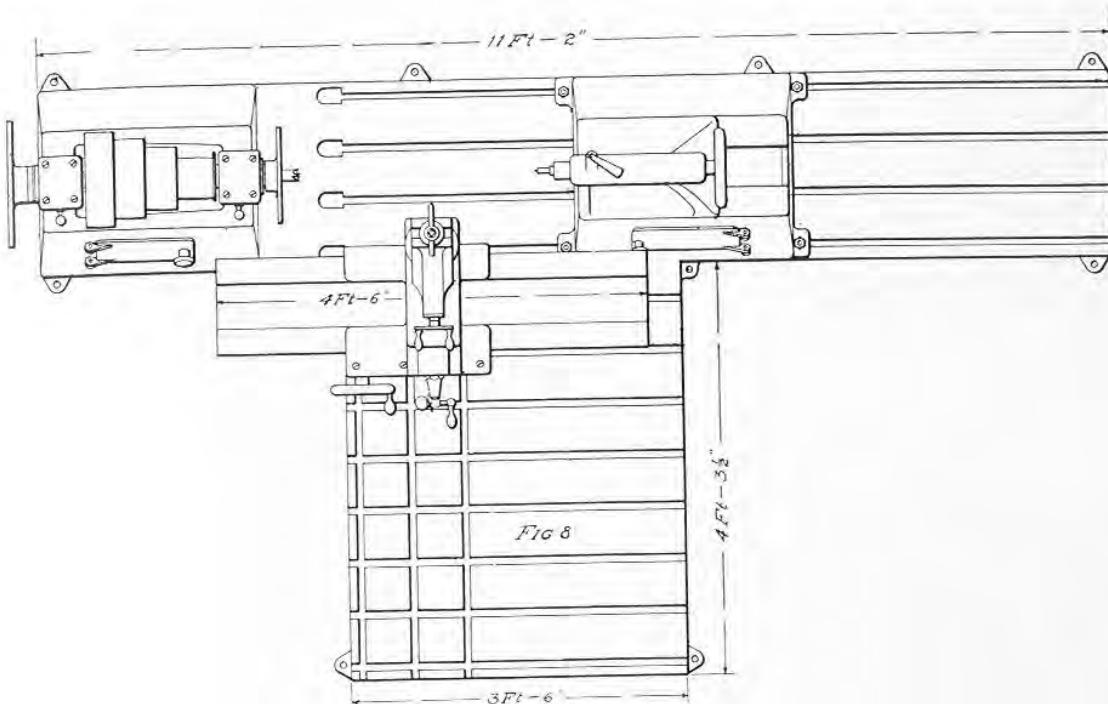


View eliminating Tail Stock and Extension Sole Plate

Extended Sole Plate for increased capacity either for lengths or to facilitate the use of tool post around pit on outside face plate at additional cost.

No. 21 "Oliver" Combination Pattern Lathe

Continued



Etching showing Floor Plan of Machine with Tail Stock and Extension Sole Plate

Movable Carriage and Tool Post

This idea is certainly new and admits performing an infinite variety of work. The alignment of the pillar is accomplished by loose keys which fit the various slots in the plate, and it may be adjusted to operate upon the largest diameters or set directly underneath the center of the spindles to act as a bed for hand turning on small work; or set close to head and tail stock, parallel with them, in such a position as to admit of the centers coming together and still have a bed for convenient use upon extremely short work that requires two centers.

Carriage

This has hand feed by means of steel cut gear and rack. Cross slide has an exceptionally long traverse, as also has the swivel rest. Compound rest is accurately graduated and swivels to any angle. This swivel, in connection with the one shown between the carriage slide and the top of column, makes it possible to secure all of the angles necessary in various bevel work. In the turning of large drums the end of the carriage slide may be inserted within the work being turned.

Equipment

Two spur center, one each $1\frac{1}{4}$ " and 2" diameter. One cup center $1\frac{1}{8}$ ". Two conical centers. Four face plates for spindle, 12", 24", 30", and 38" diameter. One rest holder arranged to attach to tool carriage. Three rests, 6", 12", and 18" long. One right angle rest, 6" long. One portable floor stand with off-set rest. One 2-speed countershaft, hangers and pulleys.

No. 21 "Oliver" Combination Pattern Lathe

Continued

GENERAL DIMENSIONS

Head Stock	Length, 28½"; width 12½". Height from sole plate to spindle center, 46". Spindle bearings—front, 6" x 2¾"; rear, 6" x 2⅞". Spindle, 34" long; 2¾" diameter. Hole through spindle, ⅛". Receives No. 4 Morse Taper. Cone, four steps, width of belt 3½".
Tail Stock	Length, 17½"; width, 12½". Spindle, 16" long, 3" diameter. Traverse of spindle, 8".
Carriage	Length of bed, 54"; height from base, 35". Traverse of cross feed, 12". Traverse of cross feed on compound rest, 9". Travel of carriage bed, 44".
Sole Plate	Length for No. 21-A, 11' 7"; for No. 21-B, 7' 10". Height, 4"; width under head stock, 33"; under tail stock, 23". Portion under carriage, 47" x 42¾". T slots, 6½" between centers.
Counter-shaft	Length, 5'; diameter, 1¾". Speeds, 100 and 500 R. P. M. Bearings, 6" long, 1½" diameter. Hangers, 14" drop. Tight and Loose Pulleys, 10" x 6" and 18" x 6". Cone Pulley, four steps, width of belt, 3½". Small T & L pulleys give spindle 430, 625, 925, 1440 R. P. M. Large T & L pulleys give spindle 100, 125, 185, 288 R. P. M.
Horse Power	Maximum, 5.
Capacity	Will swing 92" over the base and 100" at the rear of the head stock. It will turn in length on a standard machine 6' 6". It is made to order any length advancing by sections of two feet.

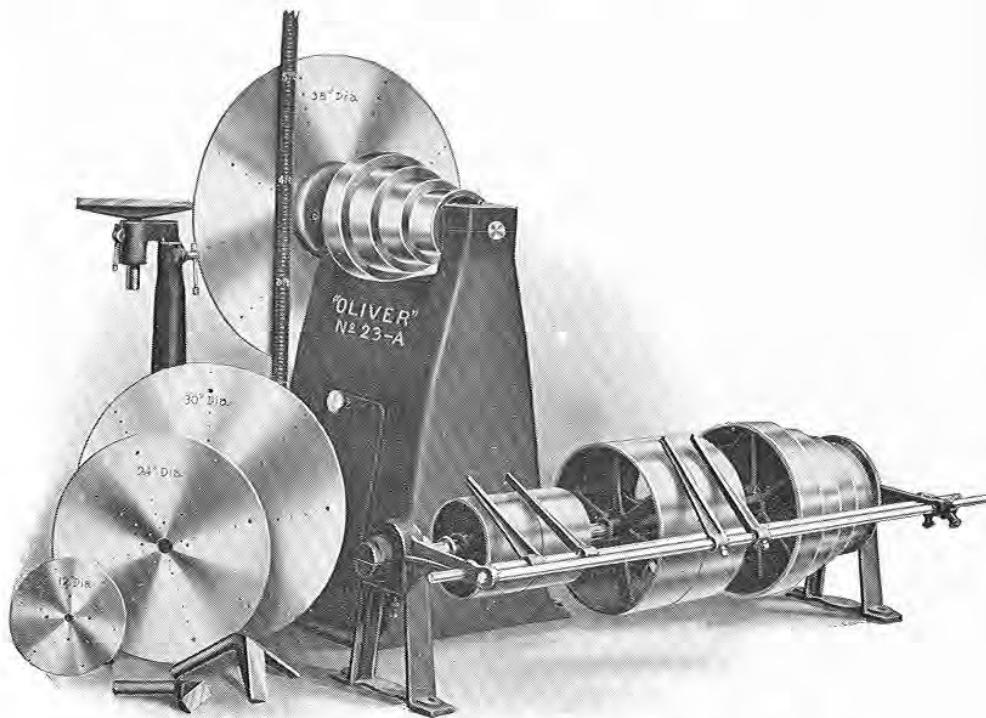
CODE, WEIGHT, ETC.

Code	No.	Machine	Weight Crated	Pounds Boxed	Cubic Feet
Dowdy	21-A	92" machine with tail stock and extension sole plate.....	6000	6600	175
Dower	21-B	92" machine without tail stock and extension sole plate.....	4400	4900	125

EXTRAS

Dowlal	Motor Bracket and Countershaft Mechanism attached to rear of head stock column for self-contained motor drive, but not including motor.
Downy	Extra Lengths of Sole Plate furnished in two-foot sections only, price for each two feet extra lengths desired.

No. 23
“Oliver” Pattern Maker’s Face Lathe
88-INCH



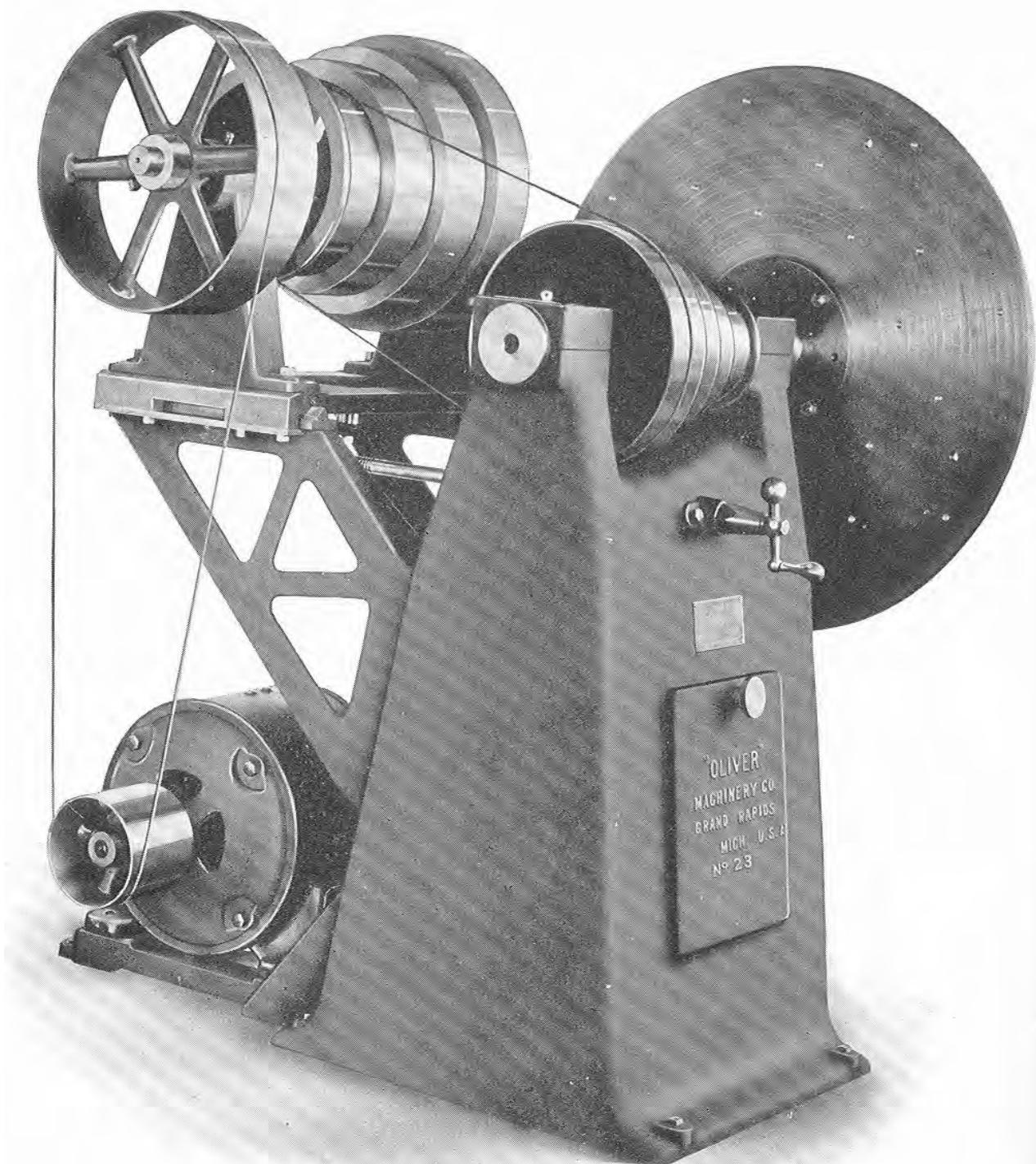
Capacity may be increased by placing machine on edge of pit in floor

Introduction In some pattern shops the need for a plain yet substantial Face Lathe is apparent to the pattern maker, and a machine constructed for that work only is preferred to one having a sole plate, movable carriage and tool post. The machine shown fills the need satisfactorily.

Head Stock This is supported on a column having a broad base and it will swing material up to 88" in diameter. The spindle is large in diameter, machine ground, and is hollow. Bearings are long and self-oiling. They are adjustable to wear.

Cone Pulley This has four steps, and the range of speeds to the spindle covers from 86 to 1440 R. P. M. It is carefully machined all over and adjusted to a running balance. The end thrust in the spindle is adjusted at the rear by thrust collars threaded to spindle and bearing against each end of the journal boxes.

Countershaft This consists of a steel ground shaft, a pair of strong ceiling hangers carrying babbitted self-oiling bearings. It carries two pairs of tight and loose pulleys to give eight speeds to the head stock cone. The loose pulleys are bushed with bronze and self-oiling. The cone pulley is of metal, machined all over, and adjusted to a running balance.



No. 23 "OLIVER" PATTERN MAKER'S FACE LATHE
Motor Driven

No. 23 "Oliver" Pattern Maker's Face Lathe

Continued

Motor Drives There are a variety of motor drives that are applicable to this machine and are shown on previous pages. We recommend the method on preceding page as the most desirable.

Equipment We furnish one face plate each 12", 24", 30" and 38" diameter; one floor stand fitted with off-set rest holder, one right angle rest 6", one each straight rest 6" and 12" long and one countershaft with two sets of tight and loose pulleys and hangers.

GENERAL DIMENSIONS

Head Stock Length, 28½"; width, 12½".
 Height to center of spindle, 46".
 Spindle Bearings—front, 6" x 2¾"—rear, 6" x 2⅜".
 Spindle, 34" long; 2¾" diameter.
 Hole through spindle, ⅝" diameter and receives No. 4 Morse Taper.
 Cone on spindle has four steps, width of belt, 3¼".
 Spindle speeds are 86, 125, 185, 288, 430, 625, 925 and 1440 R. P. M., subject to changes for motor drive.

Countershaft Length, 5'; diameter, 1¾".
 Bearings, 6" long, 1½" diameter.
 Hangers, 14" drop.
 Cone pulley, four steps, width of belt, 3½".
 Two pairs T & L pulleys, 10" x 4½" and 16" x 4½".
 Speeds, 112 and 500 R. P. M.

Floor Space 28" x 33".

Horse Power 3 to 5.

CODE, WEIGHT, ETC.

Code	No.	Drive	Swing	Weight in Crated	Pounds Boxed	Cubic Feet
Dozy	23-A	Belt	88"	2155	2300	70
Dozyb	23-C	Motor	88"	2500	2680	75

No. 26

"Oliver" Large Pattern Maker's Gap Lathe

Turns 60-inch in the Gap

Introduction The introduction of the "Oliver" Gap Lathe to the users in general of heavy lathes, is the result of a demand for a machine of great capacity, that will occupy a minimum amount of floor room when engaging it on work of medium dimensions.

Bed This is constructed in two sections: The upper section is fitted to the lower in a slide and is moved, as ordered, either by hand wheel rack and pinion or by power to and from the head stock to close and open the gap by means of gearing that engages rack on its lower side. The gearing and rack have cut teeth and are made of steel. This upper section carries the tail stock, the power feeding carriage for use in long cylindrical work and a special hand-feeding carriage, located at the inside end of the bed, for use in facing patterns and other work, either outside or inside as desired. The base section of the bed supports the head stock and its column. The bed is wide and flat, the carriage ways being located on the side. This renders it easily cleaned, and tools may be laid on it without the danger of sliding off. The casting is heavy and properly ribbed for strength. The end of the movable bed is fitted with an adjustable leg for support when the bed is set out to full capacity.

Head Stock It is mounted on a rigid column secured to the lower section of the bed. It is fitted with a large crucible steel spindle made hollow to facilitate securing large face plate work, is accurately machine ground and true in its journals. The bearings are lined with genuine babbitt metal, are self-oiling and adjustable to wear. The head stock may be swiveled 5 degrees to the right or left on its column.

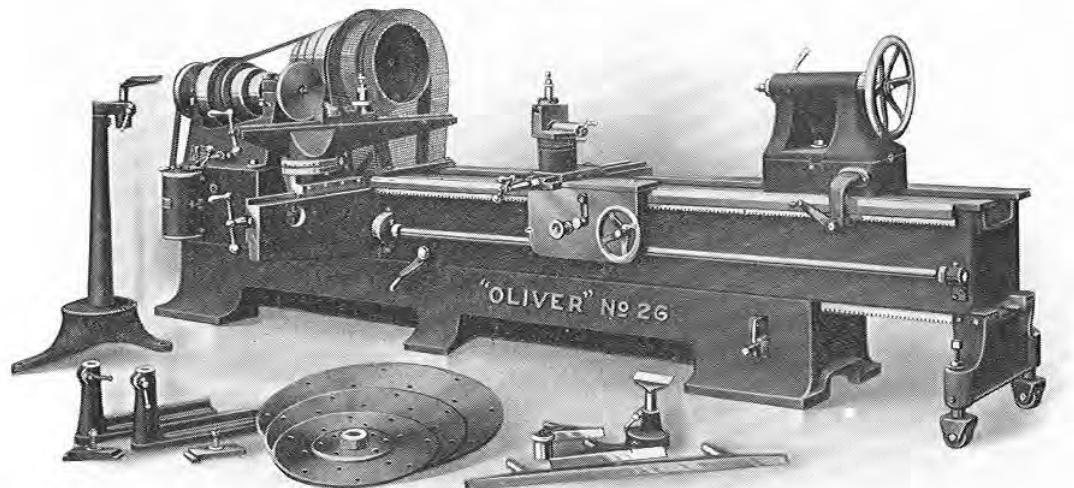
The end thrust is adjusted for wear at the rear by means of thrust collars threaded to the spindle. A loose bronze collar bears against each end of the rear journal box and plays between the solid collar on the spindle on one end and the thrust collars on the other.

Cone Pulley This is of metal, is composed of four steps, is machined inside and outside, and accurately balanced.

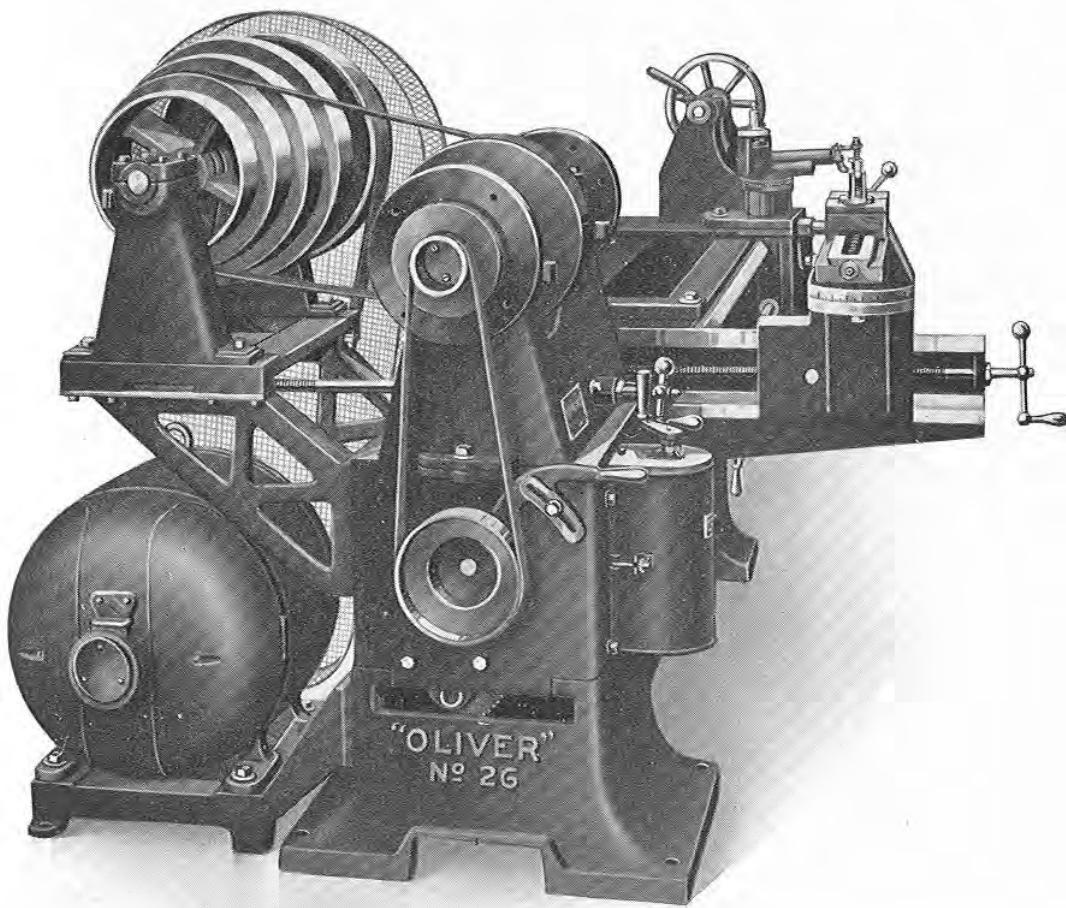
Tail Stock This is of open side design, permitting the cutting tools and tool post to be brought close to the center without interference. The spindle is large and carries Morse Taper, which admits of using standard sockets, drills and reamers. A steel locking lever securely holds the spindle in any desired position. The usual raising block and set-over device is furnished for service in taper work.

No. 26 "Oliver" Large Pattern Maker's Gap Lathe

Continued



Turns 30-inch diameter over the bed and 60-inch in the gap, any length desired



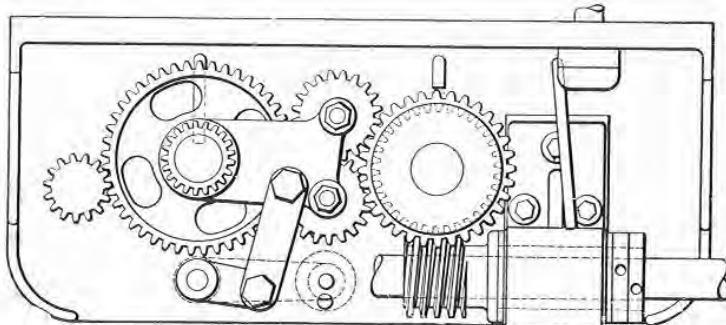
Head end view of motor driven lathe arranged to give lowest possible speeds

No. 26 "Oliver" Large Pattern Maker's Gap Lathe

Continued

**Main
Carriage**

This is supported on the adjustable section of the bed. It is furnished either hand feeding or power feeding type as may be ordered. The power feeding carriage is actuated by means of a cut gear and rack and may also be moved by hand when desired. The cross slide has a very long traverse and supports the compound swivel rest that possesses its individual traverse of the required length. This rest is accurately graduated, and swivels to any angle.



Etching Showing Power Feed Carriage Gearing

**Supplemental
Carriage**

This is located on the inside end of the adjustable bed and is used in connection with the gap when desiring to face the inside and outside of wheel rims, etc., and it possesses all the functions of a hand-feeding carriage. This tool post is made double for giving it longer range. The slide is so arranged that a hand-crank operating it forward or back can be used from either end. The cross slide is dovetailed directly to the end of the bed, and has a movement laterally that is sufficient for the full capacity of work the gap will receive. When this carriage and its cross slide is not in use it may be swung back of the frame entirely out of the way.

Countershaft

It is mounted in heavy self-oiling hangers and carries two pairs of tight and loose pulleys, giving it two speeds, thus giving eight speeds to the head spindle. The cone driving pulley has four steps, is machined all over, and adjusted to a running balance. Belt shifter rod and fingers are supplied.

Equipment

One spur center, each $1\frac{1}{4}$ " and 2" diameter. One cup center, 1" diameter. Two conical centers. Four front end face plates, 12", 24", 30" and 38" diameter. One rest holder fitted to the tool carriage. One single shank rest, each 6", 12" and 18" long. One double shank rest, 48" long. One right angle rest, 6" long. Two rest holders, bored $1\frac{1}{2}$ " diameter. One portable floor stand with off-set rest. One Countershaft, Hangers and Pulleys.

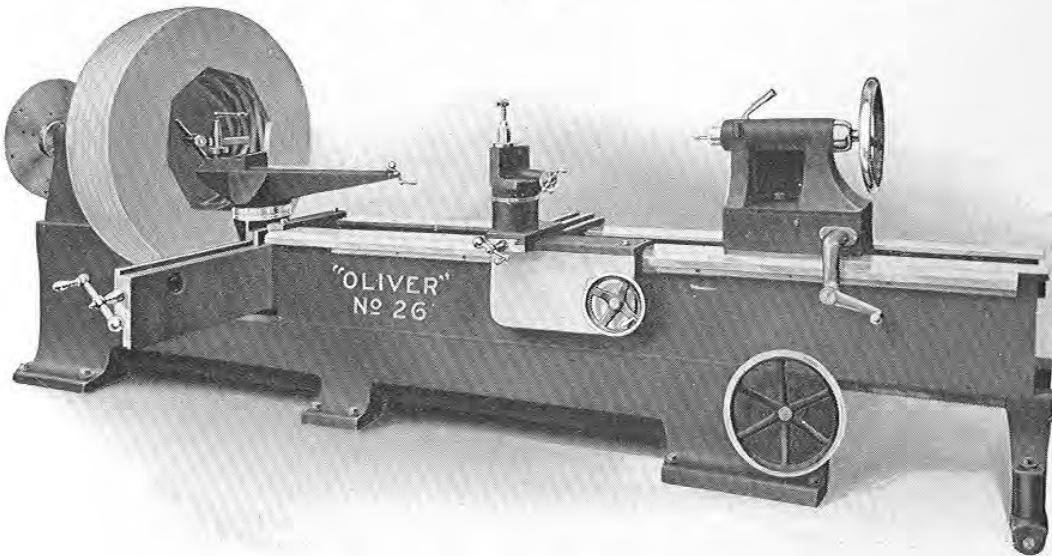
Capacity

Will turn a maximum length of 15' between centers, 30" in diameter and under when gap is open, and 8' 6" when closed. Will turn a maximum length of 92" in the gap, 60" diameter and less with tool post taken off and gap open.

Will swing 26" over the carriage and 27" over the rest.

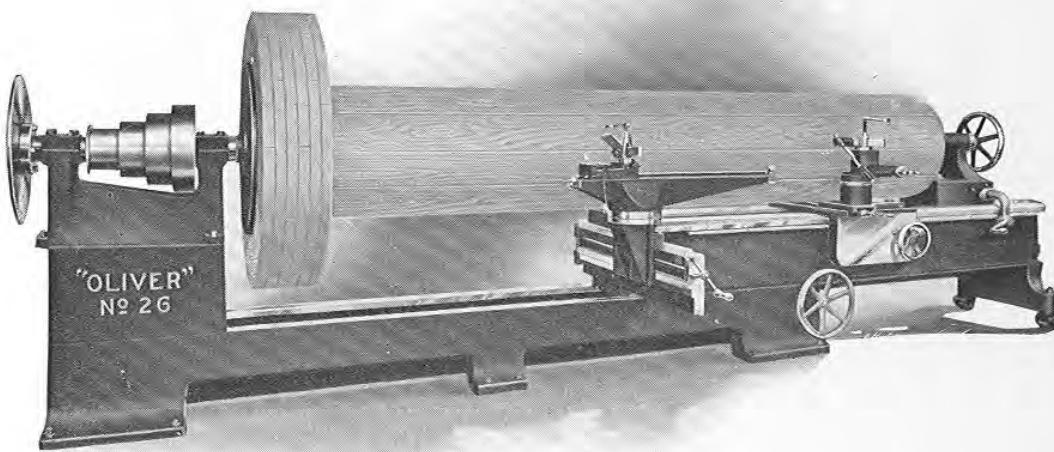
No. 26 "Oliver" Large Pattern Maker's Gap Lathe

Continued



View showing work on Face Plate, 48 inches diameter, 12 inches thick

The long compound swivel slide properly graduated and indexed makes it extremely easy for the workman to follow his blue prints. A very large advantage lies in the fact that everything works smoothly, its general convenience lends itself to quick action, all the conveniences for hand turning are also provided.



"OLIVER" No. 26 HEAVY PATTERN MAKER'S GAP LATHE
To turn 30 inch diameter over the bed and 60 inch diameter in the gap

Size of work illustrated above, column 12' long 26" diameter; large base, 48" diameter, 12" thick. Maximum length of machine extended, 19' 6". Maximum length of machine with gap closed 13'.

No. 26 "Oliver" Large Pattern Maker's Gap Lathe

Continued

GENERAL DIMENSIONS

Head Stock	Length, $28\frac{1}{2}$ ". Spindle bearings, front, $5\frac{1}{2}$ " x $2\frac{3}{4}$ "; rear, $5\frac{3}{4}$ " x $2\frac{7}{8}$ ". Spindle, 34" long; hole through spindle, $\frac{7}{8}$ ". Spindle bored to receive a No. 4 Morse Taper. Cone on spindle, four steps, width of belt, $3\frac{1}{2}$ ". Speeds of spindle—86, 125, 185, 288, 430, 625, 925 and 1440 R. P. M., subject to change for motor drives.
Tail Stock	Length, 18". Spindle, 16" long, 3" diameter. Traverse of spindle, $10\frac{1}{2}$ ". Spindle bearing, 14" long.
Bed	Length with gap closed, $12\frac{1}{2}$ "; with gap open, $19\frac{1}{2}$ '. Width, $18\frac{3}{4}$ "; depth, 15". Height to top of the extension bed, 30". Maximum width of gap, 90".
Main Carriage	Traverse of cross feed, 18". Traverse of cross feed on compound rest, 9". Travel of carriage, 7' 7". Power Feed Travel, $\frac{1}{32}$ ", $\frac{1}{16}$ " and $\frac{1}{8}$ " to each revolution of the spindle. Bearing on ways, 22". Tool post slot, $1\frac{3}{4}$ " x $\frac{3}{4}$ ".
Auxiliary Carriage	Traverse of cross feed 35". Traverse of cross feed on compound rest, 31". Tool post slot, $1\frac{3}{4}$ " x $\frac{3}{4}$ ".
Countershaft	Length, 5'; diameter, 2". Speeds, 100 and 500 R. P. M. Bearings, 6"; $1\frac{3}{4}$ " diameter. Hangers 14" drop. Tight and loose pulleys, 10" x 6" and 18" x 6". Small T & L pulley gives spindle 430 to 1440 R. P. M. Large T & L pulley gives spindle 86 to 288 R. P. M. Cone, four steps, width of belt $3\frac{1}{2}$ ".
Horse Power	Maximum 5.

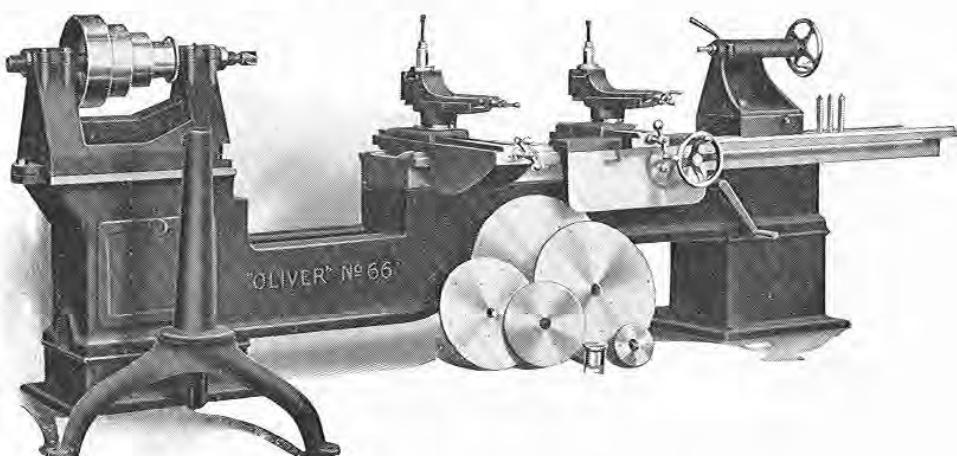
CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Draft	26-A	Hand Feed, belt drive.....	6700	7400	230
Draga	26-C	Hand Feed, motor drive.....	7080	7800	230

EXTRAS

Drage	Power Feeding Carriage and power device for moving upper bed.
Dragi	Extra Length, upper bed only, per two feet.
Drago	Extra Length, both upper and lower bed, per two feet.

No. 66
 "Oliver" Pattern Maker's Gap Lathe
 28 and 48-inch Swing



Introduction All the little refinements of construction which make an "Oliver" worth having are here. Twenty-five years of experience as builders of a very large line of wood lathes ought to have taught us the "know how," and we recommend it as a general utility tool, more than ordinarily adapted to use in the shops of either industrial or educational institutions.

Main Bed This is a one-piece cored casting exceptionally well ribbed and very heavy, and easily absorbs all ordinary vibration caused by rotating work that is out of balance.

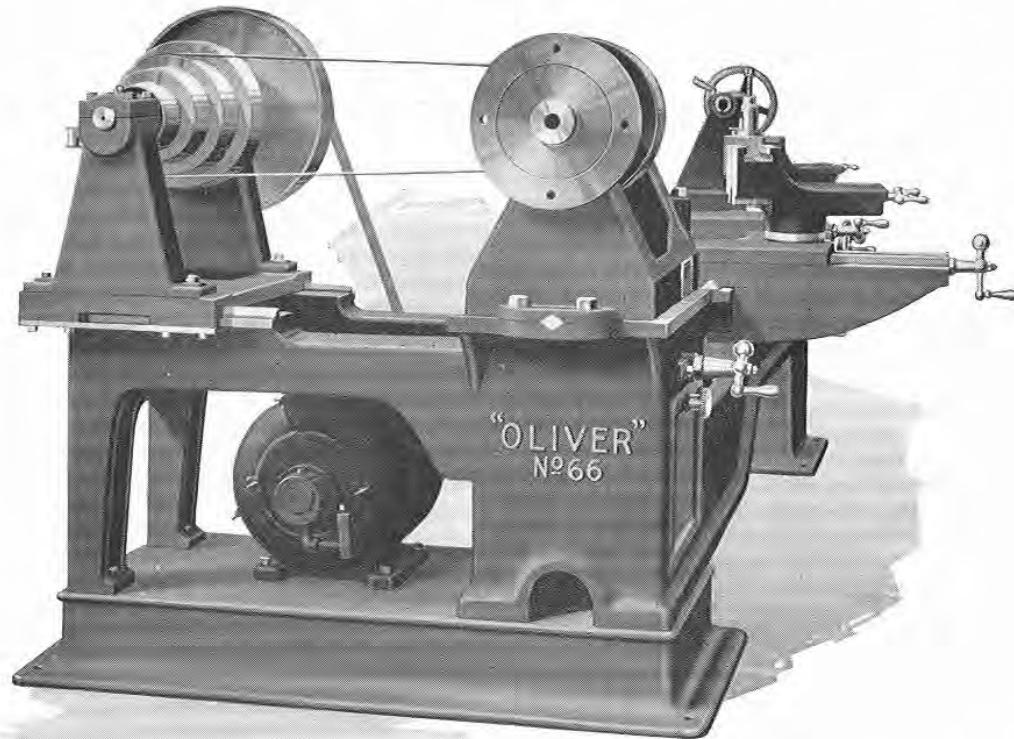
Sliding Bed This casting is movable upon the main bed by crank, rack and pinion, as illustrated. When closed over the gap, the carriage operates up to the head stock in the usual way. When gap is open, the sliding bed increases capacity between centers two feet.

Head Stock Open type and may be belted down through the bed, or driven by a two-speed countershaft from overhead, or from the ceiling of the floor below. A number of motor drives may be arranged to suit conditions. Head stock swivels 5 degrees.

Spindle Is $2\frac{3}{4}$ " diameter, $31\frac{1}{2}$ " long, runs in $5\frac{3}{4}$ " bearings. Eight spindle speeds from 86 to 1800 R. P. M. Spindle is hollow, with 1" hole and fitted for No. 4 Morse Taper; is machine ground and is carried in large bearings of genuine babbitt; substantial thrust collars are provided for end thrust. The outboard end of spindle carries a heavy steel flange to which may be attached with four bolts the large steel face plate which comes with the regular equipment, a great improvement over the usual method of threading the rear end of the spindle.

No. 66 "Oliver" Pattern Maker's Gap Lathe

Continued



View Showing Motor Drive Recommended

Main Carriage

Is hand feeding with cross feed and compound swivel rest and tool post, as illustrated. The apron has a bearing of 20" upon the bed and travels the entire length of sliding bed. The top of the sliding bed near the head stock, and the guide of the cross slide, are graduated in eighths, and the ends of the carriage, as well as the ends of the cross slide, are provided with index pointers that may be adjusted to the work and help to determine a definite diameter or length and will eliminate much of the "cut and try" method of fitting.

Auxiliary Cross Slide

This attachment is secured to the inside end of sliding table and is of sufficient size to operate upon the full capacity of 48" diameter that may be swung in the gap. It is easily removed when desired, and carries the compound swivel rest shown in connection with the main carriage. We do not furnish two, as shown in illustration. The hand tool rest socket may be substituted for the compound swivel, as per illustration.

Compound Swivel Rest

Is graduated in degrees at the base and carries the regulation tool post. It is easily detached and a socket substituted for carrying the hand tool rest, as illustrated.

No. 66 "Oliver" Pattern Maker's Gap Lathe

Continued

Tail Stock

Open side design and "Set over" adjustment. The tail spindle is of large cross section and carries a No. 4 Morse Taper. Is 3" diameter, 16" long. Tail stock travel, 11 $\frac{1}{8}$ ".

Capacity

Will turn 6' 6" between centers with gap closed, or 8' 6" between centers with gap open. Will turn 30" over the ways and 26" over the carriage. Will turn 24" long and 48" diameter in the gap. Will turn 84" over the floor at the outer end of spindle.

Increased Capacity

We build to order this machine with extra length of bed and to swing larger diameters at additional cost. Further information upon request.

Equipment

One each spur center 1 $\frac{1}{4}$ " and 2" diameter, one cup center, $\frac{3}{4}$ "; two conical centers; one each face plates, 12", 24", 30" and 38" diameter; one each tool rests, 6", 12", 18" and 48" long; two rest holders, one right angle rest, 6" long, one portable floor stand with off-set rest holder, countershaft, hangers and pulleys.

SPECIAL DATA

Head Stock Spindle

Made hollow and reamed for No. 4 Morse Taper, has four step cone pulley. Speed, 86 to 1850 R. P. M., subject to change for motor drives.

Tail Stock Spindle

13 $\frac{3}{4}$ " long and 3" diameter, has set-over base.

Main Carriage

Cross feed traverse is 14", compound rest traverse is 8".

Auxiliary Carriage

Cross feed traverse full distance for 48" diameter circle, and is detachable.

Countershaft

Has two sets of T & L pulleys, 10" x 4 $\frac{1}{2}$ ", and 16" x 4 $\frac{1}{2}$ ". Speeds 130 and 800 R. P. M. to give speed of 86 to 1850 R. P. M. to head stock spindle.

Horse Power

Five.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Drake	66-A	Gap Lathe, belt drive.....	4800	5800	200

EXTRAS

Draki Motor Bracket and Special Countershaft for Motor Drive.

Drako Extra length beds, per two feet. Any length.

No. 18

"Oliver" Heavy Wood Lathe

32-inch, 36-inch, and 42-inch

Introduction We have introduced new and important features in these lathes. The general design and construction is similar to the best iron working lathes. They are convenient in adjustments, quick in operation and capable of wide range of work. They are made in three standard sizes, viz.; to swing 32", 36" and 42" over the bed.

Head Stock This is well proportioned, carrying a stiff, strong, hollow spindle supported in self-oiling bearings. Spindle is hollow to facilitate securing face plate work, is machine ground, and absolutely true. Bearings are lined with genuine babbitt metal and adjustable to wear. Head will swivel five degrees each way from the center line without interfering with the power feed. The cone is metal, machined all over.

End Thrust This is adjusted at the rear by means of thrust collars threaded to the spindle.

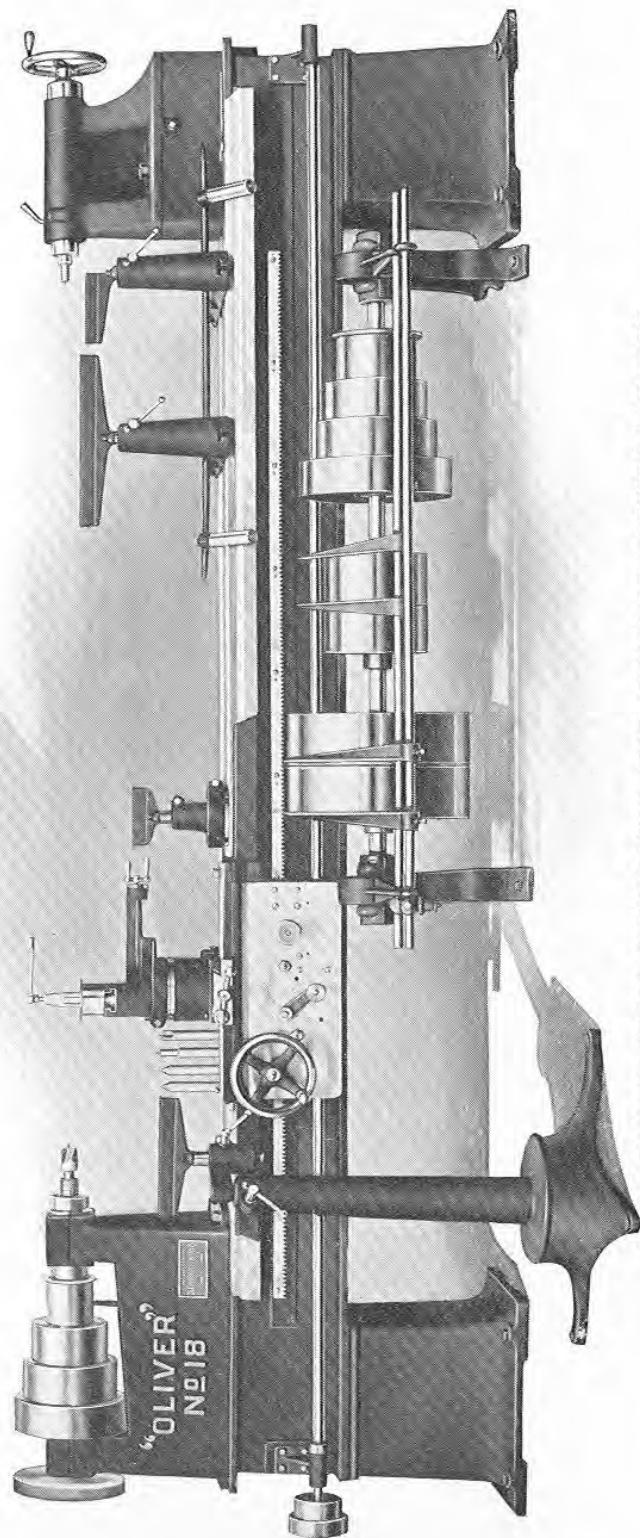
Bed This is cast iron, strongly ribbed, and has a smooth flat top with ways for the carriage located upon the side. A great convenience to the operator when hand turning, as the absence of obstructions upon its broad top surface renders it easily cleaned and upon which he can lay his sharp tools.

Tail Stock It is of the open side design, which allows the cutting tools and tool post to be brought close to centers without interference. Spindle is large and carries a No. 4 Morse Taper, same as spindle in head stock, thus allowing standard sockets, drills and reamers to be used in either spindle.

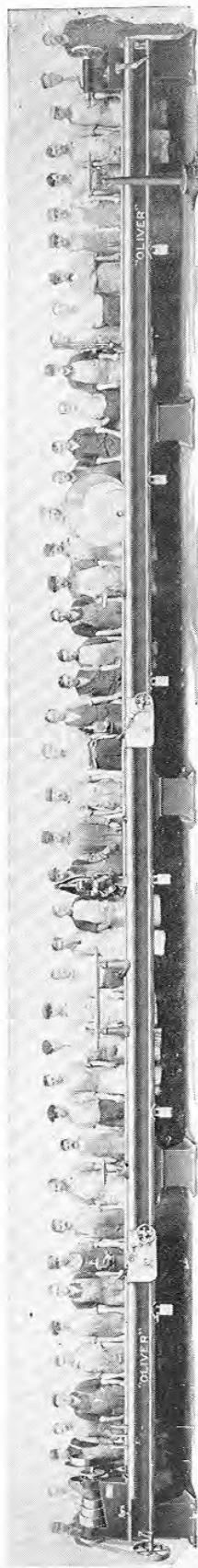
Carriage Carriage has both hand and power feed. The apron has a wide support on the front of the bed, is very substantial and the whole device is operated by hand freely in either direction by means of the hand wheel and screw, or by power, through a belted cone pulley and feed rod and gears all controlled by small hand screw on face of apron.

**Cross Slide
Swivel
Tool Rest** The carriage is fitted with a cross slide having a long traverse and this slide carries a graduated swivel or compound rest, also having a long traverse; by this device any desired angle may be correctly obtained.

**Hand Rest
Socket** A socket carrying a rest for hand turning is provided and may be substituted instead of the compound swivel and tool post when desired.



No. 18 "OLIVER" HEAVY WOOD LATHE WITH AUTOMATIC FEEDING CARRIAGE
A high class 32", 36" and 42" Swing Precision Lathe for Quality Pattern Shops



"Oliver" No. 18-A Wood Lathe 32" Swing, 62' Bed with Two Power Feeding Carriages, Two Steady Rests, etc. Motor Driven. Built for U. S. Navy.
Total Weight 19,760 pounds. Shipped October 17, 1919. We are the World's Largest Manufacturers of Wood Turning Lathes.
Let us solve your wood turning problems.

No. 18 "Oliver" Heavy Wood Lathe

Continued

GENERAL DIMENSIONS SWING HEAD STOCK

	32"	36"	42"
Length and width of frame.....	30"x14"	30"x14"	30"x14"
Length and diameter of spindle.....	35"x2 7/8"	35"x2 7/8"	35"x2 7/8"
Length of bearings.....	5 1/2"x6"	5 1/2"x6"	5 1/2"x6"
Diameter of front spindle bearings.....	2 3/4"	2 3/4"	2 3/4"
Diameter of rear spindle bearings.....	2 7/8"	2 7/8"	2 7/8"
Size of Morse Taper by No.	4	4	4
Number of cone steps.....	4	4	4
Width of belt used.....	3 1/2"	3 1/2"	3 1/2"
	86	86	86
	130	130	125
	195	195	185
Spindle speeds at rated C. S. Speed.....	390	390	280
	400	400	430
	600	600	625
(Subject to change for motor drive)	900	900	923
	1800	1800	1410

Tail Stock

Length and width of frame.....	18"x12 1/2"	18"x12 1/2"	18"x12 1/2"
Length and diameter of spindle.....	16"x3"	16"x3"	16"x3"
Length of spindle bearing.....	15"	15"	15"
Traverse of spindle.....	11"	8"	8"
Size by No. Morse Taper.....	4	4	4
Adjusting screw threads to inch.....	4	4	4

Bed

Standard length and width.....	12'8"x20 1/2"	12'8"x20 1/2"	12'8"x20 1/2"
Depth.....	12"	12"	12"
Height from floor.....	30"	30"	30"

Carriage

Traverse of Cross Feed.....	15"	17"	20"
Traverse of Compound Feed.....	9"	9"	9"
Travel of Carriage on Bed.....	8' 6"	8' 6"	8' 6"
Power feed ranges per revolution of spindle.....	1/2 and 1/10	1/2 and 1/10	1/2 and 1/10
Length of Way Bearing.....	22"	22"	22"

Countershaft

Length and diameter.....	5'x2"	5'x2"	5' 6"x2"
Length and diameter of bearings.....	6"x1 3/4"	6"x1 3/4"	6"x1 3/4"
Drop of hangers.....	14"	14"	14"
Number of cone steps.....	4	4	4
Steps of cone—width.....	4"	4"	4"
Width of belt used.....	3 1/2"	3 1/2"	3 1/2"
Speed of T & L Pulleys, R. P.M.....	146 and 600	146 and 600	112 and 500
Diameter and face of T & L Pulleys.....	{ 16"x4 1/2" 10"x4 1/2"	{ 16"x4 1/2" 10"x4 1/2"	{ 16"x4 1/2" 10"x4 1/2"
Horse Power.....	3 to 5	3 to 5	3 to 5

No. 18 "Oliver" Heavy Wood Lathe

Continued

Countershaft This is steel and machine ground. The hangers have ring-oiling boxes and shifting device. Two pairs of tight and loose pulleys are furnished to give 8 speeds to the head spindle, and the loose pulleys are of our new and special design, bushed with bronze, self-oiling and "always work." The cone is machined all over and adjusted to a running balance.

Motor Drive There are a variety of motor drives that are applicable to this machine. Special data concerning them is found on various other pages of this catalog and specific recommendations will be made to suit your needs. Write us.

Equipment Two spur centers $1\frac{1}{4}$ " and 2" diameter.
 One cup center, $\frac{3}{4}$ " diameter.
 Two conical centers.
 One rosette plate or chuck (screw spud) $3\frac{1}{2}$ " diameter.
 Four face plates, 12", 24", 30" and 38" diameter.
 One Special Hand Rest Socket for use in tool carriage.
 Four hand tool rests, 6", 12", 18" and 48".
 One right angle rest 6" long.
 Two Rest Holders, bored $1\frac{1}{2}$ " diameter.
 One portable floor stand with off-set rest.

Capacity Swing over the bed, 32", 36", 42".
 Swing over the carriage, 28", 31", 38".
 Swing at outer end of the Head Spindle, 92", 92", 98".
 Length will turn between centers, 8' 1".

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Dram	18-A	Swing 32"	4850	5200	165
Drank	18-B	Swing 36"	5000	5500	172
Drape	18-C	Swing 42"	5200	5700	180

EXTRAS

Drapu Motor Bracket and Countershaft for self-contained motor drive.

SPECIAL DATA

These machines may be made with certain modifications, viz.:
 Hand Feeding Carriage instead of Power Feeding.
 Machine with plain bed—no carriage.
 Machine with beds shorter or longer than standard lengths.
 Machine with two head and two tail stocks.
 Machines with electric drives.

We make the most varied line of Wood Lathes in the world—from 12" to 100" swing. Tell us your requirements.

No. 24

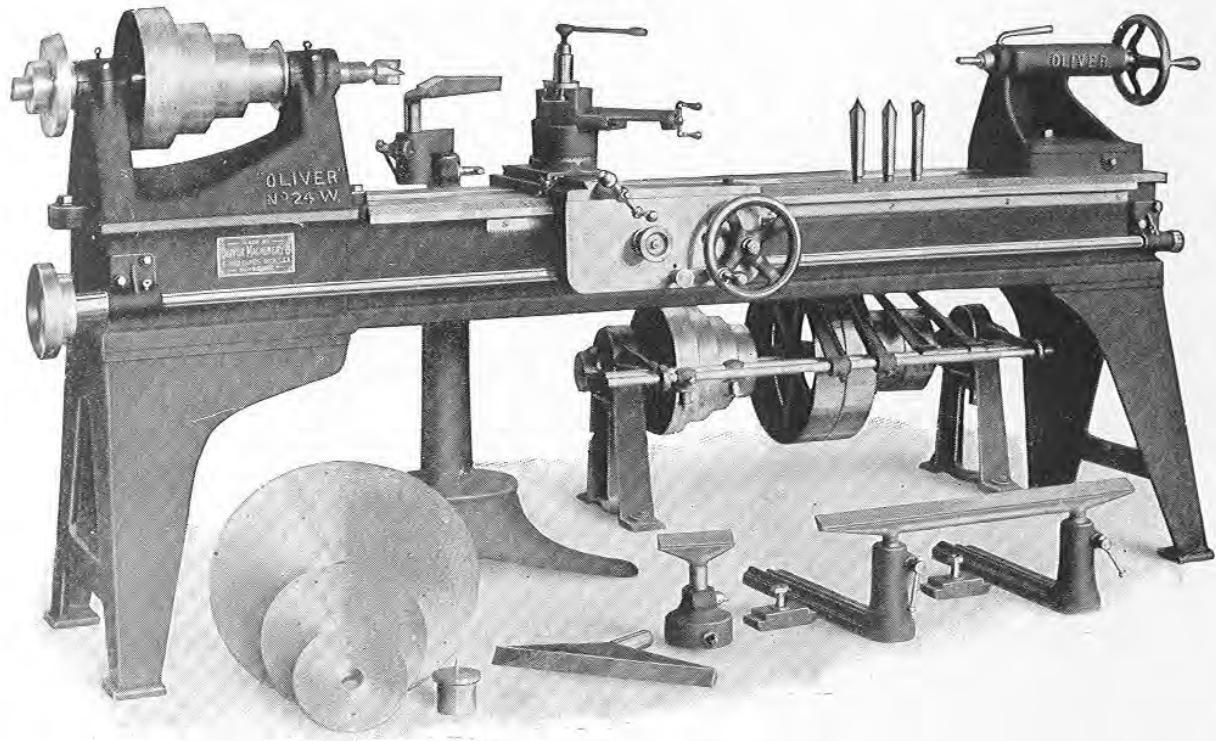
"Oliver" Double End Wood Lathe

16, 20, 24 and 30-inch Sizes

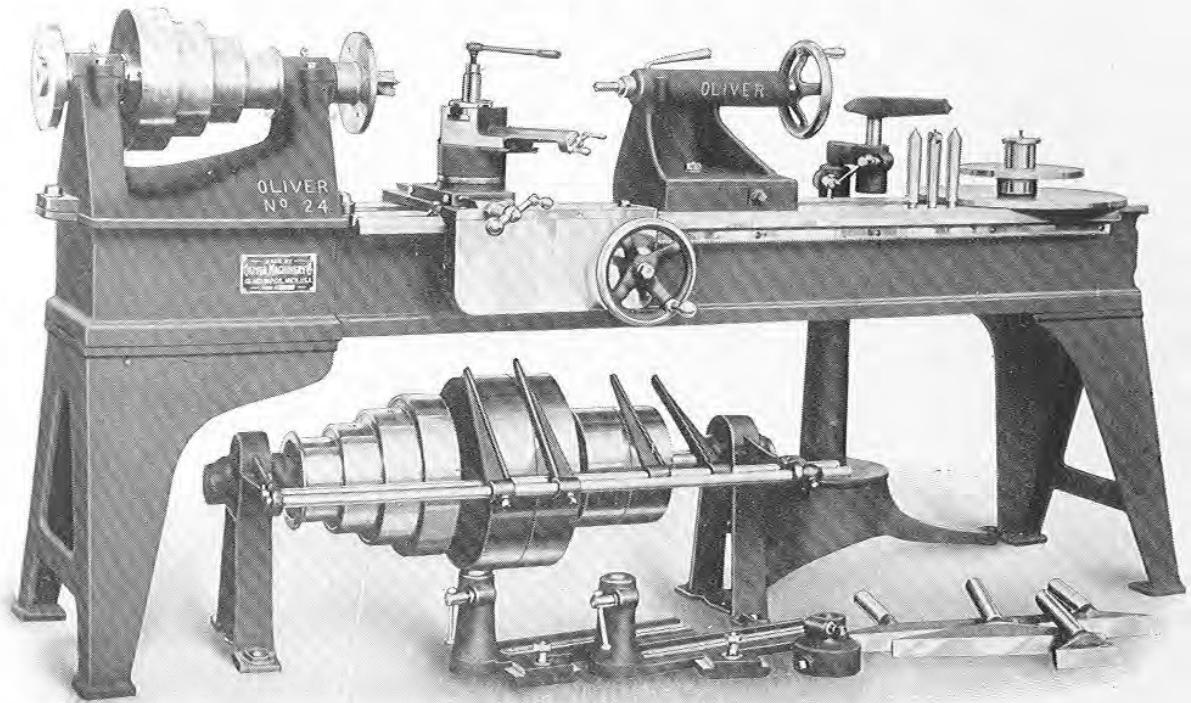
Head Stock	It is made from a cored casting of the proper strength and rigidity, and well proportioned. It may be swiveled for taper turning, about 5 degrees each way from the center.
Head Spindle	Headstock Spindles are of fine crucible steel, ground true with a hole through the center the entire length. Front end has tapered hole for centers and is threaded on the outside for face plates. The rear end has a large steel flange shrunk and finished on the spindle and arranged to receive steel face plates which fasten in place with four cap screws. This arrangement assures maximum safety because large face plate work will neither get too tight on the spindle nor have any tendency to unscrew from the spindle.
Spindle Bearings and Cone	These are lined with genuine babbitt, are adjustable to wear, and are fitted with oil chambers for self-lubrication. The spindle cone is made of cast iron, has four steps, machined all over and adjusted to a running balance.
End Thrust	It is taken care of by means of thrust collars threaded to the spindle. A loose bronze collar bears against each end of the rear journal box and plays between the solid collar on the spindle on one end and the thrust collars on the other.
Tail Stock	It is constructed in the open side design. Cutting tools may be brought close to centers. It has a set-over device for turning taper work, and a bolt for locking it in any desired position. The tail spindle is of correct diameter bored to Morse tapers. It is held in position by means of a strong clamp. The tail center may be removed by simply backing the screw.
The Bed	It is of iron of proportionate dimensions to suit the size of the lathe. It can be supplied in any length, six feet or more, calculating by advances of two feet. It has a broad top, made flat so the operator's tools will not work off. When furnished to receive a tool carriage the ways for same are cast to the side.
Power Feeding Carriage	The call for this machine fitted with a carriage that is fed automatically as well as by hand has resulted in the design of carriage shown in the accompanying half-tone. All sizes of lathes are recommended and regularly provided with it. However, when hand-feeding carriage only is especially desired, same is furnished at a slight reduction in price. The carriage receives its power through a belt from a two-step cone on the lathe spindle to a cone on the feed shaft, giving two speeds to the feed shaft. When using the lathe at the overhanging end for face turning on large diameters the cone pulley may be instantly removed.
Compound Swivel Rest	We locate a graduated swivel device on the cross slide of the tool carriage, which permits the use of the tool on angular lines. By means of the graduations the tool may be set with great exactness. It has a long traverse and any conceivable angle may be correctly obtained.

No. 24 "Oliver" Double End Wood Lathe

Continued



Arranged with 8 and 10 foot long metal beds. Power Feeding Carriage and Compound Swivel Rest. Made in four sizes, to swing over the bed, 16", 20", 24" and 30" diameter.



"OLIVER" No. 24—16", 20", 24" and 30" SWING
View showing Bed fitted with Hand Feeding Carriage

No. 24 "Oliver" Double End Wood Lathe

Continued

GENERAL DIMENSIONS

Head Stock

Swing in Inches	16-inch	20-inch	24-inch	30-inch
Length.....	16"	19½"	24¾"	28"
Width.....	8"	13"	14"	16"
Diameter of Spindle.....	1 9/16"	2 1/4"	2 1/4"	2 3/4"
Length of spindle.....	21 7/8"	25 5/16"	31 5/16"	34"
Length of spindle bearings.....	3 5/8" 3 7/8" 4"	4 1/2"	5 1/2" 6"	5 1/2" 6"
Diameter of front spindle bearings.....	1 9/16"	2 1/4"	2 1/4"	2 3/4"
Diameter of rear spindle bearings.....	1 11/16"	2 3/8"	2 3/8"	2 7/8"
Size of Morse Taper by No.....	2	4	4	4
Width of belt used.....	2"	2 1/2"	3"	3 1/4"
Spindle speeds at rated countershaft	2700	2200	1960	1800 max.
Speed in R. P. M.....				
(Subject to change as advisable.)	122	80	70	86 min.

Tail Stock

Length.....	10"	12 1/2"	12 1/2"	17"
Width.....	8"	10"	11 1/2"	12"
Diameter of spindle.....	1 1/2"	1 7/8"	1 7/8"	2"
Length of spindle.....	9 3/4"	12 1/2"	13 3/4"	16"
Traverse of spindle.....	4 1/2"	6"	7"	8"
Length of spindle bearings.....	10 1/4"	13"	14"	15"

Bed

Standard length in feet.....	8'	8'	10'	10'
Width inside of the carriage way.....	9 1/2"	11 1/2"	14 3/4"	14 3/4"
Depth.....	7"	9"	11"	11"
Height from floor.....	34"	34"	30"	30"

Carriage

Traverse of cross feed.....	8"	11"	13"	13"
Traverse of compound feed.....	5"	6"	7"	7"
Travel of carriage on the standard length of bed.....	5' 3"	7'	6' 6"	6'
Length of way bearing.....	15"	17"	20"	20"
Length of slot in tool post.....	1 7/8"	1 7/8"	2 1/2"	2 1/2"
Width of slot in tool post.....	1 1/6"	1 1/6"	7/8"	7/8"

Countershaft

Drop of hangers.....	14"	14"	14"	14"
Length of hanger bearings.....	6"	6"	6"	6"
Diameter of hanger bearings.....	1 3/8"	1 5/8"	1 5/8"	1 3/4"
Number of cone steps.....	4	4	4	4
Width of driving belt.....	2"	2 1/2"	3"	3 1/2"
T & L pulleys.....	Diameter Face	8" & 16" 10" & 16" 10" & 16" 10" & 16"	4 1/2" 4 1/2"	4 1/2" 4 1/2"
Speed of small T & L Pulleys, R. P. M.		750		
Speed of large T & L Pulleys, R. P. M.	160	135	135	130

No. 24 "Oliver" Double End Wood Lathe

Continued

Carriage These are placed on the machine to enable an operator to turn a definite length or depth without having to "fit and try" as formerly. **Graduations** They are located on top of bed at front and on ways for the carriage cross slide. "A" is a finger adjustably set in carriage slide and clamped by means of a screw "B".

Special Hand Rest Socket This device provides an effective hand tool rest mounted on cross slide of the carriage. Consists of rest socket machined to fit slide and held firmly.

Countershaft Furnished with two pairs of tight and loose pulleys and four-step cone. This gives eight speeds to head spindle. Loose pulleys are bushed with bronze, with oil chamber for supplying lubrication. Hangers are supplied with ring oiling bearings; shaft is of steel.

Capacity

Swing in Inches	16-inch	20-inch	24-inch	30-inch
Swing over bed.....	16"	20"	24"	30"
Swing over carriage.....	13"	16"	19"	26"
Swing at outer end of head spindle....	84"	84"	84"	84"
Length will turn between centers on standard length of bed.....	5' 1"	4' 8"	6' 1"	5' 6"

Equipment

Two single shank rests, length	6" & 18"	6" & 18"	6" & 18"	6" & 18"
One double shank rest, length.....	30"	30"	48"	48"
Two rest holders, quantity.....	two	two	two	two
Two head (spurs) centers, sizes.....	3/4" & 1 1/4"	1 1/4" & 2"	1 1/4" & 2"	1 1/4" & 2"
One tail (cup) center, sizes.....	5/8"	3/4"	3/4"	3/4"
Two conical centers.....	pair	pair	pair	pair
Two front face plates, diameters.....	8" & 12"	8" & 12"	8" & 12"	8" & 12"
One rear face plate, diameters.....	20"	20"	24"	24"
One screw (rosette) chuck, diameters	3 1/2"	3 1/2"	3 1/2"	3 1/2"
One right angle rest, size.....	6"	6"	6"	6"
One floor stand with off-set rest holder	one	one	one	one

CODE, WEIGHT, ETC.

No. 24 Lathes with Power Feeding Carriage and Compound Swivel Rest

Code	No.	Length of Bed	Horse Power	Weight in Crated	Weight in Pounds Boxed	Cubic Feet
Droop	24-A, size 16".....	8'	2	1800	2000	104
Dropsy	24-B, size 20".....	8'	3	2300	2600	133
Drowse	24-C, size 24".....	10'	4	3000	3300	136
Drudge	24-D, size 30".....	10'	5	3450	3900	144

Length of bed and carriage rack for 16", 20", 24" and 30" lathes may be longer or shorter than standard in 2' lengths at extra cost.

Hand Feeding Carriage and Compound Swivel Rest

Above machines will be furnished with Hand Feeding Carriage instead of Power Feeding when so ordered at a suitable reduction in price. Plain Bed Lathes furnished on special order.

No. 20

"Oliver" Motor Driven Pattern Maker's Wood Lathe

Arranged for Using Alternating Current Motor

Introduction

To successfully meet the demand for a self-contained lathe that can be driven by an A. C. motor, we have furnished the machine as shown and described herewith. We recommend it as capable of proving absolutely satisfactory.

Motor Drive

Usually an alternating current, two speeds, 600, 1200 R. P. M. motor is used, giving 8 speeds to spindle. Single speed or multi-speed motors may be used and we invite special correspondence giving kind of work expected. Motor is supported under the lathe bed and fitted with a four step cone pulley accurately balanced. A vertical adjustment serves to keep the belt taut. A self-oiling bearing carries the outer end of the armature shaft with cone pulley. Direct current motor may be used if desired.

Head Stock

It is made from a cored casting of the proper strength and rigidity, and well proportioned. It may be swiveled for taper turning, about 5 degrees each way from the center. The base is widened to permit passing the driving belt through it down to the cone on the motor shaft.

Head Spindle

We make it of special high carbon steel, large in diameter, threaded at front end to receive face plates and at rear end it has a large flange forged on the spindle and finished all over to receive the large face plates which are held securely by four stud bolts. This method of holding rear end face plates is used on "Oliver" Lathes only; it saves time and avoids face plates getting "stuck." Spindle is made with hole through it to assist in removing centers. It is accurately ground and absolutely true in the journals.

Tail Stock

It is open side design with large steel spindle bored to Morse Taper. It is supported rigidly in all its positions.

Bed

This is similar to the metal beds supplied with the No. 24 Lathe. The end that receives the head stock is widened to permit the belt to pass through.

Power Feeding Carriage

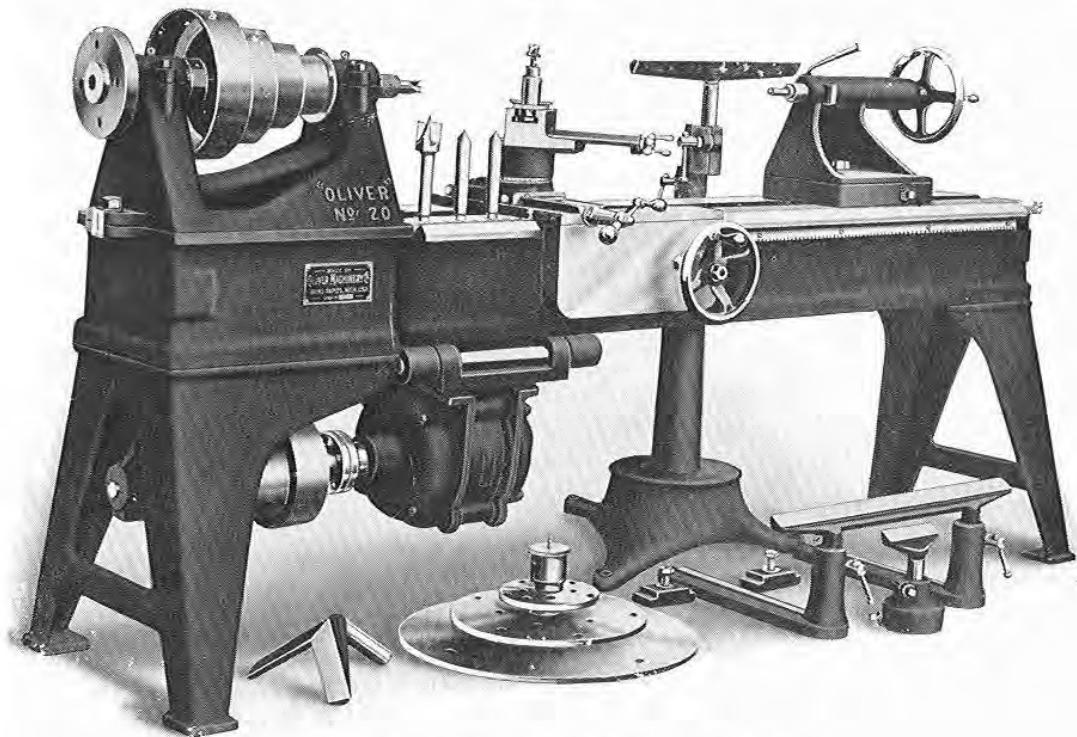
The carriage is regularly fitted with a compound swivel rest having ample lateral movement, wide bearing on the ways. It receives its power through a belt from a two-step cone on the lathe spindle to a cone on a feed shaft placed the length of the bed, giving two speeds to the feed shaft.

Equipment

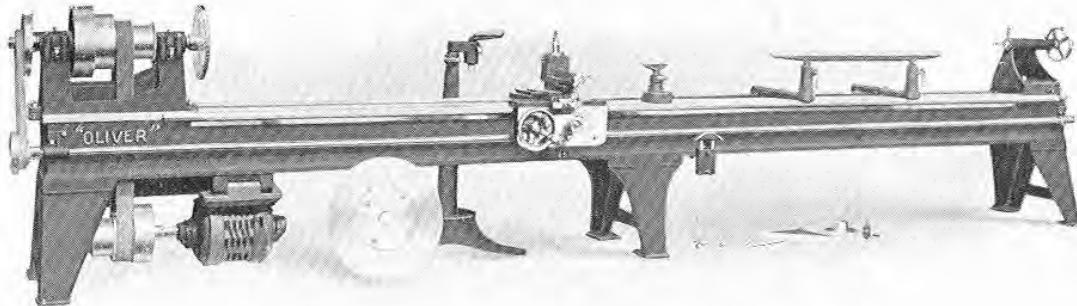
Power or hand feeding carriage and compound swivel rest; two spur centers, one cup center, one pair conical centers, three face plates, each 8", 14" and 20" diameter; one screw chuck, 3½"; two single shank rests, 6" and 18" long; one double shank rest, 30" long; two rest holders with clamps, one rest holder fitted to tool post on carriage, one right angle rest 6" long, one portable floor stand with off-set rest holder. For exact equipment with each size, see table of equipment on page 139, to which should be added one endless leather belt.

No. 20 "Oliver" Motor Driven Pattern Maker's Wood Lathe

Continued



No. 20-B 20-inch Lathe with Regular 8-foot Bed
Other sizes similar in design and equipment



No. 20-C 24-inch by 20-foot Bed Lathe as furnished to
Westinghouse Electric & Mfg. Co., Essington, Pa. Plant

Code	No.	Size	Swing Over Bed	Swing at Outer End			Turns Between Centers	Regular Bed Length	Weight in Crated	Pounds Boxed	Cubic Feet
				Carriage	Head Spindle	84"					
Duke	20-A	16"	16"	13"	84"	5'1"	8'	2250	2500	104	
Dumb	20-B	20"	20"	17"	84"	4'8"	8'	2500	2800	133	
Dumpy	20-C	24"	24"	20"	84"	6'1"	10'	3800	4200	136	
Dunker	20-D	30"	30"	26"	84"	5'6"	10'	4600	5000	144	

NOTE—Hand Feeding Carriage may be furnished instead of the regular power feeding when so ordered. Bed lengths may be increased or diminished from the standard in 2 foot lengths.

No. 25
“Oliver” Motor Head Pattern Lathe

Made in Three Sizes, 16-inch and 20-inch Swing for Heavy Work
24-inch Swing for Light Work

Advantages By the use of this motor head stock we have eliminated a number of features that are peculiar only to the belt driven machines, and we are enabled to offer you a tool wherein the factor of danger has been reduced to a minimum. Briefly, there are no belts used, no light obscured, no overhead countershaft, no oiling to do while on a ladder, no chance for a belt to become tangled and pull down a countershaft on a luckless operator, machine easier to keep clean—only two bearings to take care of.

Motor Head This consists of an “Oliver” fully enclosed, variable speed, direct current, 2 H. P. motor of improved bi-polar type, having commutating interpoles. The speed varies from 400 to 2000 R. P. M. It is made to fit our standard No. 25 Wood Lathes fully described in this catalog. Motor is double end, fully enclosed, armature shaft made hollow for face plate work and with suitable take-up for end thrust. Front end of shaft bored for Morse Taper.

Controller Ordinarily we furnish a drum type controller with proper resistance, also with low voltage protection and overload release, all of the required capacity, though we can supply other types when called for. This admits of making a large number of changes in the spindle speeds that will meet all ordinary needs.

Tail Stock This is the same as that used on the No. 24 Lathe, a rigid and well made device with strong spindle bored to Morse Taper. See preceding pages of this book.

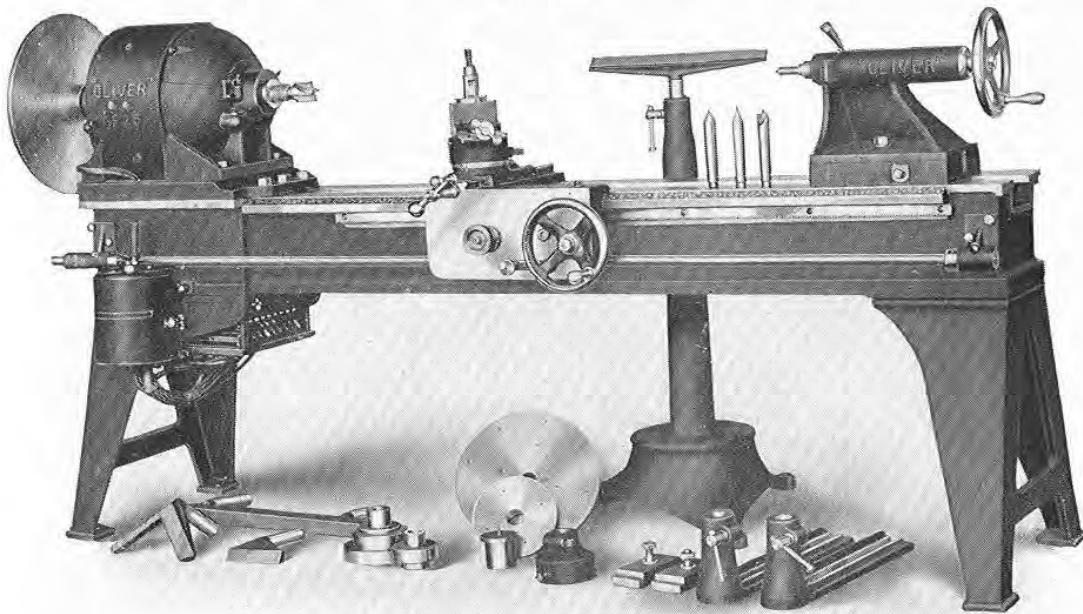
Bed It is made of iron, correct in design and construction and can be furnished in any length from six feet and upward, advancing by two-foot sections.

Power Feeding Carriage All sizes of lathes are regularly provided with a power-feeding carriage but they may be fitted with hand-feeding carriage when so ordered. The carriage receives its power through a belt from a two-step cone on the lathe spindle to a cone on a feed shaft the length of the bed giving two speeds to the feed shaft. When using the lathe at the overhanging end for the face turning on large diameter the cone pulley may be instantly removed.

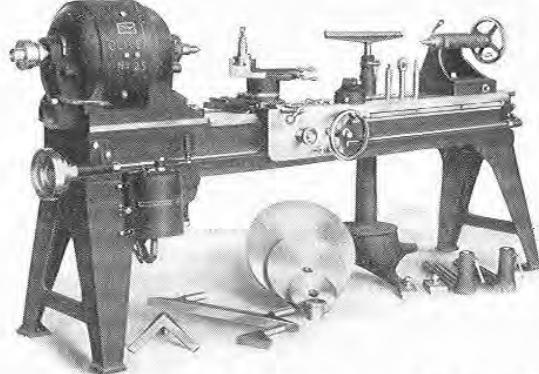
Capacity This is the same as corresponding sizes of the No. 24 Lathe. See preceding pages for this.

No. 25 "Oliver" Motor Head Pattern Lathe

Continued



View showing arrangement when rear end turning is done



View showing arrangement when carriage has power feed

Equipment

We supply the same extensive equipment with these lathes that goes with the No. 24 Lathes as listed on preceding pages.

CODE, WEIGHT, ETC.

No. 25 Lathes with Power Feeding Carriage and Compound Swivel Rest

Code	No.	Machine	Size	Weight in Crated Pounds	Pounds Boxed	Cubic Feet
Duff	25-A	Motor Head Lathe	16"	1900	2200	90
Dug	25-B	Motor Head Lathe	20"	2300	2500	133
Dugic	25-C	Motor Head Lathe	24"	3200	3600	136

Hand Feeding Carriage and Compound Swivel Rest

Above machines will be furnished with Hand Feeding Carriage instead of Power Feeding when so ordered or the carriage may be entirely omitted.

No. 19
“Oliver” Improved Speed Lathe 12-inch

Most Modern Speed Lathes Obtainable

Introduction The demand for a Speed Lathe that is well designed, correctly built, substantial, powerful and easily operated, has been met by the No. 19 Machine here illustrated. We make no claims for “cheapness” in the ordinary acceptance of the word.

Capacity Swing over bed 12" over hand tool rest 9", over carriage 9½". Turns 24" long between centers on a 48" bed. Turns 36" long between centers on a 60" bed. Two standard lengths of beds, either 48" or 60" long. Extra lengths of bed furnished on order.

Head Stock This is made in the cored form, and has a clean cut design. The base is fitted to the bed and securely bolted by bar clamps.

Head Spindle It is of crucible steel, machine ground, made hollow and the front end threaded to receive face plates, hollow chucks, screw chucks, etc. Center hole fitted for No. 2 Morse Taper.

Bearings These are supplied with split bronze bushings grooved inside for oil passage, and fitted with ring oiling device. A constant film of oil covers the journals with no danger of scattering it. Wear of spindle is compensated for by adjustable caps.

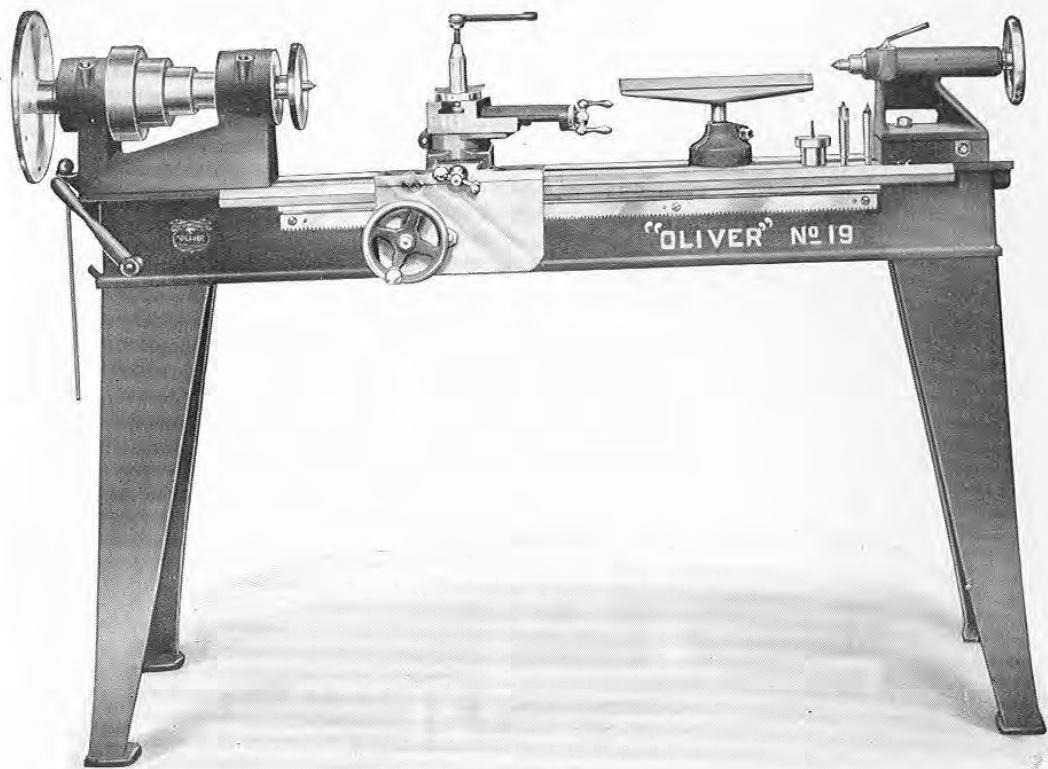
Spindle Cone This is of metal finished to a running balance, has four steps very ingeniously designed so that the smallest step can be screwed out to take up all end motion; the larger three steps are keyed to the spindle so that the entire cone pulley is rigidly held and can never cause any trouble. The cone pulley may be locked by means of a hook, while face plates are screwed on or off.

End Thrust This is cared for by the ends of the cone pulley pressing against the bronze bushings. Adjustment is made by expanding the cone. The smallest step being threaded into the balance of the cone.

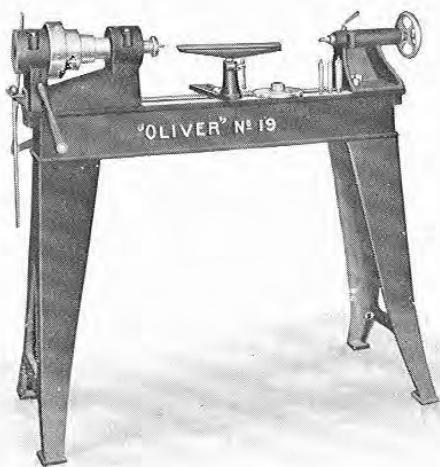
Tail Stock This is open side design, permits cutting tools to reach the centers and provides a pocket for holding small tools. A hand lever with a shaped concave end piece clamps the spindle and a hand lever clamps the tail stock at any position on the bed. On lathes with carriage, the tail stock is furnished with a set-over device for taper work.

No. 19 "Oliver" Improved Speed Lathe 12-inch

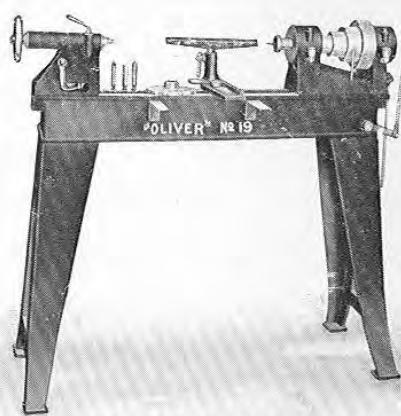
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View showing Hand Feeding Carriage, Compound Swivel Rest, Set-over Tail Stock and arrangement for Rear End Turning, including an 8-inch Rear End Face Plate, all of which are extras furnished only when so ordered



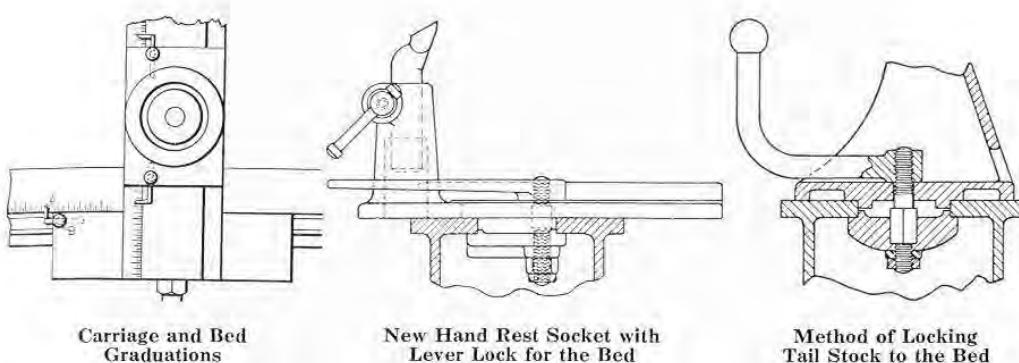
Front View 4-Foot Plain Bed



Rear View 4-Foot Plain Bed

No. 19 "Oliver" Improved Speed Lathe 12-inch

Continued



Tail Spindle Bored for No. 2 Morse taper. The end of the hand wheel rod, which is fastened by screwing a sleeve into the tail stock casting, is square threaded into the tail spindle and operates easily. The tail center may be removed by backing up the screw.

Bed This is a cored casting, well ribbed and free from vibration. The broad top of the bed is flat and will receive the operator's tools without danger of their working off and becoming lost. The inside edges are machined and act as ways for the alignment of the head and tail stock. When furnished with a tool carriage, the ways for same are cast to the side of the bed. Two iron brackets are fastened on the back to support a tool rack.

Legs Lathe is furnished with long floor legs, making top of bed 36" from floor. Special short legs may be furnished on order.

Hand Rest and Socket This is provided with a turned shank and the front edge and top machined true and case hardened to prevent being nicked by hard corner chisels. A guide ridge is milled in the face, aiding the operator in correct turning. The rest socket or holder is split and by a strong lever clamp provides a uniform pressure on the rest shank.

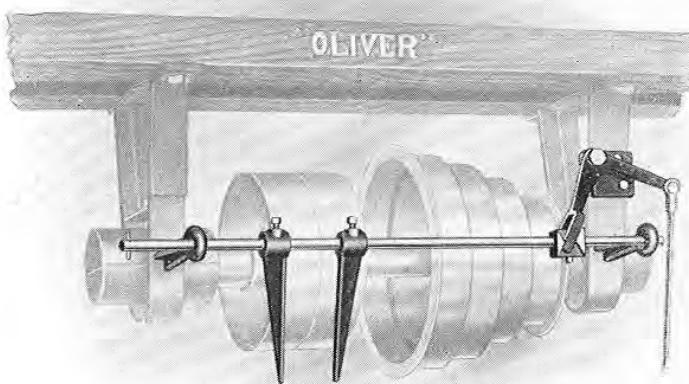
Carriage A hand-feeding carriage may be furnished. It is constructed with a cross feed and a compound swivel rest. It is freely operated in either direction by means of a cut steel rack and pinion actuated by a hand wheel.

Compound Swivel Rest This consists of a cross feeding device supported by two circular plates which are graduated accurately to permit the use of tools on angular lines. When the tool is set to the desired angle it is locked by square-head screw and brass plunger. Hand turning in connection with the carriage is easily performed by replacing the regular tool holder with a specially designed hand tool rest which may be fastened on the carriage almost instantly.

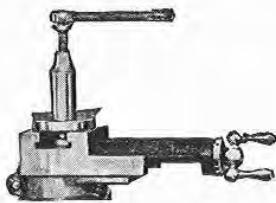
Carriage Graduations The top of the bed and the cross slide are graduated by eighths and the end of the carriage, as well as the ends of the cross slide, are provided with pointers that may be adjusted to any work. This enables the operator to turn work to a definite length or depth without having to "fit and try."

No. 19 "Oliver" Improved Speed Lathe 12-inch

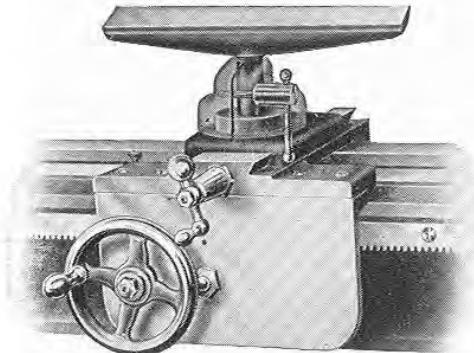
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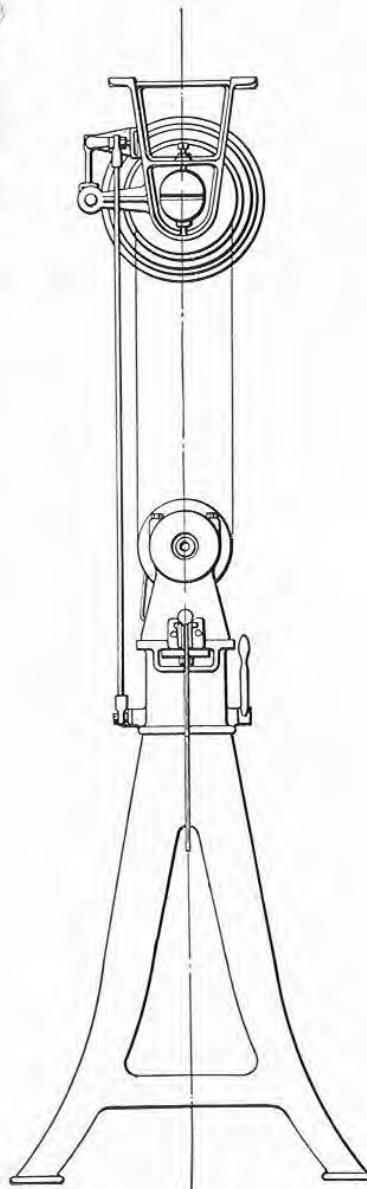
Countershaft, showing New Belt Shifting Device



Compound Swivel Cross Slide and Tool Post
easily removed from carriage when hand
Tool rest Socket is substituted



Showing new Hand Tool Rest Mounted
on the Carriage



End view, showing the Unique
Belt Shifter

Countershaft The four-step cone pulley, and the tight and loose pulleys, are supported by the shaft in ring oiling hangers. The loose pulley has a well lubricated bronze sleeve running loose both on the shaft and inside of the pulley, providing double wearing surface and lessening friction.

No. 19 "Oliver" Improved Speed Lathe 12-inch

Continued

Equipment

We furnish on all No. 19 Speed Lathes the following tools: One spur center, one cup center, one 6" face plate, one 6" and one 12" tool rest, one rest holder, one rosette chuck, one center rod, belt shifting device. When lathes are ordered with carriage we furnish a special hand tool rest for use on it in place of the regular hand rest, and the tail stock is made the set-over type.

GENERAL DIMENSIONS

Head Stock

Length, 12 $\frac{1}{4}$ ". Width, 6".
 Spindle, 15 $\frac{1}{16}$ " long, 1 $\frac{3}{8}$ " diameter.
 Hole through spindle, $\frac{5}{8}$ " diameter.
 Speed of spindle, 700, 1195, 1920, 2800 R. P. M.
 Cone on spindle—four steps—width of belt, 1 $\frac{1}{2}$ ".
 Distance from floor to center of spindle, 42".
 Front bearing, 3" long, 1 $\frac{1}{2}$ " diameter.
 Rear bearing, 3" long, 1 $\frac{3}{8}$ " diameter.

Tail Stock

Length, 7". Width, 6".
 Spindle, 8" long, 1 $\frac{1}{4}$ " diameter; spindle bearing 8" long.
 Traverse of spindle, 4".
 Amount of set-over, 1".

Carriage

Traverse of cross feed, 6 $\frac{1}{2}$ "; traverse of compound rest, 3 $\frac{1}{2}$ ".
 Travel of carriage on the bed, 33 $\frac{1}{2}$ ".
 Length of bearing on the bed, 10".
 Tool post slot, 2" long, $\frac{19}{32}$ " wide.

Bed

Length, 48" and 60"—regular.
 Width, 6 $\frac{5}{8}$ "; depth, 6 $\frac{1}{4}$ ".
 Height, floor to top of bed, 36".

Countershaft

Length, 29"; diameter, 1 $\frac{1}{4}$ ".
 Bearings, 5" long, 1 $\frac{1}{4}$ " diameter.
 Speed, 700 R. P. M.
 Tight and loose pulleys, 8" x 2 $\frac{1}{4}$ "; 2" belt required.

Floor Space

Extreme measure—24" wide, 53" long for a 4' bed.

Horse Power

Maximum, $\frac{1}{2}$.

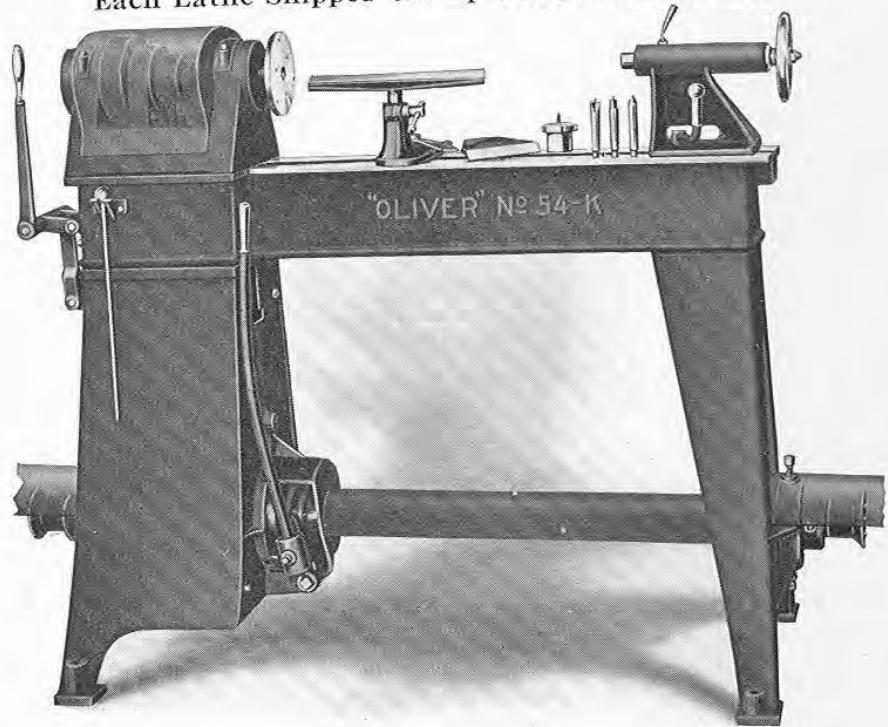
CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Ectype	19-A	Machine with plain bed 48" long, to turn 24" between centers.....	510	550	20
Eden	19-B	Machine with plain bed 60" long, to turn 36" between centers.....	570	650	21
Educe	19-F	Machine with bed 60" long, to turn 36" between centers and with a hand feeding carriage and com- pound swivel rest.....	650	700	22

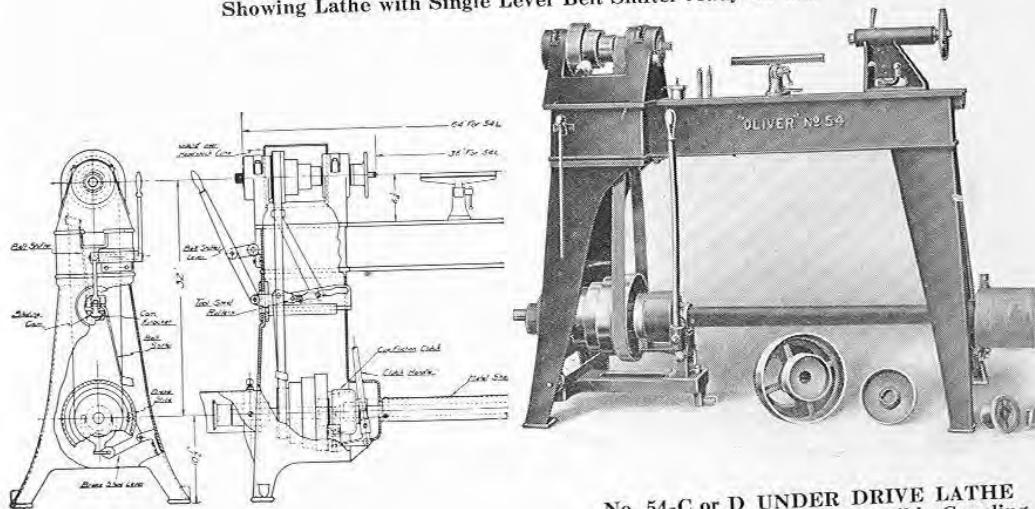
No. 54

"Oliver" Improved Under Drive Speed Lathes

12-inch Swing, Any Length
Each Lathe Shipped Set Up Complete as a Unit



"OLIVER" No. 54-K and L UNDER DRIVE SPEED LATHE
Showing Lathe with Single Lever Belt Shifter ready for use



No. 54-C or D UNDER DRIVE LATHE
Friction Clutch, Cone and Flexible Coupling

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Eland	54-C	4' bed to turn 24"	575	675	36
Elder	54-D	5' bed to turn 36"	700	850	37
Ejret	54-K	4' bed to turn 24"	725	875	36
Ejkon	54-L	5' bed to turn 36"	750	925	37
Ejma		Hand Feeding Carriage for any	50	50	0

No. 51 "Oliver" Motor Head Improved Speed Lathe

For Alternating Current
12-inch Swing Over the Bed

Adaptation

The "Oliver" No. 51 Motor Head Speed Lathe represents the very latest development in Alternating Current Motor Driven Speed Lathes. All belting and pulleys have been eliminated; the motor takes the place of the head stock; the rotor shaft of the motor becomes the headstock spindle. Ample power, safety to the operator, flexibility of service and elimination of operating troubles are among the prominent features of these lathes.

Kinds of Motors

These lathes can be furnished to operate on any kind of alternating current, that is, any phase, any cycles and any commercial volts; but the phase, cycles and volts of the alternating current should be clearly stated when ordering. Two general kinds of A. C. motor headstocks have been developed—a **Four-speed** Motor Head and an **Adjustable Speed** Motor Head; the former has only four speeds and will operate only on 3 phase, 60 cycle, 220 volt current; the adjustable speed motor head has an exceptionally great range of speeds and is furnished to operate on any phase, any cycle, either 110 or 220 volt alternating current.

Four-Speed Motor Head Details

This is a special four-speed, ball bearing, totally enclosed motor with hollow shaft or spindle as described below. Motor speeds are approximately 570, 1140, 1725 and 3450 R. P. M. at full load. The ball bearings take end thrust in either direction.

The motor frame is a cylindrical iron casting with openings at the bottom for bringing out the leads. The primary core is built up of steel laminations, riveted together and securely fastened in the frame. The stator windings consist of two distinct sets of coils, from each set of which two speeds are obtainable. The individual coils are carefully insulated from the core and from each other. The ball bearings take end thrust in either direction.

Four-Speed Motor Head Controller

The controller, with its dust-proof cover, is mounted in the leg of the lathes and is operated by bevel gears and a hand wheel on which are marked the various speeds. A complete cycle of operation is obtained by 140 degrees revolution of the controller shaft.

Dynamic braking effect for slowdown is obtained by throwing on the next lower speed. The motor should be brought to the lowest speed before being finally stopped by the hand wheel.

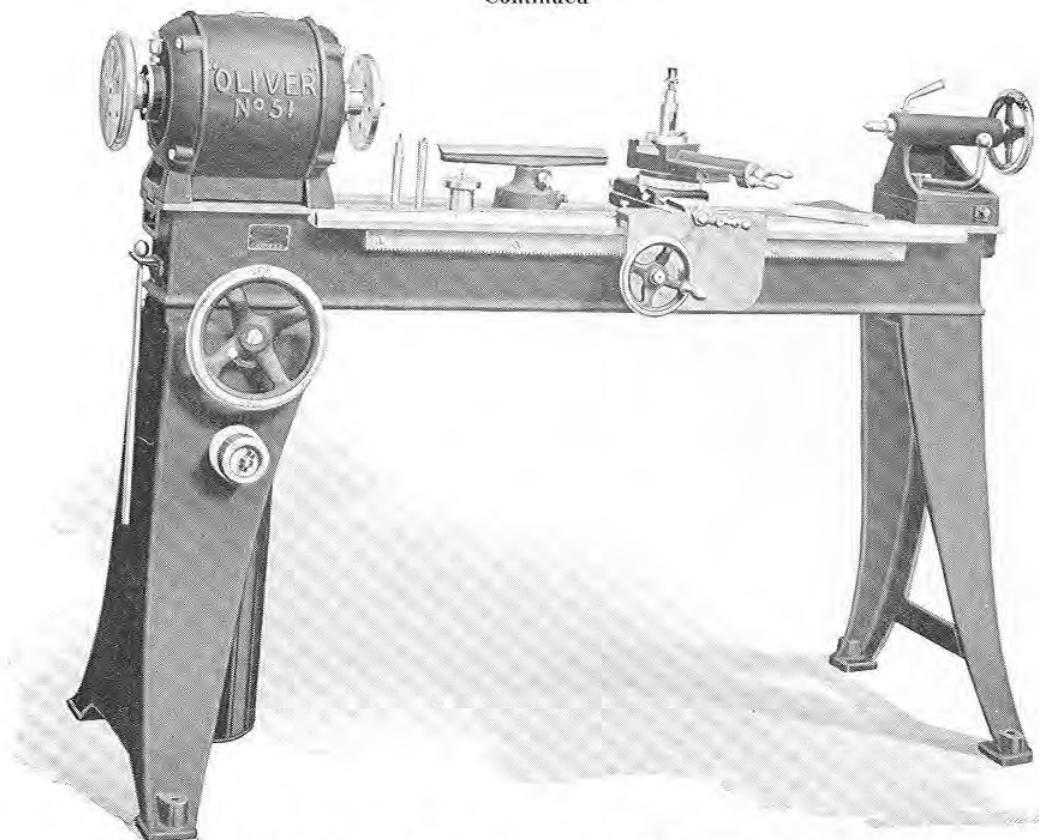


Four Speed Controller Top Cover removed to show Unit Assembly with Gears and Hand Wheel

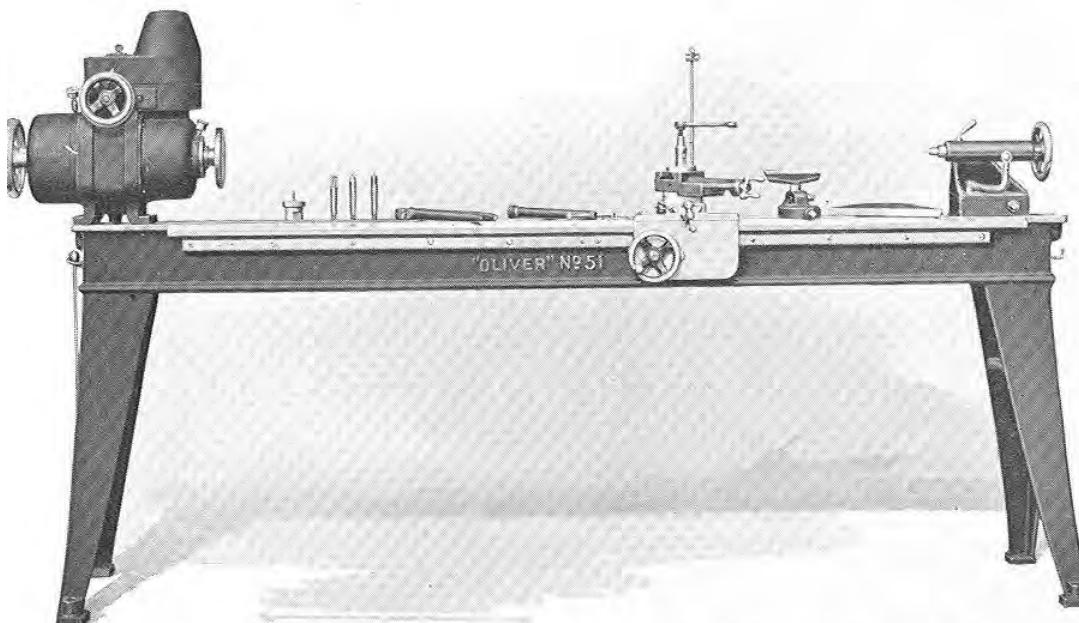
No. 51 "Oliver" Motor Head Improved Speed Lathe

For Alternating Current

Continued



No. 51 "OLIVER" FOUR SPEED A. C. MOTOR HEAD SPEED LATHE



No. 51 "Oliver" Adjustable Speed Motor Head Lathe with 8-Foot Bed Fitted with Carriage, Compound Swivel Rest and Set-Over Tailstock—a Real Good Lathe

No. 51 "Oliver" Motor Head Improved Speed Lathe

For Alternating Current

Continued

Adjustable Speed Motor Head Details

This variable speed alternating current motor is built exclusively for and sold only through the Oliver Machinery Co. The motor itself forms the headstock of this lathe and is entirely enclosed, as is also the control apparatus. The range of speeds is really wonderful—any speed from 600 to 3600 R. P. M. is easily secured. It is equipped with high grade, self-aligning ball bearings of sufficient capacity to carry a 4 H. P. radial load and a 1 H. P. thrust load, much larger bearing capacity than required by the ordinary $\frac{1}{2}$ H. P. motor. Motor is of the single phase, series-compensated type. Will operate on any single or polyphase circuit of proper voltage and can be furnished for any frequency from 25 to 60 cycles. The cover on compensator end is removable for internal inspection. The wiring from main line to motor comprises two wires only, making its connection simple through the avoidance of a multiplicity of wires incidental to the use of regulators or rheostats. The control is built as a part of the motor as follows.

Adjustable Speed Motor Head Controller

The entire controlling mechanism is contained in the motor. There are no field rheostats, regulators or relays. Speeds from 600 to 3600 R. P. M. or any intermediate speed may be obtained by simply turning the conveniently placed hand wheel. A governor of the centrifugal type is built in as a part of the motor and serves the sole purpose of maintaining constantly any particular motor speed desired. This is accomplished by increasing or decreasing the intervals during which the motor receives energy from the main line. The tension of the governor spring is adjusted by a conveniently placed hand wheel. The motor speed may be varied by turning the control hand wheel while the motor is running. A push button start and stop switch with cartridge type overload protection as approved by the National Underwriters is built in as a part of the motor.

Spindle

Is made of steel tubing selected for strength and durability. It is $1\frac{1}{4}$ " diameter and has a $\frac{1}{2}$ " hole its entire length to facilitate removal of centers. Inside end is threaded for face plates and bored to receive No. 2 Morse Taper Shanks. Outside end carries a patented combined hand wheel and face plate for holding the spindle while removing front face plates, for use as a rear end face plate, for turning spindle by hand when making adjustments, or for quickly stopping motor.

Switch

The four-speed motor head lathes, in addition to the controller, are fitted with a safety first switch with one set of fuses and cover—all safe and convenient.

Other Parts

All other parts of this Lathe are exactly as described in connection with No. 19 Speed Lathe, described on preceding pages.

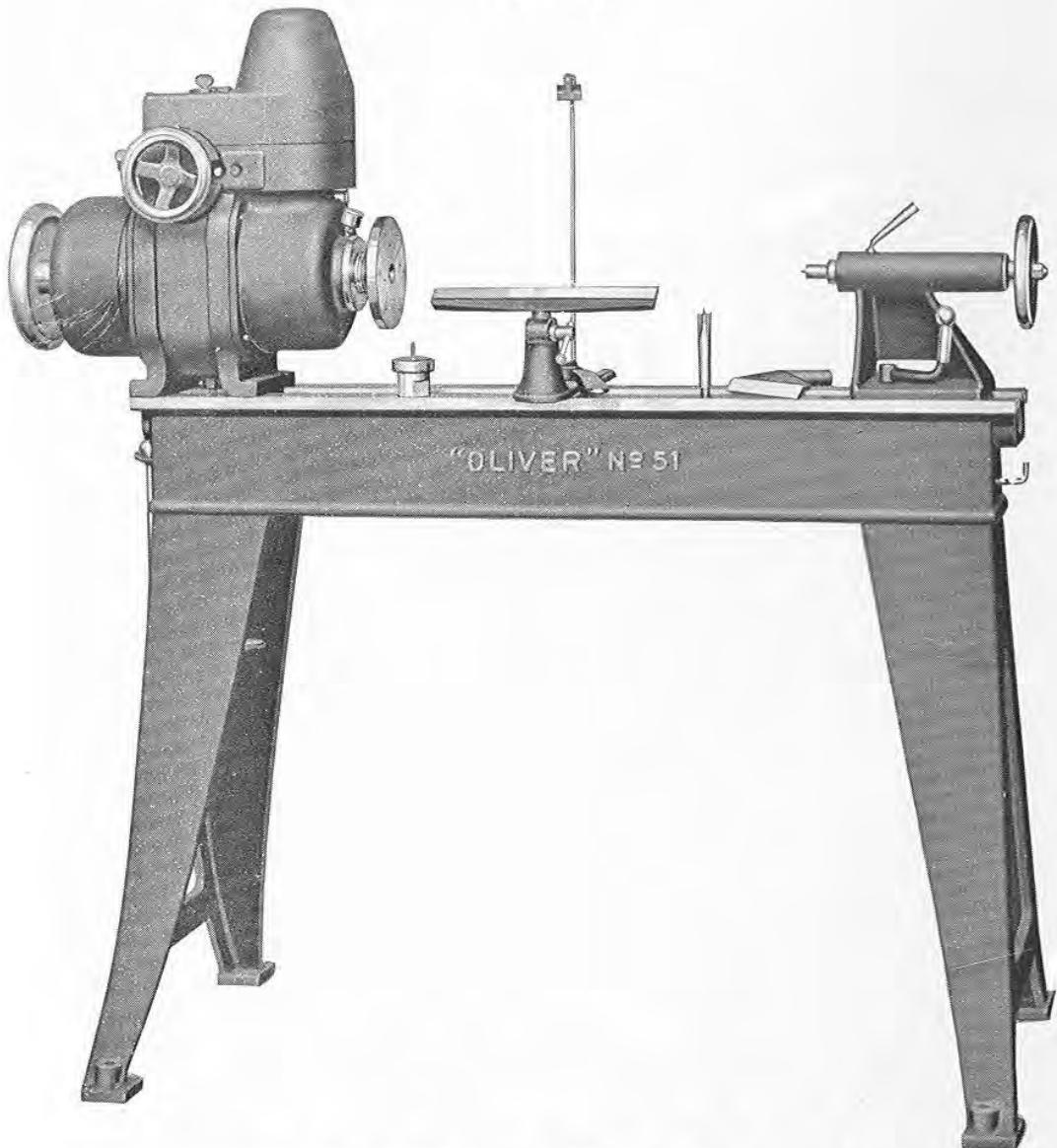
Capacity

Will swing 12" diameter over the bed or $9\frac{1}{2}$ " over the carriage and will turn 24" long between centers on 48" bed or 36" long on 60" bed.

No. 51 "Oliver" Motor Head Improved Speed Lathe

For Alternating Current

Continued



No. 51 "OLIVER" ADJUSTABLE SPEED MOTOR HEAD SPEED LATHE—12-inch
Any phase, any cycles, either 110 or 220 volt A. C.

Equipment Consists of one spur center $\frac{3}{4}$ ", one cup center $\frac{1}{2}$ ", one screw chuck $2\frac{1}{4}$ ", one face plate 6", one each 6" and 12" hand tool rest, one complete rest holder and one fully enclosed motor head with control combined hand wheel and face plate and safety first switch with fuses and cover.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Emost	51-A	Lathe with plain bed 48" long	625	750	46
Emoto	51-B	Lathe with plain bed 60" long.....	675	800	56
Emows	51-E	60" bed lathe with hand-feeding carriage and compound rest.....	765	890	56

No. 53

"Oliver" Motor Head Speed Lathe

For Direct Current
12-inch Swing Over the Bed

Its Record

The No. 53 Speed Lathes have made a fine record in the engineering and educational institutions, satisfying the users because they eliminate main shafts, countershafts and belting, secure more light, purer atmosphere, less trouble and greater safety to the operator, reduce cost of maintenance, beautify the work room and render the location of the lathes a matter of choice. We offer with pride our new No. 53 Lathe with totally enclosed ball bearing headstock, built-in enclosed push button starting controller, and other improvements which make this lathe the most modern D. C. motor headstock lathe obtainable.

Motor Head Stock

Mounted directly on the lathe bed. Consists of an "Oliver" Ball Bearing, fully enclosed, variable speed, direct current, $\frac{1}{2}$ H. P. motor of improved bi-polar type, having commutating interpoles. Speeds vary from 600 to 3000 R. P. M.

Motor Details

Frame made of soft cast steel and fully encloses all current carrying parts. At the commutator or outside end, formed steel swinging covers provide dust-proof coverage and yet give easy access for periodically adjusting brushes and cleaning commutator. Main body supports entire motor in tongue and groove fitting on the lathe bed. End brackets may be removed and entire motor assembled and reassembled without taking same off the lathe. Armature is mounted on special shaft constituting the headstock spindle. Core is built up of laminæ of soft steel sheet heavily insulated before the coils are wound into place. The spindle is hollow, threaded at both ends and runs in frictionless ball bearings lubricated by pressure grease cups. Pole pieces are drop forgings of very high magnetic permeability. Field coils are form wound and thoroughly insulated. Commutator bars are of hard drawn copper, insulated from commutator center and from each other by selected mica. Commutator uses four oversize brushes, eliminating brush trouble and sparking. Brushes are equi-spaced in stubs having patented spring pressure and adjustment for neutral point.

Push Button Controller

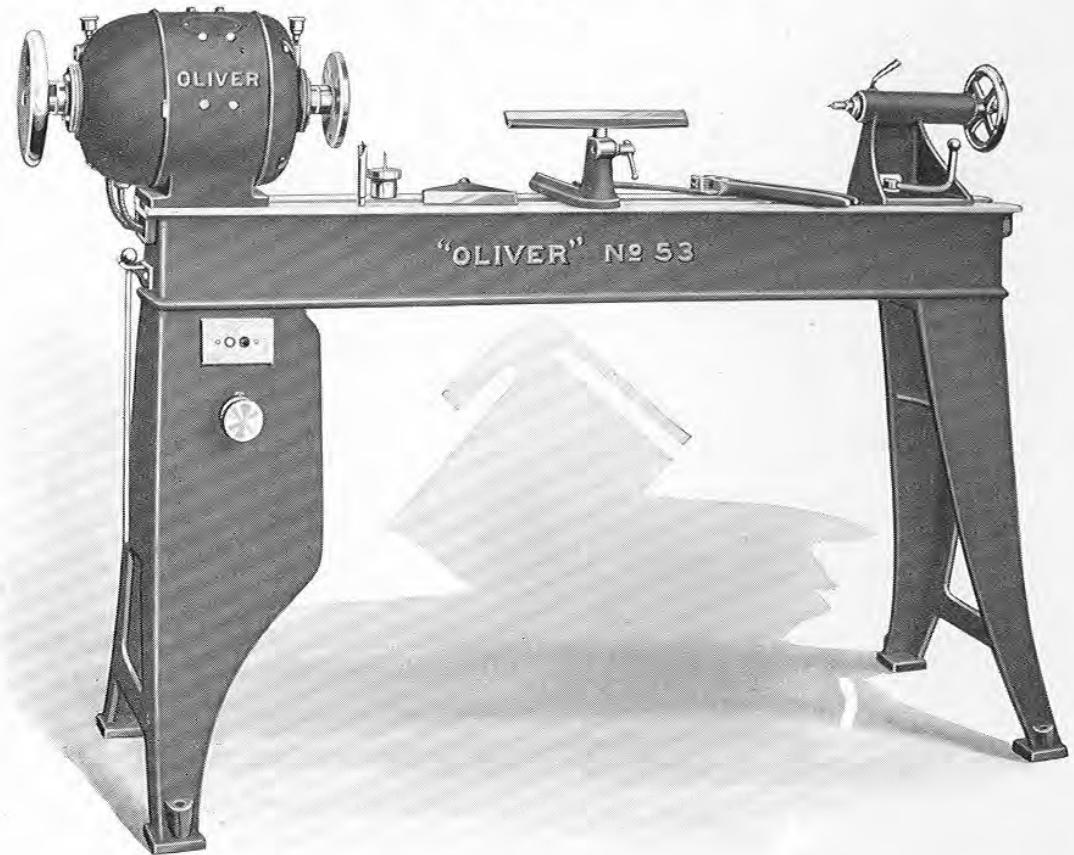
The controller arrangement is brand new, high grade and built specially for this lathe. It is of the push button start and stop and hand wheel regulating type with low voltage protection, overload relay and dynamic breaking. Push button starts the motor always at the lowest speed, then the hand wheel regulates the speed over a range of 20 distinct contact points between 600 and 3000 R. P. M. The motor may be stopped at any speed by simply pushing the stop button. Controller is of unit construction type; all operating parts are mounted on a slate back, then the entire unit is mounted inside of the leg against finished bosses in an accessible totally enclosed dustproof and thoroughly insulated manner and out of the way. Operator touches only the push button and regulating hand wheel, both of which are heavily insulated.

Spindle

Is made of steel tubing selected for strength and durability. It is $1\frac{1}{4}$ " diameter and has a $\frac{1}{2}$ " hole its entire length to facilitate removal of centers. Inside end is threaded for face plates and bored to receive No. 2 Morse Taper Shanks. Outside end carries an "Oliver" patented combined hand wheel and face plate for holding the spindle for removing front face plates, for use as a rear end face plate, for turning spindle by hand when making adjustments, or for quickly stopping motor.

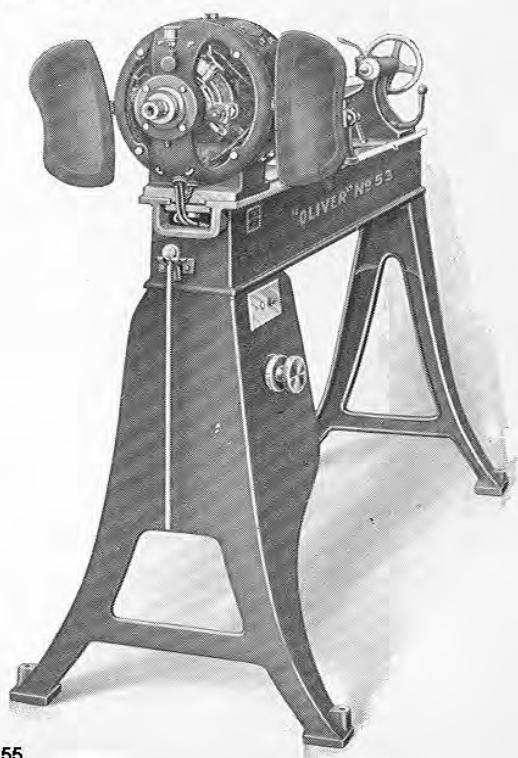
No. 53 "Oliver" Motor Head Speed Lathe

Continued



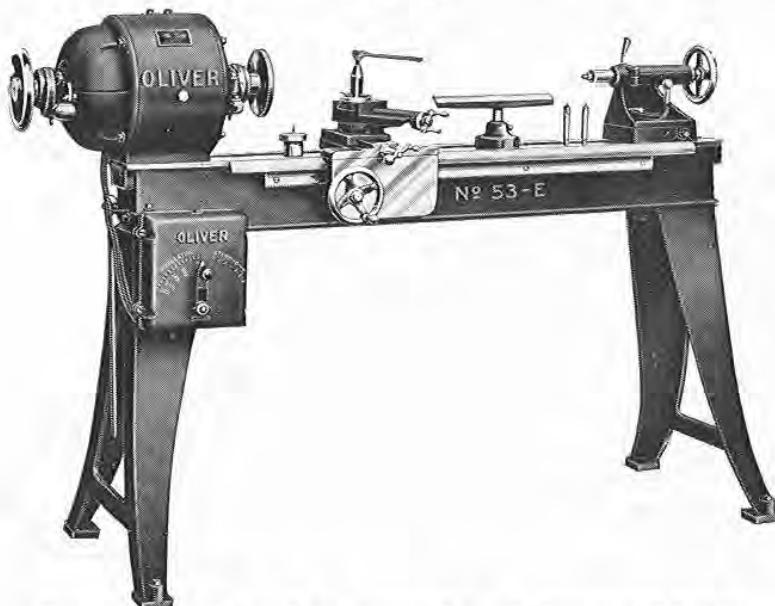
Front View of No. 53-B Lathe

Note the clear cut, enclosed and neat appearance of the headstock as well as the controller. The "Oliver" Motor Headstock illustrated on this page, is the most accessible D. C. Motor Headstock obtainable. Two steel doors swing out or close up easily.



No. 53 "Oliver" Motor Head Speed Lathe

Continued



Detached controller as above illustrated may be furnished if desired,
but the regular controller is the push-button type described on
preceding pages

Equipment Consists of one spur center $\frac{3}{4}$ ", one cup center $\frac{1}{2}$ ", one screw chuck $2\frac{1}{4}$ ", one face plate 6", one 6" and one 12" hand rest, one complete rest holder, one center drift, oil cups and one fully enclosed controller.

Capacity Will swing 12" diameter over the bed or $9\frac{1}{2}$ " over the carriage and will turn 24" long between centers on 48" bed or 36" long on 60" bed.

GENERAL DIMENSIONS

Head Stock Lengths, $18\frac{7}{8}$ "; width, 11"; spindle, $19\frac{1}{4}$ " long, $1\frac{1}{4}$ " diameter. Hole through spindle, $\frac{13}{16}$ "—use No. 2 Morse Taper. Speeds, 600 to 3000 R. P. M.

Tail Stock Length, 7"; width, 6"; spindle, 8" long, $1\frac{1}{4}$ " diameter. Adjustable screw, 8 threads to inch; bearing 8" long.

Carriage Traverse of spindle 4". Amount of set-over when ordered, 1". Traverse of Cross Feed, $6\frac{1}{2}$ "; traverse of carriage on the bed, $36\frac{3}{4}$ "; traverse of compound rest, $3\frac{1}{2}$ "; length of bed bearing, 10"; tool post slot, 2" x $\frac{9}{32}$ ".

Bed Standard lengths, 48" and 60"; width, $6\frac{5}{8}$ "; depth, $6\frac{1}{4}$ "; height floor to top of bed, 36".

Horse Power $\frac{1}{2}$. Continuous duty.

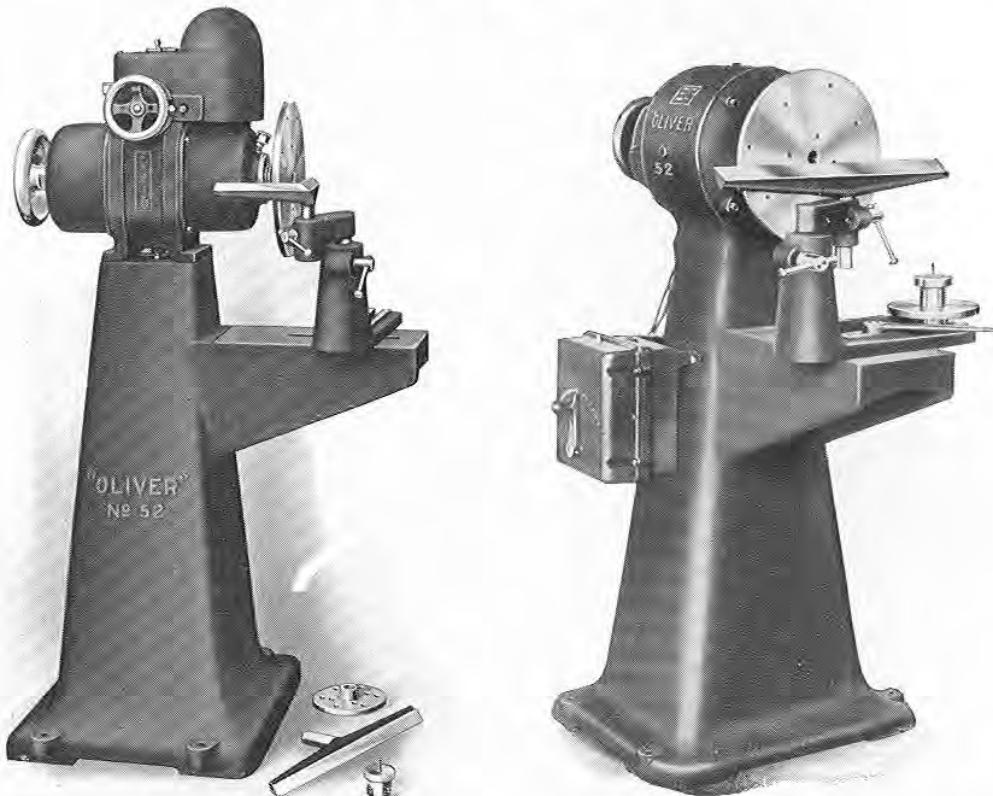
Floor Space 60" x 24" for 48" bed and 72" x 24" for 60" bed.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Emir	53-A	48" plain bed to turn 24" long, mounted on floor legs.....	600	700	44
Emira	53-B	60" plain bed to turn 36" long, mounted on floor legs.....	625	725	55
Emis	53-E	60" bed to turn 36" long, fitted with hand feed carriage and mounted on floor legs.....	715	815	55

NOTE—These lathes may be furnished with short bench legs when so ordered.

No. 52
“Oliver” Motor Head Face Lathe



No. 52-A FACE LATHE
For use on Alternating Current, any phase,
any cycle, 110 or 220 volt

No. 52-D FACE LATHE
For use on Direct Current 110 or 220 volts

Introduction This machine is self-contained; the motor head, the controller or switch and the rests are mounted on the floor column, making the machine especially desirable as a portable face lathe. All electrical parts are totally enclosed—dust proof.

Motor Head Either motor head as illustrated will be furnished in accordance with the available electric current. The A. C. motor head will run at 600 to 3600 R. P. M.—speed controlled by a hand wheel which governs a self-contained controller. The D. C. motor head will operate at 600 to 3000 R. P. M.—speed controlled by a controller mounted on the floor column.

Capacity Lathe swings 24" over bracket, 20" over rest socket and will turn work up to 12" wide by 20" diameter or 6" wide by 24" diameter. Great care should be taken not to run these lathes at a higher speed than the work at hand will warrant.

Equipment One 18" tool rest with offset rest holder, one right angle rest, one 6" and one 12" face plate, one 2½" screw chuck.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Endrad	52-A	Face Lathe for any phase 60 cycle and 110 or 220 volt A. C.....	700	800	27
Endrada	52-D	Face Lathe for 110 or 220 volt D. C... 750		850	27

No. 56

"Oliver" Motor Driven Speed Lathe 12-inch

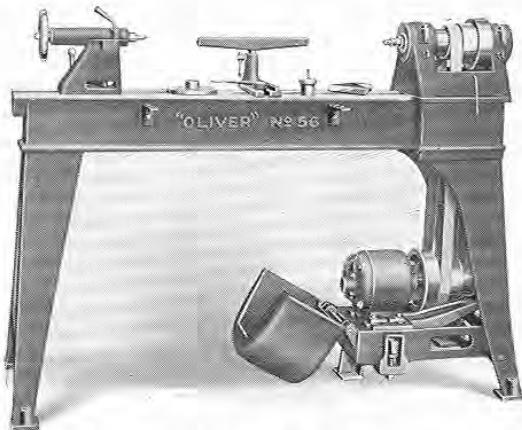
For Direct or Alternating Current Electric Power

Its Record The No. 56 Speed Lathe has proven to be a great favorite, its present perfection resulting from a long series of carefully planned tests and experiments.

Motors The No. 56 can be operated by any kind of electric current or any type of constant speed motor. Being a self-contained machine, it may be located to suit the light, or shifted with little or no expense to accommodate more equipment that may be installed later. When ordering state volt, phase and cycles of your electric current.

Capacity Will swing 12" diameter over the bed or 9½" over the carriage and will turn 24" long between centers on 48" bed or 36" long on 60" bed.

Variations of Speed Variations of speed are obtained by means of a four-step cone of suitable size attached to the armature shaft of the motor, which is located under the housing, beneath the bed, out of the way. The housing not only covers the motor, but guards the belt effectively.



Rear View with Motor Guard thrown back
to show accessibility

Head Stock Spindle, 15" long, 1¾" diameter. Hole through spindle, 5/8" diameter. Spindle bored for No. 2 Morse taper. Speed of spindle, 700, 1195, 1920 and 2800 R. P. M. Width of belt, 1½". Distance from floor to center of spindle, 42".

Rear End Turning When so ordered, any of these lathes may be arranged for rear end turning by making the head stock spindle double ended and mounting on the rear end, our 8" patented combined rear end hand wheel and face plate.

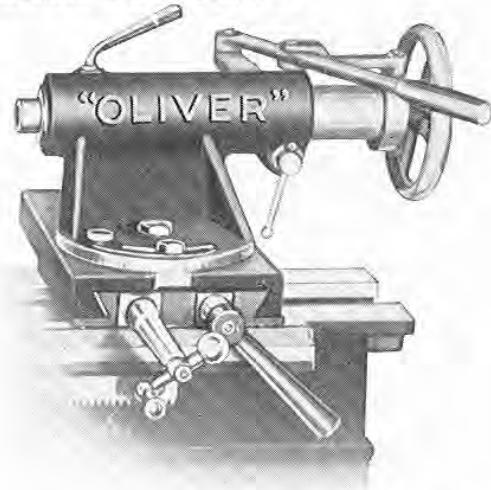
Motor Bracket Motor Bracket is supported upon three joint bearings, eliminating vibration most effectively, besides adding greatly to the general solidity of the entire machine.

Belt Belt is of best quality, 1½" wide, endless, and attached to each speed lathe at the factory. A suitable device is provided for taking up slack or stretch in the belt as it occurs from time to time.

"Oliver" Lathe Attachments

NO. 50 "OLIVER" SPECIAL TAIL STOCK

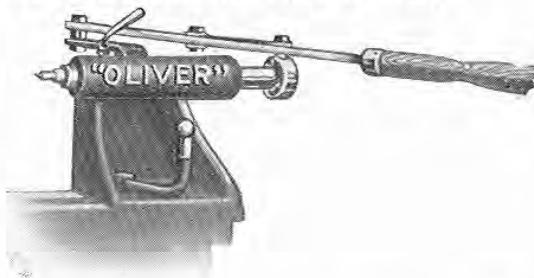
This is a Lever and Screw Feed Swivel Set-Over Tail Stock. Is built in three sizes to be used with "Oliver" Lathes up to 20" swing. The swivel device swings the Tail Stock about a central pin for 30 degrees each way and is clamped in position by two hexagonal nuts. The off-set is controlled by a lever and screw in a finished dove-tail way. A strong lever with eccentric clamp secures the Tail Stock to the bed. The Spindle may be actuated either instantly by the lever feed or steadily by the hand wheel and screw feed.



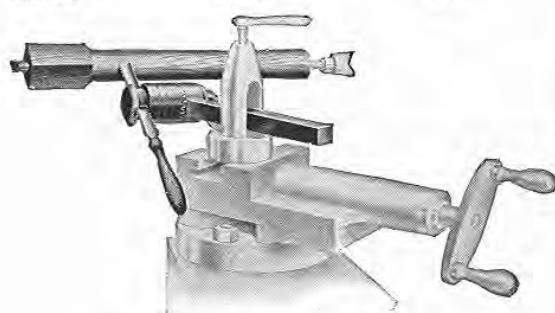
Code	No.	Swing of Lathe	Traverse of Spindle	Amount of Set-over	Weight in Pounds Crated	Weight in Pounds Boxed
Endue	50-A	12"	4"	5"	20	26
Enema	50-B	16"	4½"	7"	26	33
Enforce	50-C	20"	6"	9"	34	42

NO. 49 "OLIVER" QUICK ACTION LEVER TAIL STOCK

This kind of Tail Stock can be furnished for any "Oliver" Lathe up to 20" swing. The quick feed lever part may be securely clamped at any position, making lathe available for regular turning.



Code	No.	Swing of Lathe	Traverse of Spindle	Weight in Pounds Crated	Weight in Pounds Boxed
Enka	49-A	12"	4"	15	25
Enki	49-B	16"	4½"	25	35
Enko	49-C	20"	6"	35	45



In position in Tool Post of a Lathe

NO. 134 "OLIVER" TURNING TOOL HOLDER

This Tool Holder enables the use of old style chisels and gouges as well as special wood turning tools or cutters in the tool posts of lathes having hand or power feeding carriages.

Code	No.	Size	Weight in Pounds Crated	Weight in Pounds Boxed
Ennable	134-A—with 3 filling rings for 12" to 14" lathes..	.....	6	8
Enrage	134-B—with 3 filling rings for 16" to 30" lathes..	.....	7	9

"Oliver" Lathe Attachments

Continued

GROUP A "OLIVER" WOOD TURNING TOOLS

Code, Enroc

This group is very highly recommended as an individual wood turning set for each lathe used in educational institutions such as Universities, Colleges, Technical Schools and Manual Training Departments. The consensus of opinion of over two hundred instructors is back of this set. You will never regret adopting "Oliver" Group A as your standard individual set. All turning tools handled, ground sharp ready for use.

Each set consists of eleven pieces as follows:

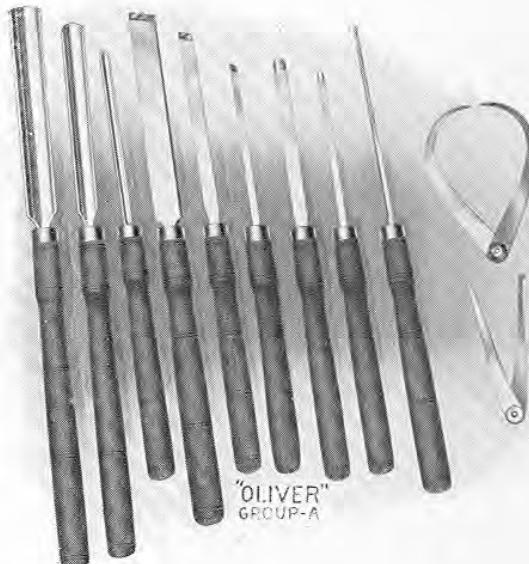
Three Turning Gouges, one each, $\frac{3}{8}$ ", $\frac{3}{4}$ ", and $1\frac{1}{4}$ ".

Three Skew Chisels, one each, $\frac{1}{4}$ ", $\frac{1}{2}$ ", and 1".

Two Round Nose Chisels, one each, $\frac{1}{4}$ " and $\frac{1}{2}$ ".

One Parting Tool $\frac{1}{2}$ ", $\frac{1}{8}$ " across cutting edge.

Two Calipers, 6" plain, one each inside and outside.



GROUP B "OLIVER" WOOD TURNING TOOLS

Code, Enrof

This group of turning tools is intended for those who do not wish as complete a set as shown above. It consists of eight pieces as follows:

Two Turning Gouges, one each $\frac{3}{8}$ ", and $1\frac{1}{4}$ ".

Two Skew Chisels, one each $\frac{1}{2}$ " and 1".

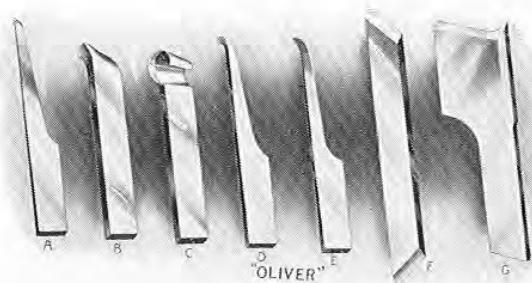
One Round Nose Chisel, $\frac{1}{2}$ ".

One Parting Tool $\frac{1}{2}$ ", $\frac{1}{8}$ " across cutting edge.

Two Calipers, 6" plain, one each inside and outside.

GROUP C "OLIVER" WOOD TURNING TOOL POST TOOLS

Code, Enrok



For use in the tool post of carriages

All of these tools are made of the highest grade material under modern methods of tempering and finishing.

A—Parting Tool $\frac{3}{16}$ ".

B—Round Nose $\frac{1}{2}$ ".

C—Gouge 2".

D—Gouge $\frac{3}{4}$ ".

E—Boring Tool $\frac{1}{2}$ ".

F—Double Edge Skew $1\frac{3}{8}$ ".

G—Roughing and Smoothing Tool $2\frac{1}{2}$ ".

"Oliver" Lathe Attachments

Continued

No. 262 ALL STEEL TURNING CHISELS



Full length 16 inch

Code, Erse

We furnish these ground sharp and handled in the following sizes:
 $\frac{1}{8}''$ $\frac{1}{4}''$ $\frac{3}{8}''$ $\frac{1}{2}''$ $\frac{5}{8}''$ $\frac{3}{4}''$ $\frac{7}{8}''$ $1''$ $1\frac{1}{4}''$ $1\frac{1}{2}''$ $1\frac{3}{4}''$ $2''$

No. 263 ALL STEEL TURNING GOUGES



Full length 16 inch

Code, Esparto

We furnish these ground sharp and handled in the following sizes:
 $\frac{1}{8}''$ $\frac{1}{4}''$ $\frac{3}{8}''$ $\frac{1}{2}''$ $\frac{5}{8}''$ $\frac{3}{4}''$ $\frac{7}{8}''$ $1''$ $1\frac{1}{4}''$ $1\frac{1}{2}''$ $1\frac{3}{4}''$ $2''$

No. 264 TURNER'S HUSTLER CHISELS



Code, Esteem

We furnish these ground sharp and handled in the following sizes:
 $\frac{1}{8}''$ $\frac{3}{16}''$ $\frac{1}{4}''$ $\frac{3}{8}''$ $\frac{1}{2}''$ $\frac{5}{8}''$ $\frac{3}{4}''$ $\frac{7}{8}''$ $1''$

No. 265 TURNER'S PARTING TOOLS



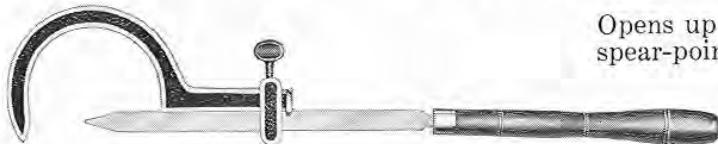
Code, Etch

Width of Blade... $\frac{1}{2}''$, $\frac{5}{8}''$, $\frac{3}{4}''$.

Cutting edge... $\frac{5}{32}''$, $\frac{5}{32}''$, $\frac{3}{16}''$.

We furnish these ground sharp and handled in the three sizes above noted.

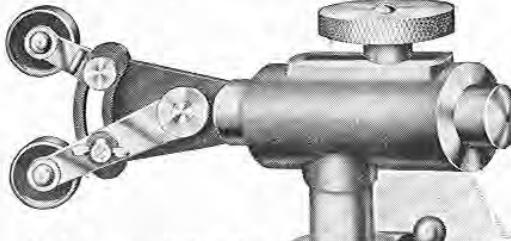
No. 266 WOOD TURNER'S SIZING TOOLS



Code, Ether

Opens up to 4" and includes one $\frac{1}{2}''$ spear-point cutting tool, handled.

No. 206 "OLIVER" ADJUSTABLE BACK REST



Notice—When ordering this Adjustable Back Rest be sure and state the "swing" of lathe on which it is to be used.

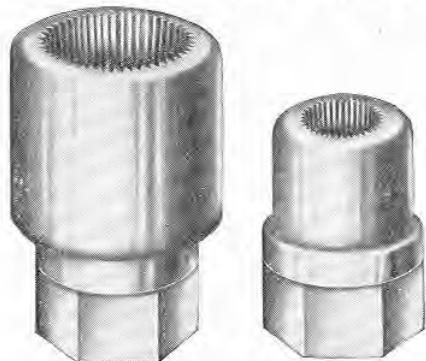
This is a tool of proven merit for steadyng long work while it is being turned in lathes. It is made of gray iron and steel with bearings accurately fitted. Rolls are smooth and do not mar the work. An ordinary hand tool rest socket and bed clamp is furnished with each back rest making same complete ready for use.

Code	No.	Capacity	Shank	Weight in Crated	Pounds Boxed	Cubic Feet
Entail	206-A	Stock up to 6" diameter... 1"	16	16	2	
Enteric	206-B	Stock up to 6" diameter... 1 $\frac{1}{4}$ "	16	16	2	
Entice	206-C	Stock up to 14" diameter... 1 $\frac{1}{2}$ "	25	25	2 $\frac{1}{2}$	

“Oliver” Lathe Attachments

Continued

No. 240 “OLIVER” HOLLOW CHUCKS



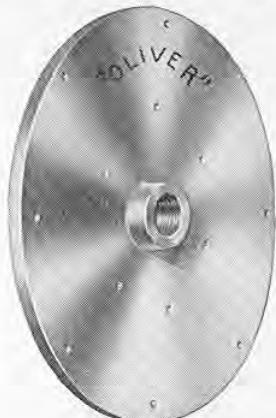
These are made of tough metal and are very useful as a quick acting chuck. The opening to receive the work is made corrugated and larger diameter at the outer end. The taper of the hole assists in holding the work firmly. The sizes given are the diameter of outside end. This device screws on like ordinary chucks and should they stick, a wrench may be applied for removing from spindle.

Code	Sizes
Ento.....	1" $1\frac{1}{2}$ " 2" $2\frac{1}{2}$ " 3"

No. 250 “OLIVER” LARGE FACE PLATES

These are made in any diameter from strong, sound and durable material, machined all over and properly balanced. There are a number of holes countersunk in the face for receiving screws with which to secure to the plate the work to be turned. Made to fit any make of lathe. When ordering be sure to state diameter and length of hole, pitch of threads and make of lathe.

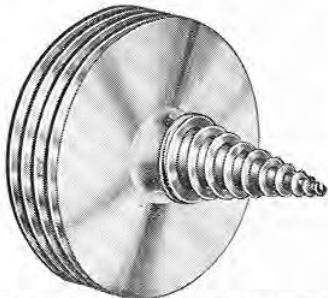
Code	Sizes, diameter in inches
Entreat	8, 12, 14, 16, 18, 20, 24, 30, 38.



No. 208 “OLIVER” SMALL FACE PLATES

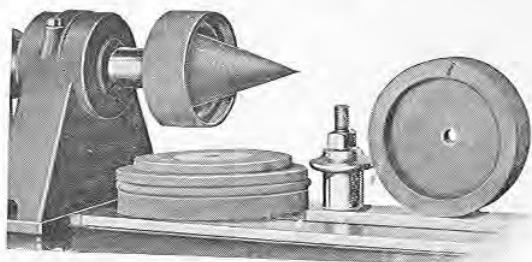
These are constructed in a similar way to the large plate above illustrated, and can be furnished for any make of lathe. State size and length of hole and pitch of threads and whether for front or rear end.

Code	Size, diameter in inches.
Entry	3, 4, 6, 8.



No. 207 SMALL SCREW CHUCK AND WRENCH

The chuck is screwed into the end of the work by means of a peg wrench. Then the work, chuck and all, is screwed into any face plate which is already on the spindle. Then the work may be turned clear to the end of the piece. Code, Entomb.



No. 239 “OLIVER” GRINDING AND BUFFING ATTACHMENT

This consists of a sleeve with two collars and a nut. Grinding wheels, emery cone, stropping wheel and rag wheels for buffing or polishing furnished as ordered.

Code	No.	Description
Errant	239-A	Attachment for use on speed lathes.
Erreo	239-B	Attachment for use on large pattern lathes.

"Oliver" Lathe Attachments

Continued

All "Oliver" centers are made from fine tempered steel with shanks accurately ground to fit the spindle for any make of lathe. We use special high carbon nickel alloy tempered steel which is both hard and tough. When ordering, be sure to specify exact kind and size of taper and make and size of lathe for which centers are desired.



No. 251 "OLIVER" SPUR CENTERS

Code, Epac

Used in the head spindle only.

Sizes $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2".



No. 252 "OLIVER" CUP CENTERS

Code, Epact

Used in tail spindle only.

Sizes $\frac{3}{4}$ ", 1", $1\frac{1}{2}$ ", 2".



No. 253 "OLIVER" CONE CENTERS

Code, Epad

Used either in the head or tail spindle.

Morse Taper No. 2, No. 3, No. 4.

Sizes $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ".



No. 254 "OLIVER" SCREW CHUCKS

Code, Epoch

For speed lathes only. Very useful in turning work which cannot be held between centers and is not susceptible of fastening to a face plate.

Sizes $2\frac{1}{4}$ ", 3", $3\frac{1}{2}$ ", 4"

No. 267 "OLIVER" CROTCH CENTER

Code, Epear

Used in the tail stock of small lathes as a means of holding firmly any piece of round turning that must be bored or recessed by a cutting tool in the head stock.



No. 268 "OLIVER" DRILL PAD

Code, Epide

Used in the tail spindle as a back rest for a piece being bored by a revolving tool in the head spindle.

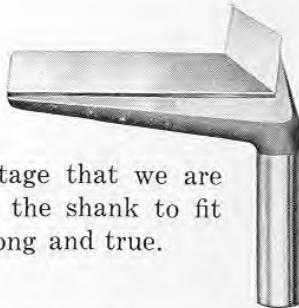


"Oliver" Lathe Attachments

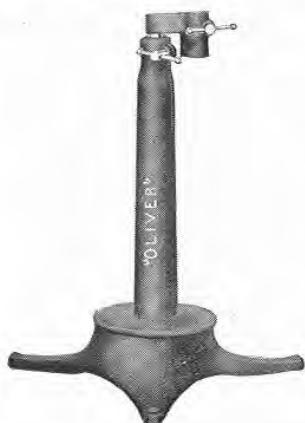
Continued

No. 255 "OLIVER" RIGHT ANGLE REST

Code, Epode



This tool has been found of such material advantage that we are supplying it with all our Lathes. We accurately turn the shank to fit the regular rest holders. The arms of the rest are 6" long and true.



No. 256 "OLIVER" FLOOR STAND

This is one of the features of the "Oliver" Lathes, having a broad base that it may be firmly placed. It carries an offset rest holder for service in doing interior turning. It holds the ordinary rests and has the clamping devices for securing them firmly. We make them in three sizes.

Code	No.	Description	Weight
Erase	256-A	for 12" lathes.....	125
Erash	256-B	for 16" lathes.....	160
Erasi	256-C	for 20" to 30" lathes.....	250
Erask	256-D	for lathes 32" and larger.....	350

No. 257 "OLIVER" SINGLE POLL REST

Code, Erebus

These are made with any size of shank. They are machined straight on the face or edge that supports the turning tool. Shanks are turned to exact sizes. When ordering be sure to give size of shank.



No.....	257-A	257-B	257-E	257-H
Length.....	4"	6"	12"	18"



No. 258 DOUBLE POLL REST

Code, Ergo

No.....	258-B	258-C	258-D	258-F
Length.....	24"	30"	36"	48"

Will make them to fit any "Oliver" rest holder.

No. 41

“Oliver” Double Disk Sander 37-inch

Introduction The economic value of sand paper is becoming more apparent every day and its application to the pattern makers' art is one of its most useful qualifications. The only difference between grinding iron and wood on a disk sander is that you can grind wood many times faster. Five minutes of sanding on a piece of wood will frequently accomplish more than an hour would any other way. It smooths up end grain and puts draft on it. It sands out saw marks. In repairing patterns the broken piece that is usually thrown away because it is full of brads or nails, may be sanded nails and all and saved.

A large disk is more desirable than a small one because the sand paper farthest from the center does the most work.

General Construction This very desirable sander is constructed from a new design and has embodied in the design and superior workmanship that which renders it subject to the most searching inspection. If one has important and variable sanding to do he should not ignore this very efficient source of economy.

Base We build this in the cored form with a wide flange for rigid support on the floor. It carries all the working parts and its solidity eliminates vibration. On the front is a door through which may be introduced a motor for electric drive.

Spindle This is of fine crucible steel, ground true and fitted at each end to receive the metal disks. Its driving pulley is grooved spirally on its face to permit increase of belt power.

Bearings They are lined with genuine babbitt scraped to correct fit, have large oil chambers and wick oilers. End motion to spindle is eliminated by means of forged collar on the spindle between disk and bearings and adjustable keyed and set screwed pulley against babbitt thrust bearing.

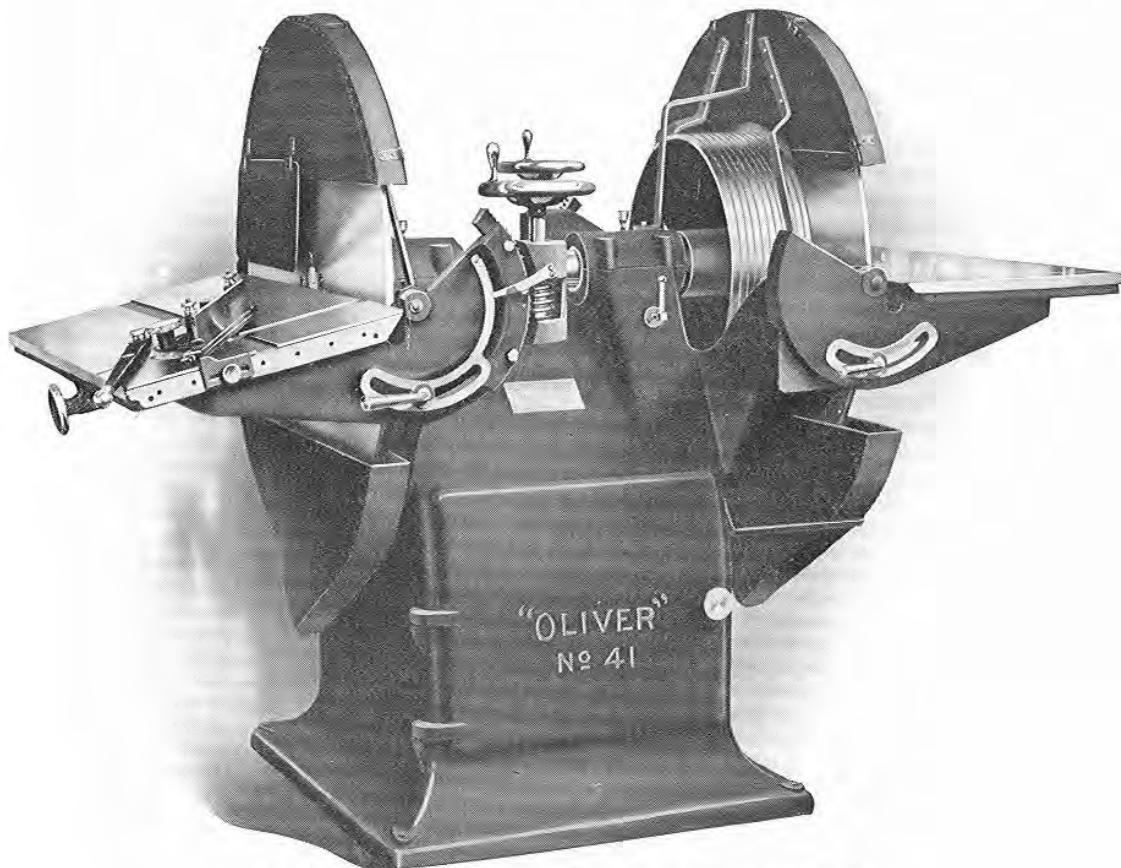
Disks These are of steel $37\frac{1}{2}$ " diameter machined to receive the sand paper and are screwed to the spindle by four large counter-sunk screws. The paper is cemented to face of disk.

Dust Hoods A sheet steel dust exhaust hood for each disk is located just below the table top with a connecting spout to each hood. Prevents dust from being scattered about the room.

Disk Guards Sheet steel guards to protect operator against danger from that part of disks above the table are furnished regularly with each machine.

No. 41 "Oliver" Double Disk Sander 37-inch

Continued

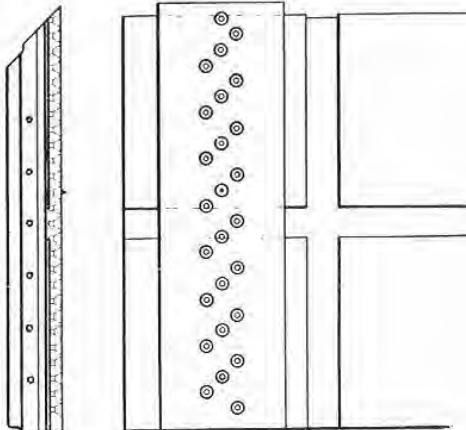


No. 41-B "OLIVER" DOUBLE DISK SANDER—37-inch
Note the Disk Guards and Dust Hoods Regularly Furnished

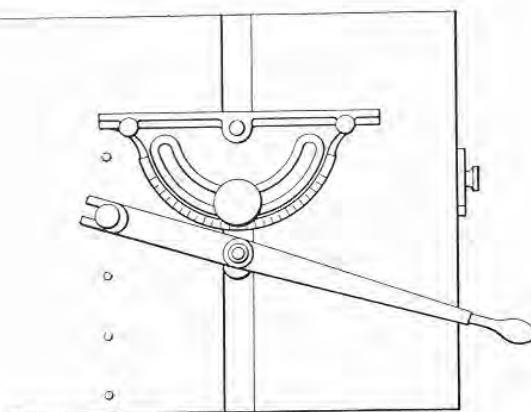


No. 41 "Oliver" Double Disk Sander 37-inch

Continued



Etching of Device for Sanding circular work on the edges



Etching of Table showing device for sanding to uniform widths and lengths

Circular Sanding Attachment Consists of metal plate with tongue to fit slot in table which permits using the entire surface of disk in circular sanding. The plate has a series of staggered holes so that any diameter within the capacity of the machine may be sanded either square or to any angle the table will tilt. The steel pivot center can readily be changed from one hole to another and for diameters between the limits of these holes and for fine adjustment, a micrometer screw is provided for bringing the table to and from the sanding disk.

Tables They are 46" long and 20" wide, have a lateral adjustment of 2" by means of hand wheel and screw and an angular adjustment of 45 degrees. The table brackets are mounted on rocker arm controlled by means of hand wheel, worm and segment of worm gear.

Duplicating Fence For sanding several duplicate pieces to the same width we furnish on one table a fence sliding in a groove. It is moved to and from disk by lever which strikes an adjustable stop at the side. The fence is graduated to 30 degrees each way and may be swiveled to sand angular work. This mechanism may be removed as desired, leaving table clear for large work.

Motor Drives There are a variety of these that are applicable to this machine, the full details of which we supply on request. The best plan is the one where the motor is located inside the base and belts from a pulley thereon to the spindle pulley. The motor support is adjustable for taking up the stretch of the driving belt.

No. 41 "Oliver" Double Disk Sander 37-inch

Continued

Countershaft This is equipped with ring-oiling bearings and the necessary driving pulleys. The loose pulley is fitted with a bronze sleeve with oiling devices.

Equipment Consists of two disks, one universal gauge with duplicate sanding attachment, circular sanding attachment, two steel disk guards to cover upper unused portion of disks, two dust hoods below the tables, six No. 1½ garnet abrading sheets, counter-shaft, hangers and pulleys.

GENERAL DIMENSIONS

Base 65" long, 39" wide, 40½" high to spindle center.

Disks 37½" diameter.

Spindle 34" long, 3" diameter with journals 7½" and 8¾" long.
Pulley 10" x 6½"—Speed 500 R. P. M.

Tables 46" long, 20" wide, vertical adjustment 6½", lateral adjustment 5", tilts to 45 degrees.

Countershaft 40⁵/₈" long, 1½" diameter.
Hangers 14" drop—bearings 6" long.
T & L pulleys 10" x 6½".
Driving pulley 10" x 6½".
Speed 500 R. P. M.

Floor Space 42" x 82".

Horse Power Maximum 7½ H. P.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Ethics	41-A	Size 37" Belt Driven.....	3100	3500	118
Ethit	41-B	Size 37" Motor Driven.....	3100	3500	118

EXTRAS

Sando Sando-Cement, one gallon can.

Ethnic Abrading Disks or sheets cut to shape, No. 1½ Garnet paper.

Etanob Metal Disks, 37" diameter, usable on either side.

No. 34

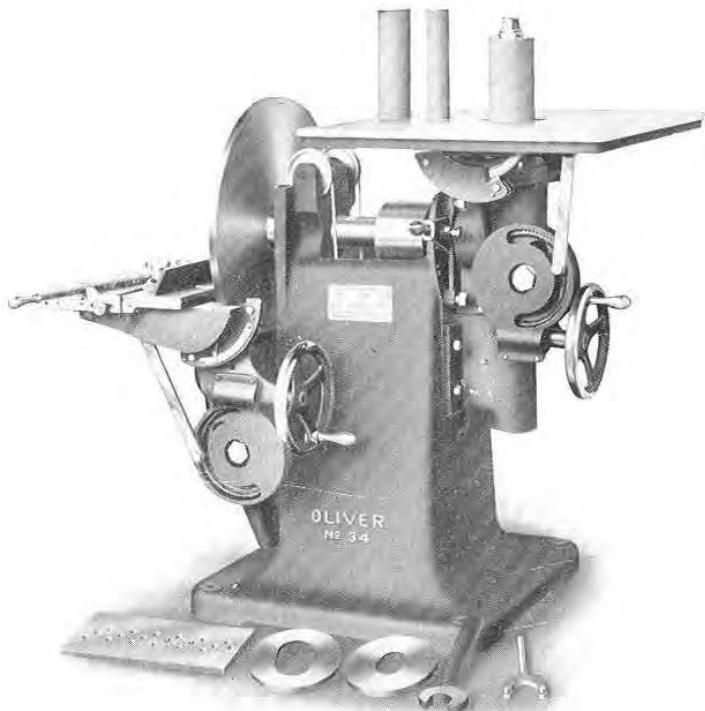
“Oliver” Vertical Spindle and Disk Sander

Ball Bearings and Single Belt Drive
24-inch and 30-inch Disk

Introduction	In this machine are incorporated all of the best features found in any disk and spindle sander. The driving is all done through a single spindle. The disk shaft is connected to the drum by means of a standard friction transmission. The machine is ball bearing throughout with double row thrust bearings for each spindle, full enclosed and protected.
Economy	By the use of highest quality ball bearings and the simple transmission, the machine requires practically no more power applied to the belt than is used at the point of sanding.
Main Frame	Is heavy, made of one casting in the cored form with large flanged base measuring 28" x 28" at the floor.
Disk Table	Is machined true with grooves to receive centering plates, duplicating attachment and angle gauge. The disk table is counterbalanced by weights operating inside the column. It raises above and lowers below the center 6". There is a positive clamping device for holding table in position on column. Disk table tilts 10 degrees up and 45 degrees down. The disk table moves back 4" from the disk. The tilting mechanism forms the bracket on which the table rests. The heavy cast iron machined rockers are so arranged that the pivoted center is exactly in the plane of the disk. Table for 30" machine is 39½" x 15"; for the 24" machine it is 33½" x 15".
Spindle Table	Is 26" x 30", height from floor 42". Table tilts 45 degrees down and 5 degrees up. Provided with removable metal throat pieces closely fitting the 2", 3" or 4" drums respectively.
Disk	This is 24" or 30" in diameter, made of steel ½" thick, machined in such a way that the paper easily adheres to it and tested for running balance. The center of the disk is 32" from the floor. Hood is so arranged as to connect conveniently with an exhaust pipe. Disk spindle pulley 6" x 4½", 1200 R. P. M.
Vertical Spindle	Can operate disk without running spindle. The latter can be instantly thrown into or out of operation by simply moving one lever, which is conveniently placed. Metal disk guard covers the back upper portion and the periphery of the disk.
	The vertical spindle is 1¾" diameter, fitted with high grade ball bearings. The oscillating mechanism is operated from spindle through worm and gear in oil reservoir, making fifty strokes per minute. The oscillating travel of drum is 1⅛". Standard length of drums 9'.

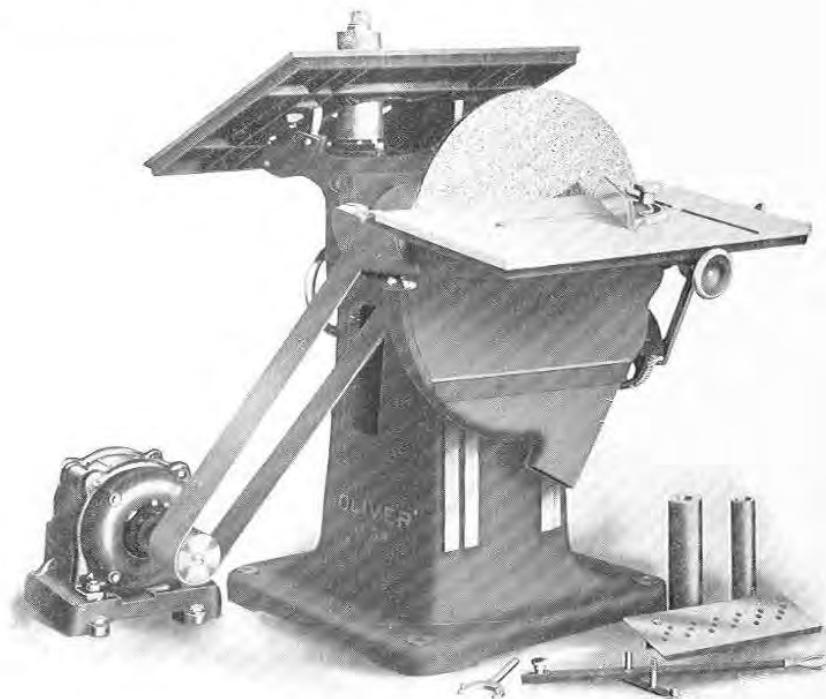
No. 34 "Oliver" Vertical Spindle and Disk Sander

Continued



A SURE
MONEY SAVER
IN ANY
PATTERN SHOP

Front View showing method of Tilting the Tables



Rear View showing Tables Tilted and Belted Motor Drive

No. 34 "Oliver" Vertical Spindle and Disk Sander

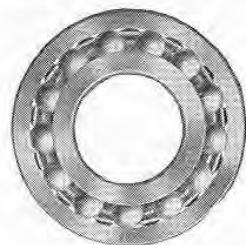
Continued

Drives

For belt drive, the countershaft may be placed on the floor a short distance from sander or suspended from ceiling below. For motor drive, the motor may be mounted on a bracket bolted to base of machine in a self-contained manner or placed on floor near the machine.

Equipment

Consists of 2", 3" and 4" drums, each with steel circles to fit the table; one centering plate with two plugs for circle work which will sand circles to 30" diameter; one attachment for duplicating pieces; one graduation gauge for setting the desired angle; one spanner wrench and one wrench for drum.



Ball bearings of the highest grade are used both for the Disk and the spindle Bearings of this Sander.

Floor Space Machine alone, 40" x 58"; with countershaft, 5' x 6'.

Countershaft Driving pulley 12" x 5"; T & L pulleys 10" x 5"; 600 R. P. M.

Horse Power 2 to 4, according to work; usually 3 H. P.

CODE, WEIGHT, ETC.					
Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Etap	34-A	Sander, 24" disk, with counter-shaft	2040	2250	64
Etape	34-B	Sander, 24" disk, without counter-shaft	1800	2050	60
Etapi	34-D	Sander, 30" disk, with counter-shaft	2070	2270	65
Etago	34-E	Sander, 30" disk, without counter-shaft	1900	2075	60

"OLIVER" SANDO-CEMENT

After many experiments we now offer with pride this scientifically prepared adhesive—"Oliver" Sando-Cement—for fastening garnet paper or emery cloth sheets to metal disks and rolls of disk and spindle sanders or grinders.

"Oliver" Sando-Cement is odorless, vermin-proof, non-corrosive, fire-proof, quick-acting, non-poisonous and comes in a can ready for use. No mixing or preparing is required.



Code Description
Sando One Gallon Can of "Oliver" Sando-Cement.

No. 181
"Oliver" Oscillating Spindle Sander
 MOTOR DRIVEN

Introduction This machine is designed especially for use in pattern shops for sanding irregular shapes, curves, etc. It may be placed very close to the patternmaker, because it connects to any light socket.

Column Cast iron with large flanged base, gives ample floor support, does away with vibration.

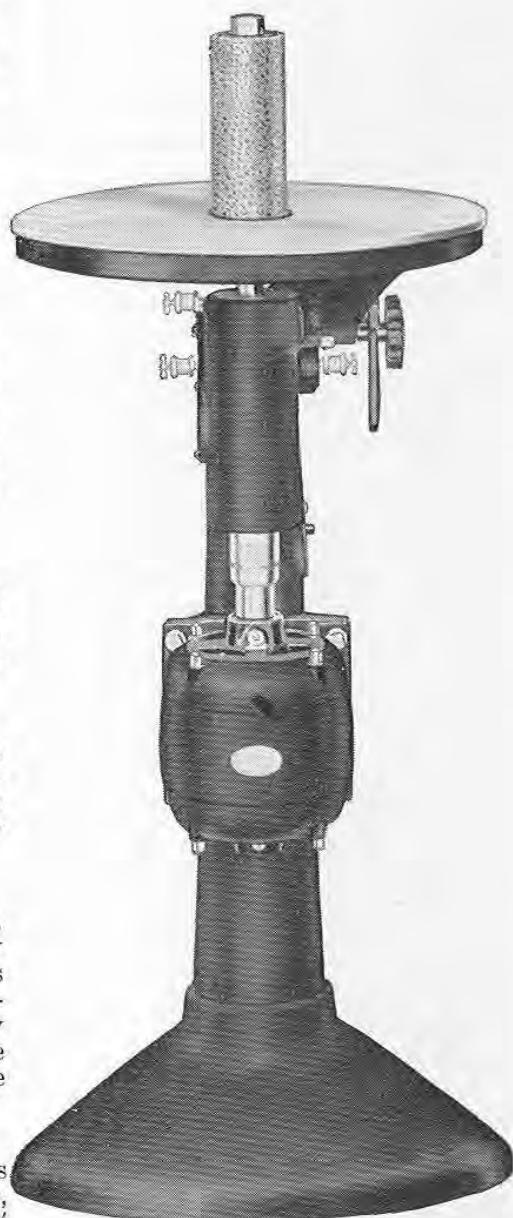
Spindle Crucible steel, finely ground, directly connected to the motor, 1725 R. P. M. Has mechanism totally enclosed for oscillating up and down. Highest grade ball bearings transmit all of the power from the motor directly to the work.

Rolls These are two in number, made of steel, one each 2" and 3" diameter, by 9" long, to which the garnet paper is cemented.

Spindle Table This is circular, 20" in diameter, is 38" from the floor and has hand wheel mechanism for tilting 45 degrees down or 15 degrees up.

Motor This is of the vertical type, either A. C. or D. C., securely fastened to the columns and is directly connected to the spindle. Can be attached to any light socket. When ordering be sure to specify voltage, phase and cycles.

Equipment Includes the machine as shown on the cut, with motor, switch, one steel roll each 2" and 3" diameter and sample can of cement.



CODE, WEIGHT, ETC.

Code Eube	No.	Machine	Weight in Crated Pounds	Pounds Boxed	Cubic Feet
	181	Oscillating Spindle Sander	200	275	7

No. 182
"Oliver" 15-Inch Disk Sander

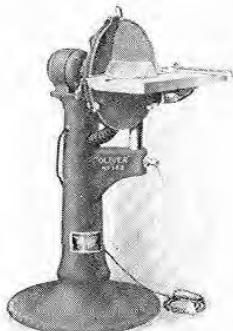
MOTOR DRIVEN—PORTABLE

Disk	15" diameter, aluminum casting turned true and balanced. Mounted on disk shaft hub. Removable for renewing sand paper by loosening clamp on swivel post, swinging table to right, and with a screw driver taking out three screws which secure disk on hub, and removing disk from center pin. Speed, 1725 R. P. M.
Disk Head	One piece iron casting, containing disk, disk shaft, ball bearing end thrust, and exhaust fan and system, forming one complete unit.
Table	Made of cast iron 9½" wide, 21" long, 37" high from floor. Machined true and has groove to take angle gauge and circle, segment and duplicating gauge. Tilts 45 degrees down, 25 degrees up by means of hand wheel, worm, worm segment, and segment, which feature is self-locking. Graduated index indicating tilt. Vertical adjustment of 6". Swings to right to take off disk.
Column	Made of cast iron, with wide flange giving solid footing on floor. Silent domes attached to bottom.
Angle Gauge	Operates in table slot and graduated from 0 to 45 degrees to right and left for accurate setting.
Circle Segment and Duplicating Gauge	With this combination gauge, circular, segment and duplicating work can be done. Consists of plate with hinged strip pivoted to bottom, which rides in slot of table. Plate has series of holes, both reamed and tapped, to take center pins for circular work and fence part of angle gauge for duplicating work. Also has stop gauge and pin for segment sanding, operated by means of handle cast to plate and adjusting screw as stop or set for amount of cut to be taken.
Motor	Proper size, single, 2 or 3 phase, 60 cycle, 110 or 220 volts A. C., or 110 or 220 volts D. C., coupled to disk shaft. (25, 30, 40 or 50 cycle motor at extra cost). Rotates disk shaft but does not take load of thrust. Motor runs in ball bearings to prevent friction and wear. Plug connector attachable to any light socket, cord and push button switch operate the motor.
Design	For accurately sanding pieces such as segments, angles for built-up work, core print and circular work, taper work, picture frame jointing, and sanding and fitting small pieces in pattern and cabinet work. When fitted with aloxite or emery cloth it is very efficient for medium and light metal grinding and polishing.
Capacity	Sands circular work up to 15" diameter and duplicating work up to 7" wide.

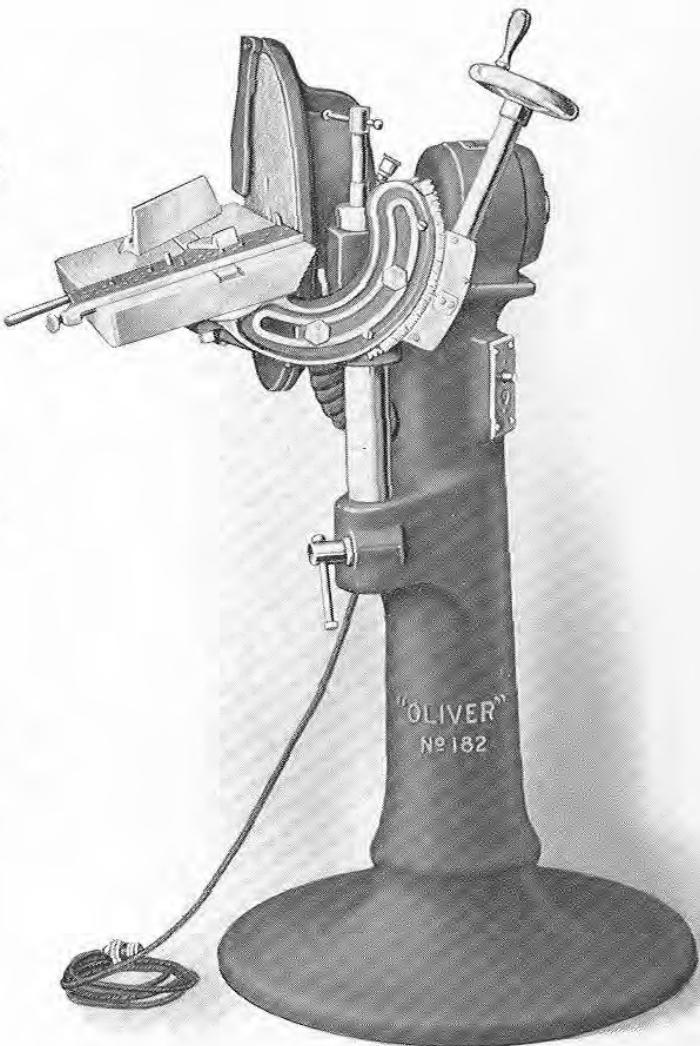
No. 182 "Oliver" 15-Inch Disk Sander

Continued

"MOST MODERN
PORTABLE
DISK SANDER
OBTAINABLE"



Rear View



"Oliver" No. 182 Disk Sander, Front View

Equipment

Motor, switch, connecting cord with plug, one extra 15 aluminum disk, six garnet abrading disks, sample can of Sand Cement, one angle gauge, one circle, segment, and duplicatin gauge with six centers, segment stop and pin.

Code	CODE, WEIGHT, ETC.		Weight in Pounds Crated	Weight in Pounds Boxed	Cul Fe
	No.	Description			
Euba	182	Disk Sander, Motor Driven.....	400	500	1
Sando		Sando Cement, in one gallon can.			

No. 126 “Oliver” Universal Belt Sander

MOST MARVELOUS BELT SANDER EVER DESIGNED

Where Used Designed to take care of large factories as well as small shops or wherever a finishing and polishing machine is required.

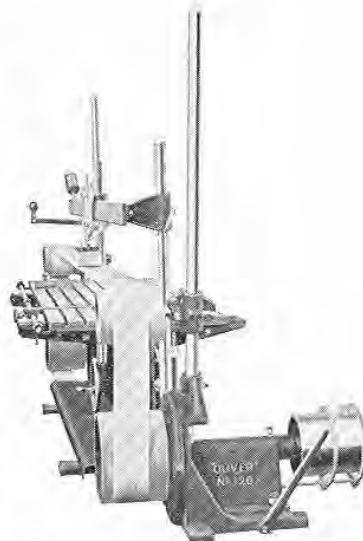
Essential Features (1) Convenience to operator. (2) Safety, having no overhead belts. (3) Belt runs sand part next to the pulleys; this overcomes the breaking of the sand from belt. (4) Can do edge work as well as line work. (5) Table rolls on ball bearings and not in ball bearing rollers. The table is so easy running that a slight push will run it the full capacity of 36" travel.

Principle The “Oliver” No. 126 Universal Belt Sander differs in principle from any other belt sander. The sand belt travels over four pulleys of which two are stationary and so placed as to keep the idle part of the sand belt down near the floor; the other two pulleys are supported on vertical arms or posts, can be moved up and down the posts and can also be swung inwardly or outwardly, thus locating the upper or working part of the sand belt at any desired height up to 72" high.

Capacity Will take work any length and sand to center of 72"; will take work on table 54" high and on floor plate 72" high; table travels 36" vertical adjustment 14"; belts up to 10" wide may be used.

Table Top is constructed of planed wood strips with 1" gaps between each strip. The table is 32" wide by 96" long, and travels horizontally 36" on ball bearing ways which also guide it. These ways have vertical adjustment of 14" and are controlled by racks, gears, shafts, worm wheel, worm, and hand wheel which forms a self-locking adjustment in any position in the 14" vertical adjustment. The ways ride on a one piece frame of rigid construction forming the base of machine. On the top of table is an adjustable bar to prevent work to be sanded from sliding off table.

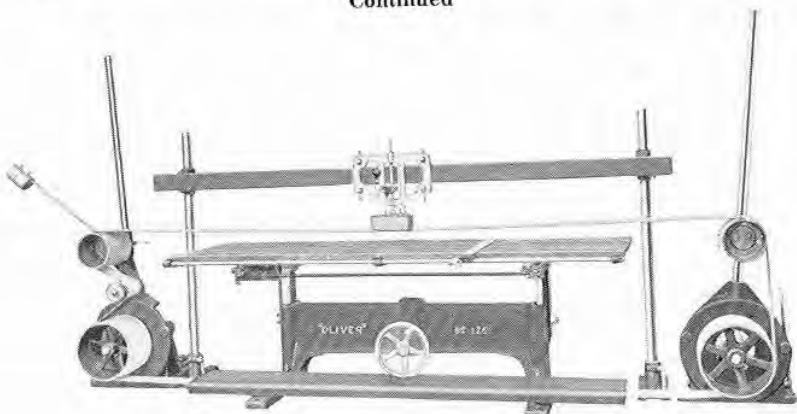
Power Stand This is of rigid construction having a base to take either belt drive countershaft which runs in ball bearings, or motor direct connected to drive pulley. The base also has belt shifting device to shift belt when belt driven. The idler arm swivels concentric to drive pulley and can be locked in any position. The idler is adjustable up or down the arm to height of work; and can be adjusted in a tilting position up or down to keep sand belt from running from side to side of pulley or jumping off pulleys.



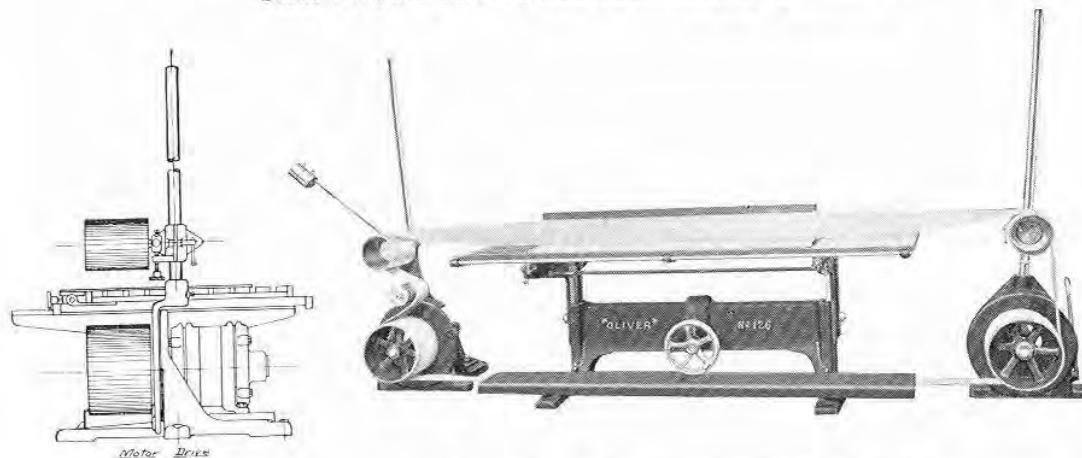
Right End View with
Semi-Automatic Attachment

No. 126 "Oliver" Universal Belt Sander

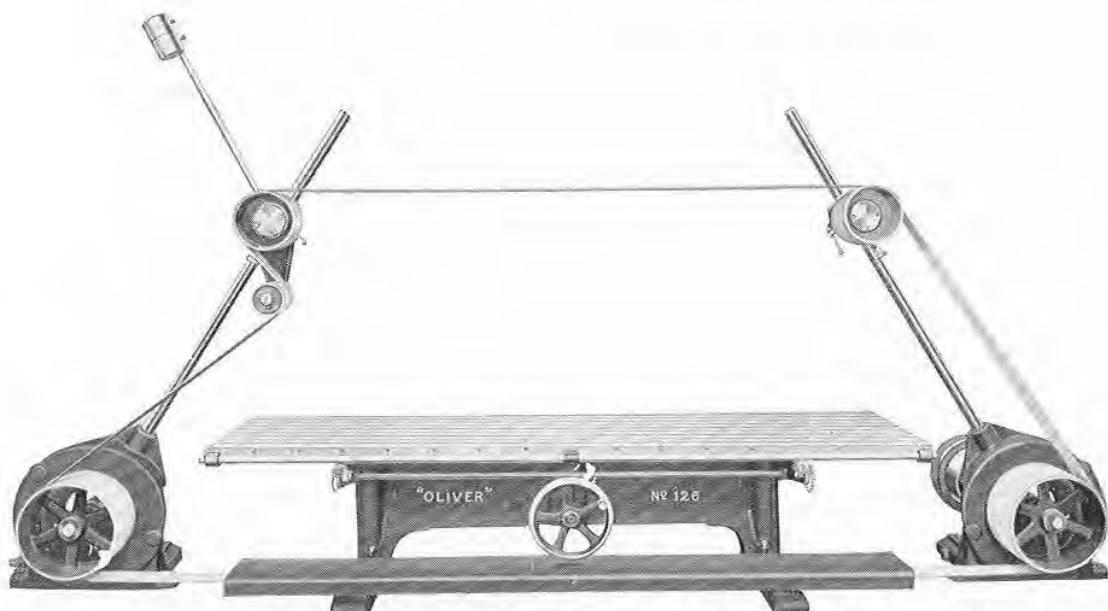
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Front View, also Showing Semi-Automatic Sanding Attachment



View of regular Sander set up as an edge sander



Showing regular machine with both stands tilted inwardly and the idler pulleys moved up to illustrate the almost unlimited capacity of this most Universal Sander

No. 126 "Oliver" Universal Belt Sander

Continued

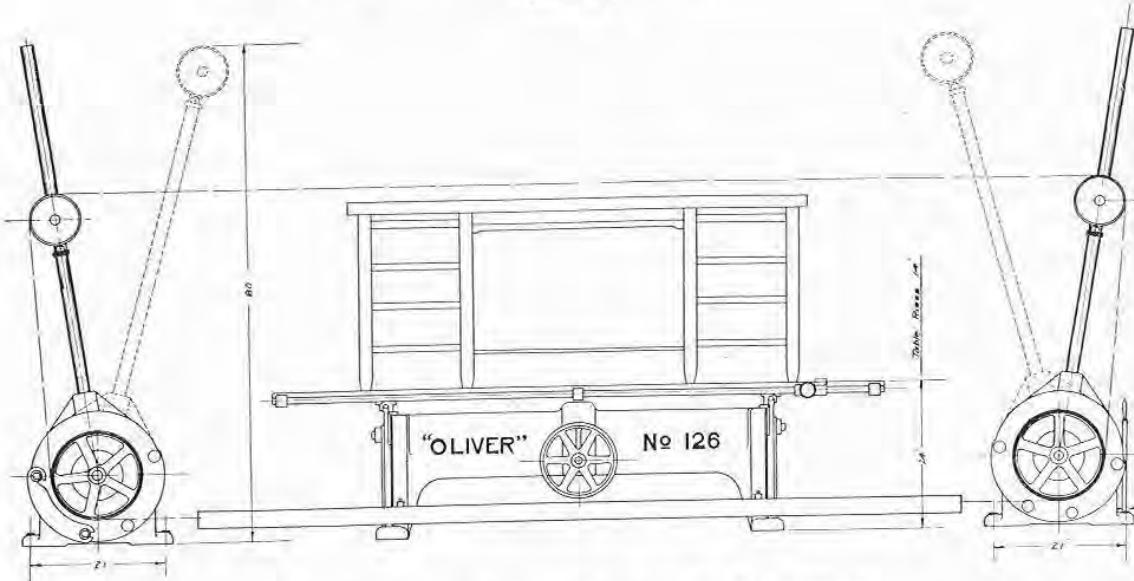


Diagram showing unusual large capacity of this sander

Idler Stand

This is of rigid construction having base to take large idler pulley which has ball bearings for idler shaft to run in. The small idler arm swivels concentric to the large idler pulley and is concentric to the large idler pulley, and is counterbalanced to take up slack and give even tension to sand belt. This idler is adjustable up or down the arm to height of work and can be adjusted in tilting position up or down to keep sand belts from running from side to side on pulleys or jumping off pulleys.

Edging Attachment

This is made to attach to power stand arm and is used for sanding edge work. It is composed of a belt plate adjustable table that can be tilted to 45 degrees up or down and can be raised or lowered at the will of the operator. It also has attachments for sanding from edge mouldings and irregular shapes.

Countershaft

$1\frac{1}{2}$ " diameter; runs in ball bearings; driving pulley is 14" diameter by 10" face. Tight and loose pulleys are 10" diameter by 5" face. Speed 900 R. P. M.

Equipment

One sanding shoe, necessary wrenches, and edging attachment.

Floor Space

72" wide, any length preferable. Height 80" over all.

Motor Drive

2 H. P., 900 R. P. M. motor mounted on power stand of machine with 14" diameter by 10" leather faced pulley.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Eufa	126	Universal Belt Sander, belt driven.....	2400	3270	153
Eufag	126	Sander without the table.....	1550	2200	100

EXTRAS

Eufig	Motor Drive Arrangement.			
Eufok	Semi-Automatic Sanding Attachment.....	250	350	5
Eufut	Pneumatic Sanding Pad with Inflating Pump.....	5	5	—

No. 183

"Oliver" Motor Driven Belt Sander

SELF-CONTAINED IN EVERY RESPECT

Where Used

The field of usefulness of this machine is practically unlimited. Large manufacturing plants, where work is done on a production scale, and job shops use this machine to very good advantage. It is used in furniture, cabinet, talking machine, commercial body, implement, toy, sash, door and blind factories, manual training schools, car shops, planing mills, metal molding, ornamental metal, and plate mills, or wherever a finishing and polishing machine is required.

Capacity

This sander will take work of any practical length and sand to center of 72". It will take work on table 42" high and on floor 66" high. Table travels 36" horizontally and adjusts 14" vertically. Belts about 31' long and any width up to 10" may be used.

Essential Features

(1) Machine is entirely self-contained. (2) Pulleys run in ball bearings. (3) Quick production. (4) Convenience to operator. (5) Safety guards on sand belt pulleys. (6) Will do edge work as well as line work. (7) Table rolls on ball bearings, not on ball bearing rollers. (8) No gravity idlers. (9) Table may be removed for sanding large work. (10) Dust Hood covers driving pulley and has opening for exhaust system connection. (11) Reversible switch permits sand belt to run either direction.

General Construction

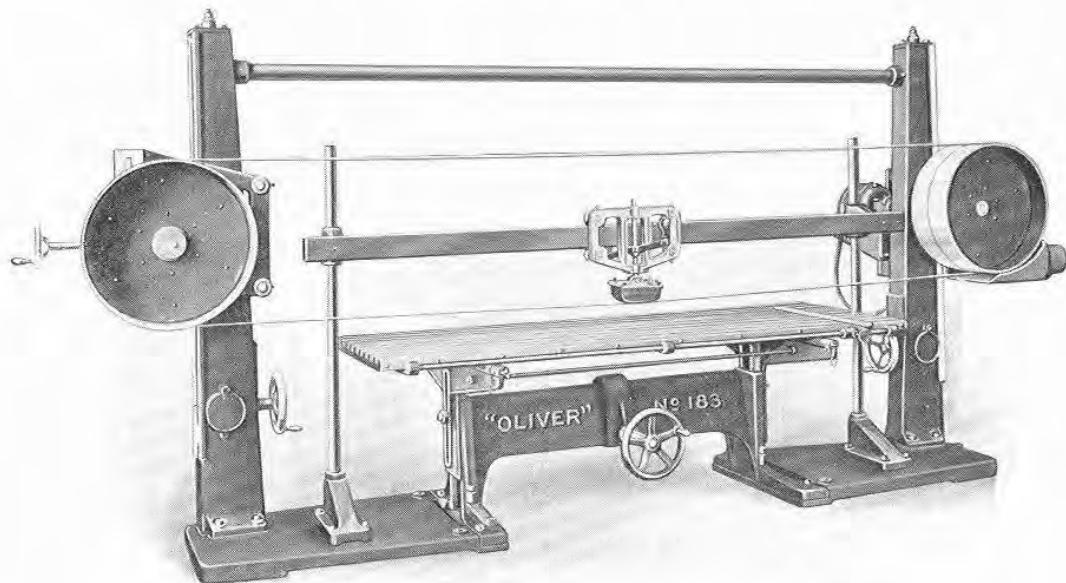
The machine consists of three principal factors—power stand, idler stand, and table, with base of table fastened to base plates of stands, all carefully machined and mounted in perfect alignment. Power and idler stands, while very securely and rigidly supported on base plates, are still further reinforced by an iron top stay which connects them and insures an absolutely rigid and vibrationless machine. Sand belt pulleys, which run in ball bearings, have individual vertical adjustment on gibbed graduated ways by means of hand wheel, bevel gears, and screw. Pulley on idler stand also has horizontal screw adjustment to take up slack in sand belt. Table has vertical adjustment of 14" and horizontal travel of 36" on ball bearings.

Table

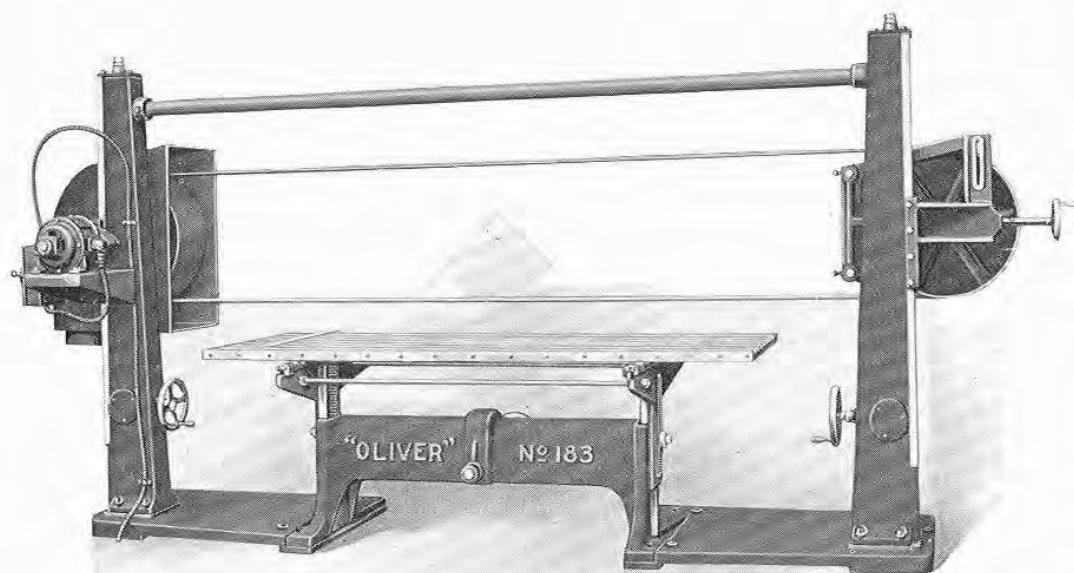
Table is 96" long, 32" wide, constructed of planed wood strips with 1" gaps between them which allow the dust to drop through and keep table top clean. Table travels horizontally 36" on ball bearing ways which have vertical adjustment of 14", from 25" to 39" high, controlled by racks, gears, shafts, worm, worm gear, and hand wheel, forming a self-locking adjustment in any position in the 14" vertical movement. The ways are mounted on a one piece frame of rigid construction which is securely fastened to base plates supporting power and idler stands, but may be removed when it is desired to sand large work. On top of table is an adjustable bar to prevent work from sliding off.

No. 183 "Oliver" Motor Driven Belt Sander

Continued



"Oliver" No. 183 Motor Driven Belt Sander—Front View.



"Oliver" No. 183 Motor Driven Belt Sander—Rear View

No. 183 "Oliver" Motor Driven Belt Sander

Continued

Power Stand

The power stand is of very rigid construction and carries the driving sand belt pulley, pulley bracket, motor bracket, motor, gear case, and mechanism for raising and lowering pulley. The pulley, pulley bracket, motor bracket, etc., form one unit which is adjustable vertically 48" on gibbed ways by means of screw, bevel gears, and hand wheel. The ways are graduated to show height of adjustment. Pulley is rubber faced, 24" diameter, 10" face, and runs in ball bearings. Speed 600 R. P. M.

Idler Stand

This stand is rigidly mounted on a wide solid base and carries the idle sand belt pulley, pulley bracket, attachment support, and raising and lowering mechanism. This pulley, bracket, etc., are vertically adjustable 48" on gibbed ways by the same method as the corresponding unit on power stand, and the ways are graduated in the same manner. The idler pulley also has horizontal adjustment of 12" by means of hand wheel and screw to take up slack in belt. Pulley is rubber faced, 24" diameter, 10" face, and runs in ball bearings.

Safety Guards

A metal dust hood is mounted on power stand. This hood has opening for connection to exhaust system and prevents dust being thrown into air. Spokes of sand belt pulleys are guarded to prevent accidents.

Motor Drive

Direct motor drive is recommended and regularly furnished on this sander, consisting of mounting a 2 H. P., about 1800 R. P. M. motor on a bracket attached to drive pulley bracket and gearing from motor to shaft carrying drive pulley. When so ordered a reversible switch is furnished with and mounted on machine in a convenient manner and wired to motor by means of a flexible conduit. This switch reverses direction of belt travel to suit requirements.

Inside Circle Sanding Attachment

When used, this attachment is mounted on idler stand and is adapted for sanding all kinds of inside curve work. It is furnished at extra cost.

Nest Idlers

This attachment is used when sanding with more than one belt. It consists of three idler pulleys each separately counterbalanced. An excellent device for sanding moldings. Furnished as an extra when desired.

Pneumatic Sanding Pad

The pneumatic sanding pad is strongly recommended for sanding irregular work. It will conform to many kinds of irregular shapes. An inflating pump is furnished with the pad.

Equipment

Regular equipment includes one sanding pad, necessary wrenches, motor, switch, and wiring as per order.

Floor Space

192" long, 84" wide. Height over all 83".

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated Pounds	Boxed	Cubic Feet
Eukab	183-A	Motor Driven Reversible Belt Sander	3600	4000	190

EXTRAS

Inside Circle Sanding Attachment; Nest Idler Attachment, including three idle pulleys; Pneumatic Sanding Pad with inflating pump.

No. 184

"Oliver" Motor Driven Belt Sander

PRACTICAL AND SELF-CONTAINED

Application The "Oliver" No. 184 Belt Sander is designed for rapidly sanding and polishing all kinds of line and edge moldings, straight, flat and irregular surfaces, and for sanding and finishing built-up pieces of medium size such as cedar chests, settees, and all kinds of small size pieces of furniture.

Capacity Work of any practical length may be sanded in front of the power and idler stands, but machine is recommended for work 6' or less in length on 6' table machine, or 8' or less on 8' table machine. It will sand to center of 72" and will take work 28" high on table. Belts up to 10" wide may be used.

General Construction The main principle underlying the design and construction of this sander is to provide one which is entirely self-contained and forms a single operating unit. Work of lining up stands and pulleys is done in our shop eliminating necessity of this difficult job in installation. Base is carefully machined so as to rest solidly on floor.

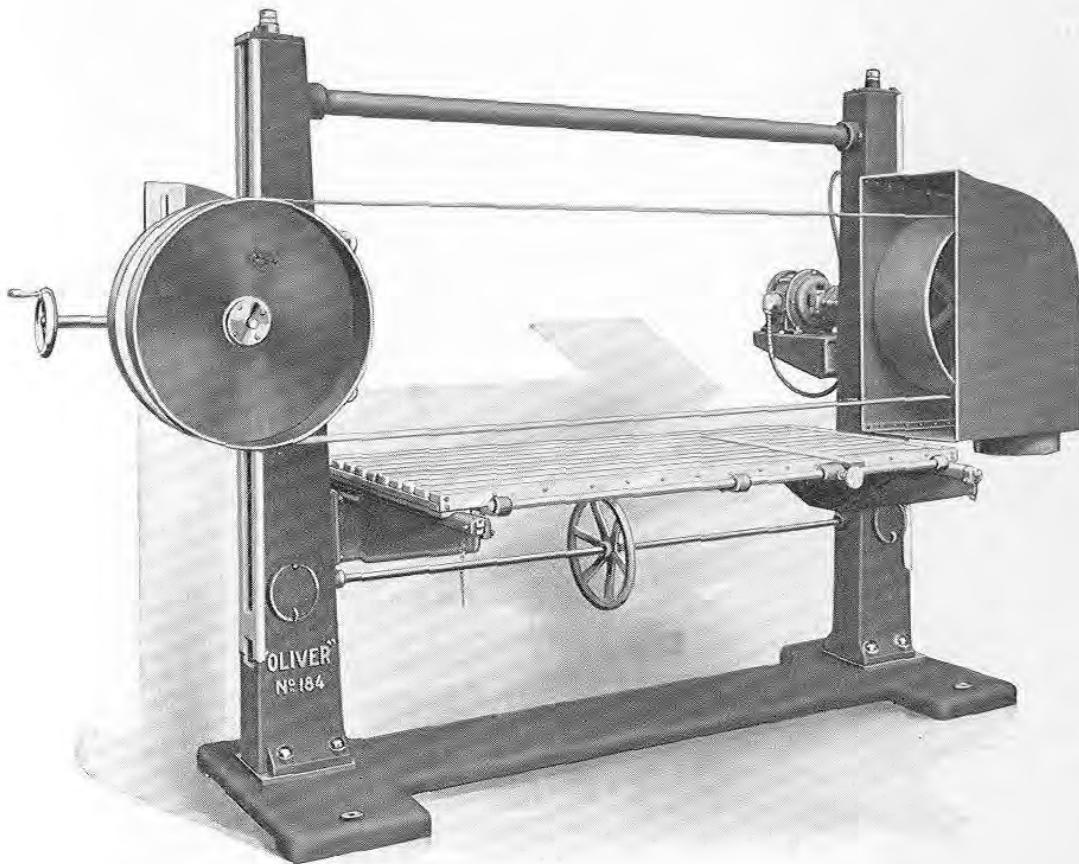
Machine consists of three principal factors—power stand, idler stand, and table. The stands, while very rigidly and securely mounted on base plate of machine, are still further reinforced by an iron top stay which connects them and insures an absolutely rigid and vibrationless machine. Sand belt pulleys, which run in ball bearings, have unisonal vertical adjustment by means of screws, bevel gears, connecting shaft, and hand wheel. Pulley on idler stand also has horizontal screw adjustment for sand belt take-up. Ways which support table are securely mounted on stands. Vertical adjustment of pulleys increases capacity as to height and kind of work that may be sanded.

Table The machine is built either with a 72" or a 96" long table, 32" wide, constructed of planed wood strips set 1" apart to allow dust to drop through and keep table top clean. Table travels horizontally 36" on ball bearing ways which are rigidly supported on power and idler stands, forming a self-contained machine. On top of table is an adjustable bar to prevent work from sliding off.

Power Stand The power stand is very rigidly mounted on right end of base plate and carries the driving sand belt pulley, pulley bracket, motor bracket, motor, gear case, and internal mechanism for raising and lowering pulley. The pulley, pulley bracket, motor bracket, etc., form a single unit which is adjustable vertically 48" on gibbed ways in unison with corresponding unit on idler stand, by means of screw, bevel gears, connecting shaft, and hand wheel. Pulley is rubber faced, 24" diameter, 10" face, and runs in ball bearings. Speed 600 R. P. M.

No. 184 "Oliver" Motor Driven Belt Sander

Continued



Front left view showing simple design and accessibility

Idler Stand

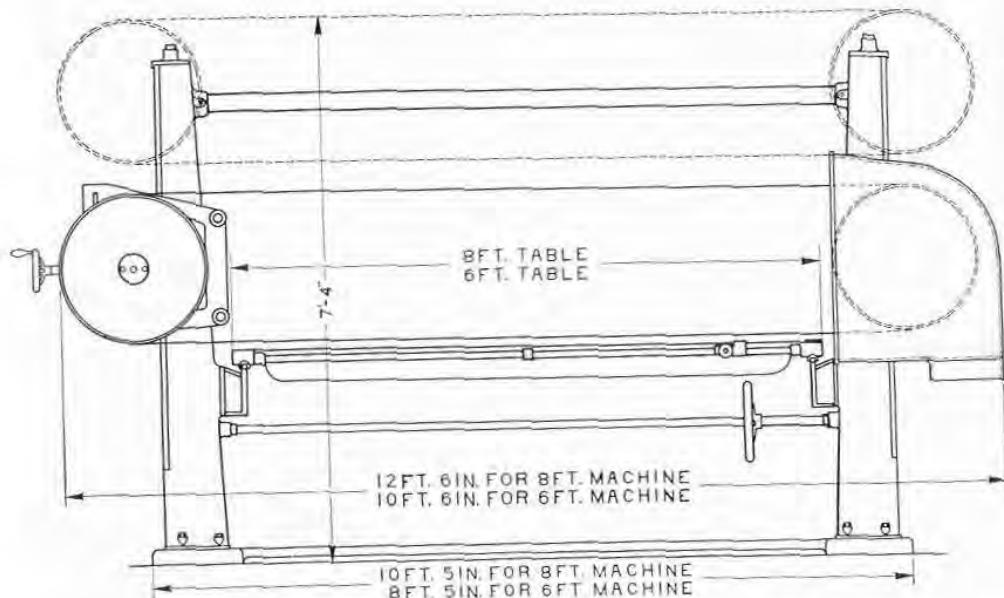
This stand is mounted very rigidly on left end of base plate and carries the idle sand belt pulley, pulley bracket, attachment bracket, and internal raising and lowering mechanism. The pulley, bracket, etc., are vertically adjustable 48" on gibbed ways in unison with corresponding unit on power stand. Idler pulley also has horizontal adjustment of 12" by means of hand wheel and screw for taking up slack in sand belt. Pulley is rubber faced, 24" diameter, 10" face, and runs in ball bearings.

Safety Guards

A metal dust hood is mounted on power stand. This hood has opening for connection to exhaust system and prevents dust from being thrown into air. Spokes of idler pulley are guarded to prevent accidents.

No. 184 "Oliver" Motor Driven Belt Sander

Continued



Front view, showing the most common position of the sand belt pulleys as well as the highest position to which the sand belt pulleys may be elevated to do sanding and polishing on extra high work

Motor Drive

Direct motor drive is recommended and regularly furnished. A 2 H. P., 1800 R. P. M. motor is mounted on a bracket attached to drive pulley bracket and gearing from motor to drive pulley shaft. A reversible switch may be furnished mounted on machine and wired to motor by means of a flexible conduit, allowing reversing direction of belt travel to suit requirements.

Inside Circle Sanding

When used, this attachment is mounted on the idler stand, and is adapted for sanding all kinds of inside curve work. It is furnished at extra cost.

Nest Idlers

This attachment is used when sanding with more than one belt. It consists of three idler pulleys each separately counterbalanced. An excellent attachment for sanding moldings. Extra if desired.

Pneumatic Sanding Pad

The pneumatic sanding pad is strongly recommended for sanding irregular work. It will conform to many kinds of irregular shapes.

Equipment

Includes sanding pad, necessary wrenches; also motor, switch, and wiring as per order.

Floor Space

132" long with 6' table; 156" long with 8' table; 84" wide. Height over all, 88".

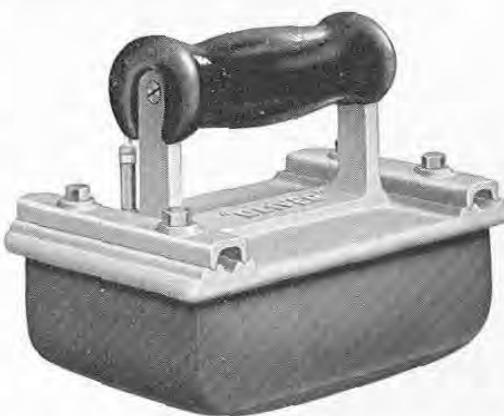
Code	No.	Description	Weight in Crated Pounds	Pounds Boxed	Cubic Feet
Eukoc	184-A	Sander with 6' table.....	2600	3000	155
Eukof	184-B	Sander with 8' table.....	2800	3200	160
Eukdi		Inside Circle Sanding Attachment. (An extra.)			
Euker		Nest Idler Attachment, including three idler pulleys. (An extra.)			
Eufut		Pneumatic Sanding Pad with inflating pump.			

"Oliver" Patented Pneumatic Sanding Pad

Code, Eufut

Weight, Complete, 5 Pounds

The best aid to belt sanders that has yet been invented. A bicycle pump will quickly inflate it to the right pressure to present a flat pliable cushion back of the sand belt for sanding flat work. For sanding concave work it should be under-inflated. For sanding convex work it should be over-inflated. It consists of an inner rubber tube encased in an outer tough rubber casing held firmly by an aluminum top with a finished wooden easy grip handle. At the ends of the top two bars are furnished for clamping graphited outer casing to suit various conditions. Extra fine for sanding irregular curves and shapes. Every block sander should have one.



PNEUMATIC SANDING DRUMS

When slightly inflated the soft and pliable cushion of these drums readily conform to any rounded shape, and when fully inflated they form a barrel-shaped cushion, well adapted for the sanding of concave or hollow stock, such as chair seats and similarly shaped pieces.

Used on belt sanders, the belt will successfully travel over the Pneumatic Drums, but when used on machinery having no sand belt arrangement, sandpaper sleeves are used and are made by cutting paper on a slant to the proper size, edges joined together (not overlapping), a thin piece of cloth glued on the inner or smooth side of this joint. Sleeve is then ready and is slipped on the drum before inflating.

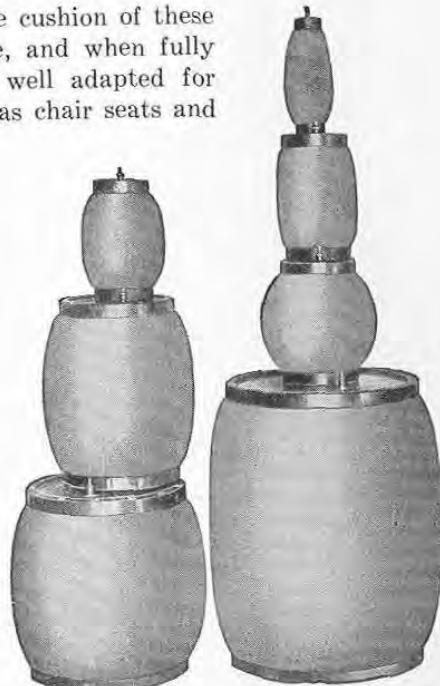
They run perfectly true, and will in a short time pay their price in the form of reduced labor and better work.

We list only the sizes mostly used, but are prepared to furnish any lengths and in diameter up to 10", 12" and 14".

Can be furnished (Style A) to clamp on shaft between shoulder and nut, (Style B) to fasten on shaft with set screws, keys, or to be threaded to shaft, and (Style C) to run loose on stationary stud similar to a loose pulley or idler.

Style A—Standard Sizes:

Diameter	2"	3"	4"	6"	8"
Length	9"	9"	9"	9"	9"



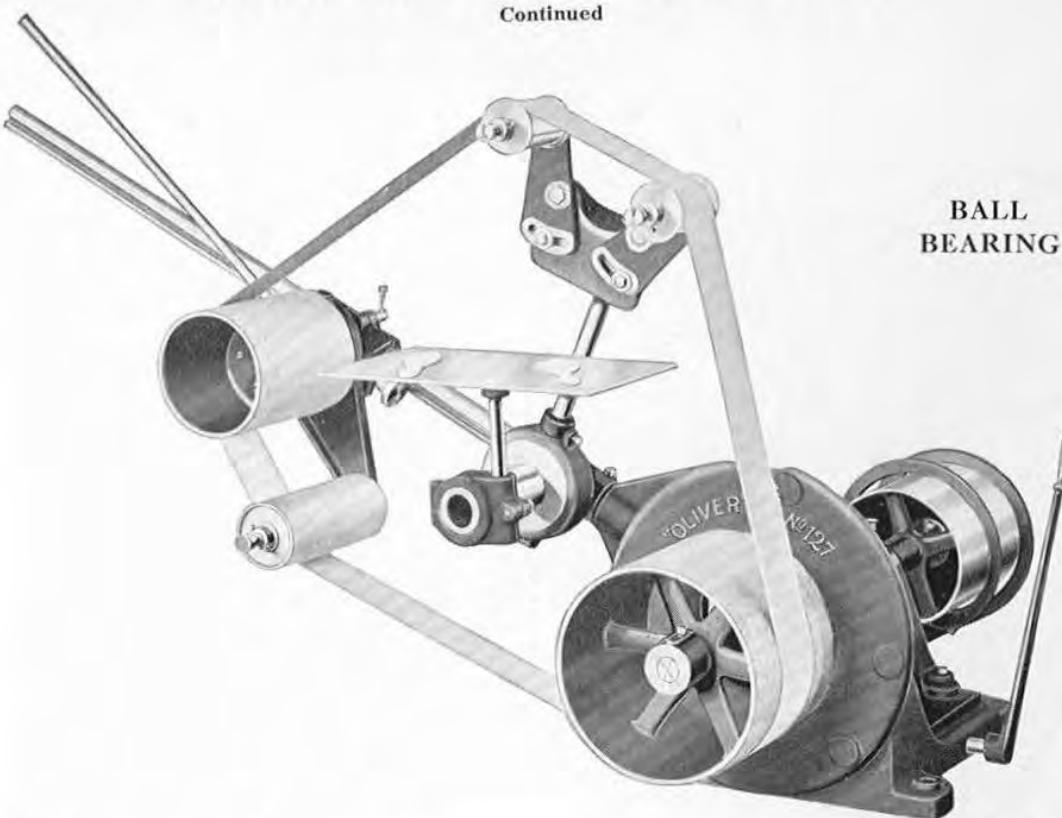
No. 127
“Oliver” Variety Belt Sander

This is the most flexible—the most adaptable Variety Belt Sander ever produced. Investigate!

Application	Designed for rapid sanding and polishing of all kinds of small irregular shapes, edge work and flat surfaces, such as brush backs, toilet sets, frames, period legs and all kinds of medium size pieces of furniture; also for polishing metal surfaces.
Essential Features	(1) A perfect Variety Belt Sanding Machine complete in every detail. (2) Quick Production. (3) Convenience to operator. (4) Convenience for setting up. (5) Safety to operator.
Principle	A main drive pulley is mounted on a countershaft located on a substantial base with a frame swinging about the center line of countershaft and carrying a support arm. On this support arm are carried two clamp brackets, one of which supports the main idler pulley and the tension idler. The other supports the table and backing plate or any forms or flexible pads desired.
Capacity	Machine will take belts up to 10" wide and 14' long.
Edging Table	Made of cast iron, size 10" x 12"; tilts any degree up or down to 30 degrees; can be adjusted in or out and has drilled holes for attaching wood tops or forms.
Backing Plate	Is 10" wide, made of cast iron and can be adjusted in and out to suitable tension on the belt and has drilled holes for attaching flexible pads.
Main Idler	Runs in ball bearings and is adjustable up or down the whole length of the idler arm, to take care of various lengths of belts. This pulley is faced with leather.
Tension Idler	Is of the ball bearing type and fulcrums in the center line of the main idler and is balanced by weights to give the right tension to the belt. Is leather faced.
Fork Idler	This attachment is mounted on the machine in place of the regular table. It is used for doing oval sanding, such as toilet seats, oval frames and all irregular shapes. The fork idler is rigid in construction, carries two aluminum idlers which run in ball bearings and are adjustable to the work.

No. 127 "Oliver" Variety Belt Sander

Continued



No. 127 "Oliver" Variety Belt Sander in Inclined Position

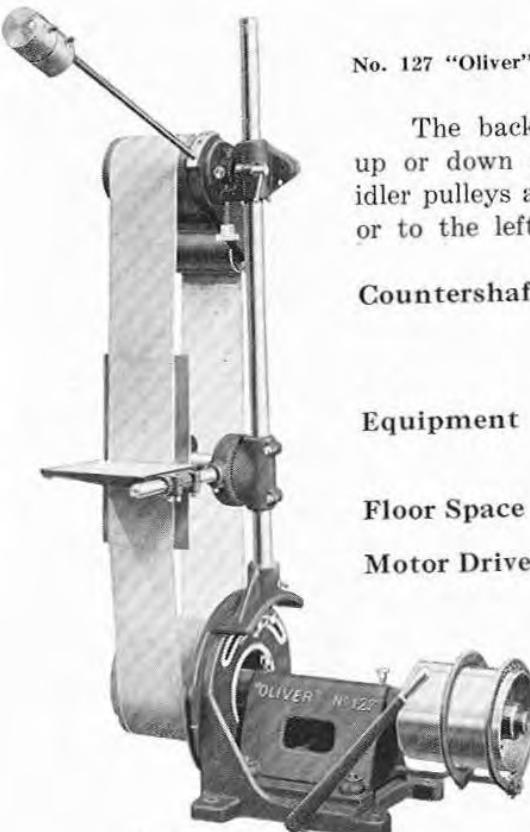
The back plate moves in or out, the table tilts up or down and the arm or post together with the idler pulleys and the table may be inclined to the right or to the left.

Countershaft Ball bearings; driving pulley 14" x 10"; T & L pulleys 10" x 5", 900 R. P. M.

Equipment Edging attachment, fork idler and necessary wrenches.

Floor Space About 4' x 8'; height 80".

Motor Drive 2 H. P., 900 R. P. M., direct connected to lower drive pulley.



			Wt. in Lbs. Cu.
Code	No.	Description	Crtd. Bxd. Ft.
Eufeb	127	Belt Driven....	600 800 30
Eufig		Motor Drive.....	— — —
Eufut		Pneumatic pad.....	5 5 —

No. 186

"Oliver" Edge and Form Sander

A SURE MONEY SAVER

Purpose

As an edge sander this machine will sand and polish straight or molded edges of either straight, irregular or scroll shaped pieces of either veneered or solid material. As a Form Sander it will sand and polish any straight, angular, curved, pocket or corner shaped work, such as found in furniture, cabinet and other wood-working factories.

Advantages

The Motor-in-Head type of machine eliminates the unnecessary bearings, pulleys, belts, gears, couplings and uses only two ball bearings, which eliminate friction, assuring greater efficiency and durability and minimizes upkeep of the machine.

Short length back plate allows the sanding belt to follow the form of work and polish without unnecessary cutting away of the wood.

Both the form holder and the table are of the tilting type, therefore set-ups are easier made because the form may be tilted to track the belt and the table may be tilted to square with the form.

As any portion of the belt wears down, the table may be raised or lowered instantly bringing a fresh portion of the sand belt in use, thus wide belts may be used, saving frequent glue-ups.

The machine has far less number of parts than any other machine for similar work and all parts are made interchangeable, being machined on jigs and fixtures to standards.

The compensating idler is so mounted on the connecting bars that it can be adjusted to and from the form as required by the shape and size of the work and the kind of cutting desired.

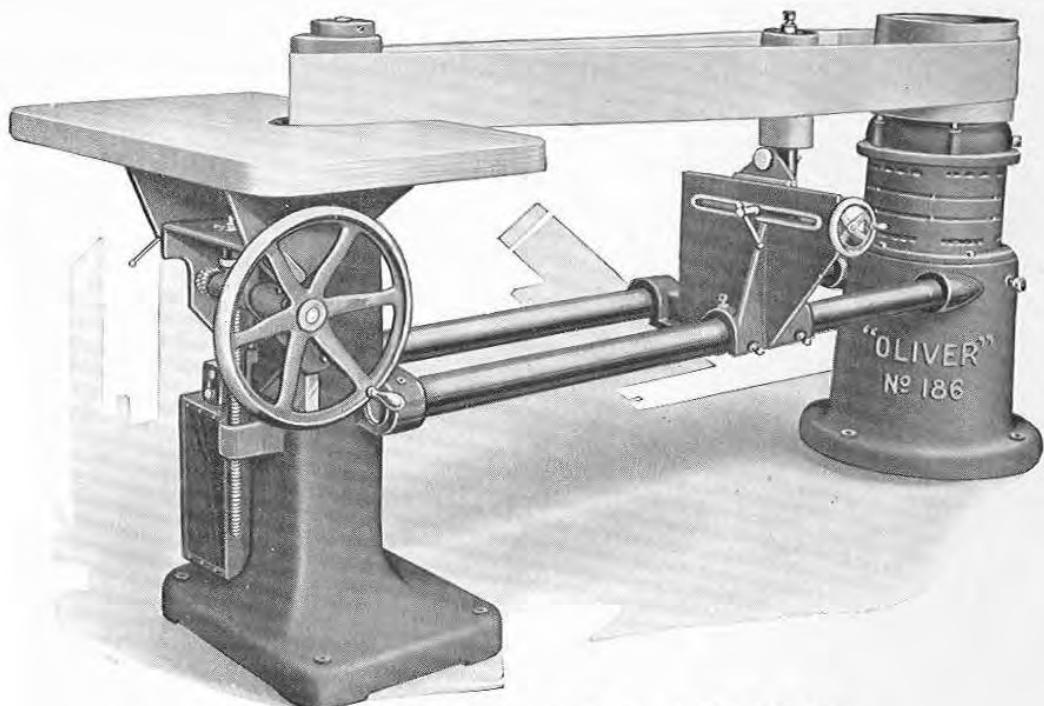
The operating end of the machine is so designed as to enhance the ease of operation. Any workman can get out far more work on this machine than on any other type of edge or form sander.

Driving End

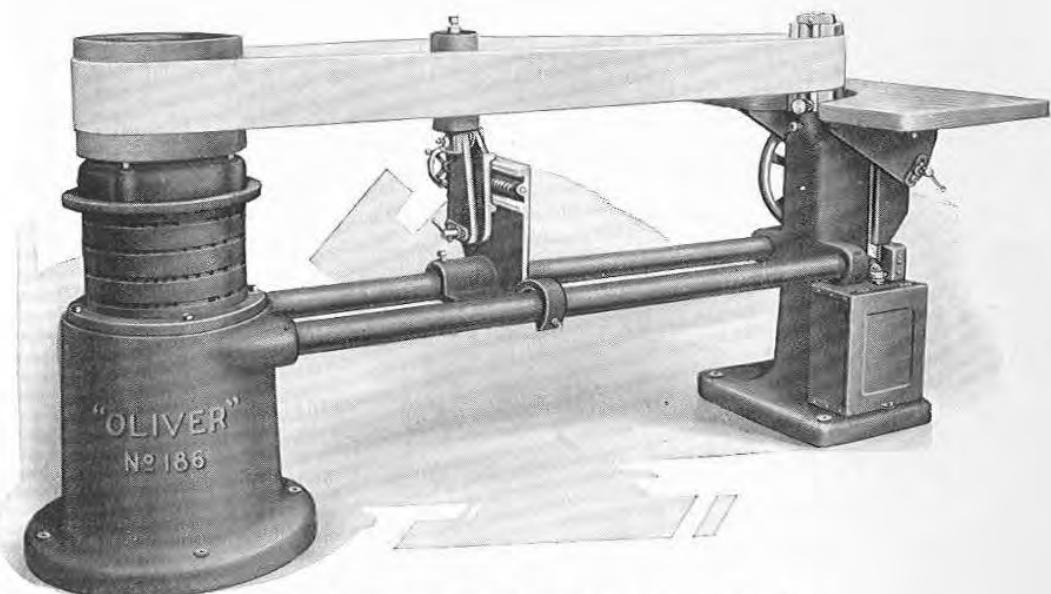
Consists of cast iron column with wide floor flange, supporting the 3 H. P., 600 R. P. M., ball bearing Vertical Fully Enclosed Motor, either two or three phase, 220 or 440 volt, on which is superimposed the sand belt driving pulley 14" diameter by 10" face covered with corrugated rubber band; or in lieu of the motor there is furnished a belt drive head consisting of the main housing supporting a vertical shaft in ball bearings driven by encased bevel gears, and propelled by a horizontal shaft also running in ball bearings and having a Tight and Loose pulley 10" diameter by 5" face, running at 600 R. P. M., with self-contained belt shifter.

No. 186 "Oliver" Edge and Form Sander

Continued



Right Hand Side View No. 186-D Motor-in-Head Machine



Left Hand Side View No. 186-D Motor-in-Head Machine

No. 186 "Oliver" Edge and Form Sander

Continued

Operating End Consists of cast iron cored column supporting in a dovetailed gibbed way the table knee which has a vertical movement of 10" by means of hand wheel, spiral gears and screw. The table consists of a glued up hardwood table sanded and shellaced and mounted on table bracket which has tilting arrangement for aligning the table at right angles to the form. Directly back of the table and reaching to the center is a form holder which has angular adjustment for tracking the belt and easy method of supporting any kind of form made for work at hand.

Compensating Idler Compensating idler consists of rubber faced aluminum pulley 4" diameter, 10" face, running on ball bearings with double compound frame support which allows angular tilt, as well as horizontal adjustment in and out for tightening the loose or flap side of the sand belt, also for tracking the belt on the driving pulley and the form.

Connecting Bars Are 3" diameter and are regularly furnished of sufficient length to give a center distance of six feet between center of driving pulley and center of form holder. These bars may be furnished longer in one foot variations if so ordered.

Exhaust System Two exhaust hoods may be furnished if so ordered, one to catch the dust as it comes off the form and the second to catch the dust as the belt rounds the driving pulley.

Motor Drives There are two methods of motor drive possible: (1) Motor-in-Head type; (2) Belted Motor Drive. The Motor-in-Head type can be furnished only for two or three phase, 220 or 440 volt, any cycle, alternating current. The belted motor drive can use any kind of a 3 H. P., 1800 R. P. M., motor with 3½" diameter by 4" face pulley.

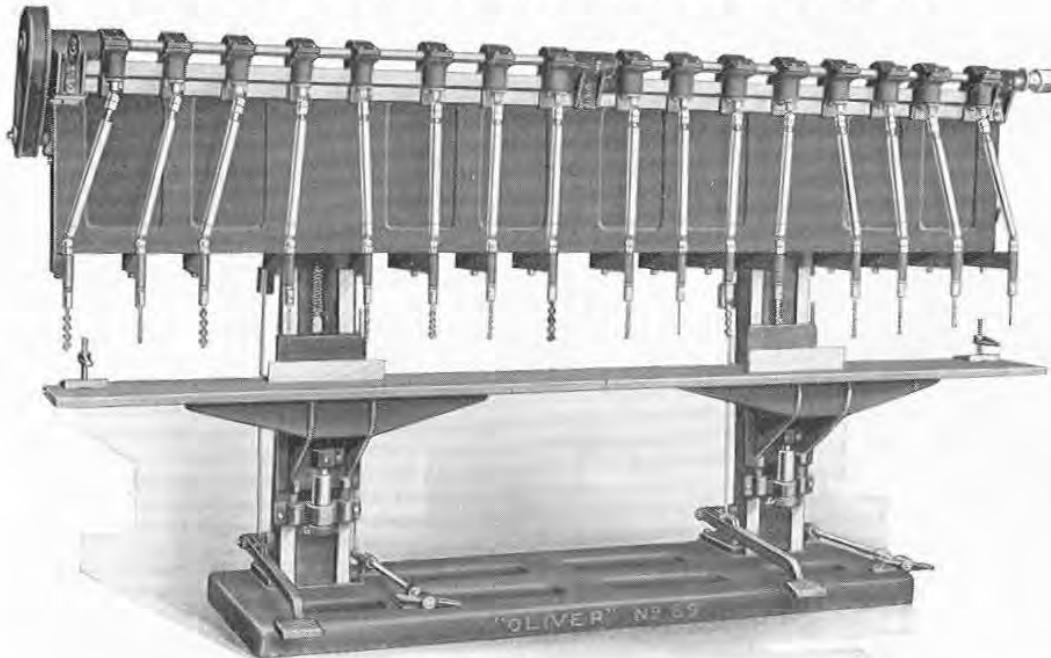
Belt Drive The belt driven machine has a self-contained tight and loose pulley and belt shifter built in the driving head housing. The pulleys are 10" diameter by 5" face, 600 R. P. M.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight Crated	Pounds Boxed	Cubic Feet
Evab	186-A	Edge and Form Sander for belt drive	1400	1800	30
Evabe	186-B	Sander with tight pulley only for belted motor drive	1400	1800	30
Evada	186-D	Motor-in-Head Edge and Form Sander, including 2 or 3 phase, 25, 30, 40, 50, or 60 cycle, 220-440 volt motor with suitable switch	1500	1900	30

No. 69
"Oliver" Vertical Rail Type Multiple Borer

ANY LENGTH, ANY NUMBER OF SPINDLES DESIRED



No. 69 Multiple Borer with Boring Area 10" x 144" with 16 Spindles, Motor Driven
 Two Columns on a Common Base are used on Machines longer than 72" length of Boring Area

Economy	It will bore simultaneously and accurately a large number of holes of different sizes either regularly or irregularly spaced, without the necessity of measuring and laying out of each piece and with the assurance that every piece will be an exact duplicate; resulting in economy, elimination of mistakes, time saved in assembly, uniformity and accuracy of product.
Capacity	Will bore simultaneously, many various size holes in wood or light metals, regularly or irregularly placed, over a boring area of 10" wide up to 3', 4', 5', 6', 8', 10', or 12' long between outside spindles, according to requirements.
Column	Hollow box type machined on the face for support of table, feed mechanism and set-up rail. It encloses the weights which counterbalance the table. One column is used on machines up to 6' length of capacity, but for longer machines, two columns are used.
Set-up Rail	The Set-up Rail carries the common driving shaft for all spindles, each of which may be moved with its driving head to any position along the upper rail, thereby enabling all the spindles to be grouped as desired.
Table	Metal, flanged for strength, and has provision in the slide for taking up wear. Table top on which the work rests is glued up Michigan hard wood, allowing easy fastening of any kind of form or gauge.

No. 69 "Oliver" Vertical Rail Type Multiple Borer

Continued

Spindle

Spindles are of high carbon steel, hardened and ground to size. Standard size of spindles is $1\frac{1}{2}$ " diameter but any special size from $\frac{3}{4}$ " to 2" diameter (at the lower joint) can be furnished when the work makes it necessary. The closest distance between centers on which spindles may be set, is the lower joint diameter plus $\frac{1}{16}$ " for clearance; thus, with the standard spindles, closest distance between centers would be $1\frac{9}{16}$ " whereas with special spindles, holes as close as $\frac{9}{16}$ " between centers may be bored. The spindle nose is regularly bored for straight $\frac{1}{2}$ " diameter shanks, but may be bored for taper shanks if desired.

Bearings

All bearings of spindle and shafts are bushed with replaceable highest quality bronze bushings, self-lubricated by felt wick system for all major bearings.

Feed Mechanism

A two step cone pulley provides two rates of table movement upward—40" and 60" per minute. By simply tripping the right hand treadle, the power feed automatically lifts the table with the work until the holes are bored to the predetermined depth, at which position the power feed automatically knocks out and the table drops quickly, by gravity, to the cushion springs at its original position. The left hand treadle is used for boring light work or for positioning the table.

Motor Drive

We furnish proper size 1800 R. P. M. motor, bolted back of the set-up rail and connected to the upper drive shaft by means of enclosed silent chain and sprockets.

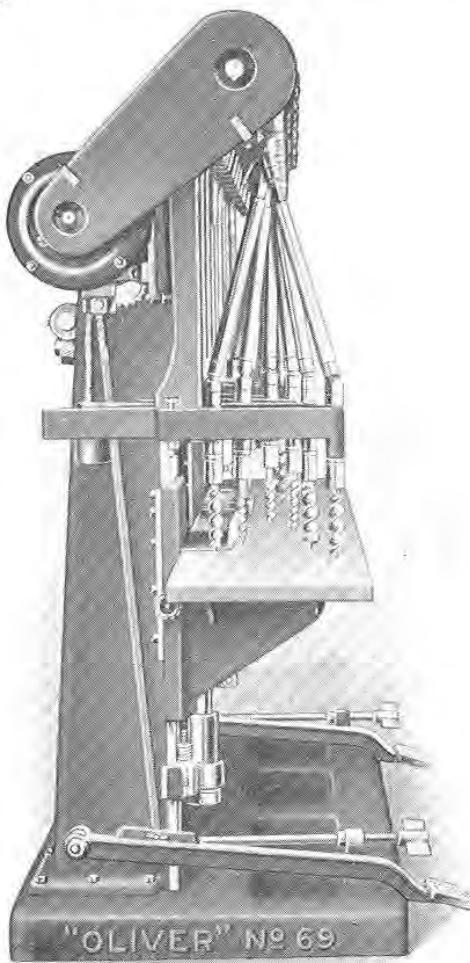
Horse Power

Horse Power varies from 3 to $7\frac{1}{2}$, depending on the number of active spindles, size of machine, kind of work, etc.

Countershaft Equipment

Tight and Loose pulleys are 12" x $4\frac{1}{2}$ "; speed 900 R. P. M.

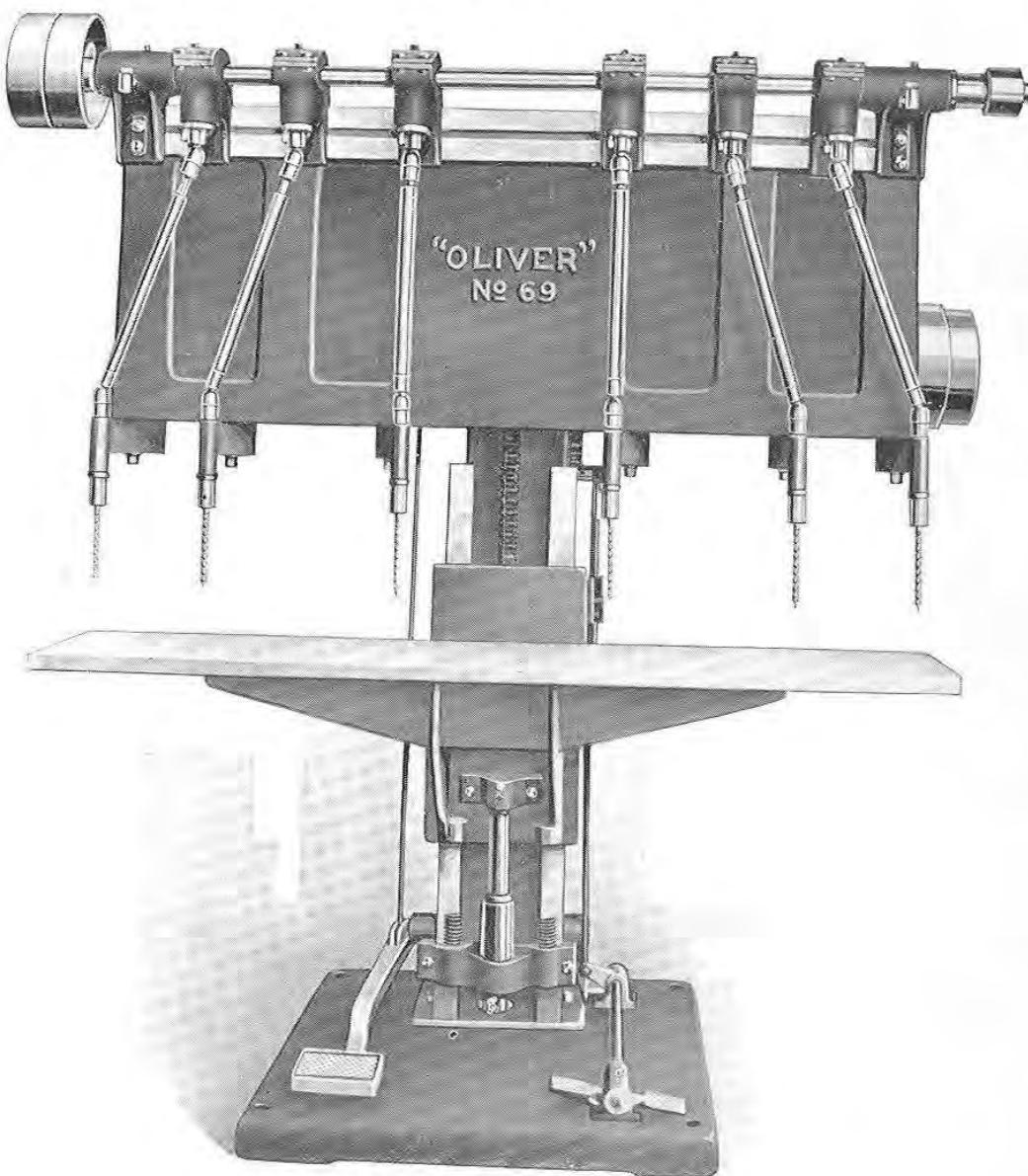
Each machine is regularly equipped with four spindles, both power and foot treadle feed, two rates of feed and automatic return for the table and self-contained tight and loose pulley countershaft for belt drive.



Left end view of machine illustrated on preceding page. Note the 10" width of boring area which is same for all machines regardless of length of boring area and the number of spindles.

No. 69 "Oliver" Vertical Rail Type Multiple Borer

Continued



Front View of No. 69-C Borer with Six Spindles

CODE, WEIGHT, ETC.

Code	No.	Machine	Spindle Capacity	Boring Area	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Evad	69-A	Borer.....	9	10"x36"	2900	3200	90
Evag	69-B	Borer.....	12	10"x48"	3100	3400	100
Evak	69-C	Borer.....	15	10"x60"	3300	3700	110
Evan	69-D	Borer.....	18	10"x72"	3500	3900	120

Note—Machines with longer areas may be furnished as desired.

EXTRAS

Evan Additional Spindles, over the regular equipment of four.
 Evap Attached Motor Drive, including bracket, chain drive and guard.
 Evaq Endless Leather Belt for table feed mechanism.

No. 68

"Oliver" Vertical Plate Type Multiple Borer

Purpose	This wonderful multiple borer is just the machine needed for boring simultaneously many holes of the same or different sizes either regularly or irregularly spaced over a circular or a wide rectangular space at a very rapid production rate, assuring greater accuracy and minimum cost of production.
Capacity	Will bore simultaneously, many various size holes in wood or light metal, regularly or irregularly placed anywhere over a rectangular or a round boring area. Machines with rectangular hoods are made in three sizes with boring areas 14" x 25", 18" x 36", or 18" x 48". Machines with round hoods are made in two sizes with boring areas 16" or 27" diameter.
Spindle	Each spindle unit consists of an upper driving head, a lower joint or boring head, an expanding spindle and two full universal joints. Spindles are of high carbon steel, hardened and ground to size, with good oiling facilities. Each spindle may be adjusted 6" in all directions from its vertical straight position. The standard size of the spindle upper joint is 1½". The standard sizes of the spindle lower joints are ¾", ⅝", 1", 1¼", 1½", and 2", and the closest centers on which spindles may be set are the lower joint diameters plus $\frac{1}{16}$ " for clearance. The spindle nose is regularly bored for straight $\frac{1}{2}$ " diameter shanks, but may be bored for taper shanks if desired. Each spindle may easily be thrown out of gear when it is desired that it remain idle.
Bearing	All bearings of spindles and shafts are bushed with replaceable highest quality bronze bushings, self-lubricated by felt wick system for all major bearings. Thrust bearings 1¼" or larger are ball bearing type but smaller thrust bearings are of bronze.
Column	The column is a hollow box type casting mounted on a wide flanged base with rear extension for either countershaft or motor. The counterbalancing weights of the table are encased inside the column.
Hood	The hood or housing for spindles, is a solid, well-ribbed casting on upper end of which is mounted gear plate and gear casing. Transmission gears in the top of the hood are all spiral cut, encased, and run in grease without excessive noise.
Table	The table is of metal, well flanged for strength, and with provision in the slide for taking up any wear. Table top on which the work rests is glued up Michigan hard wood, allowing easy fastening of any kind of form or gauge.
Feed Mechanism	A two step cone pulley provides two rates of table movement upward, namely 40" and 60" per minute. Width of feed belt 2½". By simply tripping the right hand treadle, the power feed automatically lifts the table with the work until the holes are bored to the predetermined depth, at which position the power feed automatically knocks out and the table drops quickly, by gravity, to the cushion springs at its original position. Automatic feed may be made continuous if so desired. The left hand treadle is used for boring light work or for positioning the table.

No. 68 "Oliver" Vertical Plate Type Multiple Borer

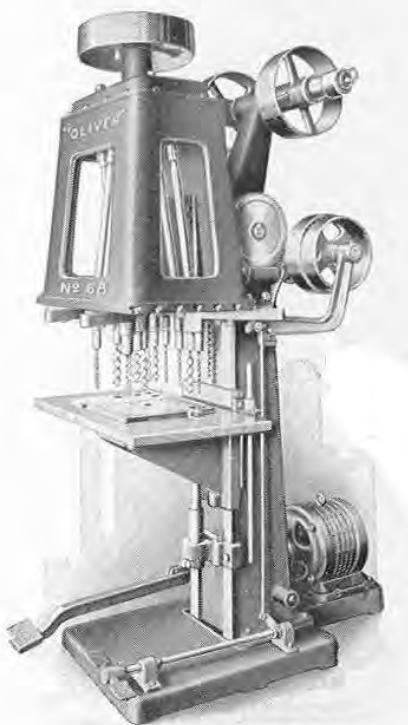
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Motor Drive Motor Drive arrangement consists of placing a 1200 R. P. M. motor on the rear extension of the base (in place of the countershaft) and belting up, over the idler pulleys, to the driving pulley of the hood.

Horse Power The required Horse Power varies from 3 to 15, depending on the number of active spindles, size of machine, kind of work, etc.

Countershaft Tight and Loose pulleys on power feed machine 18"x4"; Tight and Loose pulleys for foot treadle machine are 12" x 4"; speed 600 R. P. M.

Equipment The No. 68-A and 68-B Borers are regularly furnished with foot treadle feed but power feed may be added when so ordered. The C, D and E sizes are always furnished with power feed combined with foot treadle feed. The number of spindles and size of table as listed below. All machines are regularly fitted with self-contained countershaft for belt drive.



No. 68-D MULTIPLE BORER
View of Motor Driven Machine

SPECIFICATIONS

	No. 68-A	No. 68-B	No. 68-C	No. 68-D	No. 68-E
Number of spindles furnished	4	6	8	8	10
Maximum number of spindles	10	18	16	24	30
Boring Area	16" dia.	14"x25"	27" dia.	18"x36"	18"x48"
Size of Table Top	22"x24"	32"x32"	32"x34"	27"x42"	27"x54"
Distance table to spindle Nose	24"	24"	19"	22"	22"
Distance boring center to column	12"	12"	15"	13"	13"

CODE, WEIGHT, ETC.

Code	No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
Eveb	68-A	Multiple Borer	2500	2800	110
Evec	68-B	Multiple Borer	2800	3100	112
Eved	68-C	Multiple Borer	3200	3600	120
Evef	68-D	Multiple Borer	3600	4000	130
Eveg	68-E	Multiple Borer	4000	4500	140

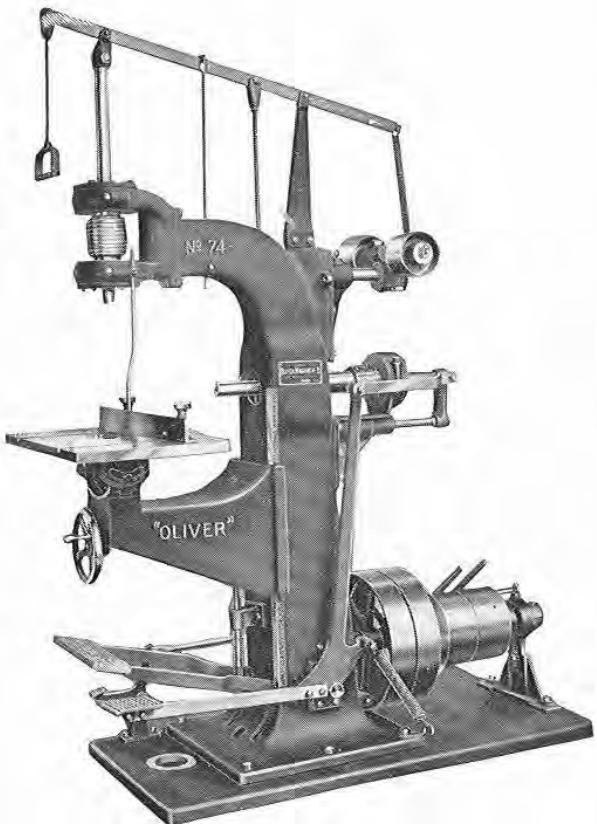
EXTRAS

- Evek Extra Spindles up to maximum capacity under specifications.
Evet Power Feed combined with foot treadle for 68-A and 68-B.
Evep Motor Drive Arrangement, placing motor in place of countershaft.

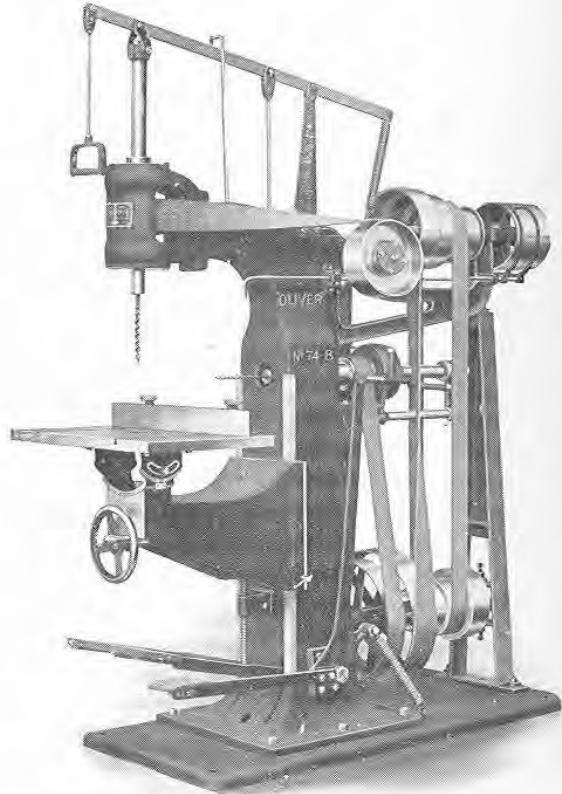
No. 74

"Oliver" Universal Vertical and Horizontal Borer

BALL BEARINGS—TWO SPINDLE



Single Speed Countershaft Belt Drive



Four Speed Countershaft Belt Drive

Introduction

We have designed this with the idea of supplying to the trade a heavier and more desirable machine for boring purposes than is usually offered. Those who find ordinary boring machines too light and weak for their purpose are particularly requested to study this borer.

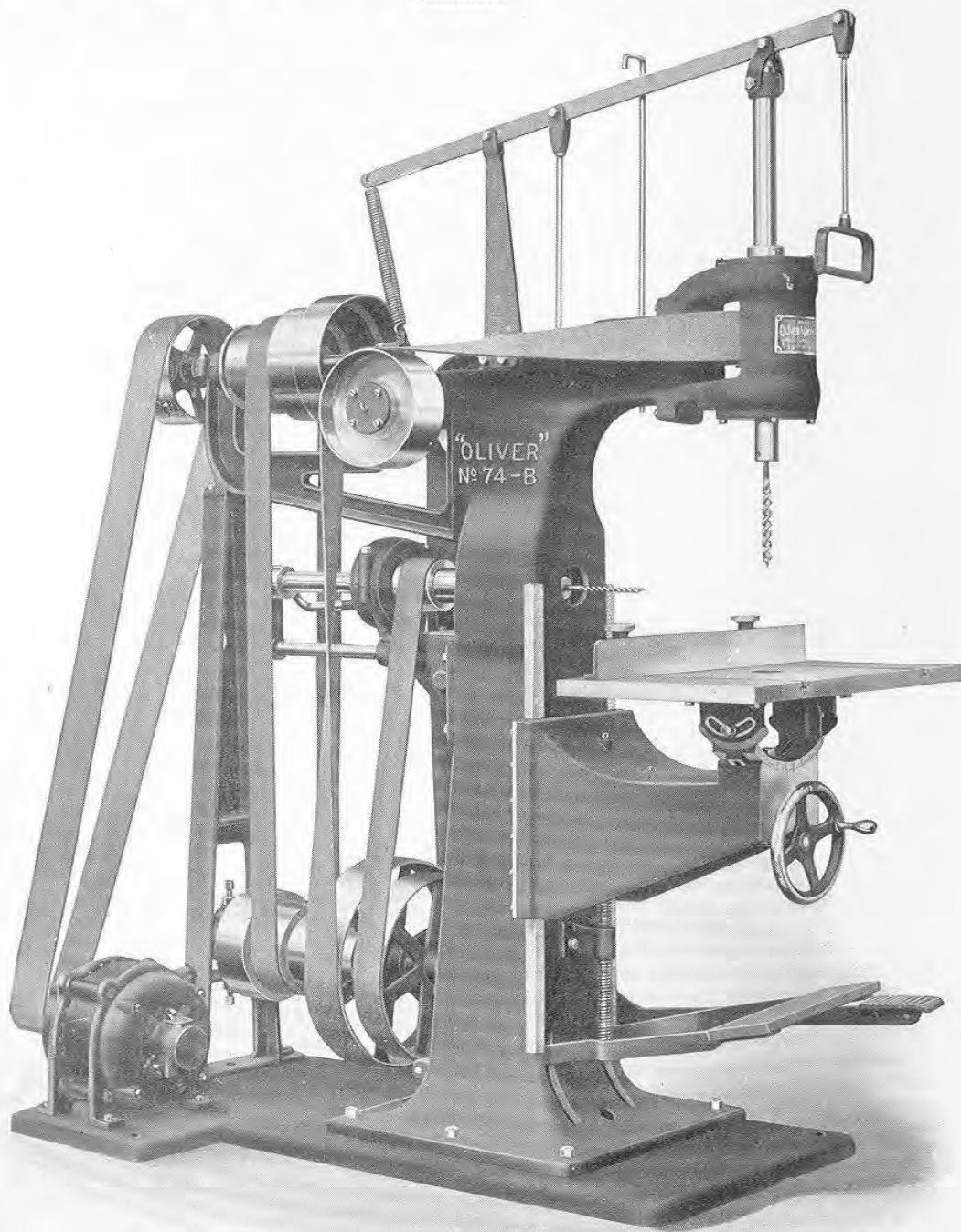
Adaptation

This is an extraordinary borer—it will not only respond with satisfaction to all kinds of boring machine work, but will also drill holes in iron or do the work of a router, shaper, buzz planer or sandpaper machine. A little safety cylinder, similar to that used on our No. 144 jointer, applied to this machine opens up an endless variety of work that this machine will easily take care of. A variety of sanding spindles helps to smooth up many otherwise almost inaccessible places.

The machine is built right, works right and we can recommend it as an "Oliver Tool."

No. 74 "Oliver" Universal Vertical and Horizontal Borer

Continued



No. 74-B "OLIVER" MOTOR DRIVEN UNIVERSAL VERTICAL AND HORIZONTAL BORER

Capacity

Vertical spindle will bore 12" deep to center of 36". Horizontal spindle will bore 7" deep. Both spindles will readily bore holes 3" diameter and under.

No. 74 "Oliver" Universal Vertical and Horizontal Borer

Continued

Column	This is a large, heavy, hollow casting bolted to a sole plate 34" x 61"; height over all, 7' 9".
Vertical Spindle	This is 1 $\frac{7}{8}$ " diameter carried in a sleeve formed by the driving pulley with its extended ends. These ends are the rotating journals which fit into very large and substantial ball bearings. Spindle is bored to receive 1/2" bit shanks and when so ordered the nose is threaded to take a three-jawed chuck. A vertical travel of 12" is obtained by either hand lever or foot treadle, as illustrated. Speed 3000 R. P. M. Pulley 5" x 4 $\frac{1}{2}$ ".
Horizontal Spindle	This has ball bearings and is sustained in a bracket on the column and projects through it at a proper height from the base to get the full benefit of the table movements necessary for the work being bored, and is moved forward by a foot treadle and made to assume its normal position through a coil spring release. It has a forward movement of 7". But one speed is supplied with this spindle, as it is usually engaged in boring the small diameters of holes. Speed 3000 R. P. M. Pulley 4 $\frac{1}{2}$ " x 4".
Table	Is 18" x 30", with a vertical adjustment of 17" obtained by hand wheel and screw. Table tilts to an angle of 40 degrees to or from the column, and 15 degrees to the right or left. Rockers are graduated to show degree of pitch attained, and table has T slots to receive fence bolts.
Countershaft	Self-contained; tight and loose pulleys 10" x 5"; driving pulleys 14" and 18" diameter, 4" wide; speed 830 R. P. M. A number ber of variations in the method of both belt and motor drive may be supplied at additional cost. Send for detailed individual circular of this machine.
Idler Pulleys	These located at rear of column are independently adjustable to track the right angle belt properly. They are turned all over and fitted with ball bearings.
Horse Power	3 to 5 H. P. is required, as work demands.
Equipment	Five bits 6" twist, one each, 1/4", 3/8", 1/2", 5/8" and 3/4".
Floor Space	80" x 38" for No. 74-A; 80" x 38" for No. 74-B.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Exile	74-A	Belt driven, as illustrated	2200	2900	135
Exilg	74-B	With special countershaft having four-step cone pulley to give 4 speeds to spindles, 968 to 3000 R. P. M.	2400	3250	136

EXTRAS

Exotic	Set of internal belts for spindles.
Expel	Little Giant Chuck for bits 0" to 1/2" fitted with a straight shank to fit the spindle.

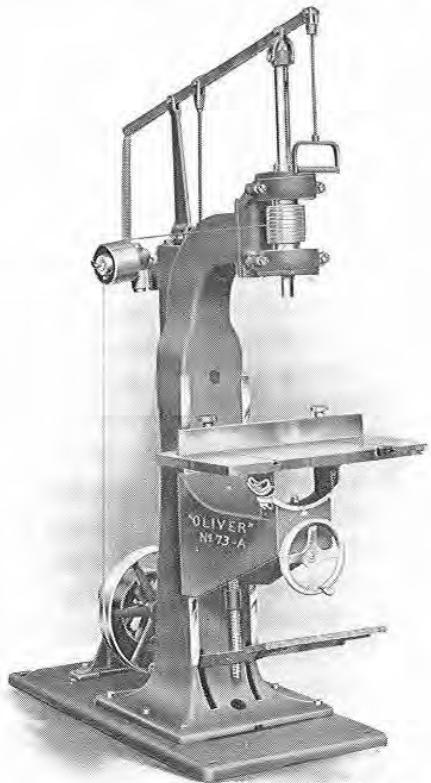
No. 73 “Oliver” Universal Vertical Borer

BALL BEARINGS—TWO KINDS—SINGLE SPINDLE AND TWO SPINDLE

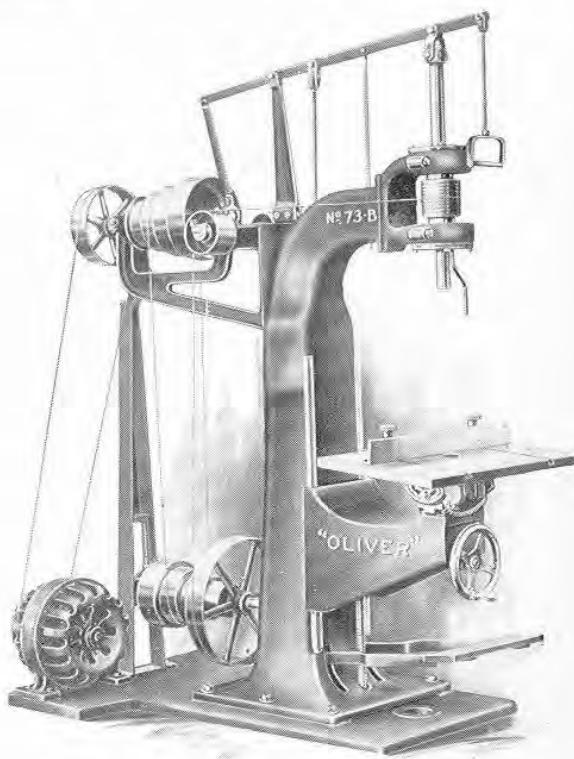
Adaptation	This is an extraordinary boring machine—much heavier, more powerful and more costly than any offered heretofore. It is an accurate, well proportioned, easy operating, powerful boring machine designed along machine tool lines and particularly adapted for use in pattern shops, shipyards, arsenals, railroad shops and other technical concerns where accuracy of product is the chief requisite.
Types	These machines are furnished in two forms—single spindle and two spindle and either of these are furnished with single speed or with four speed self-contained countershafts and either belt driven or motor driven. No. 73-A Borer has single spindle with single speed countershaft, No. 73-B has single spindle with four speed countershaft, No. 73-C has two spindles with single speed countershaft, No. 73-D has two spindles with four speed countershaft; all four types can be furnished either belt or motor driven.
Capacity	Any spindle will readily bore holes up to 3" diameter, to a depth of 12" and to the center of 36". In the two spindle machines the spindles are located in a straight line 10" between centers at a distance of 18 $\frac{7}{8}$ " from the column.
Column	A large, heavy, cored casting bolted to a thick sole plate 34" x 62"; height over all 7' 9".
Table	Is 18" x 30", with a vertical adjustment of 17" obtained by hand wheel and screw. Table tilts to an angle of 40 degrees to or from the column, and 15 degrees to the right or left. Rockers are graduated to show degree of pitch attained, and table has T slots to receive fence bolts. Fence is 28" long, 3" high. The table for the two spindle machine is 18" x 40" and has two holes, but one rocker for tilting.
Boring Spindle	This is of the highest workmanship and is carried in a sleeve formed by the driving pulley with its extended ends. These ends are the rotating journals which fit into very large and substantial ball bearings. Spindle is 1 $\frac{7}{8}$ " diameter bored to receive 1/2" straight shanks. A vertical travel of 12" is obtained by either hand lever or foot treadle, as illustrated. Spindle of single speed borers run at 3000 R. P. M., that of four speed machines 1000 to 3000 R. P. M. Spindle pulley 5" x 4 $\frac{1}{2}$ ", use a 3 $\frac{1}{2}$ " belt.

No. 73 "Oliver" Universal Vertical Borer

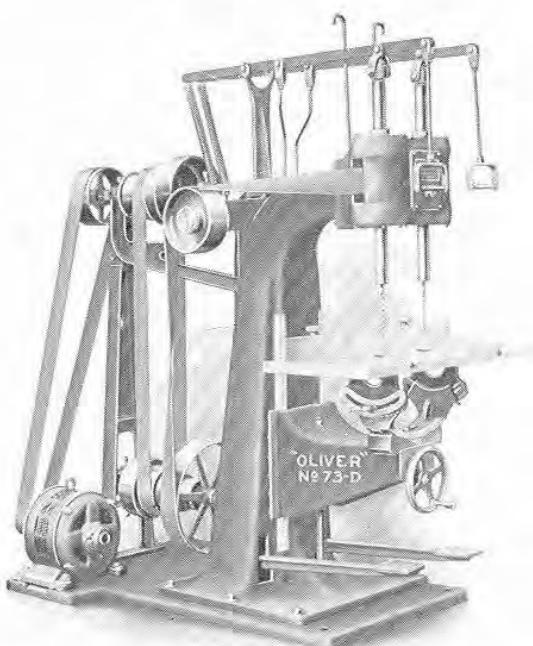
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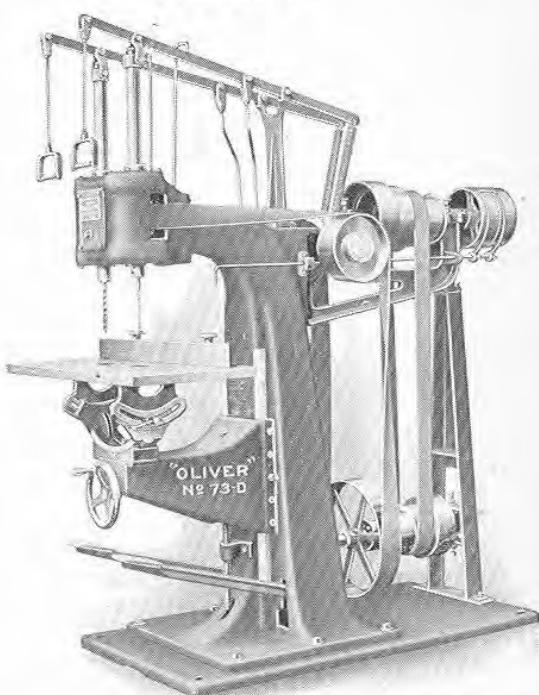
No. 73-A Single Spindle Single Speed Borer Belt Driven. Also Furnished Motor Driven



No. 73-B Single Spindle Four Speed Borer Shown Motor Driven but also furnished with T & L Pulleys for Belt Drive



No. 73-D Double Spindle Four Speed Borer Motor Driven. Also furnished with Single Speed, Called No. 73-C.



No. 73-D Double Spindle Four Speed Borer Belt Driven. Also furnished with single Speed C. S., Called No. 73-C.

No. 73 "Oliver" Universal Vertical Borer

Continued

Idler Pulleys These are 10" diameter 4" face, fitted with ball bearings and located at rear of column; independently adjustable to track the right angle belt properly. In case of the two spindle machine there is a third ball bearing idler pulley located directly back of the two spindles, and fitted with screw and nut mechanism having 2 $\frac{1}{4}$ " adjustment for taking up stretch of belt.

Countershaft Countershaft for No. 73-A and No. 73-C Single Spindle Machines is mounted directly on the sole plate in a self-contained manner; has 10" x 5" tight and loose pulley, 18" x 4" driving pulley, at 833 R. P. M. to provide a spindle speed of 3000 R. P. M.

The countershaft for No. 73-B and No. 73-D four speed machines are of the special self-contained four speed cone pulley and jack-shaft arrangement as illustrated. The tight and loose pulleys are 10" x 5" and should run at 463 R. P. M. to provide spindle speeds of 1000 to 4000 R. P. M.

Motor Drive There are two chief methods of motor drive applicable to the No. 73 Boring Machines. The commonest way is to use a constant speed motor in connection with Nos. 73-B and 73-D machines, placing the motor on extended base and belting to the tight pulley only. The second method would be to eliminate the countershaft entirely and to mount either a constant speed or adjustable speed motor on the sole plate directly back of the column; motor fitted with proper size pulley and belted through the idlers directly to the spindle. We recommend 3 to 5 H. P. motors, about 1800 R. P. M. when constant speed, or when adjustable speed motors are used the highest speed should be about 1800 R. P. M.

Floor Space About 71" x 34" is the floor space required.

Equipment With each machine we furnish one fence with two clamps; also one each boring bit $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ " diameter, 6" twist.

CODE, WEIGHT, ETC.					
Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Expend	73-A	Single Spindle Single Speed Belt Driven Borer	2150	2450	101
Expense	73-B	Single Speed Four Speed Belt Driven Borer	2350	2650	101
Explor	73-C	Two Spindle Single Speed Belt Driven Borer	2450	2750	106
Explor	73-D	Two Spindle Four Speed Belt Driven Borer	2250	2550	106

EXTRAS

- Exploit Endless Leather Belt for driving spindle.
- Explor Endless Leather Belt for use between cones on No. 73-B and No. 73-D machines.
- Explom Endless Leather Belt from motor to upper drive shaft of Nos. 73-B and 73-D machines.
- Explop Wire Mesh Guards for totally guarding internal belts and pulleys of No. 73-A or No. 73-C.
- Explopo Wire Mesh Guards for totally guarding all belts and pulleys of No. 73-B or No. 73-D.
- Explore Little Giant Chuck for shanks 0" to $\frac{1}{2}$ " diam., fitted to spindle.

No. 72

"Oliver" Vertical Single Spindle Electric Borer

Adaptation The "OLIVER" No. 72 Motor-in-Head Vertical Single Spindle Borer is for rapid and accurate boring of holes on a production basis. It possesses ample power and a wide range of adjustments, enabling it to do an unlimited variety of boring in all kinds of woodworking shops.

Capacity Bores holes up to 2" diameter and up to 6" deep with one stroke, to the center of 36". Distance from center of spindle to column 18". Vertical movement of table 14". Maximum stroke of motor head 6½". Table swivels completely around and tilts up to 45 degrees in any direction.

Features The chief exclusive features of this Borer are:

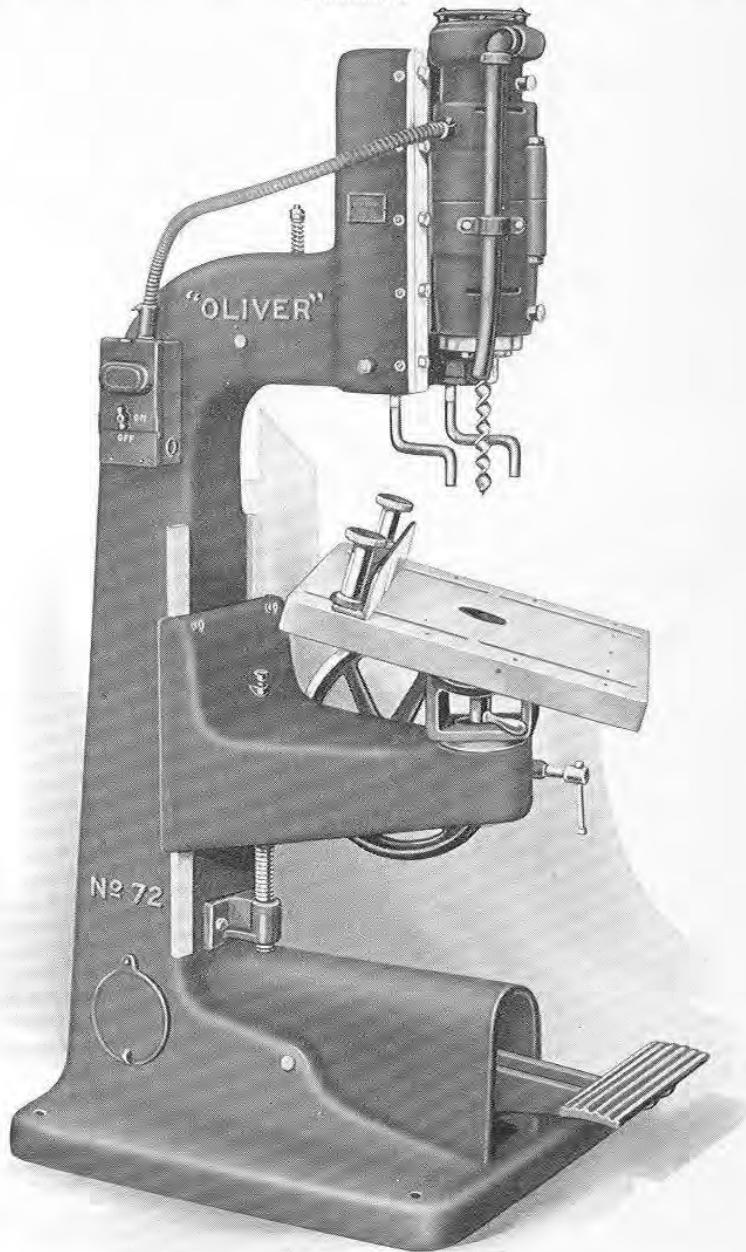
- 1 Entire Motor-Head, with self-contained pressure Blower Fan, moves vertically while boring, assuring rigid support to spindle, more accurate boring and easy disposal of chips.
- 2 Motor Shaft and Boring Spindle are one and the same, eliminating all pulleys, gears, shafts, belts and unnecessary bearings, thereby assuring greater efficiency and less trouble of upkeep.
- 3 Unusual distance of 18" from spindle to column and 14" vertical movement of table gives large capacity.
- 4 Vertical adjustment of table is controlled by a large hand wheel on the right hand side of the machine allowing ample room at the front of the machine for operator's knee.
- 5 Universal table tilts in all directions and swivels completely around enabling boring at any desired angle without the necessity of jigs or forms.

Column A one piece cored casting with a substantial wide flanged base measuring 24" x 31", is planed at the bottom and the dovetailed ways for the table and the Motor Head are planed and scraped square with the base and fitted with take-up gibbs, giving true and rigid alignment to the entire machine. Inside of the main column is located the counterbalancing weight which is the connecting link between the foot lever and the head lever. A hood cast on column deflects the chips away from the foot lever.

Motor Head The motor is fully enclosed, perfectly ventilated, 1½ H. P., either 2 or 3 phase, 60 cycle, 220 or 440 volt, 3600 R. P. M. The lower half of the motor head has a lug at the back through which a connecting link and a counterbalanced lever system reaching to the foot lever, supply the downward motion of the head while a coil compression spring provides quick return. At the right hand side of the motor head is a stop lug which operates between two adjustable stops clamped on a circular rod bolted to the top of the column providing easy set for length and position of the stroke.

No. 72 "Oliver" Vertical Single Spindle Borer

Continued



Left Hand Side View. Table with Compound Tilt

Spindle

Boring Spindle and the Motor Shaft are one and the same fitted with high grade ball bearings at each end. Spindle is of high carbon crucible steel ground true to size. At lower end it is bored to receive $\frac{1}{2}$ " straight shanks of bits or chucks. At upper end it carries the blast fan. At extra cost the spindle may be arranged for Morse Taper shanks Nos. 1, 2, or 3.

Blast Fan

A funnel type pressure Blast Fan is mounted at upper end of the motor head. The blades are a one piece aluminum casting pinned to the upper end of boring spindle. The constant pressure blast being directed toward the boring point, blows the chips away and also cools the boring bits.

No. 72 "Oliver" Vertical Single Spindle Borer

Continued

Switch

Safety first totally enclosed switch is conveniently mounted on the machine and conduit wired to the motor, ready for use. Other kinds of switches can be furnished if desired.

Fence

The right angle fence is 24" long, 2 $\frac{1}{4}$ " high. It may be set on the table at any desired position and securely clamped through the table slots by means of two clamp knobs.

Table

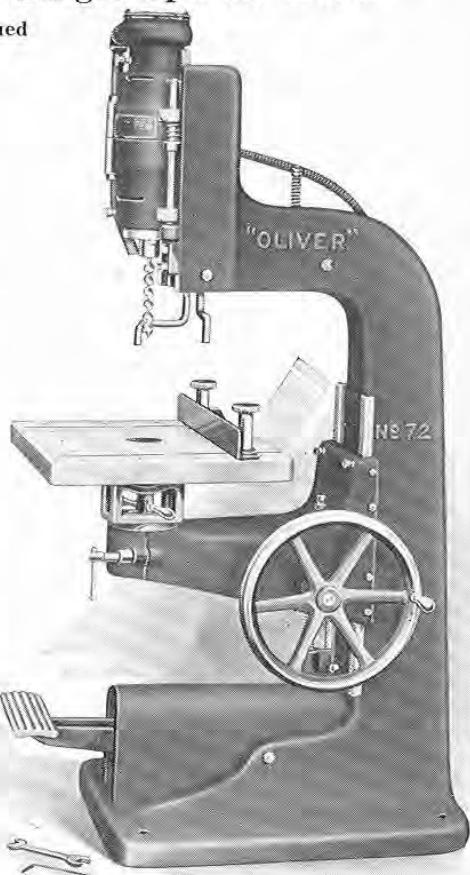
Table is cast iron 20" x 24", heavily ribbed and accurately finished at top as well as on all four sides and bored for wood screws to fasten wooden tables or forms for special work. Table is mounted on accurately machined rockers and rocker seats having a trunion base which allows table to swivel completely around and to tilt in any desired direction up to 45 degrees with scale and pointer to indicate the angle of tilt. An opening 2 $\frac{1}{4}$ " x 3 $\frac{1}{4}$ " at center of the table allows the chips to drop through and provides bit clearance in all positions of table. The knee, or arm, which carries table, is gibbed to main column in scraped dovetailed ways and is moved vertically by means of self-locking spiral gears, square threaded screw and large hand wheel on right hand side of the machine out of the way of the operator's knee. Both knee and the table are securely clamped in any desired position by clamp levers or clamp knobs conveniently located.

Equipment

Regular equipment includes the motor, the safety first switch conduit wired to the motor, fence on table, two hold down fingers and five boring bits—one each $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ "—all 6" twist.

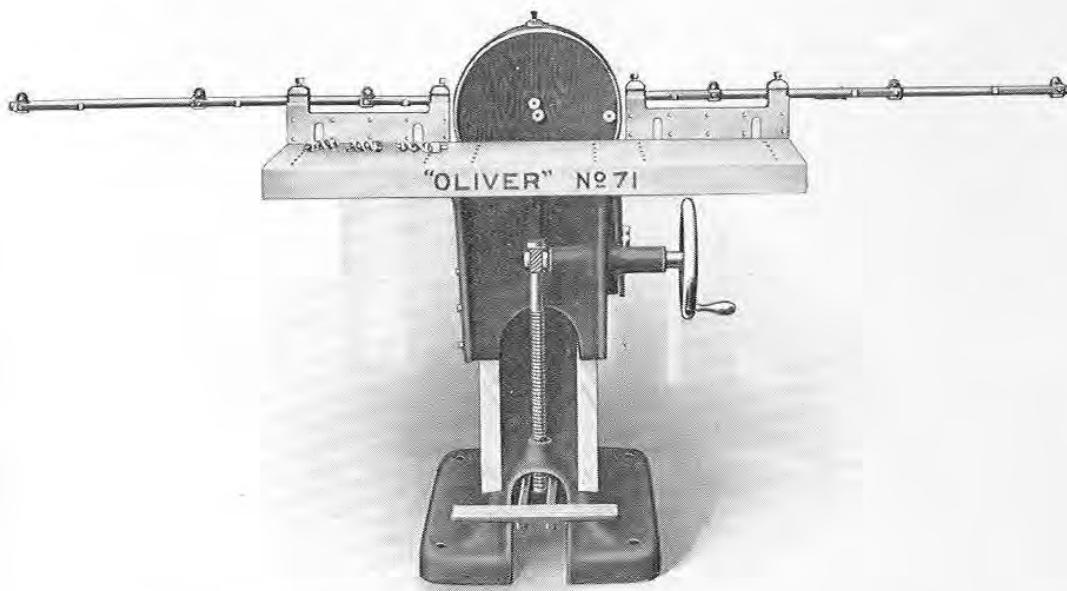
CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Explos	72-D	Motor-in-Head Vertical Single Spindle Borer, with motor, switch and regular equipment.....	1200	1400	80
Explos		Boring Bits—6" twist in following sizes: $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2".			



Right Hand Side View
Table Clamped Squarely in Place

No. 71
 "Oliver" Three Spindle Universal Borer
 MOTOR-IN-HEAD TYPE



Front View No. 71 Borer Complete with Stop Gauges

Purpose

The "Oliver" Three Spindle Radial Borer is used as a single, two or three spindle horizontal borer to bore dowel holes in the ends or sides of wood pieces used in the manufacture of furniture and similar woodwork. It can also be used as a general multiple borer for any kind of side or end boring within its capacity.

Capacity

As a single spindle machine, will bore holes up to 2" diameter, 6" deep. As a two or three spindle machine it will bore simultaneously two or three holes up to 6" deep and up to 1" diameter at distances ranging from 1" between centers up to 12" between centers of outside spindles in a straight horizontal, straight vertical or straight angular line; also at distances from 1" up to 6" from the center spindle to either side spindle in a radially staggered line covering any possible set up of three holes within a 12" diameter circle. Table 40" x 15" with 12" vertical movement. The kind of lumber and rapidity of boring desired will, of course, modify the capacity of any borer.

Column

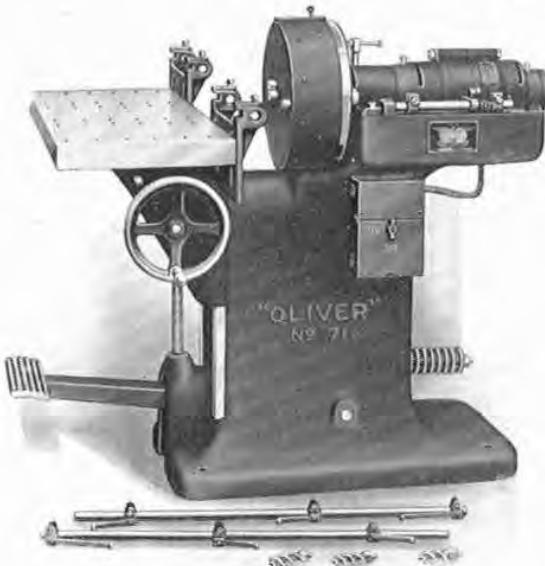
The column is a one piece cored casting with wide flanges for substantial floor support. It is planed at the bottom and the dovetailed ways for the table and the motor head are planed and scraped square and parallel with the base and fitted with take-up gibbs, giving true and rigid alignment to the entire machine.

Lubrication

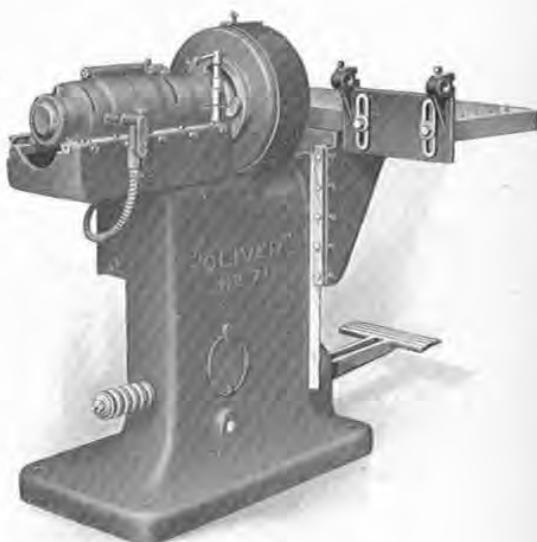
All bearings of the motor as well as the Radial Spindle Head are lubricated by the Alemite System of forced feed lubrication which is recognized as the most modern system of lubrication for machines of this type.

No. 71 "Oliver" Three Spindle Universal Borer

Continued



Right Front View



Left Rear View

Motor Head

Motor is $1\frac{1}{2}$ H. P., either 2 or 3 phase, 60 cycle, 220 or 440 volt A. C., 3600 R. P. M. (will run 3000 R. P. M. on 50 cycle). The motor housing consists of two halves securely clamped by two large bolts forming a unit, with planed dovetailed ways at the base. The Motor Stator is clamped inside of these two halves with ample air passage for proper ventilation. The motor rotor is keyed to the spindle running in ball bearings at the outer ends of the two halves.

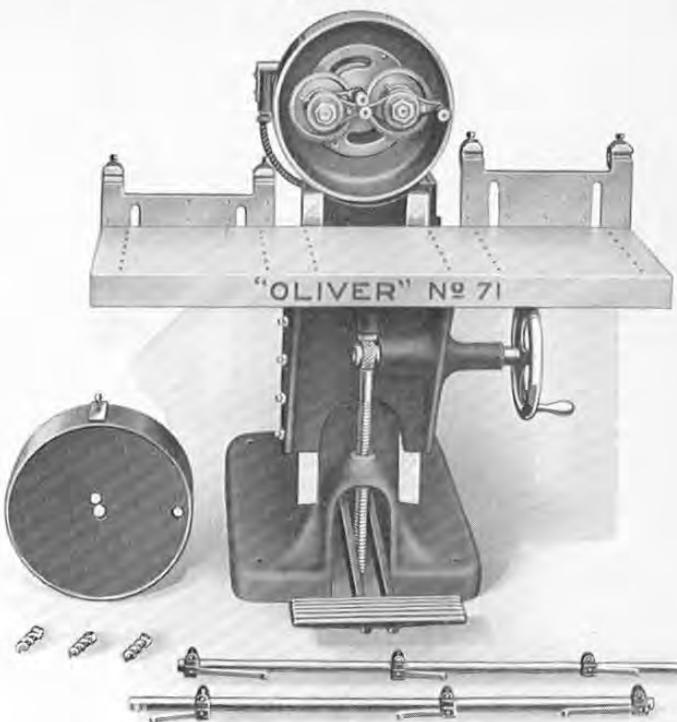
The front half of the motor head has a lug at the bottom through which a connecting link and a one piece foot lever supply the forward motion of the head while a coil spring provides quick return. At the right hand side of the motor head is a stop lug which operates between two adjustable stops clamped on a circular rod bolted to the top of the column providing easy set for length and position of the stroke. The front end of the motor head forms a trunnion which supports the radial spindle head through the center of which the motor spindle projects to drive the three radial spindles.

Radial Spindle Head

This is a concentrically designed head with a circular housing having a hub which locates same on the front end of the motor head. Within this circular housing are three gear driven spindles, of which the two outer are radially and concentrically adjustable in opposite quadrants of a circle of 12" diameter, receiving power in all positions by a train of nickel steel hardened expansion gears that are always in mesh with the driving gear of the center spindle, which in turn is driven by the motor spindle. The entire radial spindle head may be turned around the trunnion of the motor head to any desired position, which combined with the adjustments of the two outer spindles gives the unusual set-up capacity above described.

No. 71 "Oliver" Three Spindle Universal Borer

Continued



Front View with Guard and Gauges Removed

Spindles

All spindles run at 3600 R. P. M. They are accurately machined and ground to size. The three boring spindles are made of hardened chrome nickel steel with the driving gear teeth cut right in the spindles and the chuck ends tapped to take screw shank bits of any size up to 1" diameter. The spindle bearings are of phosphorus bronze. All parts are machined in jigs and fixtures assuring perfect fit, interchangability and easy replacement of parts.

Table

The Knee and the Table are cast in one piece, accurately finished and fitted with adjustable gibbed dovetailed way to the front of the column with hand wheel, spiral gear and screw vertical adjustment of 12". The top of the table is 40" long, 15" wide fitted with adjustable back fence and an 8' stop rod with six adjustable automatic spring stops to facilitate quick and definite set-ups. Both table and fence are drilled for wood screws for fastening special forms.

Floor Space

Size of base on the floor, 20" x 35". Extreme floor space required for complete machine, 40" x 52", without the stop rod.

Equipment

Regular equipment includes motor, safety switch, wiring from the motor to switch, stop rod with six adjustable stops, radial spindle head fitted with three $\frac{3}{8}$ " screw shank dowel bits, guard for radial head, and necessary wrenches.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated Pounds	Weight in Boxed Pounds	Cubic Feet
Explot	71-D	Motor-in-Head, 3 Spindle Borer.....	1000	1200	60
Exploti		Screw Shank Dowel Bits to fit above machine, state size desired.			
Exploto		Screw Shank Dowel Drills to fit above machine, state size.			

No. 102

"Oliver" Universal Wood Milling Machine

Read Carefully the Following Ten Pages

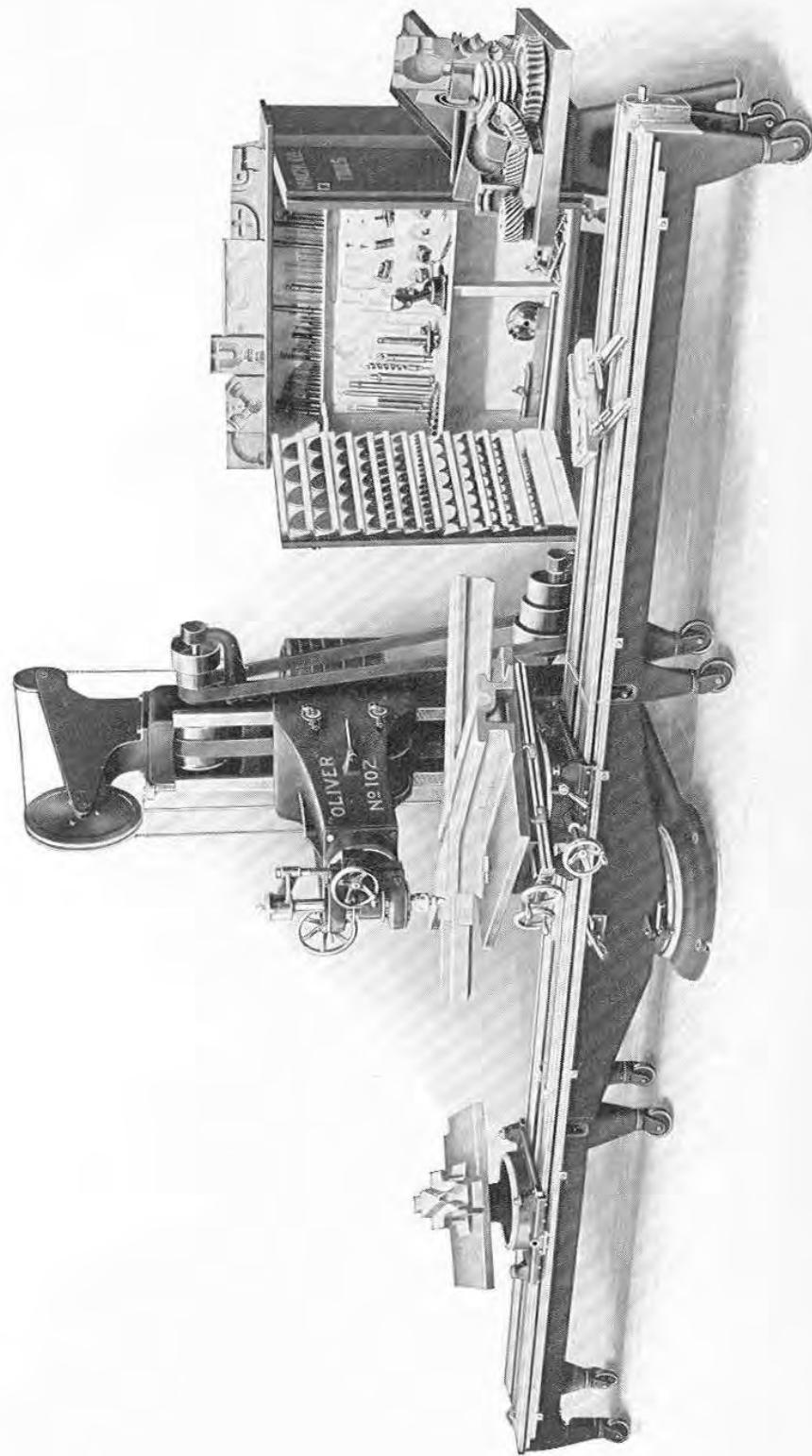
The most desirable machine for working in wood that has been brought to the attention of the public. Its range of usefulness is unlimited.

It is to the patternmaker and his department what the Universal Milling Machine is to the tool room.

For general pattern work it has no equal.

GENERAL DESCRIPTION

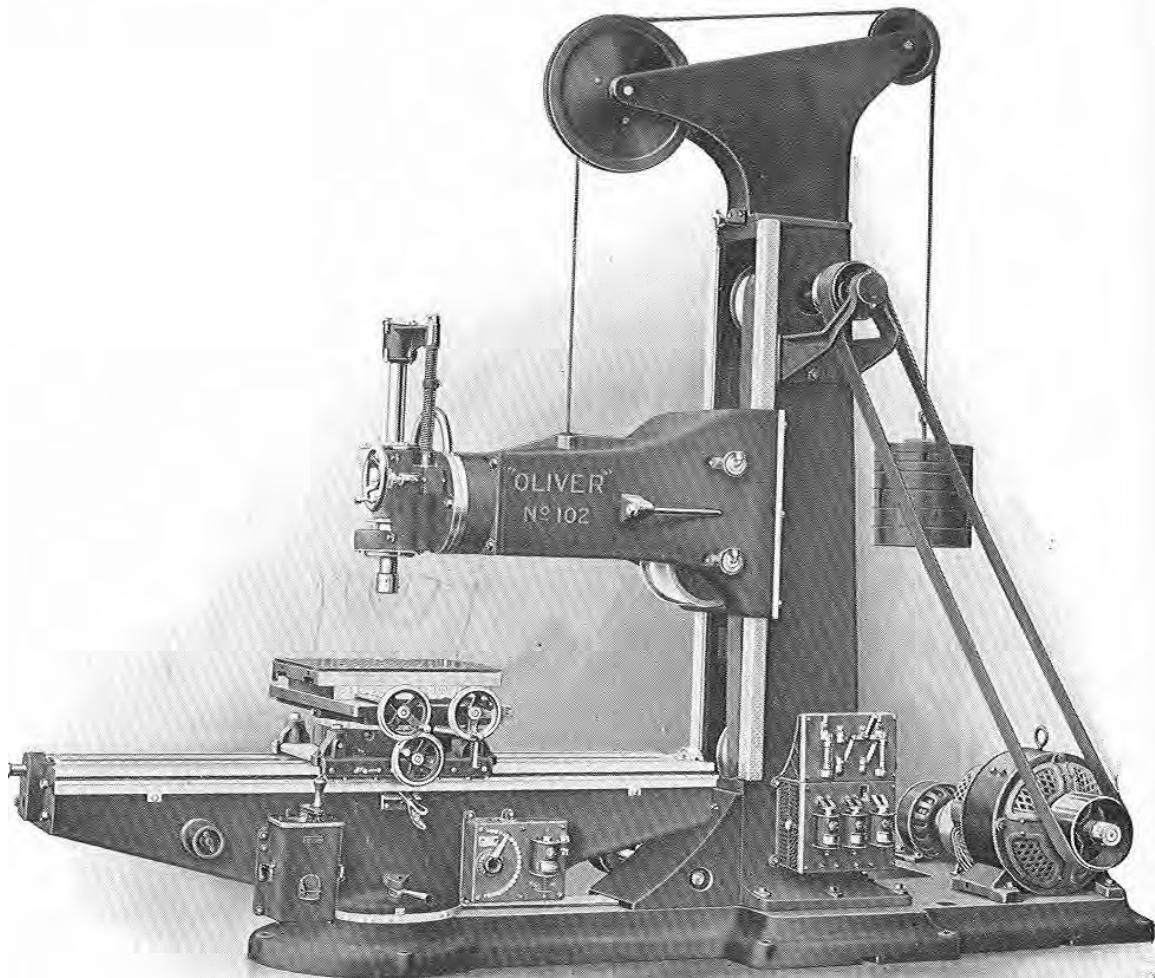
Column	Is 92" high and 18" wide across the face.
Base	Is 88" long and 42" wide.
Main Arm	Has vertical adjustment of 42" controlled by hand and power feed.
Head	Is made to swivel 90 degrees to the right and 45 degrees to the left and is graduated to cover this range.
Spindle	Is $2\frac{1}{2}$ " in diameter in the sleeve and 3" in diameter where cutter holders are attached. Has a 6" vertical movement controlled by hand wheel. Distance from spindle to face of column 48" and from table to spindle when raised to extreme height 30".
Off-set Head	Can be readily attached to main head and is fitted to receive large core box cutters.
Main Swivel Bed	Is 86" long and 19" wide. Permits movement of main table $62\frac{1}{2}$ " and swivels through complete circle on ball bearing graduated base. Feed screw is controlled by hand or power and is fitted with an automatic stop. Front edge of bed is graduated in inches and $\frac{1}{8}$ " fractions.
Table	Is mounted on ball bearing swivel carriage graduated in degrees. The slides give a horizontal movement of $9\frac{3}{4}$ " to the left of center, and 12" to the right for upper, and $9\frac{1}{2}$ " to right and 10" to left of center for lower section by means of hand wheel, worm and rack. Upper table is 20" x 24".
Power Feed	Main carriage slide has a power feed screw with right and left shifting clutch, giving feed speeds of 26", 34" and 45" per minute.
Extension Beds	Each is $88\frac{3}{4}$ " long. Is fitted with power feed shaft and screw. With both extensions attached to one end of main swivel it gives a carriage travel of 17' 2" from spindle, and with one extension on each end of main swivel carriage travel will be 9' 10". For large radius work, long core boxes, frog and crossing pattern work, these extension beds are absolutely necessary.
Bearings	The main spindle, idler pulleys in main arm, upper and lower drive shafts in column all have high grade ball bearings. Offset head also has the ball type bearings.



FRONT VIEW "OLIVER" NO. 102 WOOD MILLING MACHINE
23 feet long over all. Power feed for Main Table over entire length. Radial capacity increased by placing one extension bed on end of the other bed as shown
on following page.

No. 102 "Oliver" Universal Wood Milling Machine

Continued



Either Motor Driven as Above or Belt Driven

Specially adapted to the requirements of Industrial Engineering Plants, Railroad Shops, Shipyards, Arsenals and all manufacturers using wood and metal patterns.

Would you, or could you, conduct your machine shop tool room without a Universal Milling Machine with a suitable dividing head with spiral attachment and all other up-to-date features?

Think about it. If you have the same quality of talent in your pattern shop this Wood Milling Machine can be used just as effectively and upon a much wider range of work; besides, the cutters do not cost nearly so much.

No. 102 "Oliver" Universal Wood Milling Machine

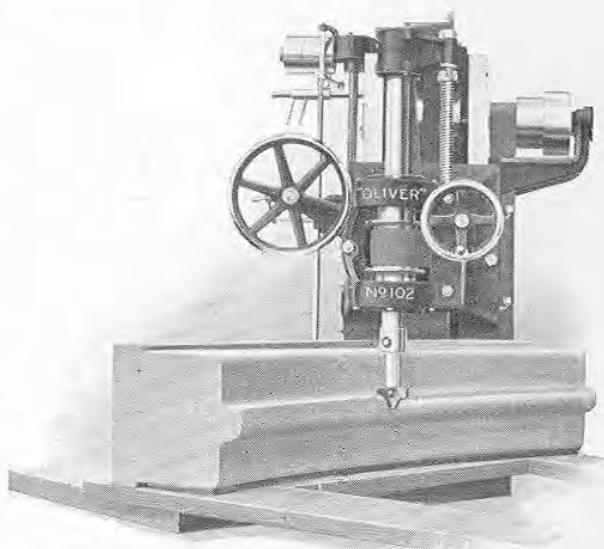
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A 6' section of a fly wheel pattern 20' in diameter with a cross section 14½" by 15½". This was worked out of the rough glued up section to the true circle and with proper draft and fillet cut out of the solid stock, and the ends squared off true to the correct angle. Time, 8 hours.

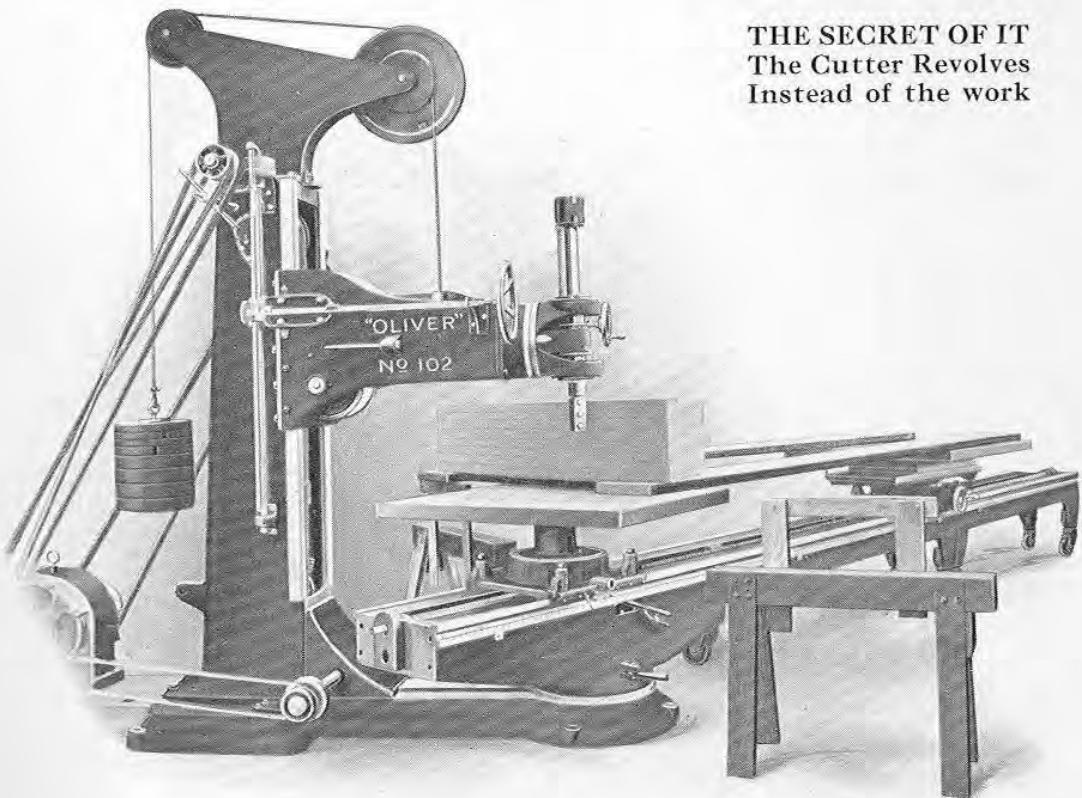
Illustrates both extensions on one side.

Work illustrated centered upon main table (at the right).

Work is controlled by hand past the cutter head.



Finishing inside of Heavy Fly Wheel Segment



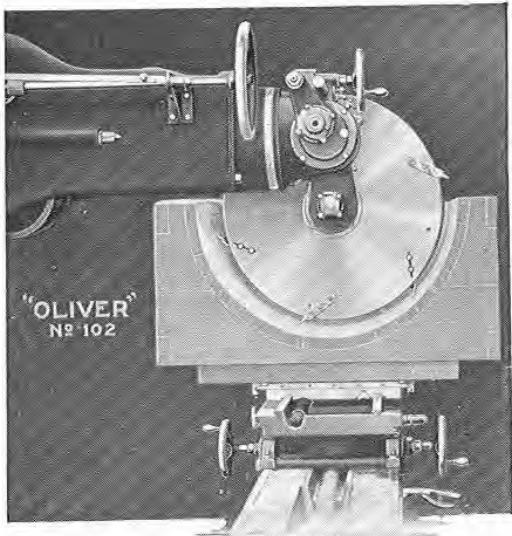
THE SECRET OF IT
The Cutter Revolves
Instead of the work

Finishing Outside of Heavy Fly Wheel Segment

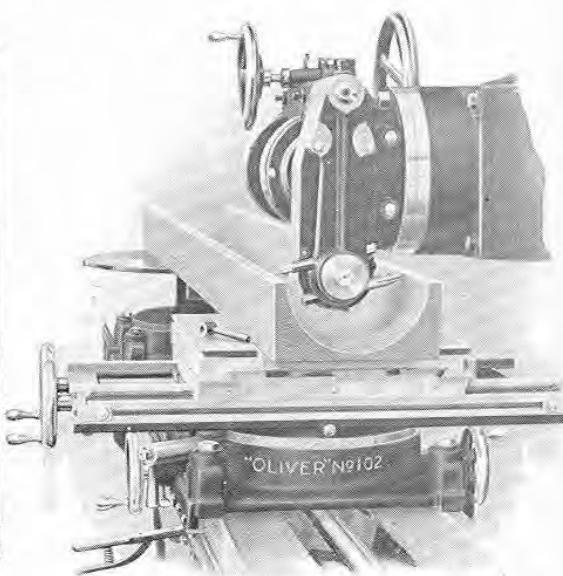
Lower belt controls feed in bed. The small straight and cross belts control the raising and lowering of the main arm.

No. 102 "Oliver" Universal Wood Milling Machine

Continued

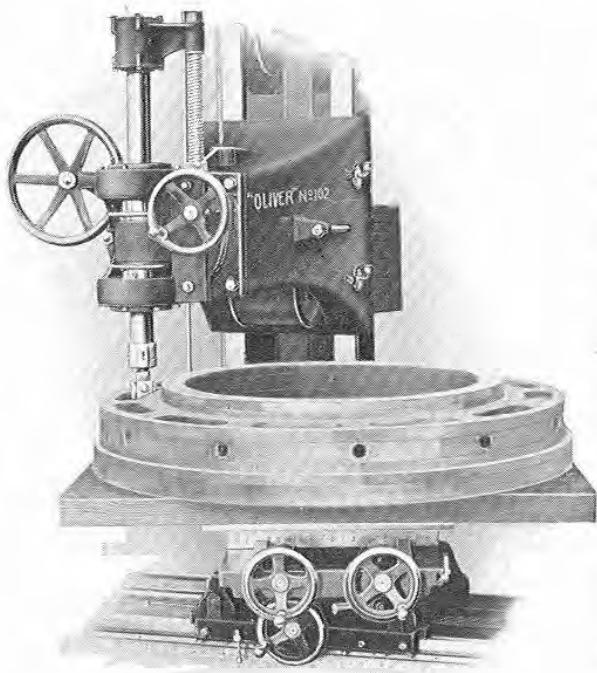


Core Box 26" diameter, of the staved type, being accurately finished on the "Oliver" No. 102 Pattern Milling Machine. On work of this type time saved ranges from 70 to 90 per cent of the ordinary methods used.



Showing off-set head making core box 10 feet long by 10 inches diameter (5 inch radius) completed in thirty minutes.

This offset head brings the center down so that half diameters may clear the overhanging arm as illustrated. Works up to 37" diameter, any length.



This piece of work is 48" diameter. Every convenience is there to produce quick results. The cutter on the spindle at 4500 R. P. M., the work and cross slides all swivel upon a ball race. If this job was on a lathe in the usual way everything would be the reverse; in that case the work would revolve at high speed. In this case the cutter head revolves and the work is moved past it. Besides, you can let in the pockets with suitable draft and fillets. Which is the safest way? You can do more in five minutes this way than five hours the other way.

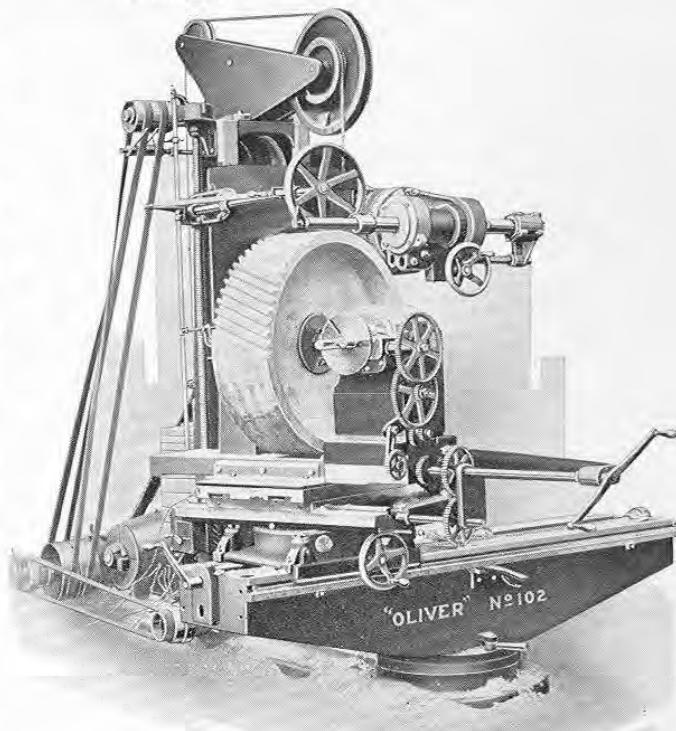
No. 102 "Oliver" Universal Wood Milling Machine

Continued

STRONG EVIDENCE FROM ONE WHO KNOWS

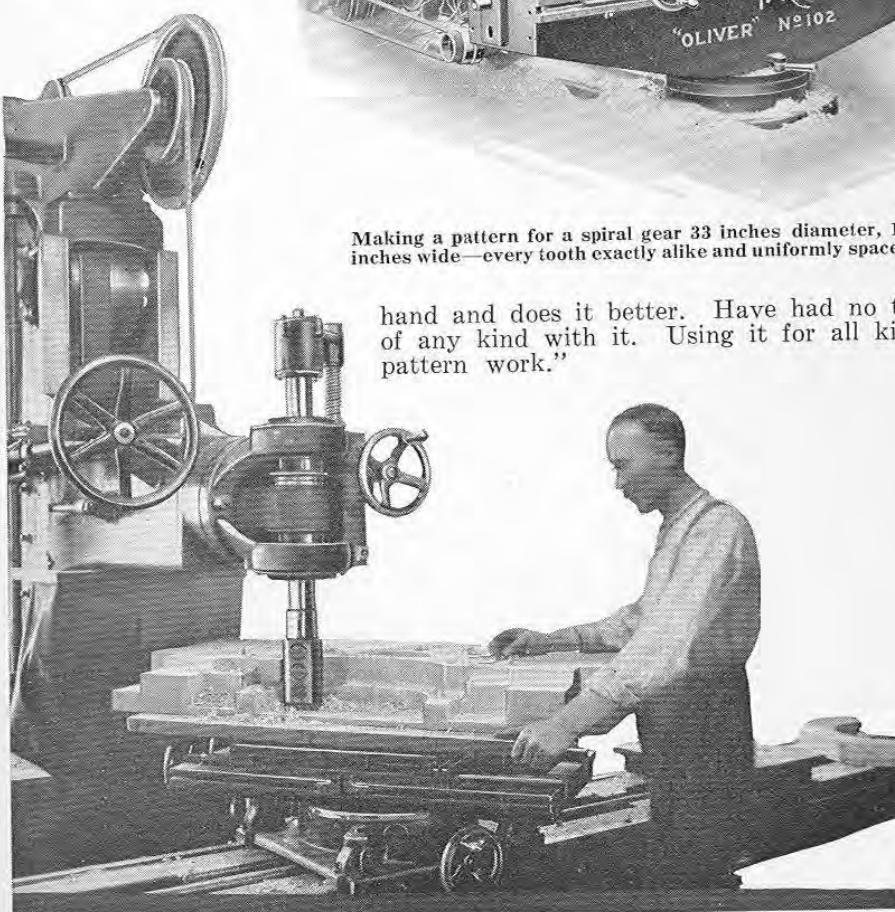
Here is what the foreman in the pattern shop of the De La Vergne Machine Co., of New York, says about the "Oliver" No. 102 Universal Wood Milling Machine which you see here cutting patterns for castings of submarine engine cylinder heads.

"Very accurate, very fine; does work in an hour that would take a man a day or more by



Making a pattern for a spiral gear 33 inches diameter, 10 inches wide—every tooth exactly alike and uniformly spaced

hand and does it better. Have had no trouble of any kind with it. Using it for all kinds of pattern work."

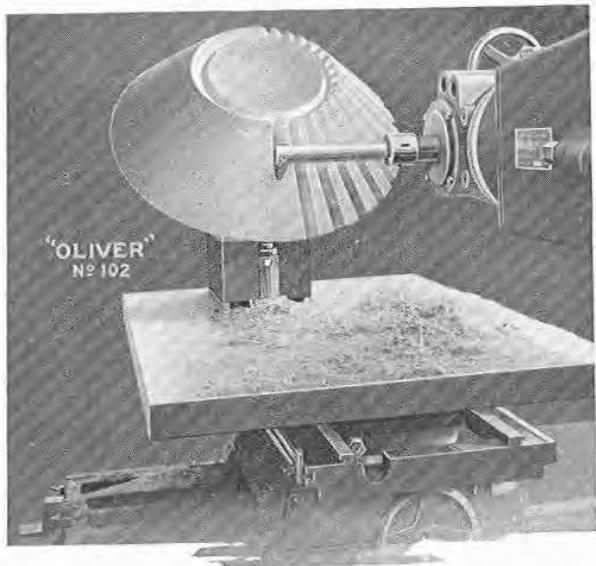
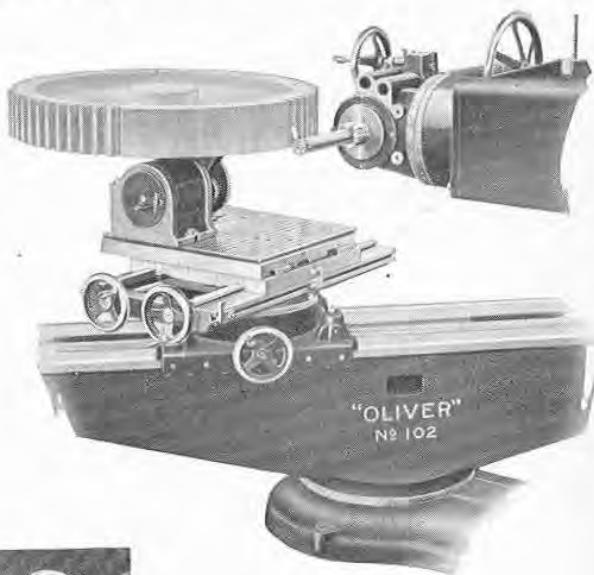


Heavy Routing in the Pattern Shop of De La Vergne Machine Co.

No. 102 "Oliver" Universal Wood Milling Machine

Continued

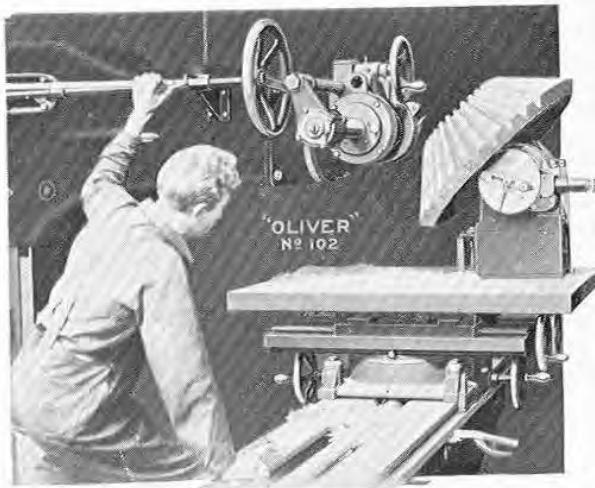
This view shows machine finishing a spur gear pattern. Size, 35" pitch diameter by $5\frac{1}{4}$ " face. Total number of teeth, 70. Blanks for teeth were all shaped to conform to circle of body pattern, also beveled on edges where they are joined together and the entire pattern worked out of rough, glued-up stock. By slightly tilting the dividing head on which pattern was mounted, the proper draft was cut at same time teeth were finished. Pattern completed in eight hours.



Just three things make this tool a wonder—a good head on the operator, a good equipment of tools and lots of work that needs doing.

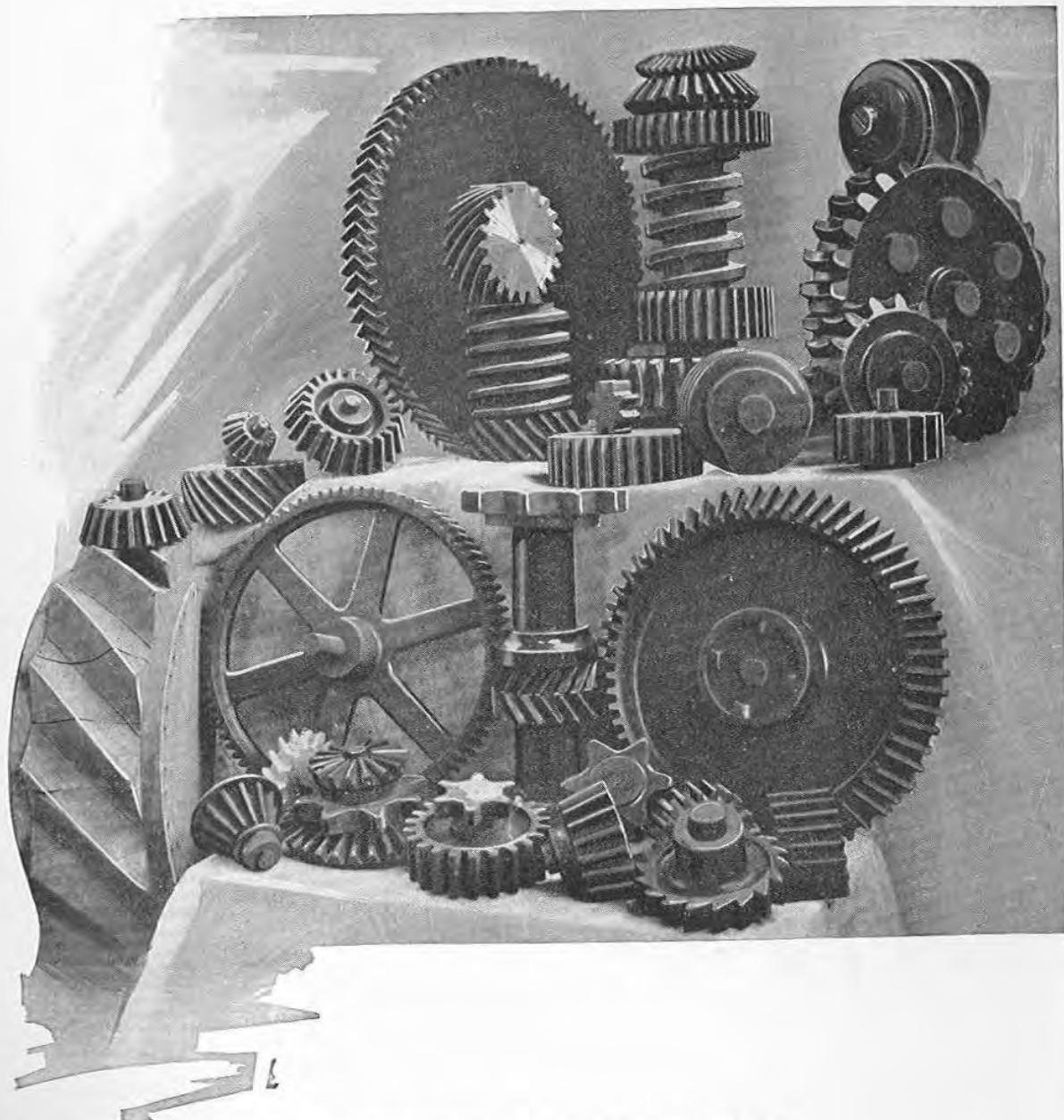
More information upon request.

Bevel Gear Pattern 30" diameter, 12" face, being made on the "Oliver" No. 102 Pattern Milling Machine. Very close approximations of the theoretically perfect Bevel Gear Patterns may be made in a few hours as against several days required in the ordinary methods.



No. 102 "Oliver" Universal Wood Milling Machine

Continued



SPIRAL SPUR AND WORM GEAR PATTERNS

Special Shapes for Crushing

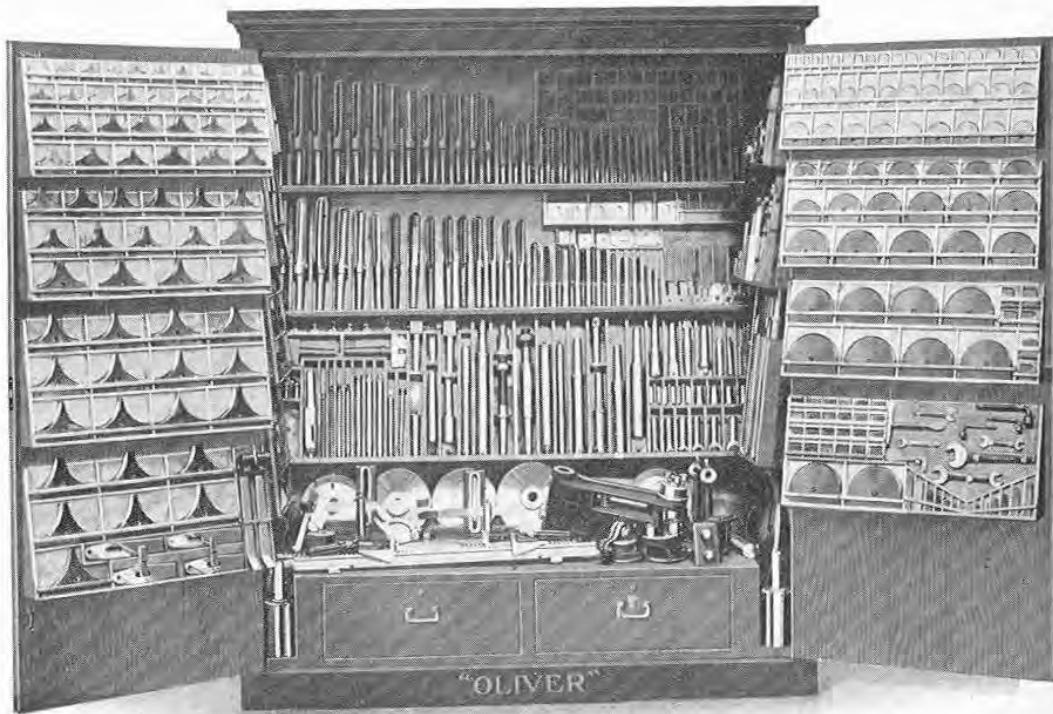
Example of work that can be produced on an "Oliver" New No. 102 Wood Milling Machine

The work shown in above cut represents patterns which were entirely completed on the machine and as accurately as it could be done on any milling machine.

This is the only machine on the market that will do the above illustrated work and do it efficiently. We are ready at all times to prove this statement. The limitations of this machine have not yet been discovered.

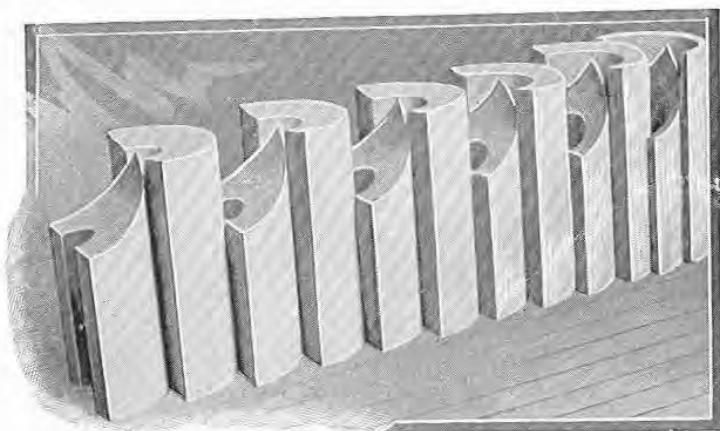
No. 102 "Oliver" Universal Wood Milling Machine

Continued



TOOL CABINET AND TOOL EQUIPMENT

The tool cabinet above illustrated, is a part of the regular equipment of the "Oliver" No. 102 Universal Wood Milling Machine, but the cutters, cutter holders and attachments displayed in the cabinet are sold as extras as the needs of the user may require. A more comprehensive idea can be had by reading the detailed tool list which we publish describing these attachments referring to their uses. Please remember that these tools represent the highest grade of workmanship; they are all standardized so as to be used on any "Oliver" Wood Milling Machine and they are the result of many years of careful study and experiment.



Standard Core Box Bushings

The small cut shows 12 bushings made on No. 102 machine. Size, 12" radius, tapering slightly. All are 21" long.

Entire set completed, as shown, in eleven hours. Figure the saving.

No. 102 "Oliver" Universal Wood Milling Machine

Continued

Horse Power	Spindle, 7½ H. P. Vertical and horizontal feed screws 2 H. P.
Countershaft	Is mounted on sub-base extension at rear of column fitted with two driven pulleys 14" x 16", with reversing friction clutches. One driving cone pulley 10", 12", 14" by 4" face to drive main spindle. One driving pulley for vertical feed screw, 18" x 8", one driving cone pulley for horizontal feed screw, 8", 9" and 10" diameter by 1¾" face. Speed of countershaft to be 900 R. P. M.
Capacity	This machine is practically without limitation for capacity as well as variety of operations.
Metal Patterns	Both brass and soft metal patterns can be worked out on this, the only universal pattern making machine produced on which both wood and soft metals can be worked accurately.

CODE, WEIGHT, EQUIPMENT, ETC.

Explub	No. 102 Universal Wood Milling Machine, having unlimited capacity for making patterns and core boxes; fitted with ball bearings throughout; consisting of main column, overhanging arm, spindle head, main swivel bed, two extension beds, universal swivel carriage, auxiliary carriage, power feed to both carriages, double compound universal table, geared off-set head and heavy floor plate supporting the above; complete with especially designed tool cabinet and internal endless belt. Weight, 15,500 lbs. Note—For detailed information covering cutters, etc., see special booklet and tool list which will be furnished on request.
Expluc	Belt Drive Arrangement consisting of ball bearing countershaft for belt drive.
Expluf	Motor Drive Arrangement, in case customer furnishes the Motors and Starters.
Explug	Direct Current Motor Drive, arrangement consisting of one 7½ H. P., 220 volt, direct current motor to have a speed ratio of 2:1 or 850:1700 R. P. M. and reversible; to have semi-enclosing covers and mounted on extension sole plate or motor base and fitted with proper size driving pulley. Motor controlling device will consist of one operator's switch with reverse movement and dynamic brake, one speed controlling device, one remote controller with three contact points and main line switch; all controlling devices to be mounted on machine convenient to operator. One 2 H. P., 220 volt, 1200 R. P. M. constant speed motor to have special shaft extension, driving pulleys and out-board bearing; all to be mounted on extension motor base; the starting device for this motor to be mounted on machine convenient to operator. Weight, 1,100 pounds extra.
Expluk	Alternating Current Motor Drive, arrangement consisting of one 6 H. P., 3 phase, 60 cycle, 220 or 440 volt motor with multi-speed winding. Speeds, 600, 900, 1200 and 1800 R. P. M., with shaft arranged for and fitted with two-step cone pulley for driving main spindle. One motor controller to give four changes of speed to the above motor. One 2 H. P., 3 phase, 60 cycle, 110, 220 or 440 volt, 1200 R. P. M. motor with safety first switch for driving feed screws. All the above to be mounted on machine ready to receive wiring. Weight, 1,000 pounds extra.

EXTRAS

Explup	Special Cutters, Tools, etc., full information on application.
--------	--

No. 75
“Oliver” Wood Milling Machine

Adaptation

For the general pattern shop where good work is appreciated. It does the most difficult work very simply and very easily. This machine is to the pattern shop what the milling machine is to the tool room. The same dividing head may be used not only for cutting gear teeth, but also for dividing off and machining duplicate work on similar segments or sections of the same piece. It is a machine that improves with acquaintance, although the operator quickly grasps the idea and general working of the machine, it is a matter of time for him to realize to the fullest extent the operations it can perform, since it is only as extraordinary shapes are brought to him that he gradually sees that the flexibility of the machine renders its range of operations practically unlimited. Hours you spent then now mean minutes on this machine on any of the following operations:

Kind of Work

Core Boxes, regular and irregular, any section.
Square Bends, S Bends, Tees, Socket Ends, Valve Boxes, etc.
Regular and Irregular Patterns to match the above.
Cross Grooving, Trenching, Halving, Jointing, Cross Cutting.
Recessing, Routing out heavy bodies, Rounding Curves.
Shaping U D and C Shaped Sections.
Truing up Sectional Built-up Pieces direct from the saw.
Boring and Slotting large size holes at any angle.
Facing, Cutting Port Holes.
Shaping straight or curved Arms of Wheels, and bases of same.
Recessing and trenching of every description and variety.
Gear Cutting.
Boring up to 6" or larger by rotating the work table.
Cutting Fillets, straight or curved.
Cutting Dowels crosswise of the grain.
Straight Corner Locking Half Lapping Jointing, Ploughing.
Slot Mortising and Recessing any length up to 6" wide.
Shaping Square to any design, size or length.
Tenoning, double or single, and scribing at one operation.
Dovetailing right and left hand sets at one setting.

Tools Needed

Most of the above operations may be accomplished with the tools provided with the machine and others can be quickly made to suit special work.

Capacity

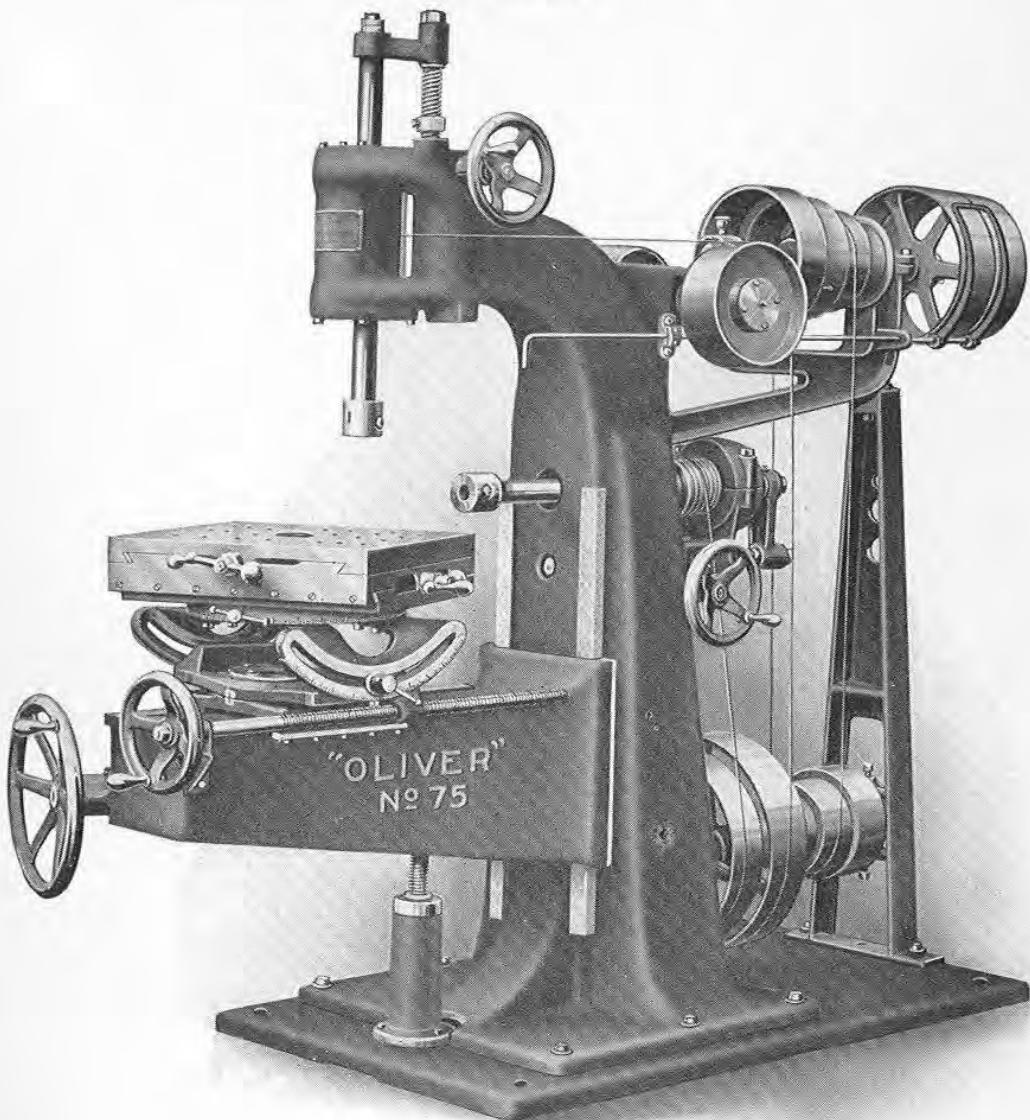
The capacity of this machine is limited only by the size of cutters that can safely be used, and the ability of the operator to get the full usefulness out of the machine. Core box cutters up to 3" diameter are regular part of the equipment, although larger core boxes may be cut. A core box 30" in length may be cut at a single setting of the stock.

Using vertical spindle, circular work up to 19" diameter may be turned by means of the revolving table. By centering work on table center plugs, work up to 28" diameter may be turned.

By revolving table, work up to 48" diameter may be turned. By centering work on superimposed table, the limits of such circular work are indefinitely greater. By means of a special dividing head, spur and bevel gears may be accurately cut, spur gears up to 24" diameter by 4" face.

No. 75 "Oliver" Wood Milling Machine

Continued



No. 75-A WOOD MILLING MACHINE—Front View Belt Drive

Column Cored type with ample flange support bolted to base. Vertical ways $10\frac{3}{4}$ " wide across face, extending far enough to give perfect bearing to knee in either highest or lowest position. Height over all, 7' 0".

Base Or sole plate 34" x 60" planed to receive column and telescoping screw bracket. On No. 75-B this plate is extended to receive motor.

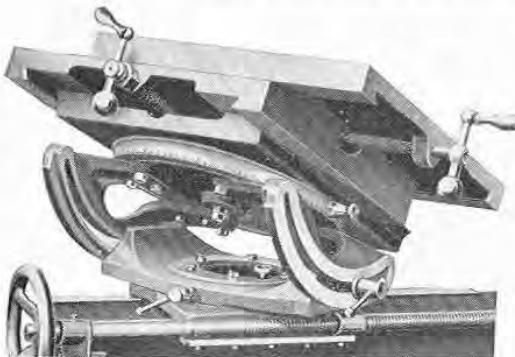
Countershaft Has 10" x 5" T & L pulleys, and four-step cone driving pulleys. It is an integral part of the machine and is supported solidly from sole plate. Speed, 500 R. P. M.

No. 75 "Oliver" Wood Milling Machine

Continued

Table

We are justly proud of the improved table now regularly furnished with the "Oliver" No. 75 Wood Milling Machine. It is universal, compound, double sliding, double tilting and double swiveling. The top of the table is 20" x 20", divided accurately into 1" squares by etched lines and tapped at convenient locations for attaching the general purpose clamps. A 6" removable centering disk permits boring below the line of table. Two centering plugs $\frac{1}{2}$ " and 1" diameter are furnished for circular work where the work revolves. The table slides 12" one direction and 9 $\frac{3}{4}$ " the other; the table slide moves 10" either direction of the center by means of screw and ball crank lever, which may be operated from either side of table. Table tilts 45 degrees in either direction shown by graduations and pointer. Table swivels full 360 degrees on ball bearings both above and below the tilting mechanism. Plungers are provided to positively locate the table at each 45 degree point of swivel and the upper swivel plate is graduated in degrees.



View of Table showing Compound Cross Slides, Double Swivel and Method of Tilting

Spindles

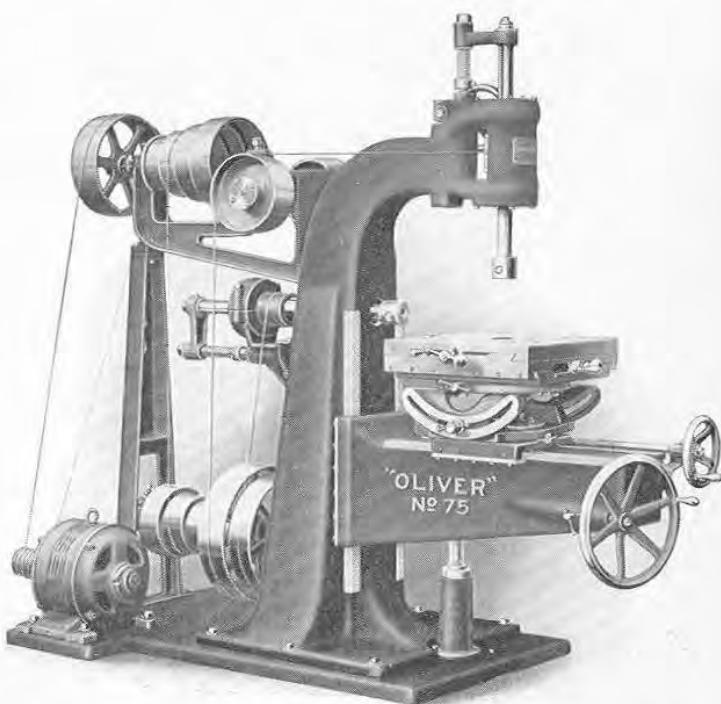
Made from highest grade high carbon stock and accurately ground. Diameter $1\frac{7}{8}$ " in sleeve and 3" head for receiving cutters with No. 4 Morse taper. Both vertical and horizontal spindles are hollow to allow the draw in rods to safely hold the fly cutter holders in place. Vertical travel of spindle is 10" while the horizontal spindle has $11\frac{1}{2}$ " travel. Both spindles are controlled by hand wheel and spiral gear acting on double square thread screw of large diameter. Micrometer adjustment to both hand wheels permits very accurate control of cutting tool. Each spindle control screw is provided with knurled brass positive stop lock nut to insure cutting to given depth. Spindle slides easily in accurately bored pulley sleeve, the construction of which is such that no belt strain whatever is transmitted to the spindle. Distance of center of vertical spindle to face of column is 18" and when in highest position is 20" above the table. Center line of horizontal spindle is 10" above table at lowest position.

Drives

This Universal Wood Milling Machine is made to drive direct from line shaft with T & L pulleys, or with base extended to receive constant speed motor either D. C. or A. C. A third method and a very desirable one when proper current is available is by means of D. C. variable speed motor, allowing speed changes from slowest to fastest speeds. The machine thus arranged is known as No. 75-C Universal Wood Milling Machine.

No. 75 "Oliver" Wood Milling Machine

Continued



No. 75-B WOOD MILLING MACHINE—Front View Motor Drive
5 H. P. Motor Usually Recommended

Bearings

Both vertical and horizontal spindles run on ball bearings of large diameter, allowing a maximum speed of 5000 R. P. M., if desirable, on certain work. Regular speeds of each spindle on No. 75-A and B are 1250, 2000, 3000 and 4300 R. P. M. Idler pulleys are 10" diameter and 4" face, and are provided with ball bearings, thus eliminating all lubrication troubles of high speed loose pulleys. The countershaft bearings are of genuine babbitt, as the slower speeds render ball bearings needless, and the loose driving pulley is bushed with self-oiling bronze bushing.

Knee

Construction is box type closed on top to prevent chips interfering with raising mechanism, opens below, strongly gibbed to column. Horizontal planed ways permit table to travel to and from column a distance of 23", a large square thread screw and hand wheel giving rapid traverse. Total length of knee 38". Additional support to the knee is rendered by a centrally located telescoping screw. An extra large hand wheel operating this screw lowers or raises the knee with ease its 21" of vertical travel. A zero line on the horizontal ways gives quick location of the table exactly in line with vertical spindle.

No. 75 "Oliver" Wood Milling Machine

Continued



The above illustration shows the regular equipment furnished with each machine. We make all kinds of cutters to suit ordinary work, and special cutters for special work. The usefulness of machine is greatly increased by a liberal assortment.

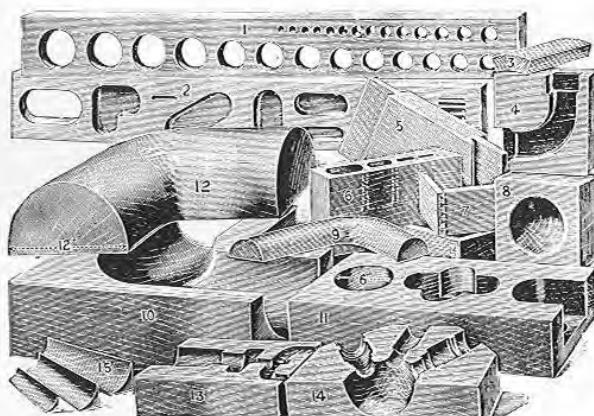
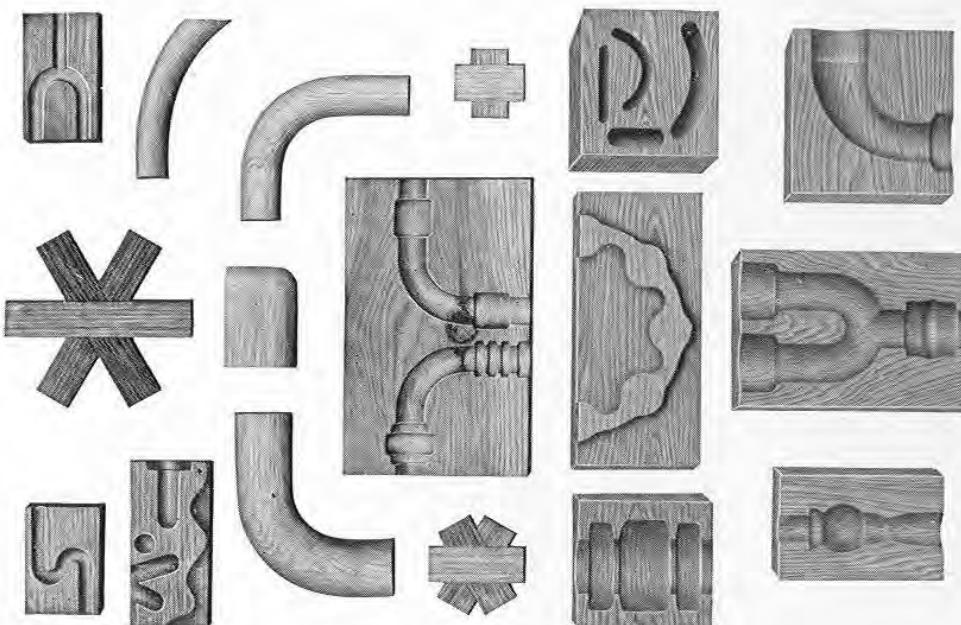
Partial List of Users of "OLIVER" No. 75 Wood Milling Machine

- | | |
|--|---|
| American Steel Foundries, Granite City, Ill. | La Crosse Plow Co., La Crosse, Wis. |
| Aviation Experimental Station, Hampton, Va. | H. Mueller Mfg. Co., Decatur, Ill. |
| Canadian Westinghouse Co., Ltd., Hamilton,
Ont. | New York Air Brake Co., Watertown, N. Y. |
| Carborundum Co., Niagara Falls, N. Y. | Norton Grinding Co., Worcester, Mass. |
| Chase Metal Co., Waterville, Conn. | Rock Island Arsenal, Rock Island, Ill. |
| Fairmont Mining Machinery Co., Fairmont,
N. J. | University of Texas, Austin, Texas. |
| The Falk Corporation, Milwaukee, Wis. | Signal Corps Aviation School, Dallas, Texas. |
| Farmington Machine Works, Farmington, Mass. | Westinghouse Electric & Mfg. Co., Essington,
Pa. |
| Holt Mfg. Co., Stockton, Cal. | Westinghouse Machine Co., E. Pittsburgh, Pa. |
| International Harvester Co., Chicago, Ill. | Winchester Repeating Arms Co., New Haven,
Conn. |

No. 75 "Oliver" Wood Milling Machine

Continued

ILLUSTRATIONS REPRESENTING WORK DONE ON THE "OLIVER" WOOD MILLING MACHINE



Note the time required to do the work shown in accompanying cut.

Number	1	2	3	4	5	6	7
Minutes	4	3	6	10	4	3	8

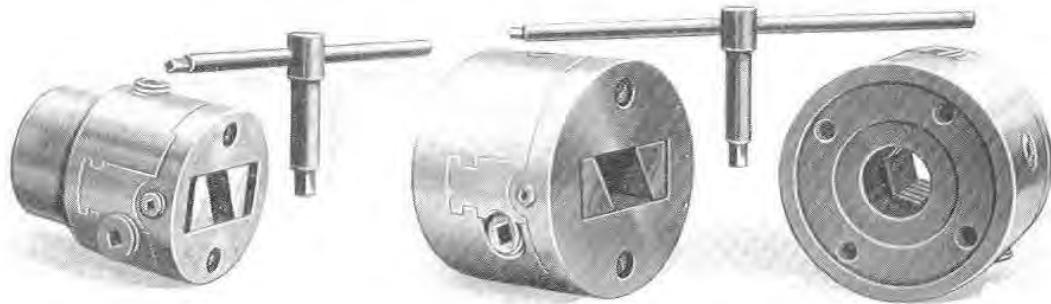
Number	8	9	10	11	12	13	14
Minutes	5	6	30	15	30	25	20

CODE, WEIGHT, ETC.

Code	No.	Description	Weight Crated	Pounds Boxed	Cubic Feet
Expo ^b	75-A	Regular belt driven machine with self-contained four speed counter-shaft.....	3500	3950	170
Expo ^f	75-B	Machine arranged for constant speed motor drive.....	3435	3950	188
Expo ^k	75-C	Machine arranged for adjustable speed motor drive.....	3000	3400	150

Drill Chucks for Borers and Lathes

No. 268 "LITTLE GIANT" TWO JAW CHUCKS

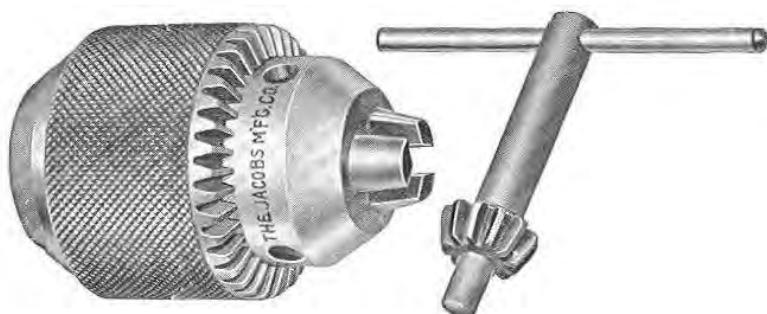


Taper Body

Straight Body

Code	No.	Capacity	Diameter	Length	Weight
Fabib	268-A	0" to $\frac{1}{4}$ "	$1\frac{7}{16}$ "	$2\frac{1}{2}$ "	$1\frac{1}{4}$ lbs.
Fabif	268-B	0" to $\frac{1}{2}$ "	$2\frac{1}{2}$ "	$2\frac{3}{4}$ "	$2\frac{1}{2}$ lbs.
Fabig	268-C	0" to $\frac{3}{4}$ "	3"	$3\frac{1}{2}$ "	$4\frac{3}{4}$ lbs.
Fabik	268-D	0" to 1"	$3\frac{1}{2}$ "	$4\frac{1}{2}$ "	8 lbs.

No. 269 THREE JAW "JACOBS" SUPER-CHUCK



Note — When ordering any of these Chucks be sure to state what kind of shank is desired, straight or tapered and give dimensions of shank desired.

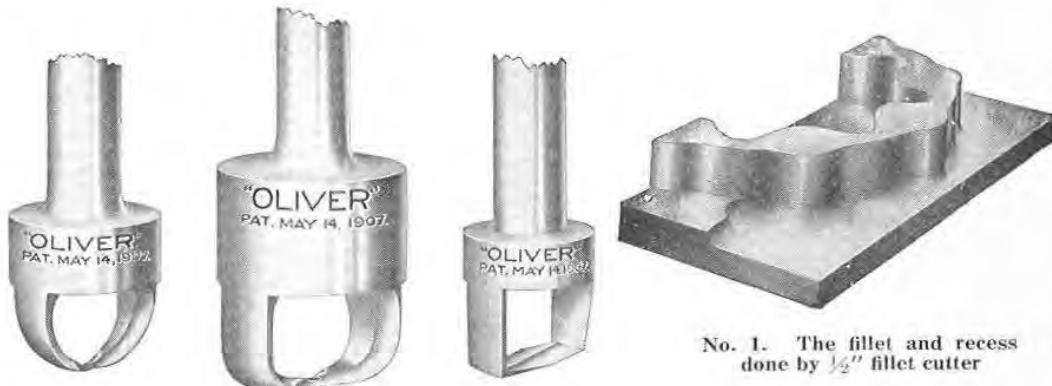
Code	No.	Capacity	Diameter	Length	Weight
Fabom	269-A	0" to $\frac{1}{4}$ "	$1\frac{3}{8}$ "	$2\frac{3}{8}$ "	$\frac{1}{2}$ lbs
Fabor	269-C	0" to $\frac{3}{8}$ "	$1\frac{7}{8}$ "	$2\frac{7}{8}$ "	1 lbs.
Fabot	269-D	0" to $\frac{1}{2}$ "	$2\frac{3}{16}$ "	$3\frac{7}{16}$ "	2 lbs.
Fabov	269-E	$\frac{3}{8}$ " to 1"	$3\frac{1}{2}$ "	$5\frac{3}{8}$ "	7 lbs.

"Oliver" Little Pattern Makers

RICHMOND PATENT

These are useful cutters for the purpose of working out small core boxes, making fillets and routing. They may be best used on Boring or Profiling machines, though they can be used in lathes or similar machines.

The philosophy of these cutters is that the broad, circular band of the cutter, just above the knife edge, forms a rub-collar and any irregular shape or pattern bandsawed as required (say $\frac{1}{2}$ " to 2" thick) and tacked temporarily to top of work, allows the work to be pushed or pulled by hand under the cutter with the collar pressed against the pattern; if cutter is sunk into the work beyond the pattern the path just cut acts as a guide for cutter. A very simple, quick and efficient way of working out core boxes, slots, etc.



No. 211

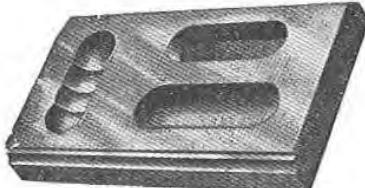
No. 210

No. 212

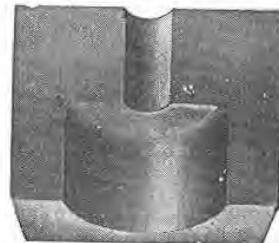
No. 1. The fillet and recess done by $\frac{1}{2}$ " fillet cutter



No. 4. Section of Stair Stringer grooved by $\frac{7}{8}$ " routing cutter.



No. 6. Showing round and flat bottom mortises made with core and routing cutter respectively.



No. 5. Sample of work done with fillet cutter and 1" core box cutter. The large recess is $3\frac{1}{2}$ " in diameter.

Order by number—give exact diameter and length of shank. State name of machine in which will be used. These cutters are money-savers. Try them.

No. 210 Fillet Cutters—Code, Fabub

Nos.	210A	210B	210C	210D	210E	210F	210G	210H	210J	210K	210L
Rad.	$\frac{1}{8}$ "	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"

No. 211 Core Box Cutters—Code, Fabuf

No.	211A	211B	211C	211D	211E	211F	211G	211H	211J	211K	211L	211M	211N	211P
Dia.	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"	$2\frac{1}{4}$ "	$2\frac{1}{2}$ "	$2\frac{3}{4}$ "	3"

No. 212 Routing Cutters—Code, Fabuk

Nos.	212A	212B	212C	212D	212E	212F	212G	212H	212J	212K
Size	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"

No. 92

"Oliver" Power Feed Hollow Chisel Mortiser

CONVENIENT—RAPID—ACCURATE

Adaptation

The "Oliver" No. 92 Power Feed Hollow Chisel Mortiser is designed to meet the demand for greater production than is possible with foot feeding machines. It is particularly useful in factories engaged in multiple quantity manufacture of cabinets, furniture, sash and similar woodwork.

Design

Flexible power stroke, feeding of the tools to the work, the quick return stroke, a direct thrust support for the table, correct handling of bit and spindle thrusts, proper tool holders, speed, convenience, dependability, economy, and compactness are outstanding features of this, the latest designed, most modern Power Feed Hollow Chisel Mortiser.

Capacity

Will handle chisels from $\frac{1}{4}$ " to $\frac{3}{4}$ " square. Stroke is adjustable from $2\frac{1}{2}$ " to 4" long. Stock 6" wide can be centered beneath the chisel. Hollow chisels with 4" blades will mortise in 12" high material; chisels with $2\frac{3}{4}$ " blades are commonly used in $\frac{1}{4}$ " and $\frac{5}{16}$ " sizes.

Column

The column is a rigid, hollow, box type, one piece casting having a wide flanged floor support. It encloses the power feed mechanism with the exception of the drive pulley. The ways for the chisel carriage and for the table are planed at one setting to insure accurate alignment.

Blower

The built-in fan blower back of the column furnishes a constant air blast which cools the tools and keeps the work free from chips.

Mortising Ram

The Mortising Ram or plunger reciprocates in adjustable gibbed ways and has an adjustable travel from $2\frac{1}{2}$ " to 4" long, controlled by the foot treadle for single or continuous power feeding strokes. A swinging guard covers the spindle and the pulley affording maximum safety to the operator from revolving parts.

Spindle

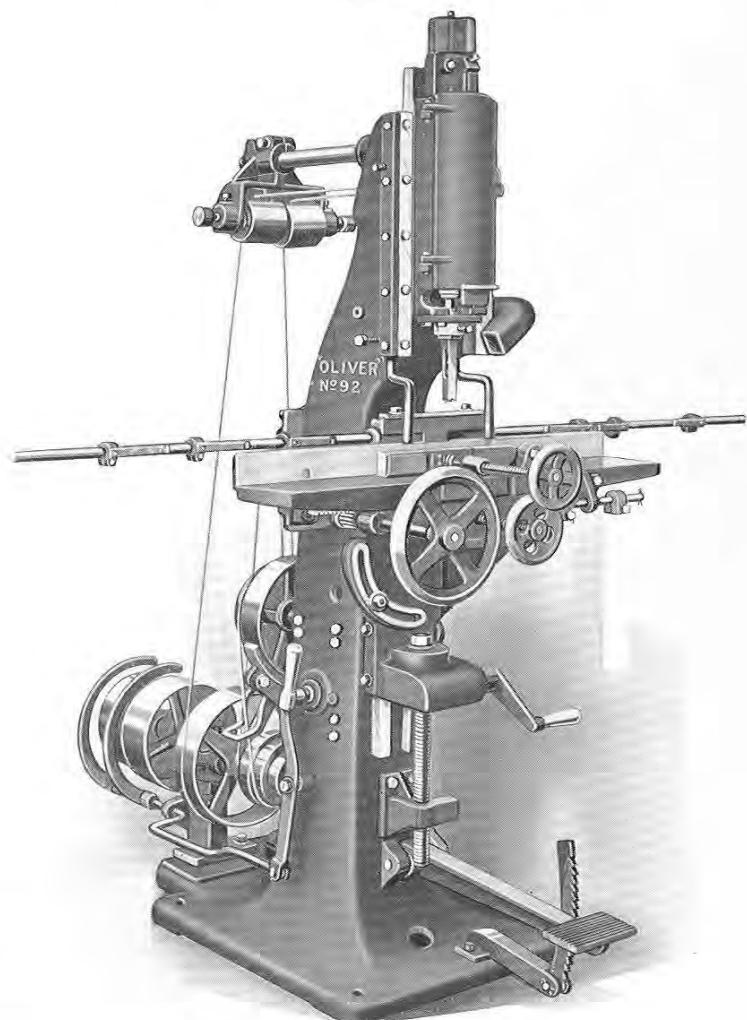
Is carried in self-lubricating bearings with special attention to taking care of end thrusts. Pulley is 4" x 8". Speed 3450 R. P. M. Belt should be about 3" wide.

Power Feed

The Power Feed mechanism is extremely simple and yet very effective. It is controlled by the foot lever and is brought into action by a belt tightener which, when released, brings a brake into action on the rim of the drive pulley. A ratchet is provided to hold the lever down for continuous feeding. The power feed has three rates of feed—18, 26 and 36 strokes per minute by means of cone pulleys and a feed belt shifter. By throwing out the ratchet the continuous feed mechanism may be instantly stopped and the machine operated by single strokes.

No. 92 "Oliver" Power Feed Mortiser

Continued



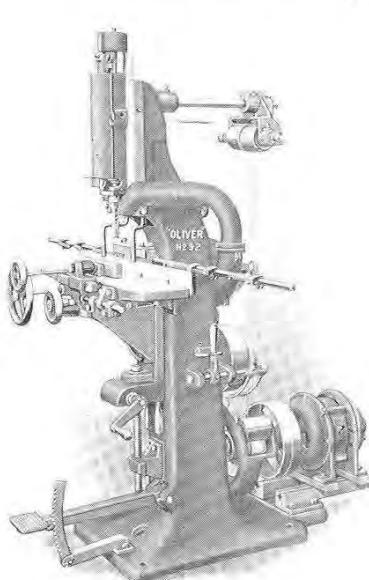
"OLIVER" No. 92-A AUTOMATIC HOLLOW CHISEL MORTISER
Belt Driven Machine with Self-Contained Countershaft



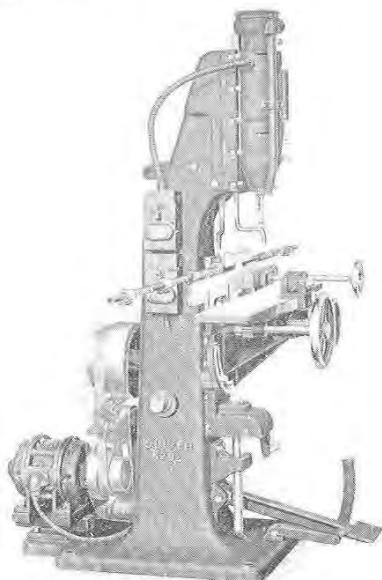
Square Hollow Chisel and Bit, to suit any size desired

No. 92 "Oliver" Power Feed Mortiser

Continued



No. 92-C BELTED MOTOR DRIVEN MORTISER



No. 92-D MOTOR-ON-ARBOR MORTISER

Motor Drive

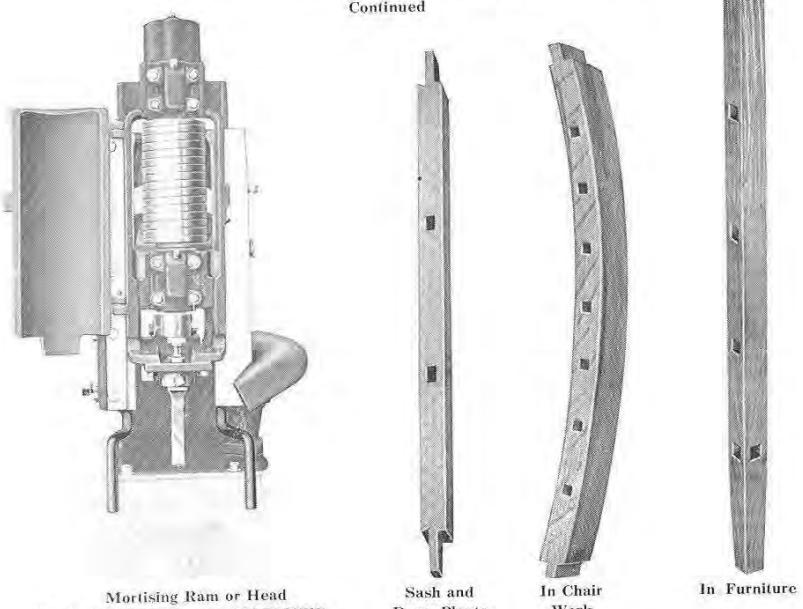
Two types are offered; No. 92-C having 3 H. P., 1200 R. P. M. motor mounted on bracket and coupled to drive shaft carrying the pulleys for the spindle, fan and power feed mechanism, or where 2 or 3 phase, 220 or 440 volt, 60 cycle current is obtainable the No. 92-D Motor-on-Arbor Mortiser can be had having one motor 1½ H. P., 3600 R. P. M., built in with ball bearings directly on the spindle and having a fan blower at upper end with nozzle to furnish blast to chisel and for operating the power feed mechanism a 1 H. P., 1200 R. P. M. motor is direct connected to cone pulley.

Table

A universal compound table with screw clamp for 6" wide, stock and hand wheel, rack and pinion for longitudinal travel, gauged by adjustable stops, is regularly furnished and very highly recommended as the most satisfactory form of table on machine of this type. Table is 36" long, 6" wide, 32" above floor at lowest position and 44" at highest position. Fitted with a vertically adjustable back fence having lip hold down and also carries a 6' layout stop rod with six spring stops for automatically locating mortises. A rod and two adjustable stops directly in front of table govern the length of mortises. Two swinging hold down fingers held in column of machine, project over the table and prevent work climbing up when chisel recedes.

No. 92 "Oliver" Power Feed Mortiser

Continued

Mortising Ram or Head
BELT DRIVEN No. 92 MORTISERSash and
Door PlantsIn Chair
Work

In Furniture

Countershaft

The countershaft is supported on the base of the machine in adjustable bearings and has self-contained belt shifter with handle conveniently carried on column of machine. Tight and loose pulleys 10" diameter, 4½" face. Speed 1150 R. P. M. Aside from the tight and loose pulleys, the countershaft carries the driving pulley for the mortising bit, the pulley for driving the blower fan and the three step cone pulley for driving the power feeding mechanism. This cone pulley also has a belt shifting arrangement controlled by a handle held on the main column.

Floor Space

Extreme floor space of machine 3' wide, 5' long. Total height 6'.

Equipment

Regular equipment consists of one ½" square, 4" long hollow chisel with bit, set of chisel bushings, adjustable thrust bit bushings, layout stop rod with six spring stops, built-in fan blower, necessary wrenches, and self-contained countershaft.

CODE, WEIGHT, ETC.			Weight in Crated Pounds	Cubic Feet
Code	No.	Description		
Faga	92-A	Regular belt driven machine	1800	2000
Fageb	92-C	Self-contained belted motor driven machine	1800	2000
Fagid	92-D	Motor-on-Arbor type, including two motors—one on spindle, one on feed	2000	2200

EXTRAS

Set of three endless leather belts for belt drive.
Wire mesh belt guard for belts and driving pulleys.
Bit guide and spindle extension for use when boring only.

No. 91

"Oliver" Vertical Hollow Chisel Mortiser

Chisels and Bits quickly changed

Compound Tilting Table Regular

Introduction

This mortising machine performs its work by means of the hollow chisel, a form of tool now almost universally applied for all kinds of mortising operations. This chisel has a high speed bit revolving within it which serves both to bore a round hole and to remove the chips thus bored, as well as those cut out by the corners of the chisel. All chisels are accurately sized and thus mortise accurately, while operating smoothly, cleanly and without noise or vibration. They cut rapidly, due to the high bit speed possible with a supporting chisel, and are readily adapted to any shape of mortise, of any length or practical depth.

Capacity

This foot feed machine is usually operated with tools from $\frac{1}{4}$ " to $\frac{5}{8}$ " square, although $\frac{3}{4}$ " square chisels can be fed in woods not excessively hard. Material 12" high can be worked and the table will center pieces 6" wide under the chisel.

Column

The vertical type of mortiser is most popular and in this machine we offer a substantial, hollow vertical column with an extended base which offers support for either a self-contained counter-shaft or motor. This column carries the ways in which the spindle shaft or motor operates and also those on which the table adjusts, correct alignment of the tools with the table being insured.

Plunger

The vertically reciprocating plunger carries the bit spindle with its drum driving pulley and also the chuck which holds the chisel. Its movement is controlled by foot lever, the length of stroke being adjustable according to the work. The return movement is accelerated by spring pressure. The foot lever is also adjustable in length and the belt pulley guarded. The spindle bearings of belt driven machine are of genuine babbitt, self-lubricated from ample oil wells. The bearings of motor-on-arbor machines are ball bearing.

Spindle

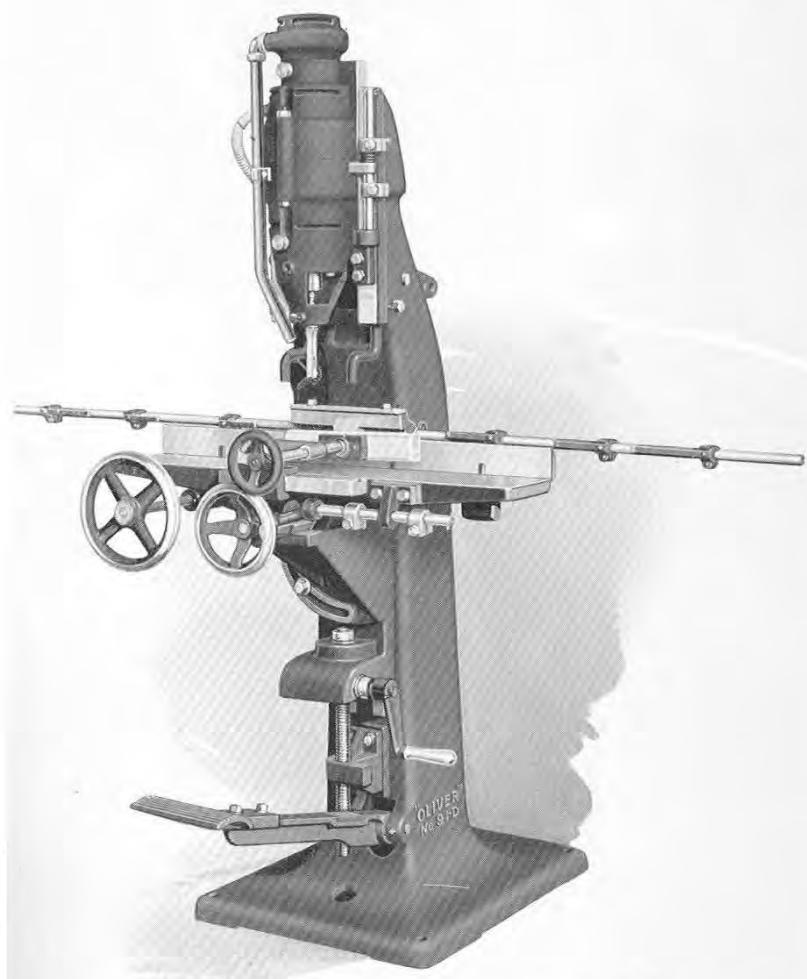
Operates in self-lubricating bearings, with special attention given to taking care of end thrusts. Pulley is 4" x 8". Speed 3450 R. P. M. Belt should be about 3" wide.

Blower

A built-in fan blower back of the column may be furnished at extra cost on the belted machines. This blower furnishes a constant air blast which cools the tools and keeps the work free from chips. On the motor-on-arbor machine the fan blower is mounted at the upper end of the motor, with a nozzle to direct the air blast to the chisel.

No. 91 "Oliver" Vertical Hollow Chisel Mortiser

Continued



"OLIVER" No. 91-D MOTOR-ON-ARBOR MORTISER
Eliminates all Belts, Pulleys, etc., and insures most direct power application



Kind of Square Hollow Chisel and Bit used on "Oliver" Mortisers

No. 91 "Oliver" Vertical Hollow Chisel Mortiser

Continued

Table

The most satisfactory form of table for any hollow chisel machine is the compound type with a clamp and rack and pinion feed. While many pieces can be mortised without clamping there are others where clamping is necessary for straightening the stock or doing accurate work. Machines are sometimes cheapened by having plain tables, but such are deficient for general work.

Adjustments

The table has a swivel adjustment for angle mortising, cross adjustment for varying thickness of stock and a lengthwise movement regulated by stops for long mortising. Its rear fence can be varied in height so that pieces may be held by a lip fitted on its upper edge. Tables are made to receive stop rods which are an extra feature but useful when making many duplicate pieces. The vertical adjustment is by enclosed spiral gears and a screw directly beneath the line of the chisel thrust.

Tools

The machine is operated with what we call short or extra short types of hollow chisels and bits, which are universally standard in their dimensions and most economical in practical use. Chisel blades are of 4" lengths, except that in the $\frac{1}{4}$ ", $\frac{5}{16}$ ", and $\frac{3}{8}$ " sizes extra short or $2\frac{3}{4}$ " blades are often used.

Boring

When ordinary boring is desired, we furnish a Bit Guide to put on chisel holder and an extension for the bit spindle to allow use of ordinary boring bits with $\frac{1}{2}$ " straight shank.

Countershaft

The countershaft is supported on the base of the machine in adjustable bearings and has self-contained belt shifter with handle conveniently carried on column of machine. Drive pulley 12" x 3", tight and loose pulleys 10" x 4". Speed 1150 R. P. M.

Motor Drive

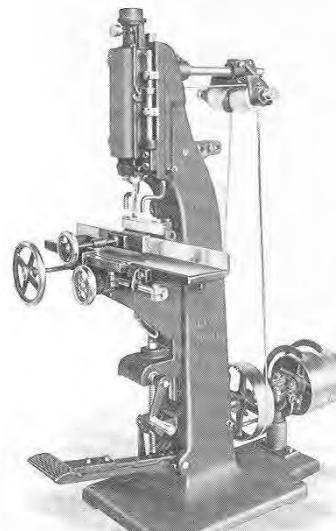
The usual type of motor drive consists of mounting a 2 H. P. 1200 R. P. M. motor with pulley on a bracket in place of the tight and loose pulleys, and belting to the spindle pulley. For use on 2 or 3 phase, 60 cycle, 220 or 440 volt alternating current we also offer the motor-on-arbor type of motor driven machine known as our No. 91-D. This drive eliminates the countershaft, pulleys and belts. A 1 $\frac{1}{2}$ H. P., 3600 R. P. M. motor is built-in with ball bearings directly on the spindle in place of the pulley, and at the upper end of this motor is mounted a fan blower with a nozzle to furnish a constant air blast to the chisel.

Floor Space

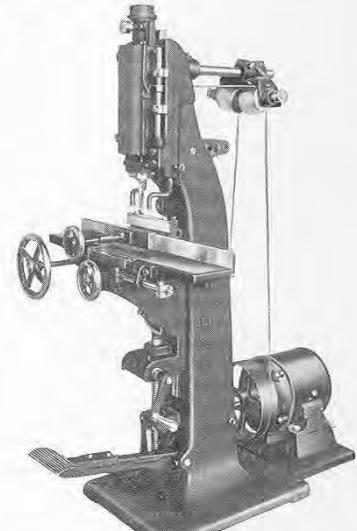
Extreme floor space of machine 3' wide, 5' long. Height 6'.

No. 91 "Oliver" Vertical Hollow Chisel Mortiser

Continued



"OLIVER" No. 91-A MORTISER
Regular Belt Driven Machine



"OLIVER" No. 91-C MORTISER
Belted Motor Driven Machine

General Dimensions

Table is 6" x 36", is 43 $\frac{1}{2}$ " above floor at highest position and 31 $\frac{1}{2}$ " at lowest position. Spindle pulley 4" diameter, 8" face; 3450 R. P. M. Pneumatic belt 2 $\frac{1}{2}$ " or 3" single, about 14' long.

Equipment

We furnish one hollow chisel $\frac{3}{8}$ " x $\frac{3}{8}$ " square with a hollow chisel bit to fit, and also necessary bushings and wrenches.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Fade	91-A	Regular belt driven machine.....	1100	1525	68
Fadit	91-C	Belted motor driven.....	1100	1525	70
Fabite	91-D	With motor on arbor, and safety first switch.....	1200	1600	70

EXTRAS

- Fadiv Six Foot Rod and six stops.
- Fadix Best Oak Tanned Endless Leather Belt.
- Fadiy Wire Mesh Belt Guard for belt and driving pulleys.
- Fadiz Bit Guide and Spindle Extension for use when boring only.
- Faeb Extra Bushings for Shanks of any size Hollow Chisel.
- Faec Extra Bushings for Shank of any size Hollow Chisel Bit.
- Faca Fan Blower for A and C machines.

No. 125

"Oliver" Universal Single End Tenoner

THE MOST EFFICIENT AND THE MOST THOROUGHLY
SAFE GUARDED TENONER EVER PRODUCED

Application

Designed for tenoning, coping and cutting off up to wide stock to lengths used in the production of furniture, cabinets, automobile bodies, implements, chairs, vehicles, talking machines, toys, cars, house trim and finish, sash, doors, blinds, and manual training manufacture, or wherever a tenoner of wide range is needed.

Principle

Two tenon heads on horizontal arbors are mounted on front side of a stand placed on a frame which forms the base of the machine. These two arbors have independent horizontal and either independent or unisonal vertical adjustment. Back of these two heads are located the two vertical cope heads, each with independent vertical and horizontal adjustment. On the rear of the stand is mounted a saw arbor in a horizontal position having both vertical and horizontal adjustment. All of the above are driven from a countershaft in the base of the machine by means of belts and pulleys. To the right of the stand carrying the heads and arbors is a table with horizontal rolling travel to carry material to be machined.

Capacity

Will cut tenons 7" long at one cut or 10" long by two cuts, 6" thick and 24" wide; cut off stock 42" wide; will make double or triple tenons 4" deep; can be used as saw tenoner to work tenons 4" long, 6" thick and 24" wide.

Guards

Are provided to cover all belts, and also completely cover the cutting heads and saw.

Main Frame

Of machine is made of iron, rigid construction, having large base and dust chute cast in one piece. This frame carries all of the sub units which compose the machine and are interchangeable for repair.

Head Stand

Is of rigid construction and carries the head yoke, cope, and saw arbor spindles. It is bolted and pinned to the main frame.

Table

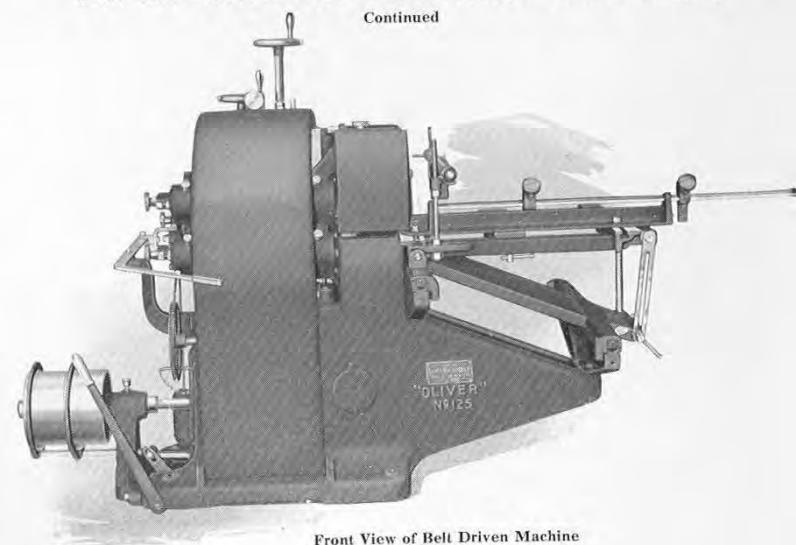
Rolls on ball bearings and not on roller ball bearings; has a horizontal travel of 44". Will clamp stock 6" thick, 24" wide. Has a tilting adjustment for tenoning angle tenons such as chair backs and polygon joints. It also has a fence which can be adjusted to angle; on this fence is a swing stop gauge and the stops can be swung back out of the way as occasion requires. On main frame of table is an automatic stop bar having two disappearing stops which can be set to the work and are used when cutting double end tenons mostly. There is a clamp rod and shoe to hold the stock while passing through machine. This clamp has lock to be used when doing heavy tenoning.

Tenon Heads

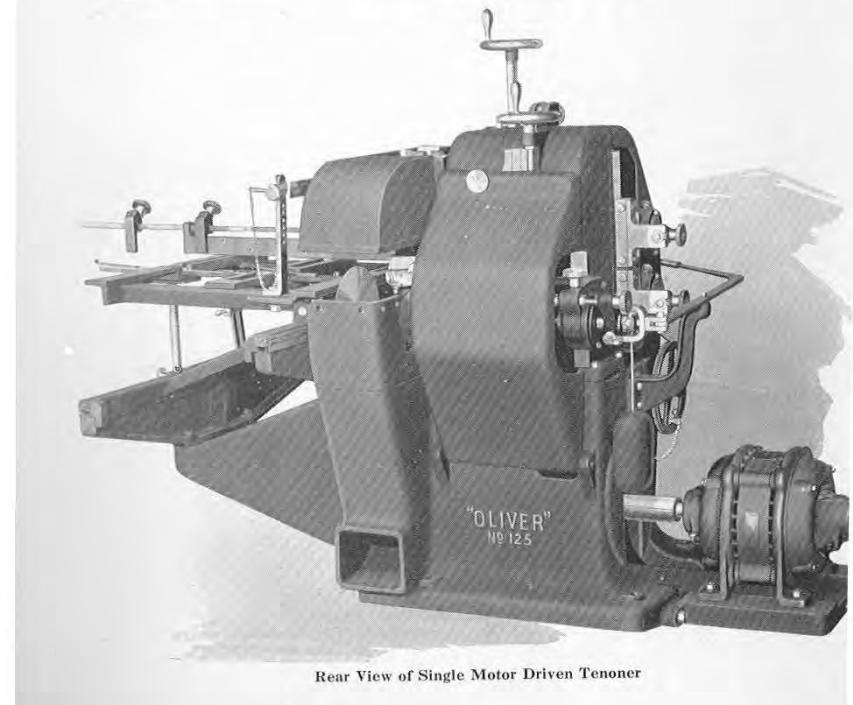
Are of the shear knife circular safety type with the modern self-hardening steel thin knife; the spur knives are of the fluted type, reversible; cutting diameter 7"; face of front head 3½" with spur cutters; face of back head 3½" without spur cutters; they have 1½" holes.

No. 125 "Oliver" Universal Single End Tenoner

Continued



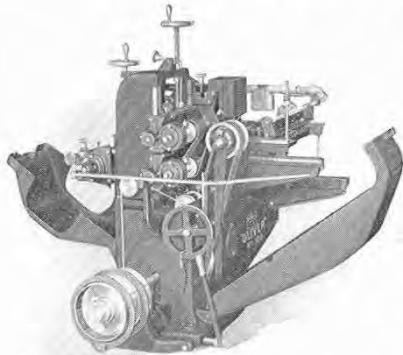
Front View of Belt Driven Machine



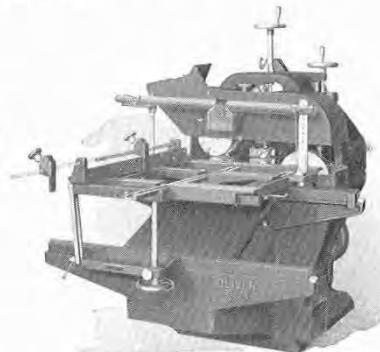
Rear View of Single Motor Driven Tenoner

No. 125 "Oliver" Universal Single End Tenoner

Continued



View showing Front and Rear Main Guards opened out for accessibility



View showing rigid construction of Table and tilting arrangement

Tenon Head Yokes

Have both vertical and horizontal adjustment by means of screws and hand wheel. The vertical adjustment is 6" and the horizontal adjustment is 1½". The spindles, both upper and lower, ride in ball bearings, which are practically impervious to wear and run in a lubricating grease that prevents cutting, and which are encased so completely that no dirt can come in contact with them. The spindles are 1½" diameter where heads are applied. The head yokes adjust vertically on the head stand which is bolted to main frame of machine.

Tenon Head Belt Idler

Is attached to mainframe of machine and takes up the slack in belts when adjusting heads. It is controlled by slide, rack, gear, sheave pulley and weight, and runs in ball bearings.

Cope Head Yokes

Are attached to tenon head yokes and adjust with tenon head yokes. Also have independent 2" vertical and 2" horizontal adjustment. Cope head yokes have a spiral bevel gear drive through frame of machine from countershaft; this drive eliminates the use of a cope arm drive and makes the machine safer and takes up less floor space. The cope spindles and drive shafts run in ball bearings, which are impervious to wear, run in lubricating grease which prevents cutting and which are encased so completely that no dirt can come in contact with them. The spindles are 1" diameter where heads are applied.

Cope Heads

Are of the square type with long hook shear cutting knives. They have 1" diameter holes.

Cope Belt Idlers

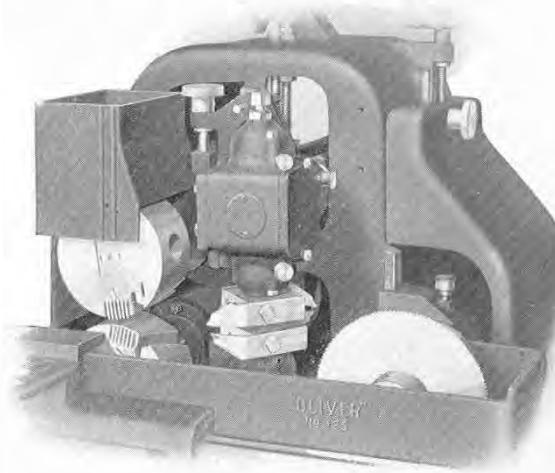
The stationary idler is attached to frame of machine and runs in ball bearings, making a light running idler and one requiring very little attention. The adjustable idler is attached to head stand and takes up the slack in belt when adjusting cope heads. It is controlled by slide, nut, screw and hand wheel, and runs in dust proof bearings.

Cut-Off Saw Yoke

Is attached to rear of head stand. The advantage of this is that machine can be used for cutting and edging wide stock such as table tops and ends of framings, and by the use of lower tenoning head on the saw arbor wide cross grain rabbets and grooving can be done. Saw arbor runs in ball bearings which are impervious to wear and are encased in dust proof mountings. It is 1½" diameter where saw is applied and has quick stop adjustment horizontally of 4", controlled by a lever which is operated from front of machine. The arbor also has micrometer horizontal adjustment of 2" and vertical adjustment of 3" controlled by screw and hand wheel.

No. 125 "Oliver" Universal Single End Tenoner

Continued



View with guards removed to show form and relation of Tenon Heads, Cope Heads and Cut-Off Saw. Note the Spiral Bevel Gear Drive of the Cope Heads eliminates usual Cope Arm Drive and its several belts.

Equipment

Ten inch fine tooth cross cut saw; right hand top tenon head; left hand lower tenon head; two cope heads with one set of cutters and wrenches.

Countershaft

Runs in ball bearings and is 1½" diameter, having 10" diameter, 6" face, tight and loose pulleys, speed 1200 R. P. M. Loose pulley runs in roller bearings. Countershaft is built as a unit and is interchangeable to main frame of machine with single motor drive base unit.

Motor Drive Countershaft

Runs in ball bearings and is 1½" diameter, having 5 to 10 H. P., 1200 R. P. M. motor mounted on base as a self-contained unit interchangeable with belt drive countershaft.

Motor Direct To Spindles

Where either two or three phase, 60 or 50 cycle A. C. current is obtainable, this machine can be equipped with individual motors built-in on each spindle eliminating all belts, idlers, and counter-shaft. Required motors would be two 1½ H. P. motors for tenon spindles, two 1 H. P. motors for cope spindles and 2 H. P. motor for saw arbor—all 3600 R. P. M.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Faha	125-A	Regular belt driven machine including tenon heads, cope heads, and cut-off attachment.....	2750	3100	210
Fahab	125-B	Fitted with single motor drive.....	2750	3100	210
Fahad	125-D	Having 3600 R. P. M. individual motor built on all five arbors.....	3000	3350	210

EXTRAS

Internal Endless Leather Belts.
Rear Tenon Head, no spurs, for use back of regular tenon heads.

DEDUCTIONS

Cut-Off Attachment with 10" saw and idler.
Cope Heads, either upper or lower, each.
Idler for Cope Heads, not required when both copies are omitted.
Plain Table instead of the tilting universal table.

No. 483

"Oliver" High Speed Double Spindle Shaper

FASTER WORK WITH LESS TROUBLE

Introduction The Wood Shaper or Variety Molder is one of the essential machines to a wood working plant. The style of work varies from rabbiting, grooving and fluting to shaping of every description. The illustrations represent our new High Speed Shaper, the machine that runs at extreme high speed without vibration.

Table Is large, very rigid, planed, and then accurately ground by a special process. It is bored out and fitted with three sets of rings for each spindle.

Spindles Are large and made of High Carbon Crucible Machinery Steel ground perfectly true on dead centers. Regularly fitted to "run out."

Bearings Ball bearings with automatic forced feed lubrication, is now regularly furnished on all "Oliver" Shapers, is justly recognized as the most perfect bearing for shaper spindles. A centrifugal vacuum pump at the lower end of each spindle forces clear, thin, cooling oil to the top of the upper ball bearing, whence the oil flows through the interstice between the balls, down to the top of the lower ball bearing and thence, through the interstice between the balls down to the settling basin at the lower end of the spindle, ready to be pumped up again and to keep the bearings well lubricated and cool regardless of the extreme high speed of the spindles. Sight oil gauges on oil pipes provide easy view of the flow of oil.

Pulleys Are carefully balanced and of the pneumatic type. They fit the spindles perfectly and are held in place by taper pins.

Yokes Are raised and lowered by means of the handwheels at the side of the machine, there being sufficient vertical adjustment to raise the spindle above the table or lower it beneath the tables. These yokes are very rigid and the screws for raising or lowering are directly in the rear of the spindle, affording them a direct support.

Top Bearings With guides and supporting brackets are designed and particularly adapted to auto body or similar work. Top bearings are frictionless ball bearing type. If desired these brackets can be furnished without the guides for furniture or column work.

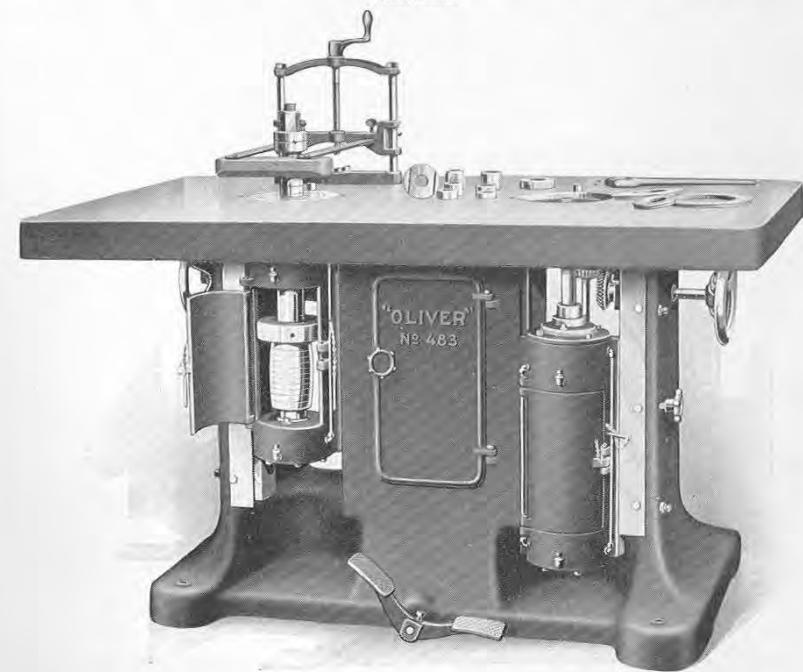
Guard One Quick Adjusting Shaper Guard is regularly furnished with each machine. Additional guards may be secured anytime as the tables are drilled and tapped for two guards. As shown by the details on opposite page, these guards are adjustable in all directions and are never in the way.

Steel Beveled Shaper steel in bars $\frac{1}{4}$ " thick, 24" long and any width can be furnished, beveled, ready for making any kind of knives.

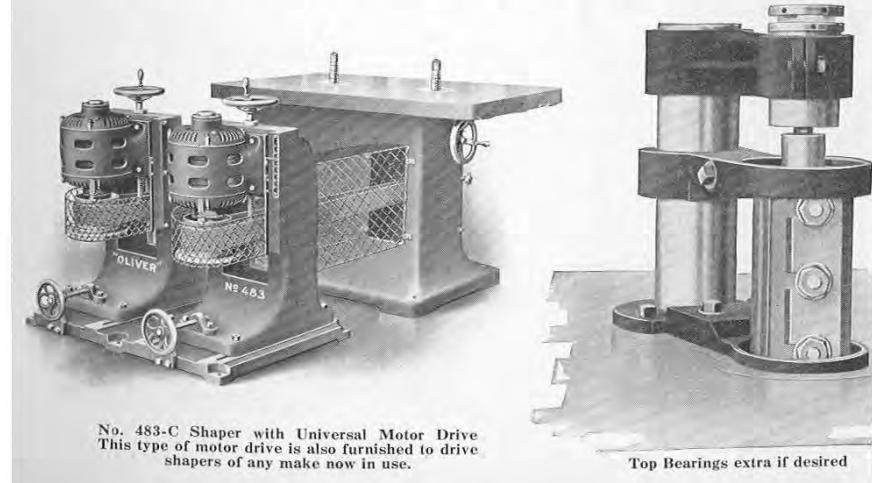
Countershaft An improved column type countershaft with self-contained belt tighteners and ring type shifting device is furnished with each machine. The main bearings are ball bearing type. The loose pulley is ball bearing with ample oil chamber to assure cool operation. The idler pulleys are rigidly fastened to shafts that run in self-oiling ball bearings.

No. 483 "Oliver" High Speed Double Spindle Shaper

Continued



No. 483-A "OLIVER" HIGH SPEED DOUBLE SPINDLE SHAPER—BELT DRIVEN
Simple in Design; Powerful in Action; Durable in Operation; Second to none; Leader of Many

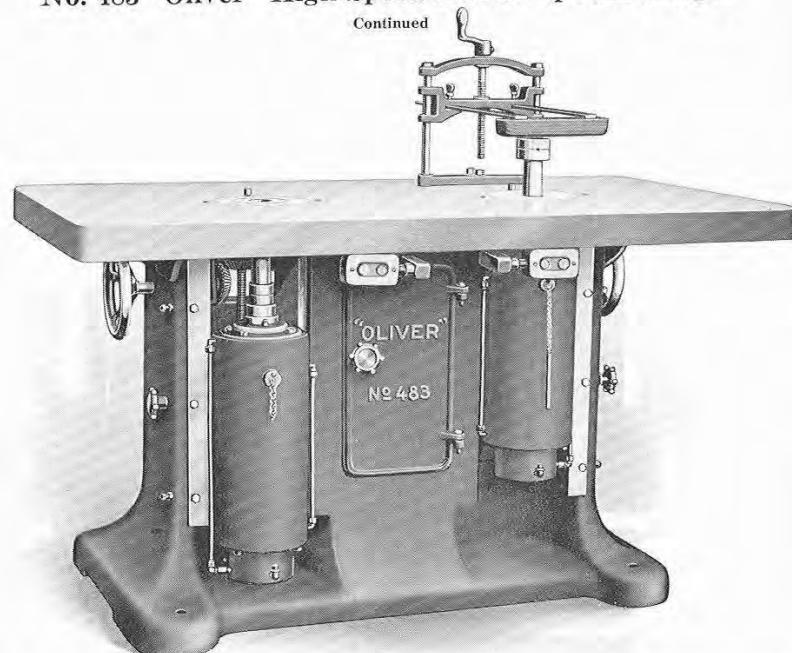


No. 483-C Shaper with Universal Motor Drive
This type of motor drive is also furnished to drive shapers of any make now in use.

Top Bearings extra if desired

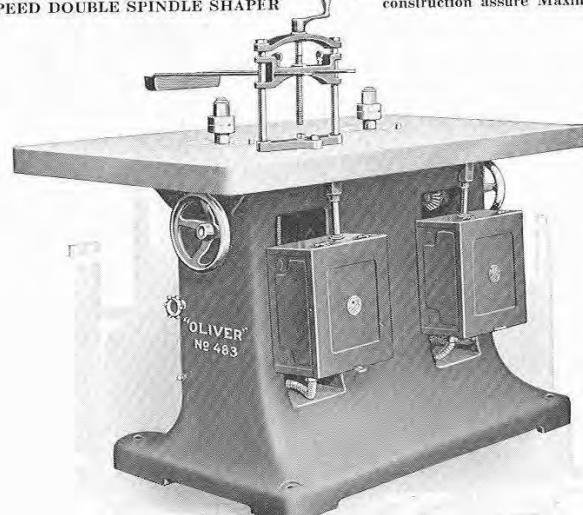
No. 483 "Oliver" High Speed Double Spindle Shaper

Continued



No. 483-D "OLIVER" MOTOR-ON-SPINDLE HIGH SPEED DOUBLE SPINDLE SHAPER

Front View—Ball Bearings and Motor-on-Spindle construction assure Maximum Efficiency



Rear View of No. 483-D Motor-on-Spindle Shaper

No. 483 "Oliver" High Speed Double Spindle Shaper

Continued

Motor Drive

Three methods of motor drive can be furnished; (B) Coupled Drive consisting of a $7\frac{1}{2}$ H. P., 1200 R. P. M. motor coupled to the end of the countershaft; (C) Attached Drive consisting of two 3 H. P., 1800 R. P. M. horizontal motors each mounted on a bracket having adjustable idler for regulating belt tension, and (D) Motor-on-Spindle Drive consisting of two shaftless 3 H. P., 7200 R. P. M. motors mounted directly on the two shaper spindles. We can furnish any kind of motor drive desired—just tell us the volts, phase and cycles of your electric current.

Equipment

Each machine is regularly furnished with two sets of knife collars, sufficient filling collars, oil cups, pins, wrenches, one shaper guard or hold-down, and countershaft complete.

GENERAL DIMENSIONS

Spindle	Table
Revolutions per minute.....	7200
Vertical adjustment.....	8½"
Length of collars.....	8½"
Diameter at collars.....	1¼"
Diameter at top bearings.....	2½"
Diameter at bottom bearings.....	1½"
Length at top bearings.....	7½"
Length at bottom bearings.....	4½"
Pulley diameter and face.....	3½"x7"
Driving Belt, width.....	4"

Collars

Large grooved collars.....	3"
Small grooved collars.....	1¾"
Filing-in collars, 1 each, 1½", 1", ½"	

Rings

Number of rings.....	3
Hole in smallest ring.....	2"

Floor Space
Machine alone..... 60"x44"
Countershaft..... 36"x60"

Horse Power

Recommended H. P. $7\frac{1}{2}$

CODE, WEIGHT, ETC.

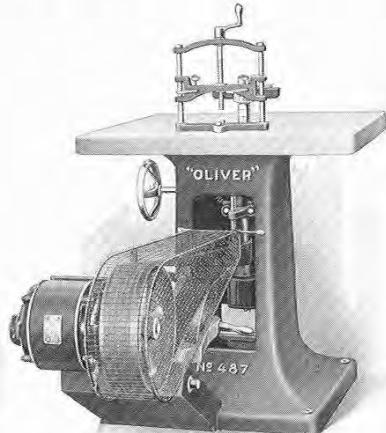
Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Falab	483-A	Belt Driven Shaper.....	2500	2750	56
Falaf	483-B	With Coupled Motor Drive.....	2500	2750	56
Falak	483-C	With Attached Motor Drive.....	2700	3000	66
Falam	483-D	With Motor-on-Spindle Drive.....	2500	2750	56

EXTRAS

491 Quick Set Shaper Guard.....	15	15	1
Beveled Shaper Steel 24" bars, any width desired.			
Overhead bearings with guide collars per pair.			
Full set of Knife and Filling Collars.			
Round Shaper Head, any length, any diameter, any shape.			

No. 487

"Oliver" High Speed Single Spindle Shaper

No. 487-A SINGLE SPINDLE SHAPER
Front View of Belt Driven MachineNo. 487-C SINGLE SPINDLE SHAPER
Rear View showing Self-Contained Attached
Motor Drive arrangement

Economy

This high grade, high speed, single spindle shaper cuts without reversing, against, across, as well as with the grain. The high speed of spindle (7200 R. P. M.) eliminates necessity for reversing as required in slower running machines. This creates a fifty per cent saving in knife and cutter head equipment and assures greater production because of time saved by eliminating the need for reversing.

Features

Spindle bearings are self-aligning frictionless ball bearings with forced feed thin oil lubrication. Column is a one piece solid casting with large base. Table is unusually large (36" x 36") surface ground, true and smooth. Spindle yoke is heavy casting with long gibbed ways fitted inside column. Spindle is large with detachable upper end so that special size spindles and chucks may be used. Safely guarded throughout.

SPECIFICATIONS

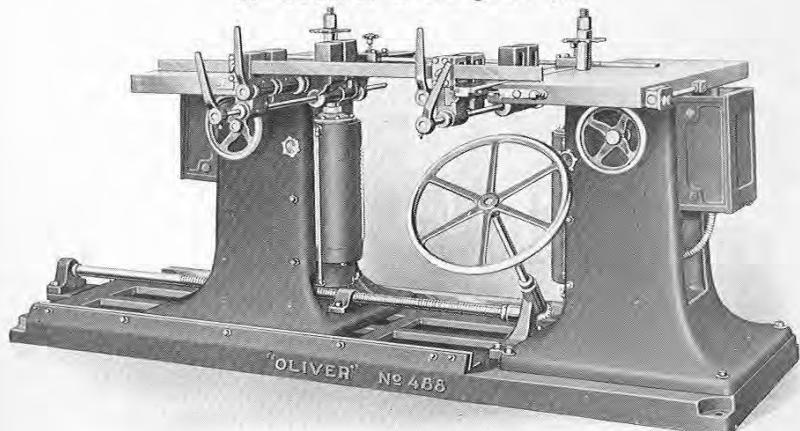
Diameter, spindles at collars	$1\frac{1}{8}''$	Width of driving belt	$3''$
Diameter, spindles	$2\frac{1}{2}''$	Diameter of driving pulley	$14''$
Length of spindles at collars	$8\frac{1}{2}''$	Tight and Loose pulleys	$8'' \times 5''$
Size of large collars	$3''$	Speed of countershaft	1800 R. P. M.
Size of small collars	$1\frac{3}{4}''$	Speed of spindle	7200 R. P. M.
Size of table	36"x36"	Floor space of machine	36"x36"
Diameter, hole in table	8"	Floor space of countershaft	24"x28"
Diameter, hole in rings	2"	Horse power recommended	.3
Size of spindle pulley	$3\frac{1}{2}''$		

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Faleb	487-A	Belt Driven Shaper with C. S.	1350	1700	.50
Falef	487-C	With Attached Motor Drive	1350	1700	.50
Faleg	487-D	With Motor-on-Spindle Drive	1350	1700	.50

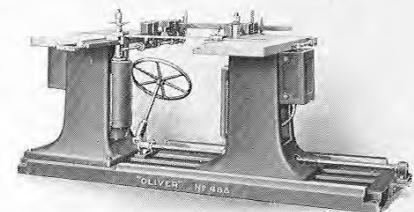
No. 488

"Oliver" Adjustable Centers Double Spindle or Drawer Fitting Shaper

View of Front or Operating Side of Machine
as Fitted for Drawer Sizing

Specifications

Distance between centers, 15" to 54".
Size of each table, 36" x 36".
Regular base, 36" x 8' 6".
Each detachable spindle, $1\frac{1}{8}''$ x 12".
Vertical movement spindles, 6".
Height table from floor, 40".
Other details on application.



Rear View of Above Machine

Adaptation

This is a new shaper adapted to various kinds of production work where parallel shaping or sizing is desired, such as drawer fitting and similar work. The rolling carriage is furnished of any type required by the specific work at hand. Special correspondence is invited. Tell us the kind of parallel shaping and the production you require and we will gladly submit estimates.

Design

This machine consists of two high speed Single Spindle Ball Bearing Motor-on-Spindle Shapers mounted on a common base, having one of the shapers slidably mounted in a dovetailed gibbed way with screw adjustment to vary the distance between the shaper spindles to suit the work. The inside edges of the tables are fitted with patented ball bearing ways on which is mounted a telescopic sliding carriage with suitable clamping jig to hold the work while it is rolled past the cutting spindles.

Drawer
Fitting

When used for drawer fitting this shaper is provided with a special carriage in which the assembled drawer is clamped and shoved between the cutter heads which plow the sides and cut the top and bottom edges of the drawer exactly true with the front. This greatly decreases the hand work in fitting drawers.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Falib	488	Shaper with Motors and Starters	4000	5000	.90

No. 406 and No. 404 "Oliver" High Power Die Filing Machines

Rearwin Patent

The Rearwin Patent Die Filing Machine is the result of many years experience in the manufacture of machines of this type. It is thoroughly patented in all of its essential features, many of which are not to be found in any other Filing Machine. It is a heavy powerful filing machine, capable of doing the accurate work of a small bench machine as well as handling the largest capacity of work. It has a wide range of adjustments, which guarantee increased production, decreased cost and makes it possible for the inexperienced tool maker or apprentice to do accurate filing much faster than the expert can accomplish by the ordinary hand method. This machine is designed for general purpose service in the tool room and die shop, for filing, sawing and trimming templates, punches, metal patterns, jigs, special gauges and cutters of many kinds too numerous to mention. It is also useful in the manufacturing shop for filing and sawing plain or irregular shapes from sheet metal and doing other accurate work in experimental shops.

Detailed circulars furnished on request.

SPECIFICATIONS

NOTE—These specifications are subject to change as improvements direct.

		No. 406	No. 404
Capacity	Length of files will take	3" to 14"	3" to 12"
	Length of stroke, adjustable	1/2" to 7"	1/2" to 7"
	Strokes per minute range	80 to 320	80 to 320
	Distance front of file to front of slide	9"	6 1/2"
	Height of work maximum	9"	5"
	Height of work constant filing	6"	3"
Table	Universal Tilting Table, size	20" x 24"	17" x 18"
	Height from floor	38"	38"
Steel Head	Total length	22"	20"
	Release of file on up stroke	3 1/2"	3 1/2"
Floor Space	Base of machine	23" x 38"	22" x 33"
Drive Shaft	Friction Pulley	12" x 2 1/8"	12" x 2 1/8"
	Speed, r. p. m.	160	160
	Cone pulley steps, diameter	4" to 8"	4" to 8"
	Width of belt	2"	2"

MOTOR DRIVE

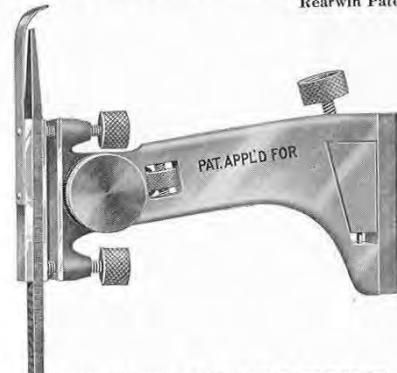
Motor drive can be furnished for any of these machines; the arrangement consists of $\frac{1}{2}$ H. P. 1800 R. P. M., motor mounted on the motor bracket and belted to a speed reducing jackshaft which has a yoke support to the regular parts of the machine, making the entire outfit self contained.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Subad	406	Filing Machine, belt driven	650	750	33
Tabad	404	Filing Machine, belt driven	550	650	30
Stabef		Motor drive arrangement for either filer.			

"Oliver" No. 406 and No. 404 Die Filing Machines

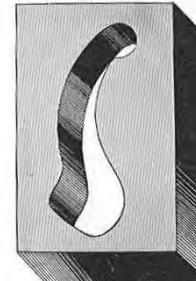
Rearwin Patent—Continued



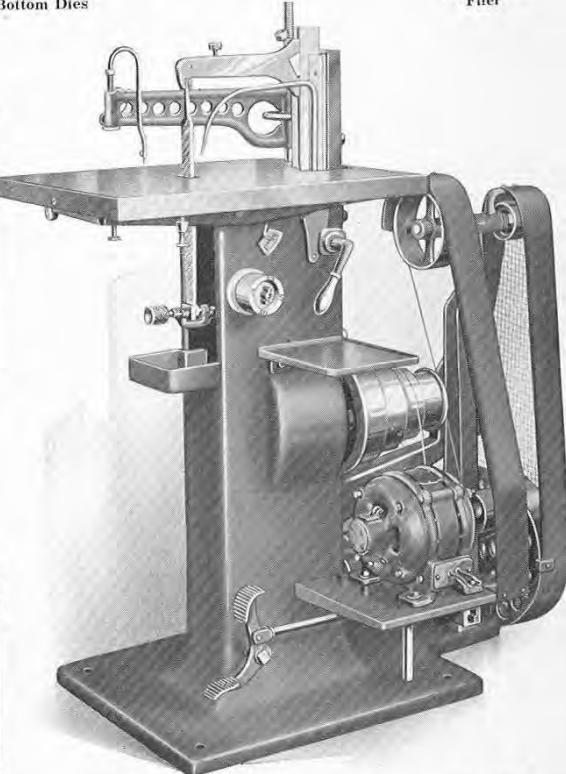
INDEPENDENT OVERHEAD SUPPORT
For Supporting Files From Above.
For Filing Closed Bottom Dies



Regular
Belt Driven
Filer



By Hand, 5 hours
By Machine, 2 hours



By hand, 4 hours
By machine, 1 1/4 hours

Rearwin Patent "Oliver" No. 406 High Power Filing Machine.
The No. 404 is like No. 406 in design but smaller

"Oliver" Equipment in Government Shops

The United States Government has for many years been a steady and large buyer of "Oliver" machinery for the equipping of numerous Public Buildings, Departments, Bureaus, Navy Yards, Ships, Arsenals, Depots, Hospitals, Fields, Camps, Laboratories, Homes, Schools, etc., subject to Government ownership, maintenance or control, as listed below:

DEPARTMENTS	
Agriculture	Air Service Flying Fields
Commerce	Bureau of Aircraft Production
Interior	Hazelhurst Field
Labor	General Hospitals
Navy	Govt. Printing Office
War	Hawaiian Ordnance Depot
Post Office	Hygienic Laboratory
State	Isthmian Canal Commission
Treasury	Indian Training Schools
NAVY YARDS	Library of Congress
Puget Sound	Leavenworth Penitentiary
Cavite	Post Quartermasters
Charleston	Post Office Buildings
Mare Island	Public Health Service
New Orleans	Railroad Administration
Norfolk	U. S. Veterans Bureau
Pearl Harbor	Weather Bureau
Philadelphia	Langley Field
Portsmouth	Selfridge Field
Washington	Signal Corps Supply Depots
Brooklyn	Wilbur Wright Field
ARSENALS	Army Medical Supply Depot
Augusta	Naval Academy—Annapolis
Frankford	Army School Auto Mechanics
Picatinny	Army Medical Supply Depot
Rock Island	Aberdeen Proving Grounds
Springfield	Bureau of Insular Affairs
Watervliet	Bureau of Animal Industry
Submarine Bases	Bureau of Standards
St. Mary's Canal	Bureau Engraving & Printing
U. S. Senate	U. S. Coast Guard
Soldier's Homes	Coast Artillery School
Training Ships	Commissioner of Immigration
Lighthouses	Coast & Geodetic Survey
U. S. Mints	Dept. Terrestrial Magnetism
Federal Board Trg. Centers	Dept. of Public Roads
Forest Products Laboratory	Marine Carpenter Shop
Great Lakes Training Station	Motor Transport Depots
Govt. Philippine Islands	Naval Ordnance Plants
General Engineer Depots	Naval Magazines
Geological Survey	Naval Torpedo Stations
Aviation Schools	Naval Air Stations
Aircraft Eng. Design Lab.	Naval Engineering Camps
Aviation Repair Depots	Naval Exp. Stations
Aeronautical Exp. Stations	Naval Med. Supply Depot
Airplane Eng. Dept.	Naval Vessels

U. S. Railroad Administration

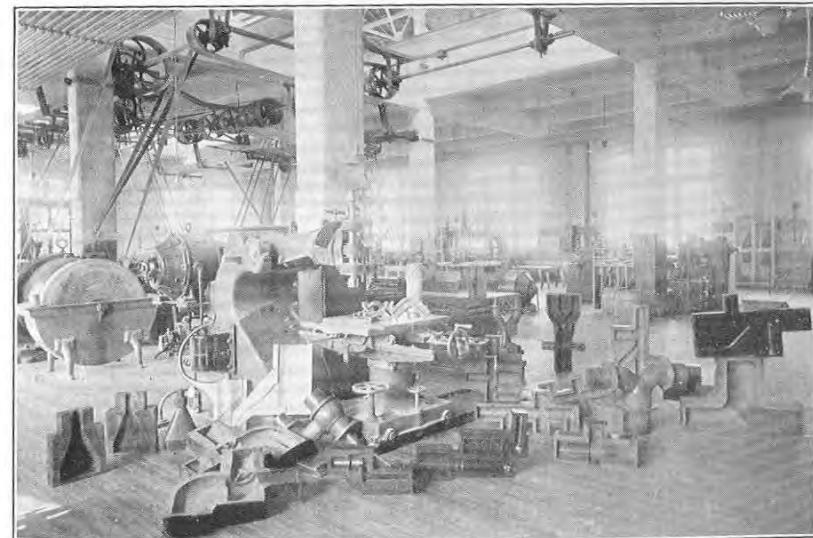
The woodworking shops of the Army, Navy, and Technical Departments of leading nations of the world are equipped in large measure with "Oliver" machinery in departments where accuracy and dependability are desired.

"Oliver" Equipment in Government Shops

Continued



Wood Shop in a U. S. Government Arsenal



Pattern Shop in a U. S. Government Navy Yard

"Oliver" Equipment in Industrial Plants

The Greatest Industrial Plants of National and International Renown are Customers of the Oliver Machinery Company

"Oliver" machinery is employed by many thousands of plant operators throughout the United States, and is marketed to over 40 different foreign countries. Its superior quality, finish and efficiency render it especially desirable for the Machine Tool, Car and Locomotive Builders, Arsenals, Navy and Ship Yards, Steel Mills, Engineering, Automobile and General Machinery Plants, the Paper and Textile Trades, and for the manufacture of quality Furniture, Musical Instruments, Interior Finish and high class Woodwork of every description.

The character and commercial importance of customers for Oliver Machinery and the wide range of distribution will be obvious from the following names of well-known Corporations, Plants, or Products:

Bethlehem Steel	Bausch Machine Tool
Fore River Ship	Beloit Iron Works
Keystone Driller	International Paper
Waterbury Clock	Imperial Furniture
Armstrong Cork	Kellogg Corn Flakes
Mesta Machine	Standard Steel Car
American Tool	Union Pacific Ry.
American Seating	N. Y. O. & W. Ry.
Arlington Mills	Maine Central R. R.
American Tube	P. C. C. & St. L. Ry.
American Rolling	Atlantic Coast Line
American Hoist	Pittsburgh Plate Glass
J. G. Brill Co.	Edgar Allen Steel
Brier Hill Steel	Howard Safe & Lock
Brown & Sharpe	N. Y. Central R. R.
Indiana Steel	Hyl. Pressed Brick
American Bridge	C. C. C. & St. L. Ry.
American Steel & Wire	E. I. duPont deNemours
Brown Hoisting	Grand Rapids Showcase
Bell Telephone	International Harvester
Pittsburgh Coal	American Tin Plate
Standard Oil Co.	Canadian Pacific Ry.
Babcock & Wilcox	Illinois Central Ry.
J. L. Mott Iron Wks.	Atlantic Terra Cotta
Baldwin Locomotive	Brown Ketchum Iron
Norton Grinder	Canadian Govt. Rys.
Goodrich Tire	Harbison Refractories
C. B. & Q. Ry.	Cerro dePasco Copper
P. & R. Ry.	Colo. Iron & Steel
American Brass	Ingersoll-Rand
American Blower	Jones & Laughlin
National Carbon	Lackawanna Steel
Standard Tube	National Casket
Bath Iron Wks.	Goodyear
Moltrup Steel	Cramp Shipyard
Ball Engine	Heinz
Beacon Light	U. S. Steel
Alamo Iron	Ames Plow
Corbin Lock	Amoskeag
Berkey & Gay	Link-Belt
American Thread	Atlantic Sugar
Westinghouse Electric	Globe Wernicke
Canadian Pacific	Anaconda Copper
Anglo Newfoundland	U. S. Sanitary
International Ship	Victor Talking
Marion Steam Shovel	Atlas Cement
Tenn. Coal & Iron	Calumet & Hecla
Norfolk & Western Ry.	Morgan & Wright
Central R. R. of N. J.	Chicago Ry.
St. L. & S. F. Ry.	Worthington Pump
American Radiator	E. W. Bliss
Continental Rubber	Allis Chalmers
	Rowser Tank
	U. S. Radiator
	Dietzgen
	Keuffel & Esser
	Pratt & Whitney
	Lodge & Shipley
	Standard Milling
	Niles Tool
	White Dental
	Mengel Box
	Pullman Car
	American Car
	Anniston Pipe
	Sessions Clock
	Bristol Rod
	Eastman Kodak
	Laconia Car
	Winchester Arms
	Cleveland Frog
	Dominion Bridge
	Grand Trunk Ry.
	Southern Pacific
	Postum Cereal
	United Fruit
	C. & A Ry.
	Otis Elevator
	General Electric
	Steinway
	Royal Furniture
	Michelin Tire
	Penna. R. R.
	C. & O. Ry.
	P. & L. E. Ry.
	Boston & Albany
	Globe Knitting
	Cluett Peabody
	Pacific Mills
	Hood Rubber
	Seal Shipt
	Van Camp Packing
	American Can
	Waltham Watch
	Cincinnati Car
	Singer Sewing
	White Sewing
	National Lamp
	Bigelow Carpet
	Welsbach
	Blake Pump
	Platt Iron Wks.
	Bosch Magneto
	Union Carbide

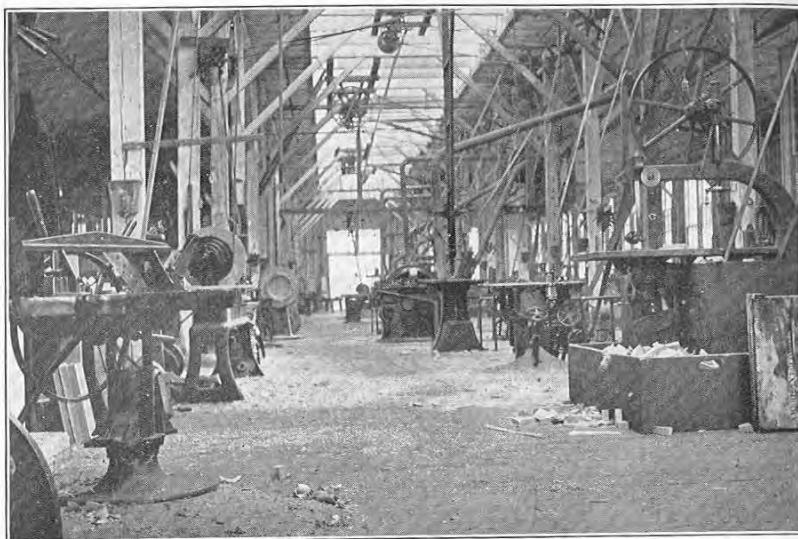
"Oliver" Equipment in Industrial Plants

Continued

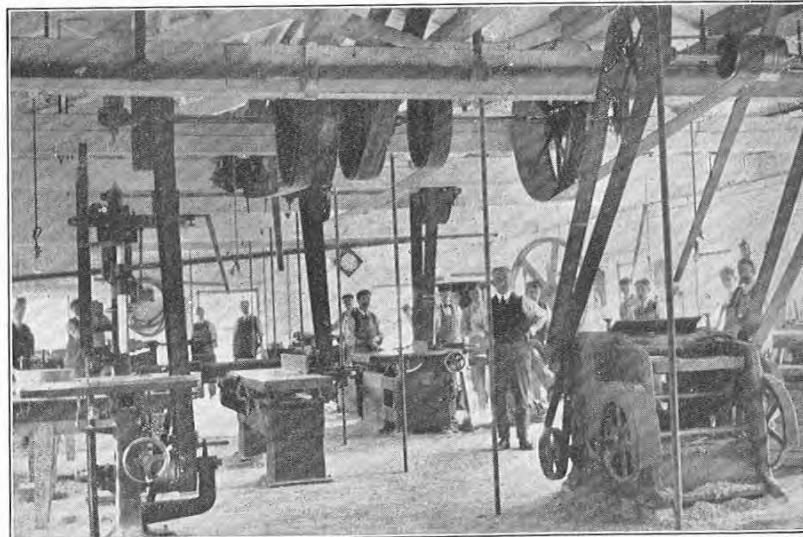
Amer. Brake Shoe	Auto Wheel
Apperson Auto	Calumet & Ariz.
Carnegie Steel	Int. Steam Pump
Amer. Loco.	Banner Buggy
Great Lakes Ship	Downey Shiphldg.
Ford	Bernard & Leas
Cadillac	Diamond Match
Packard	Canadian Vickers
Pierce Arrow	Doenbecker
Willys-Overland	Edison Phonograph
Buick	Knowles Pump
Knabe	Johns-Manville
Celluloid Co.	Wilmart Showcase
Carborundum	Boston Rubber
Pete Marquette	Boston Elevated
Great Northern Ry.	Burgess Sulphite
Atlantic Coast Line	Cottrell Press
L. S. & M. S. Ry.	Follansbee Bros.
Northern Pacific	Lima Locomotive
Boston & Maine Ry.	Heywood-Wakefield
C. M. & St. P. Ry.	Hercules Wheel
Rock Island Ry.	Crocker-Wheeler
Lehigh Valley R. R.	Parke Davis
Honolulu Iron Wks.	Bethlehem Ship
Carver Cotton Gin	Govt. Porto Rico
Nova Scotia Steel	Lehigh Coal & Nav.
Kelly Springfield	Remington Arms
Campbell Wyant Fdy.	Revere Rubber
Potter & Johnston	Ridgway Dynamo
Richardson Piano Case	St. John Iron Wks.
Seco-Lowell Shops	Samson Tractor
St. Maurice Lumber	Sprague Electric
Standard Shiphldg.	Standard Gauge
International Nickel	Erie Railroad
New Departure Mfg.	Kentucky Wagon
Springfield Traction	Kissel Car
Amer. Mang. Steel	Griffith Studio
Cheney Piano Action	Firestone
Birdsboro Steel Fdy.	General Motors
Romano Americana	Chickering
New London Ship & Eng.	E. T. Burrows
Pressed Steel Car	Pabst Brewing
Sales Bleachers	Portsmouth Steel
International Motors	National Iron
Oliver Chilled Plow	Sheffield Car
Pratt & Lethworth	Long Bell Lumber
Rice, Barton & Fales	Menasha Woodenware
Rome Loco. & Mach.	Nash Engineering
St. L. Frog & Switch	Ohio Steel Fdry.
Continental Motors	Santa Fe Railway
Federal Shipbuilding	B. & O. R. R.
Nicholson File	Durant Motors, Inc.
Amer. Steel Fdry.	Case Plow
Amer. Laundry Mch.	Champion Fibre
Oklahoma Iron Wks.—Mexico	Clark Thread
Deere & Company	Elk Tanning Co.
French & Hecht	Union Tanning Co.
Dow Chemical	Duplan Silk Mills
Great Lakes Engrg.	Illinois Watch
Curtis Aeroplane	Goessling Box
Canadian Copper	Hendey Machine
Oil Well Supply	Brunswick-Balke
Brinly-Hardy	Wagner Electric
Panama Railway	DeLaval Steam Tur.
H. K. Porter Company	Kelsey Wheel
Republic Iron	Union Bag & Paper
Maxwell Motors	Globe Shipbuilding
Chicoutimi Pulp	Hoyt Metal.
Advance-Rumely	Phila. Electric
Algoma Steel	Moore Ship
Apollo Steel	Hayes Ionia Co.
Anseco	Reeves Pulley
American Sugar	Republic Rubber
Atlantic Refining	Rolls-Royce Auto
Auto Body	Semet Solvay

"Oliver" Equipment in Industrial Plants

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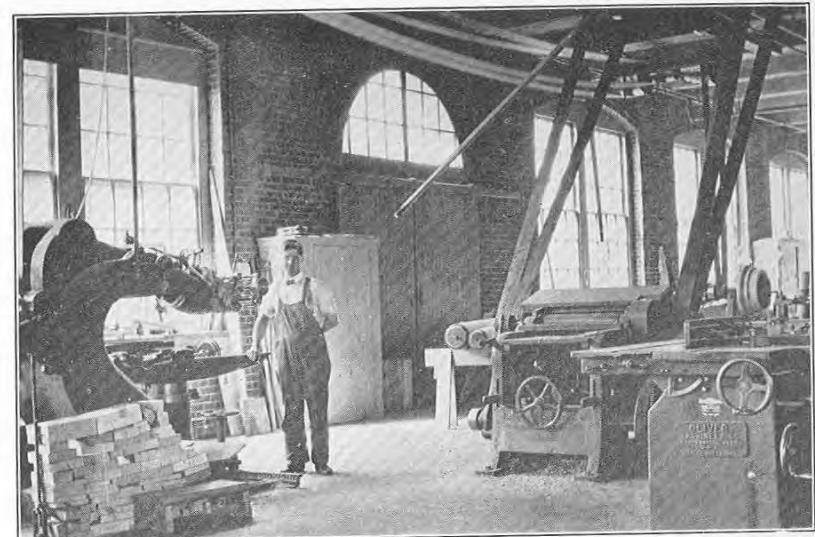
American Locomotive Co., Schenectady, N. Y.



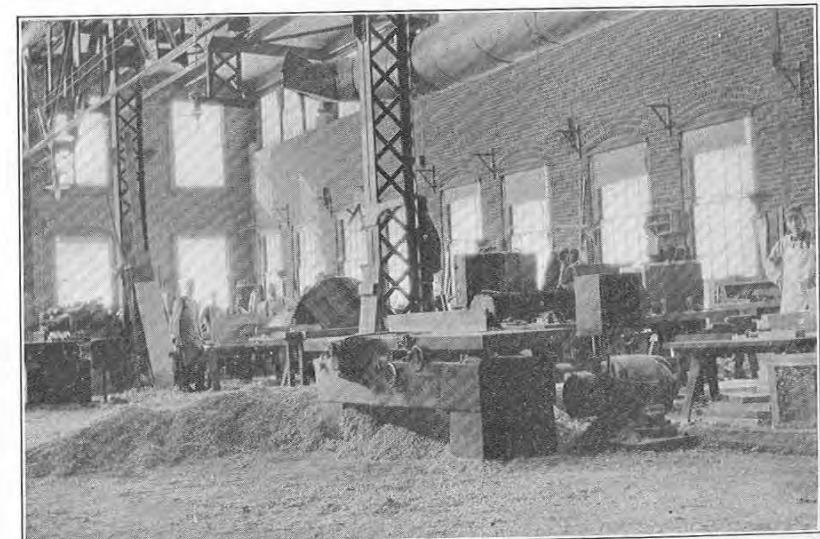
Farrell Foundry and Machine Co., Ansonia, Conn.

"Oliver" Equipment in Industrial Plants

Continued



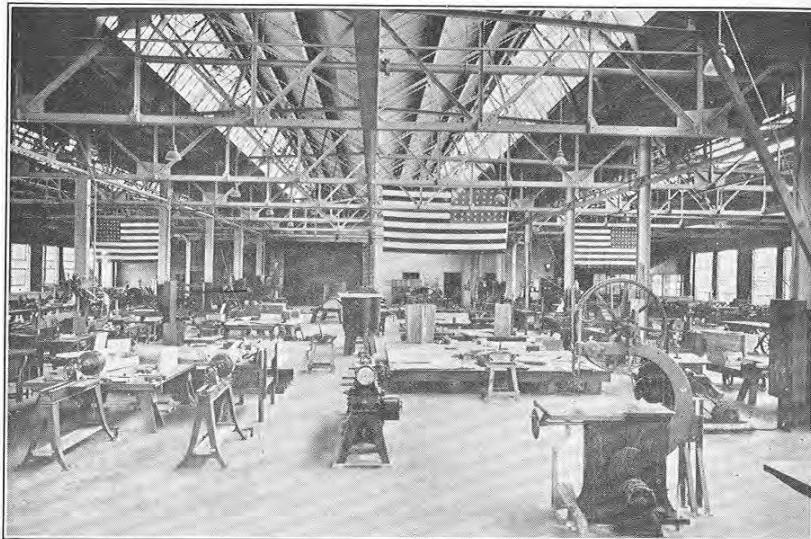
Standard Cast Iron Pipe and Foundry Co., Bristol, Pa.



Baker & Shevlin, Saratoga Springs, N. Y.

"Oliver" Equipment in Industrial Plants

Continued



Westinghouse Electric and Manufacturing Co., Essington, Pa.

"Oliver" Equipment in Industrial Plants

Continued



Bethlehem Steel Co., South Bethlehem, Pa.



Mesta Machine Co., Pittsburgh, Pa.

310



Wood Shop, Laskey Studio, Hollywood, Cal.

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"Oliver" Equipment in Educational Institutions

The Oliver Machinery Company was a pioneer and has been continuously progressive as a manufacturer of wood and metal working machinery, tools and appliances, well designed, thoroughly safeguarded, equipped and highly efficient for the requirements of Institutes and Schools of Technology, Universities, Agricultural Colleges, Mining, Normal, Teachers' Training, Trade and Industrial Schools affording technical or mechanical courses, shop practice, etc., and Vocational, High, Grammar and Intermediate Schools, State, Municipal, Endowed or similar institutions such as Homes, Asylums, Hospitals, Sanitariums, Houses of Refuge or Correction, Reformatories, Prisons, etc.

Industrial education is constantly broadening in scope and usefulness and gaining in popularity. Its effect upon industry, trade, and foreign commerce in many countries has been of tremendous and far reaching importance. Its vocational forms are especially practical.

Long time experience in manufacture and the making of plans, layouts, and estimates for educational installations enables us to offer our services with confidence in our ability to be helpful and useful to instructors, directors, superintendents, purchasing departments, and members of educational and institutional boards.

The following Universities, Colleges, Institutes, etc., represent a partial list of Technical and Engineering Institutions using "Oliver" equipment.

Alabama	Colorado	Leland Stanford	North Carolina	Southern
Arizona	Columbia	Lewis	North Dakota	Stout
Arkansas	Concordia	Loomis	Ohio	Tennessee
Armour	Connecticut	Louisiana	Oklahoma	Texas
Baltimore	Cornell	Maine	Oregon	Tillson
Berkley	Delaware	Maryland	Peabody	Tufts
Billings	Drexel	McPherson	Pratt	Tuskegee
Bradley	Fisk	Maori, N. Z.	Pennsylvania	Utah
Brown	Georgia	Massachusetts	Porto Rico	Vermont
Bucknell	Girard	Mechanics	Purdue	Virginia
California	Hawaii	Michigan	Rensselaer	Washington
Carnegie	Howard	Mississippi	Rice	Wentworth
Case	Indiana	Missouri	Roberts-Turkey	Wilberforce
Catholic	Illinois	Montana	Rose	Wisconsin
Chicago	Iowa	Morgan	Rutgers	Wilmerting
City of N. Y.	Kansas	New Hampshire	Swarthmore	Worcester
China	Kentucky	Nelson	Shepherd	West Virginia
Cincinnati	Latter Day Sts.	New Mexico	Stevens	Washington, Mo.
Clarkson	Lehigh	New York	South Dakota	Xavier

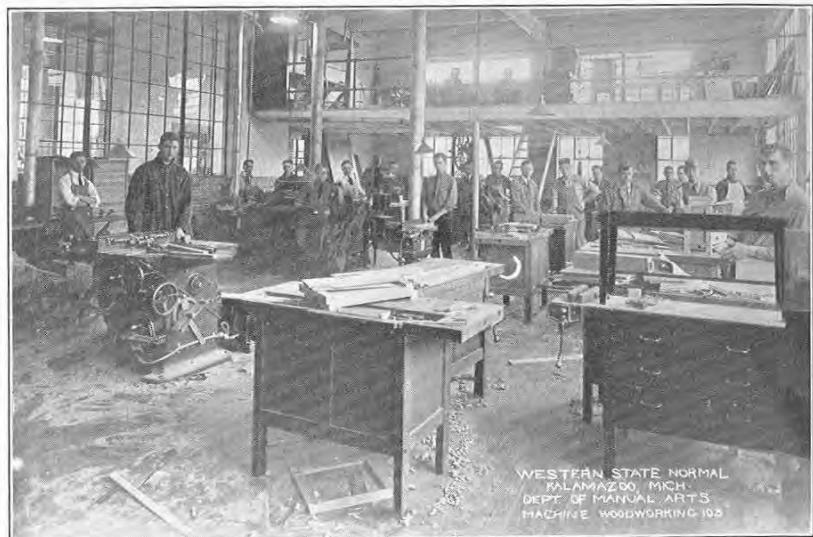
Hundreds of Normal Schools, Teachers' Colleges, Agricultural and Mining Schools, Industrial, Trade, Vocational and Continuation Schools employ Oliver Machinery Company equipment.

More than 1,500 High, Grammar and Intermediate Schools with manual training departments employ Oliver Machinery Company equipment.

Numerous State, Municipal and Welfare Institutions employ Oliver Machinery Company equipment.

"Oliver" Equipment in Educational Institutions

Continued



Cabinet Making Department, Western State Normal, Kalamazoo, Mich.



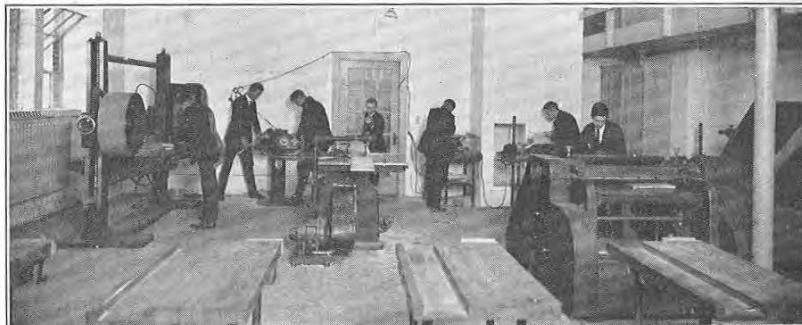
Wood Turning Department, Western State Normal, Kalamazoo, Mich.

"Oliver" Equipment in Educational Institutions

Continued

The board of education at Minneapolis, Minn., with its repeated purchases from the Oliver Machinery Company has shown its full appreciation of the high quality of "Oliver" machines. Only complete satisfaction could be the cause of repeat orders as follows:

- 1908: 25 Lathes; 1 Surfacer; 2 Band Saws.
- 1909: 21 Lathes.
- 1910: 36 Lathes; 2 Band Saws; 1 Saw Bench; 1 Grindstone; 20 Forges; 1 Blower; 1 Exhauster.
- 1912: 8 Forges; 1 Blower; 1 Exhauster.
- 1913: 10 Forges; 2 Lathes.
- 1914: 10 Forges; 6 Lathes; 2 Band Saws; 2 Jointers; 1 Surfacer; 1 Mortiser; 1 Grinder.
- 1918: 1 Swing Saw.
- 1919: 1 Swing Saw Table.
- 1922: 74 Lathes; 5 Grinders; 5 Surfacers; 6 Jointers; 2 Jig Saws; 2 Belt Sanders; 4 Saw Benches; 2 Trimmers; 2 Disc Sanders; 2 Mortisers; 2 Band Saws.



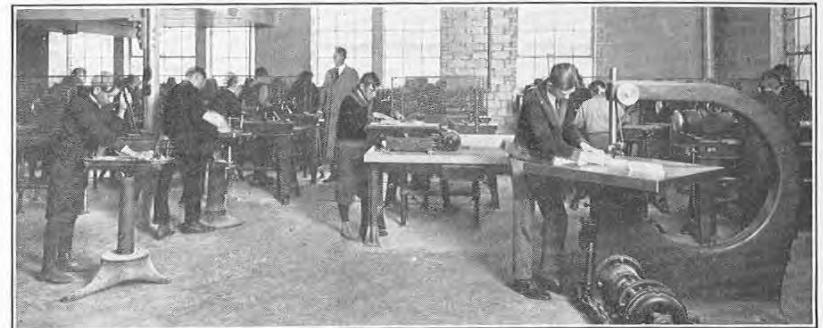
Wood Working Room, Edison Junior High School, Minneapolis, Minn., Schools



Jordan Junior High School, Minneapolis, Minn., Schools

"Oliver" Equipment in Educational Institutions

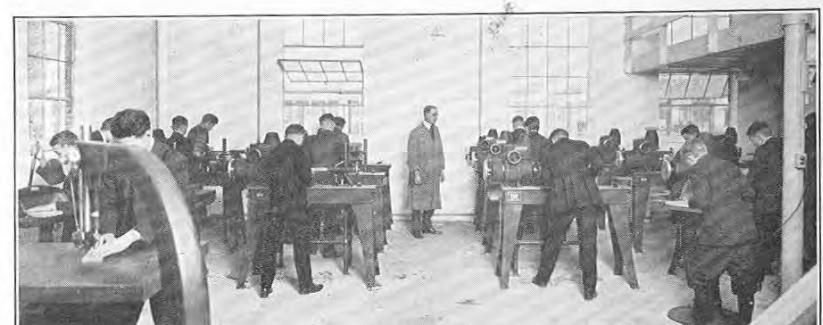
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Pattern Shop, Roosevelt Senior High School, Minneapolis, Minn., Schools



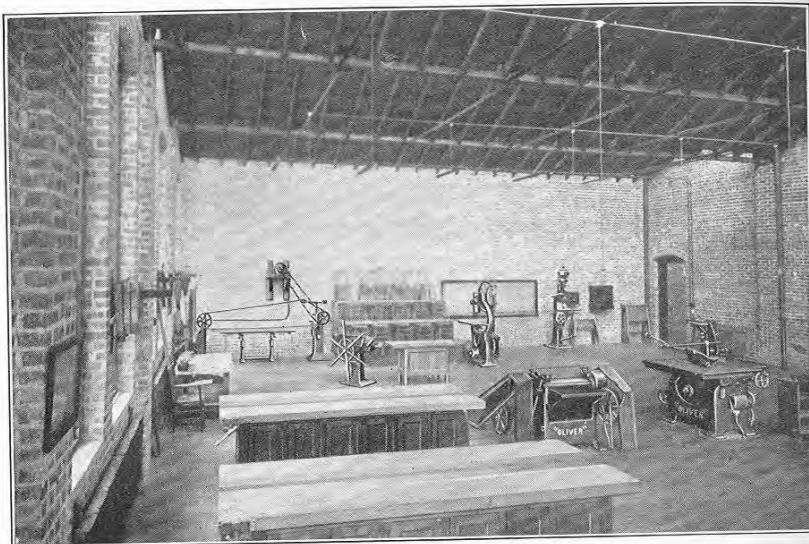
Wood Working Room, Roosevelt Senior High School, Minneapolis, Minn., Schools



Wood Working Machine Room, Edison Junior High School, Minneapolis, Minn., Schools

"Oliver" Equipment in Educational Institutions

Continued



Advance Woodworking Shop, State Manual Training Normal, Pittsburg, Kansas



Wood Turning and Pattern Making Shop, State Manual Training Normal, Pittsburg, Kansas

Proof of Excellence of "Oliver" Packing

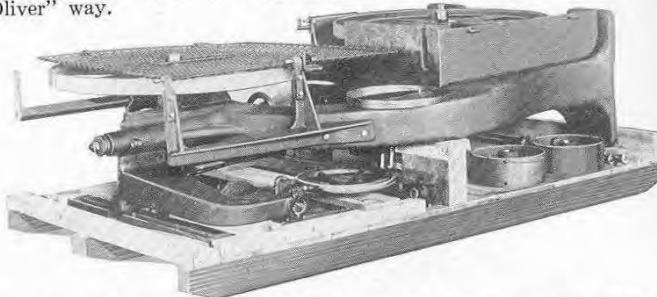


Above illustrations show "Oliver" machinery being hauled to the Engineering Department of Robert College, Constantinople, Turkey, to whom we shipped a complete equipment of woodworking machinery and forges in 1912. The Dean of the Engineering Department at Robert College stated that of all shipments received from various sources in Europe and America, the "Oliver" shipment "was the only one received in perfect condition."

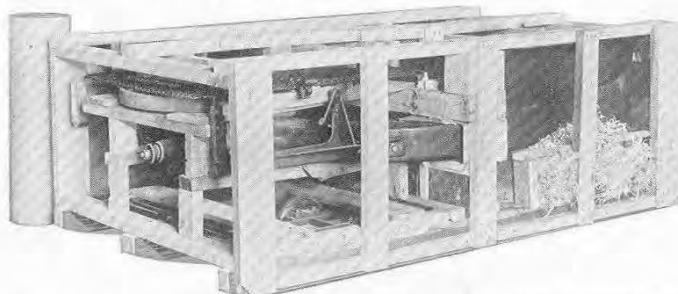
"Oliver" Packing Methods are Unexcelled

Doing a world-wide business, the "Oliver" Shipping Department has developed experts in packing—men who fully realize the importance of good packing and who keenly feel a sense of responsibility in the work they are doing. Foreign customers repeatedly declare that no one has ever excelled "Oliver" in packing.

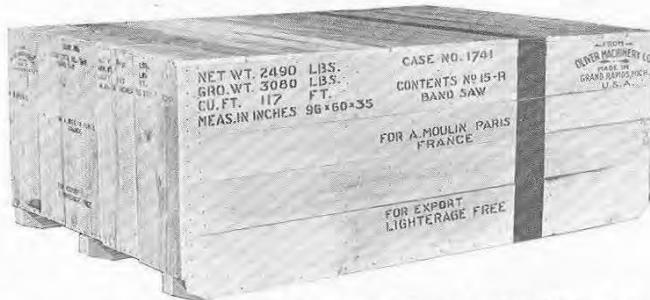
Note how securely and safely all "Oliver" export shipments are packed. Damage, shortage, and annoying delay are all avoided when your goods are packed the "Oliver" way.



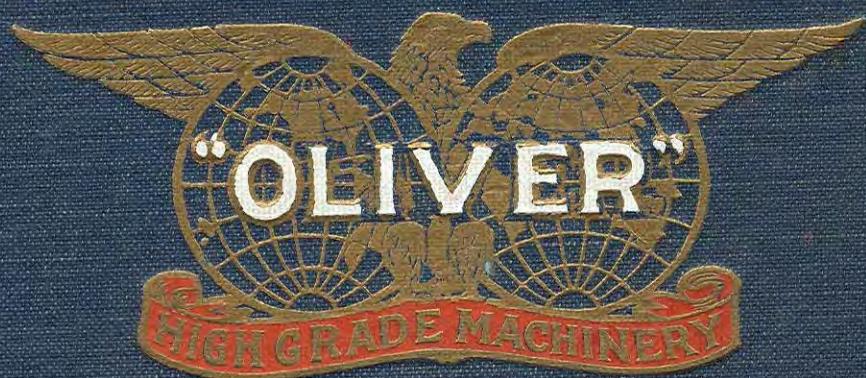
Showing the machine "knocked down" and mounted on a rigid frame the base of which is formed by three heavy skids. This takes the least possible space in vessel thus saving freight



A heavy frame is built around the machine. Braces are placed to prevent shaking or moving of machine
A heavy water proofed material is then rolled around the entire frame



Frame is now securely covered with heavy lumber. Box is completely marked showing net weight, gross weight, cubical contents, measurements, case number, contents, consignee, and shipper, and a three-inch red band painted around box. This red band readily identifies and easily locates any "Oliver" shipment in any warehouse



CATALOGUE
No. 22

OLIVER MACHINERY CO.
GRAND RAPIDS, MICHIGAN, U.S.A.

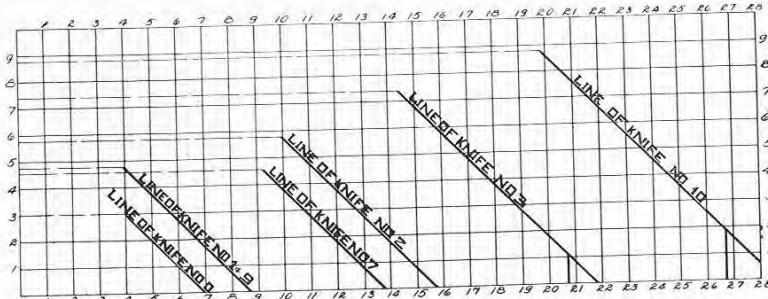
"Oliver" Wood Trimmers

We are giving the same careful attention to pattern shop needs in Wood Trimmers that has characterized our efforts in other tools, and today we take pride in the almost universal recognition of our Trimmers as the most excellent in design, most perfect in construction, most convenient in adjustment, and most durable and efficient.

The old style machines have given place to new and improved tools, and up-to-date ideas embodied in their construction indicate the progressive thought and experience we have given them. The name "Oliver" cast into the frame of a Wood Trimmer means more than the name of the maker. It stands for correct methods in every detail of our large and expanding business of selling trimmers and it means "Quality."

To make a proper selection bear in mind that a small machine for the exclusive use of each man together with enough of the larger sizes to care for heavy work is the ideal and most satisfactory way. For all around general work both large and small, the Nos. 1 or 9 for small work and No. 3 for larger work makes the most useful combination. If you only want one, buy a large one; it will work upon both little and large work with equal convenience.

Size Diagram



This will prove of service to intending purchasers. Each square represents one square inch, and the exact trimming capacity of each machine is represented by black and dotted lines of knives. Thus No. 3 trims $20\frac{3}{4}$ " long and $7\frac{1}{2}$ " deep. Below are the capacities of machines.

No.	Kind	Length of Stroke Inches	Depth of Cut Inches	Trimming Area Sq. Inches	Domestic Weight Pounds	Foreign Weight Pounds	Measure'mt Cubic Feet
0	Small	6	3	15	35	35	1
2	Universal	15	$5\frac{3}{4}$	70	380	450	12
3	Universal	$20\frac{3}{4}$	$7\frac{1}{2}$	135	670	750	22
9-A	For Bench	$8\frac{1}{2}$	$4\frac{3}{4}$	25	105	115	$3\frac{1}{2}$
9-B	With Column	$8\frac{1}{2}$	$4\frac{3}{4}$	25	250	262	9
10	Full Universal	$26\frac{1}{2}$	9	198	1400	1510	46

"Oliver" Wood Trimmers—Interesting Special Features

Continued



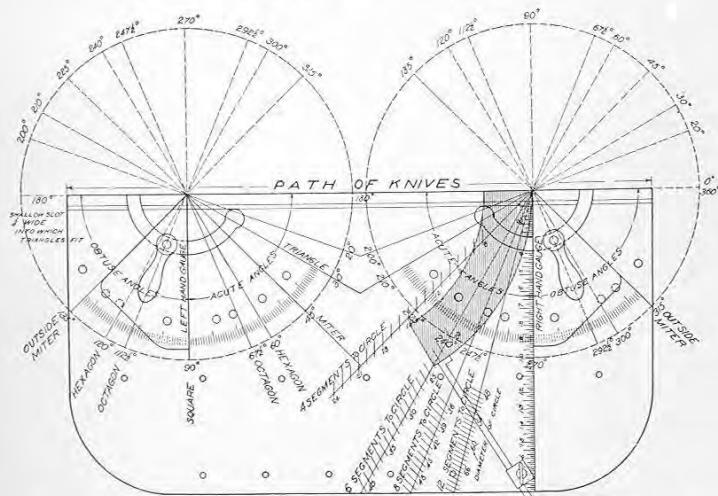
No. 143 "OLIVER" WOOD TRIMMER KNIFE VISE

Trimmer Knives

Some knife manufacturers have attempted to furnish these knives without learning their essential qualities. If you desire results from the trimmer buy our knives, which are made by a special process, ground properly, and will last for years with correct usage.

Care of Knives

Trimmer knives are not hard to sharpen. It is necessary to realize that you always obtain the exact duplicate of the face of the knife on the surface of the wood trimmed; hence care must be taken to preserve the face of the knives in perfect condition. They are purposely ground slightly concave, not to exceed two one-thousandths of an inch.



The above illustrates how our full Universal Trimmers, Nos. 2, 3 and 10, are graduated, and the theory upon which they are designed. It will be observed that the gauges cover degrees from 30 to 135 degrees on each side of the bed.

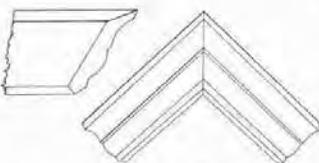
The reason for two gauges is that the one on the right hand is intended to cover one-half the degrees in a circle, and the one on the left hand the other half.

"Oliver" Wood Trimmers—Interesting Special Features

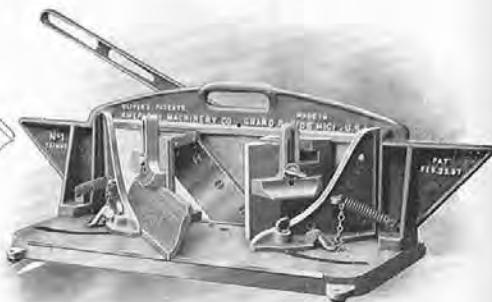
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Triangle Gauges

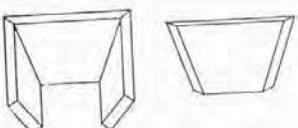
This page illustrates the various uses of the triangle gauges regularly furnished with all "Oliver" Trimmers except the No. 0. Detailed instructions upon request.



Showing Compound Angle
and Mitered Frame Molding



Showing a semi-trimmed shoulder to
rabbet

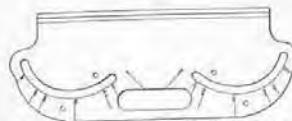


Showing Mitered Sprung Moldings



No. 0

"Oliver" Wood Trimmer The "Mighty" Little Fellow



No. 0 Wood Trimmer, 45 to 135 degrees



Front View



Rear View

Adaptation

This size of wood trimmer is adapted for the exclusive use of each pattern maker or cabinet worker and is strongly recommended for all bench service where the pieces do not exceed 5" x 2". When nickel plated, it becomes an excellent machine for trimming and finishing plaster models used by Orthodontists. Full information is furnished upon request.

Details

In construction we have adhered to the policy of producing the best that skill and precision tools are capable of and the following details will prove interesting:

Gauges cover degrees from 45 to 135.

Important angles are located by taper pins.

Gear and rack are cut from solid steel and placed out of the path of the shavings.

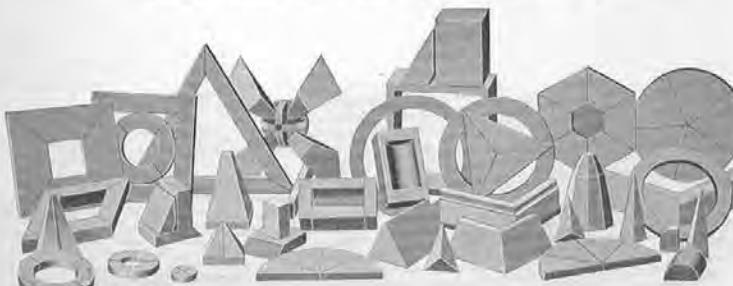
Knife is solid double edged, of finest steel, accurately tempered and rigidly tested.

Knife is warranted. May wear 1 1/4" from either end without detriment to its working qualities.

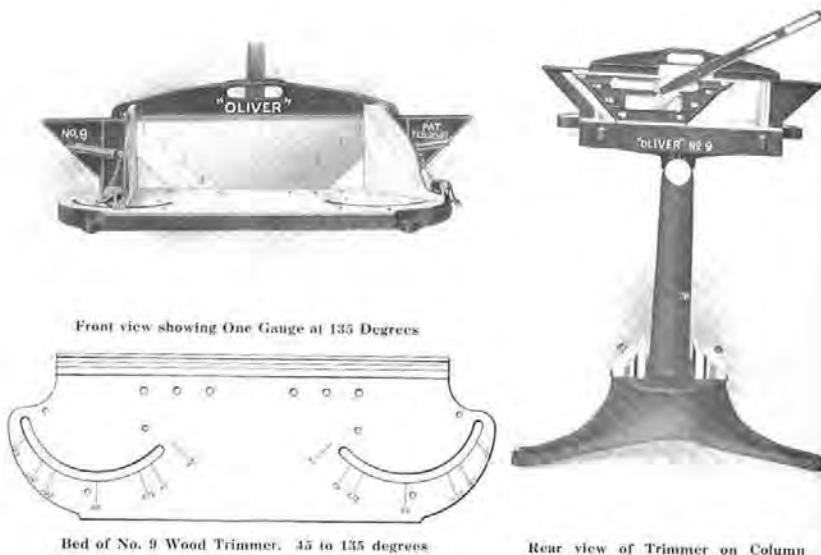
CAPACITY, CODE, WEIGHT, ETC.

Code	Style	Length of Stroke of Cut	Depth of Cut	Trim. Area	Size of Red.	Dom. Wt.	For. Wt.	Meas. Cu.Ft.
No. Famine	For Bench	6"	3"	15"	15 1/2" x 6"	35	35	1
Famnic	Nickel Plated	6"	3"	15"	15 1/2" x 6"	35	35	1

Triangle gauges are never supplied with this machine.



No. 9
"Oliver" New Style Wood Trimmer



Front view showing One Gauge at 135 Degrees

Bed of No. 9 Wood Trimmer. 30 to 135 degrees

Rear view of Trimmer on Column

Popularity

This is one of the most popular of our small trimmers and is well suited to the needs of the pattern maker, carpenter, contractor, etc. Being strong, rigid, well made and convenient, it has been successfully used in thousands of shops all over the world. It may be purchased without column or stand and placed on the work bench if desired.

Knife Carriage

This carries two sets of bolt holes to allow the knives to be moved forward, doubling their usefulness. All sliding parts are milled and scraped.

Gauges

They rest flatly on the bed; are held back by springs, are easily clamped at any angle; may be accurately located by taper pins at the principle angles—45, 90, 135 degrees and move through angular paths whose centers are exactly in lines formed by points of the gauges with the cutting edge of the knives.

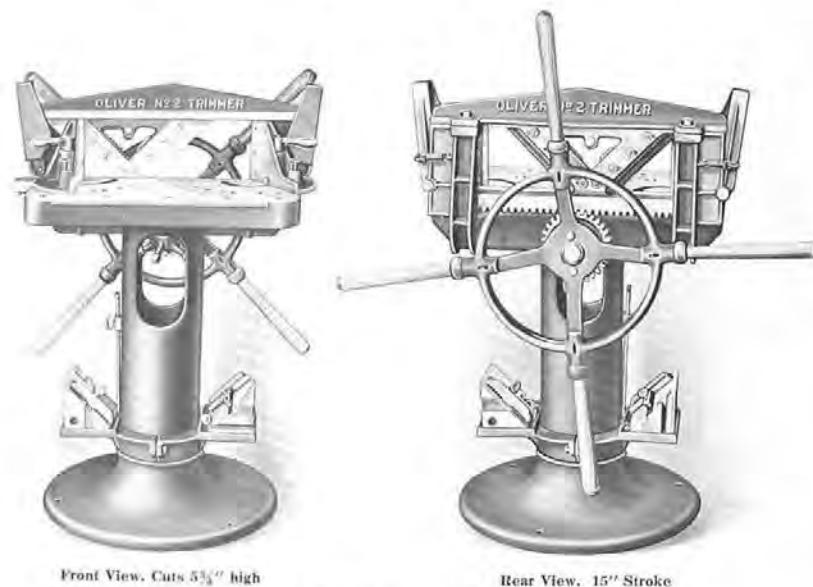
Driving Mechanism

A malleable iron lever turns a pinion with cut teeth which meshes into steel cut racks—upper one fastened back of frame, lower one fastened to knife carriage out of the way of shavings.

CAPACITY, CODE, WEIGHT, ETC.

Code	No.	Style	Length of Stroke	Depth of Cut	Trimming Area	Size of Bed	Dom. Wt.	For. Wt.	Meas.
Femur	9-A	For Bench	8 1/2"	4 3/4"	25"	9"x24"	105	115	3 1/2
Fen	9-B	On Column	8 1/2"	4 3/4"	25"	9"x24"	250	262	9

No. 2
"Oliver" Full Universal Wood Trimmers



Front View. Cuts 5 1/2" high

Rear View. 15" Stroke

"OLIVER" No. 2 FULL UNIVERSAL WOOD TRIMMER

Its Character

When the first Universal machines were introduced this was the best size in demand, but since then we have changed its capacity and added such new features that bring it up to date, and large sales have resulted.

Quality

Its quality in workmanship and finish is "right," its appointments modern and it has the same standard of excellence as the more expensive machines.

Details

Graduations on the bed cover 30 to 135 degrees. Segment graduations for circular work. Adjustable bearings for the knives. Automatic location of the gauges at important angles. Four handle operating pilot wheel. Automatic spring knife guards. Cut Gear and Rack protected from shavings. Adequate provisions for wear of knives. Spring stops and taper pins for locating gauges. Triangle Attachment furnished when ordered.

CAPACITY, CODE, WEIGHT, ETC.

Code	No.	Length Stroke	Depth of Cut	Trimming Area	Size of Bed	Weight in Pounds Crated	Weight in Pounds Boxed	Cu. Ft.
Fascies	2	15"	5 1/2"	70 sq. in.	11 1/2"x26"	460	550	12

No. 3

"Oliver" Full Universal Wood Trimmer

Over 2,000 in Daily Use

"The Master of them all"

Design

Great thought and care in designing this wonderful machine resulted in the introduction of new and valuable features that give it a unique place in the pattern shop. Correct proportions insure strength and rigidity. Up-to-date ideas in construction and perfect workmanship establish the unqualified merit of this tool.

Gauges

These are automatically located at the principal angles, i. e., 30, 45, 60, 67½, 90, 112½, 120 and 135 degrees. The etching shows this is affected by a spring that forces a tapered pin into a tapered hole. Accuracy and speed are thus obtained. The gauges can be set at any of the intervening degrees by means of a thumb screw or clamp.

Principal Features

Six handle operating wheel, always in reach on small or large work. Can use two handles on the largest pieces. Gauges are automatically located upon the prominent angles. Segment graduations for circles from 6" to 72" in diameter. Adjustable bearings, doubling its life on accurate work. Entire top swivels on the column or can be held in a fixed position by a lock nut.

Fine Points

Automatic spring knife guards furnish adequate protection at all times. Faces of both gauges are graduated in inches for cutting positive lengths. Rack, gear and bearings are protected from shavings and grit. Cut gear and cut rack eliminate uneven and loose motion. The bed is long and wide, making a valuable truing table. Wear to the knives is adequately provided for.

Adjustable Bearings

The method of taking up the wear to the bearings of our Nos. 2 and 3 Trimmers is carefully designed, and its importance cannot be over-estimated. When bearings become worn the tendency in any trimmer is for the knife to crowd away from the bed. By our adjustment, however, the long tapered gib raises the knife carriage and the double bevel keeps it thrust firmly against the face of the bed. This is a great improvement.

Triangle Gauges

We have found them desirable in working tenons, half laps, wide miters and compound angles, etc. A workman will often find other special things in his particular work in doing which these attachments enable him to save time and trouble.

No. 3 "Oliver" Full Universal Wood Trimmer

Continued



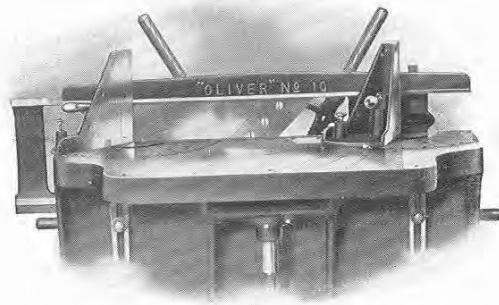
The utility of "Oliver" Wood Trimmers in pattern shops and other fine wood working plants is universally recognized. They are great money savers, no pattern shop should be without "Oliver" Wood Trimmers.

These trimmers are adjusted to cut square, vertically and horizontally, and warranted to read absolutely true to their graduations. The correct position of each graduation for the triangle, miter, hexagon, octagon, and square upon both the obtuse and acute angles is determined by actually fitting pieces together.

CODE, WEIGHT, ETC.

Code Fasting	No. 3	Length Stroke 20¾"	Depth of Cut 7½"	Trimming Area 135 sq. in.	Size of Bed 18"x34"	Weight in Crated 670	Pounds Boxed 800	Cubic Feet 24
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No. 10
"Oliver" Patent Adjustable Wood Trimmer



Showing Bed elevated to its maximum height

Introduction Some new features have been incorporated in the No. 10 that render it a more general machine than any of its predecessors. The introduction of an adjusting table for distributing evenly the wear along the full length of the knives and dulling the entire knife before re-sharpening is the new feature not found on other types of machines. It has also greater capacity.

Column and Bed We make the column in cored form 28" x 37", giving good floor surface. The bed is 18" x 41", graduated at each end from 30 to 135 degrees. Taper pins locate the gauges at all the important angles, viz.: 30, 45, 60, 67½, 90, 112½, 120 and 135 degrees. At the right hand gauge extending across the bed from 4" to 16" from the knife line are length graduations made in eighth inches.

Segment Graduation Graduations are shown for cutting segments for circles from 6" to 72" in diameter ranging from 4 to 12 segments. Raising screw is mounted on ball bearings.

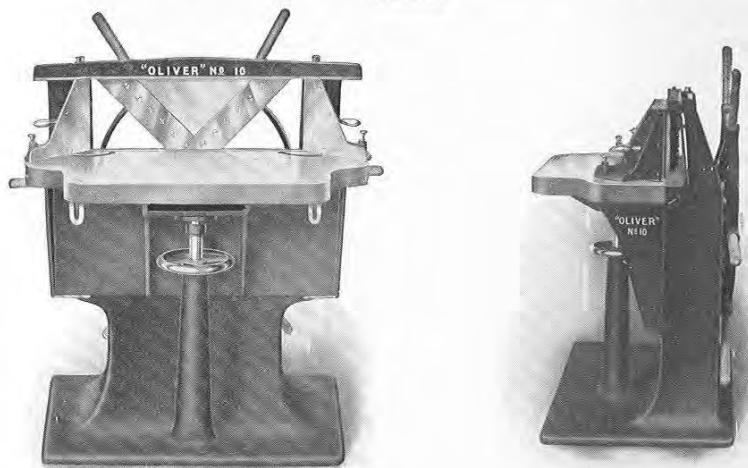
Table Gibs The bed may be raised 5" by operating hand wheel and screw at the front. The entire cutting edges of the knives may be thus presented to the work before regrinding.

Knives These are made from special laid steel, are hollow ground and of correct temper.

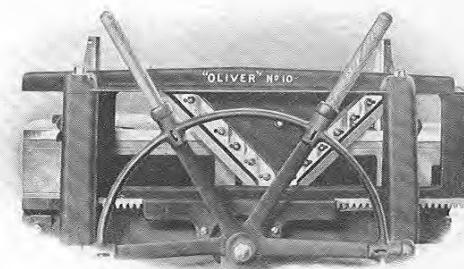
Gauges These are two in number, located one at each end of the bed. The front edges are faced with steel strips and are graduated to eighth inches. They are secured to bed by clamping levers.

No. 10 "Oliver" Patent Adjustable Wood Trimmer

Continued



Front and End Views



Showing the broad Bearings back of the Bed and the Gear and Rack Cover, etc.

Bridge and Knife Slide**Driving Method**

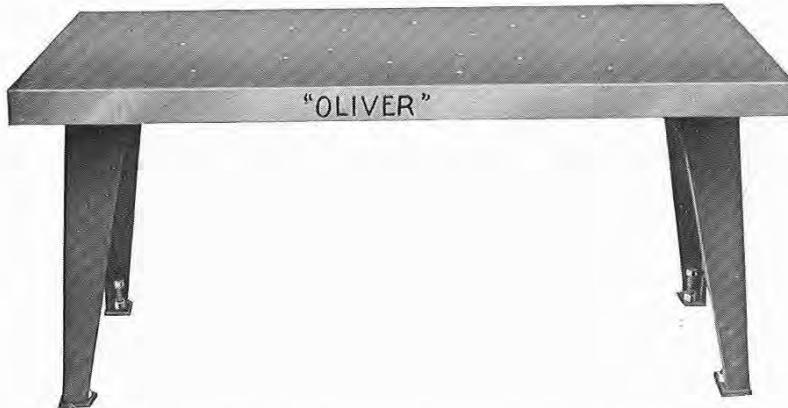
Bridge is cast iron and is bolted to the posts of the main frame. The knife slide is supported in dovetail bearings and by this means all wear in the slide is readily taken up. It is moved in either direction through cut rack fastened to the outside edge of the slide.

A six point pilot wheel is mounted at the back of the machine and carries a steel cut pinion that meshes into the rack on the knife slide. Revolving this wheel and pinion forces the slide and knives forward.

CAPACITY, CODE, WEIGHT, ETC.

Code	Length of Stroke	Depth of Cut	Trimming Area Sq. Inches	Floor space	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Fennel	26½"	9"	198	41" x 28"	1400	1510	46

No. 132
"Oliver" Iron Adjustable Surface Table



Adaptation

There is an increasing demand for a surface table made of metal that may be relied upon to retain its shape and the table shown in the half-tone has met it.

Table

This is made of cast iron, is strongly ribbed and is planed true. The standard size is 66" long, 30" wide, 31" high and a 3" deep flange around its edge. Concentric with the center of the table surface is a series of tapped holes to receive the supporting and clamping screws of general purpose clamps as shown.

Legs

These are cast with wide bearings for the table, with a flaring base and with two adjustable screws in the bottom of each for service in aligning the table. Each leg has four heavy bolts securing the table to them.

CODE, WEIGHT, ETC.

**Code
Ferry**

No.	Machine	Weight in Crated	Pounds Boxed	Cubic Feet
132	Surface Table.....	1200	1310	42

EXTRAS

Ferta

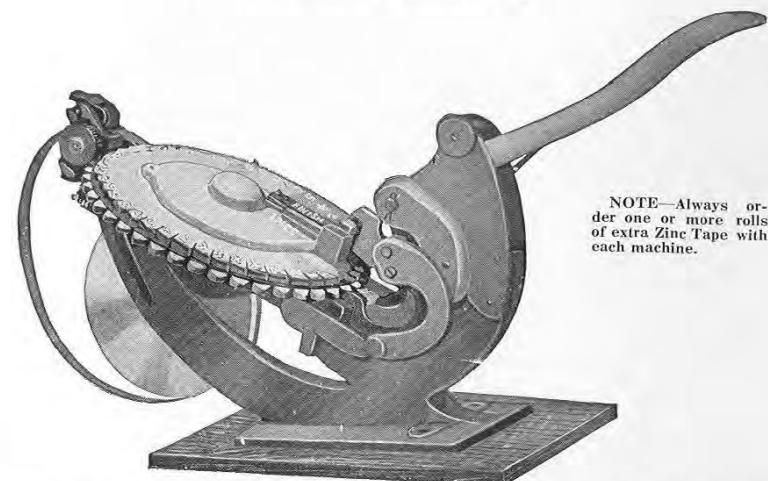
No. 124-A General Purpose Clamp, consisting of 6" clamp, wing nut, brace screw 5½" long and clamp screw 6" long.

Ferte

No. 124-B General Purpose Clamp, consisting of 8" clamp, wing nut, brace screw 6" long and clamp screw 6½" long.

"Oliver" Type Embossing Machines

For Extra High Embossing



The Demand

Durable pattern plates, tags, labels, etc., can be finished in such fine style and at such small expense that the demand for them is becoming world wide. They are simple, strong and efficient.

Zinc

This is the substance into which the letters and figures are ordinarily embossed, though soft brass and aluminum tapes are sometimes used. It comes in rolls, and plates can be made with one letter or figure to any number of letters and figures desired.

Feed

The zinc strip is fed automatically through a guide chute situated between circular die plates. By pressing down the handle it feeds the strip to the correct place, the dial is then turned to bring the desired letter or figure into place, then the handle is pressed down, causing the strip to receive the character and embosses it on the strip. The process is repeated until the plate is finished.

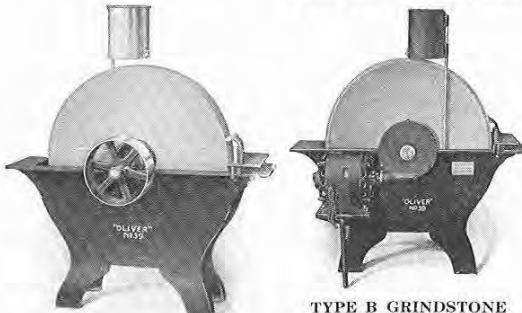
CODE, WEIGHT, ETC.

Code	No.	Description	Height of Letters, etc.	Width of Tape	Weight in Crated	Pounds Boxed	Cubic Feet
Ferteb	475-A	High Embossing Press....	1/8"	3/8"	80	120	3
Fertec	475-B	High Embossing Press....	3/16"	3/16"	80	120	3
Ferted	475-C	High Embossing Press....	1/4"	1/2"	80	120	3
Fertef	476-F	High Embossing Press....	9/32"	9/64"	120	170	6
Ferteg	476-A	High Embossing Press....	5/16"	3/4"	120	170	6
Fertek	476-B	High Embossing Press....	3/8"	7/8"	120	170	6
Fertel	476-C	High Embossing Press....	15/64"	1 1/8"	360	420	12
Fertem	476-D	High Embossing Press....	5/8"	1 1/4"	360	420	12
Ferten	476-E	High Embossing Press....	3/4"	1 1/2"	360	420	12

EXTRAS

Zinc Tape, any width, as required by above machines, always carried in stock.

No. 39
“Oliver” Grindstones



No. 39-A GRINDSTONE Belt Drive

TYPE B GRINDSTONE MOTOR DRIVE
Clutch, Worm Gear and Worm Method as applied to No. 39 Grindstone Frame



TYPE C GRINDSTONE MOTOR DRIVE
Self-Contained Belted Motor Method as applied to No. 39 GRINDSTONE FRAME



“Oliver” Grindstone Truing Device

“Oliver” Grindstones are high grade in every way. Bearings are exceptionally large, lined with genuine babbitt and fitted with oil cups. The mandrel and the flanges are generously proportioned and accurately finished. An outlet is provided in the base for convenience in removing sediment. The capacity and dimensions are as follows:

Frame	27" high, made of cast iron.
Mandrel	1 1/4" diameter, 22 1/4" long, made of steel.
Bearings	4" long and babbitt.
Pulley	12" diameter, 4" face; speed, 50 R. P. M.
Flanges	Diameter to suit the stone.
Tool Rest	6" long; vertical adjustment 2".
Floor Space	51" x 22" for 36" stone and 62" x 27" for 48" stone.

CODE, WEIGHT, ETC.

Code	No.	Size Stone	H. P.	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Fettic	39-A	36" x 6"	1/2	1150	1350	33
Fettif	39-B	48" x 8"	1	2050	2300	42

Grindstone Truing Device

This very useful device is now regularly furnished on all “Oliver” grindstone frames or may be supplied for frames of other makes now in use.

Code	No.	Length of Roll	For Width Stone	Diameter of Roll	Length Over All	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Fettle	1	6 1/2"	6"	1 1/2"	13"	22	26	2
Fetu	2	9 1/2"	9"	2"	18"	28	35	2
Fetua	3	12 1/2"	12"	3 1/4"	24"	40	50	3

No. 473

“Oliver” Alundum or Corundum Grinder

12-inch Wheels, 1 1/2-inch Wide

Design

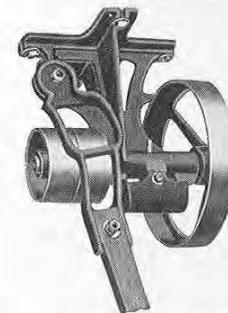
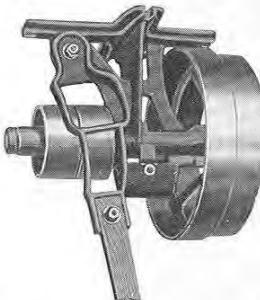
This is a modern grinder in every respect—thoroughly safe guarded, large self-oiling bearings, heavy well-proportioned, substantial base, place to lay tools being ground, adjustable tool rest and water pot.

Equipment

Two 12" Alundum or Corundum grinding wheels, one 1 1/2" wide medium grain, one 1" wide fine grain, two metal wheel guards or hoods arranged for exhaust connection, one cast iron floor column, one water pot and one 4" x 4" single spindle pulley.

Dimensions

Spindle 22" long, 7/8" in bearings, 3/4" in wheels, 40" from floor; flanges 5" diameter; bearings 4" long; base on floor 12" x 16"; single spindle pulley 4" x 4"; cone pulley for spindle, furnished without extra cost in place of single pulley, when so ordered, two steps, 3 3/4" and 4 1/2" diameter, 2 1/4" face.



No. 473-D Countershaft—Code, Fifan
Shaft 21" long, 1 1/8" diameter. Driving Cone 16" and 15 1/4" diameter. T. & L. pulleys 6" x 2 3/4" face. Speed 530 R. P. M.

No. 473-C Countershaft—Code, Fifak
Shaft 15 3/8" long, 1" diameter. Driving pulley 12" x 4" face. T. & L. pulleys 5" x 4" face. Speed 530 R. P. M.

Code	No.	Description	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Fifa	473-A	Grinder as regularly equipped.....	310	350	9
Fifab	473-B	Grinder with two-step cone.....	310	350	9

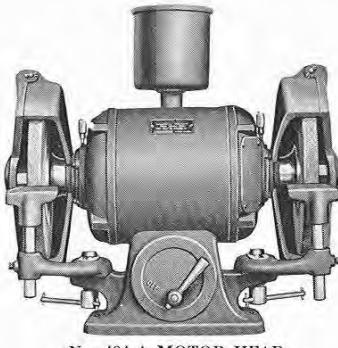


No. 473-F Four Wheel Grinder
Code, Fifam

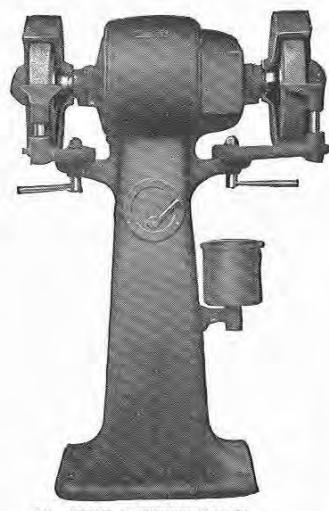
Bench style machine arranged to carry four wheels—especially suitable for grinding shaper and moulding knives or bits. Weight 175 lbs.

No. 484 Motor Head Grinders

Either for Direct or Alternating Current



No. 484-A MOTOR HEAD BENCH GRINDER



No. 484-C MOTOR HEAD COLUMN GRINDER

Motor

The motors in these grinders are designed for this work. They are completely enclosed, making it impossible for dirt or grit to get in the moving parts. Each machine is self-contained, complete ready for use.

Bearings

Motor Bearings are self-oiling and completely protected from the grinding dust.

Starting Device

The starters, made for these motors only, are conveniently located in the pedestal and all connections are completely housed; operator cannot come in contact with them.

Electric Current

Made for alternating or direct current. It is necessary to know voltage for D. C. and voltage, phase and cycle for A. C. when quoting price.

Wheels

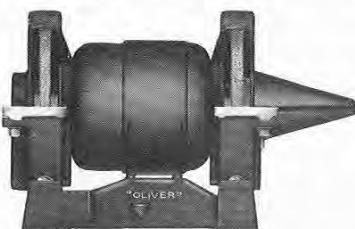
All wheels equipped with safety flanges with ample dimensions, and guards are supplied for the wheels.

SPECIFICATIONS

Code	No.	Type	H.P.	Size of Wheels	Weight in Pounds Crated	Boxed	Cubic Feet
Figac	484-A	Bench	1/2	8" x 3/4"	185	300	2
Figaf	484-B	Bench	1 1/2	12" x 1"	310	460	3
Figah	484-C	Col.	2	12" x 2"	550	700	12

EXTRAS

We can furnish extra attachments usable on above machines as desired.



No. 485 Variety Tool Grinder

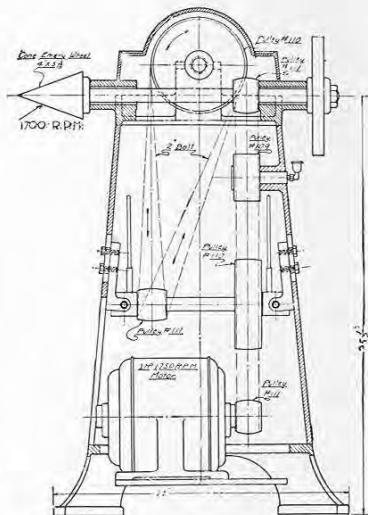
Code—Figam

Consists of a $\frac{1}{3}$ H. P., 1800 R. P. M. motor, with extended shaft fitted with two 8" x $\frac{1}{2}$ " grinding wheels and 3" x 5" grinding cone—all mounted on a common base; including cord, push button switch and plug for light socket portable use. Weight, 100 pounds.

Nos. 581 and 583 “Oliver” Revolving Oilstone Grinders



No. 581 "OLIVER" OILSTONE GRINDER



Cross Section showing self-contained Motor Drive and Internal Belting

Introduction

These machines are designed for quickly grinding and sharpening various tool edges, general grinding, beveling knives, etc. They take the place of the ordinary grindstone and bench whetstone, doing the work quicker and better. “The modern way of grinding edge tools, planer and jointer knives.”

Oilstone Wheels

Oilstone wheels are 10" diameter by $2\frac{1}{2}$ " face, one intended for rapid abrasion, the other for putting the smooth keen edge on the tool. They are mounted on a steel arbor driven by proper belting and run 225 R. P. M.

Cutting Lubricant

Kerosene oil discharged on the inside of the cup wheels is the best lubricant for the grinding wheels. This method of applying the lubricant keeps the wheels well saturated. A special appliance prevents the oil from being thrown off by a centrifugal force.

Emery Cone

An emery cone 4" diameter by $5\frac{1}{4}$ " long, for grinding gouges, is located on one end of lower arbor.

Emery Wheel

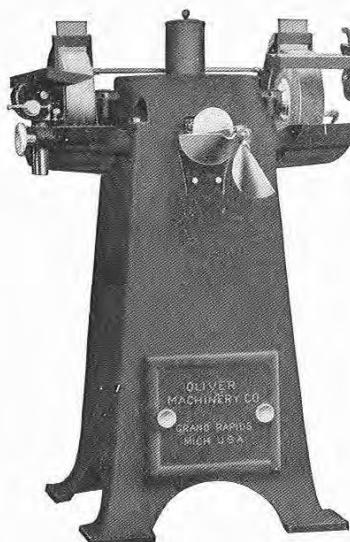
An emery wheel 10" diameter by 1" face is mounted on opposite end of arbor for general dry grinding.

Tables

Tables are tilting, fully universal and adjustable for face grinding, giving plain straight surface as well as peripheral grinding.

Nos. 581 and 583 "Oliver" Revolving Oilstone Grinders

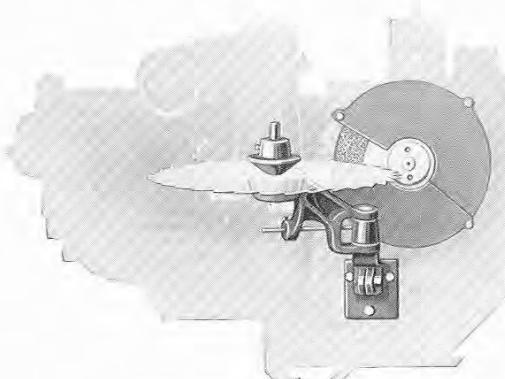
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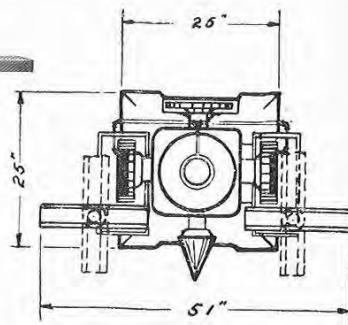
Front View of No. 581 Grinder

Frame

The frame is very rigid and substantial, cast in one piece cored, with 25" x 25" base. Height of spindles 35" and 37½". Height over oil receptacle 45½". The arbors are made of high carbon steel and run in self-oiling bearings, all bearings and transmission fully enclosed with cast iron covers.



SAW GUMMING ATTACHMENT
Extra if desired

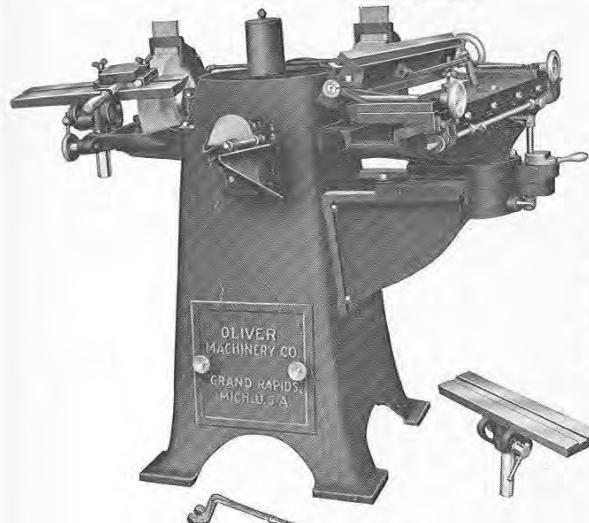


Top View of No. 581 Revolving Oilstone Tool Grinder showing the relative positions of the Four Grinding Wheels.

The accompanying illustration shows the attachment which may be used with either No. 581 or No. 583 Grinder when it is desired to sharpen circular saws by the use of these machines. Special grinding wheels shaped to produce the desired gullet must be used.

Nos. 581 & 583 "Oliver" Revolving Oilstone Grinders

Continued



No. 583 "OLIVER" OILSTONE GRINDER

Tool Holder

The tool holder is adjustable with micrometer adjustments for holding small tools when grinding, and can be taken from table for inspection of tool and replaced instantly.

Knife Grinding Attachment

The knife grinding attachment is fully automatic and made in two sizes, viz.: to grind 24" and 30" knives. It has a rigid knife bar equipped with dial and indicator, adjustable for grinding to any usual knife angle. It is pivoted at the center and has provision for bringing knife into contact with the wheel so that either straight or concaved bevels may be ground. This attachment may be removed quickly by loosening two bolts.

Safety First

Special attention is called to the manner in which these machines are guarded. All bearings and transmissions are fully enclosed with a heavy cast iron cover and all grinding wheels have the latest improved guards, and the grinding cone is equipped with a housing of cast iron. Down belt and motor drive machines have all the belting inside the column.

Countershaft

Tight and loose pulleys are 5" diameter, 2¼" face, driving pulley 12" diameter, 2¼" face, speed 390 R. P. M.

CODE, WEIGHT, ETC.

Code	No.	Machine Description	H. P.	Weight in Pounds Crated	Boxed	Cubic Feet
Fobac	581-A	Two Arbor, Belt Driven.....	1	850	975	23
Fobaf	581-B	Two Arbor, Motor Driven.....	1	875	975	23
Fobam	583-A	Two Arbor, Belt Drive, with 30" Knife Grinding Attach- ment.....	2	1250	1450	33
Fobap	583-B	Two Arbor, Motor Drive, with 30" Knife Grinding Attach- ment.....	2	1250	1450	33

Focal

EXTRAS
Saw Gumming Attachment usable on above machines.

No. 585

"Oliver" Variety Oilstone Tool Grinder

MOTOR DRIVEN—BALL BEARING THROUGHOUT

Advantages

For rapidly grinding and sharpening various woodworking tools, such as plane bits, chisels, gouges, and other bench tools.

Being portable and equipped with a plug and cord of suitable length, it can be attached to any electric light socket and placed where it will be most convenient to the operator. Expensive wiring is entirely avoided. It insures better tools—consequently better and faster work. It saves steps—time—money.

General Construction

The motor is mounted on and forms a part of the machine and has a double ended shaft, at one end of which is mounted an emery cone and leather stropping wheel; the other end carries a gear and a flexible coupling. The gear, by means of a train of gears running in lubricant, transmits power to the arbor carrying the oilstone wheels. The flexible coupling connects the motor shaft to a ball bearing arbor which carries the emery wheel.

The use of high grade ball bearings throughout insures a light running quality not found in other grinders.

Table and Tool Holder

The table extends across the front of the machine, tilts to any desirable angle, and has horizontal adjustment of several inches. It is fitted with a special tool holder for holding chisels, plane bits, etc., with screw feed arrangement for feeding the tools to the oilstones when grinding.

Automatic Saturation System

An oil reservoir is mounted over each oilstone cup wheel and the oil is directed so as to drip on the inside of the cup wheels, through small tubes with faucets to regulate the flow of oil. Special wipers prevent the oil being thrown off the wheels.

Oilstone Wheels

These are of the cup wheel type and run in ball bearings. They are two in number—one coarse grain for rapid abrasion and the other fine grain for putting a smooth keen edge on the tool. Size 8" diameter, 2" face. Speed 300 R. P. M.

Emery Wheel

This wheel is mounted on a ball bearing shaft and is used for general dry grinding. Size 8" diameter, $\frac{1}{2}$ " face. Speed 1800 R. P. M.

Emery Cone

The emery cone, mounted at one end of the ball bearing motor shaft, is used for grinding gouges and irregular shaped tools. Size 3" diameter, 5" long. Speed 1800 R. P. M.

Stropping Wheel

The leather stropping wheel, mounted on the same shaft as the emery cone, takes away burrs and puts the finishing touches on the tools. Size 6" diameter, 2" face. Speed 1800 R. P. M.

No. 585 "Oliver" Variety Oilstone Tool Grinder

Continued



Left side view—Note emery cone, leather Stropping wheel as well as two oilstone wheels and tool holder



Right side view—Note emery wheel with tool rest as well as two oilstone wheels and tool holder

Tool Rest

This right angle tool rest permits grinding on side and face of the emery wheel.

Safety Features

"SAFETY FIRST" is a feature in the design of this machine. Gears and bearings are fully enclosed with cast iron covers. The oilstone wheels, emery wheel and emery cone have the most improved metal guards, the leather stropping wheel has a guard on the off-side. Belts and pulleys are entirely eliminated.

Motive Power

Direct motor drive, ball bearings, and the elimination of belts and pulleys, the power consumption is decidedly minimized and full efficiency secured. Motor is enclosed, fitted with ball bearings, 1800 R. P. M., alternating or direct current, 110 or 220 volt, has ample power and may run from any lamp socket.

Switch and Cord

A push button switch, mounted on the machine, starts and stops the machine, and is fully wired with cord and plug for attaching to light socket.

Equipment

Two 8" x 2" oilstone cup wheels (one coarse and one fine grain), one 8" x $\frac{1}{2}$ " emery wheel, one 6" x 2" leather stropping wheel, one emery cone 3" diameter, 5" long, adjustable tool holder, right angle tool rest, suitable motor, push button switch, and cord and plug for attaching to light socket.

Floor Space

Machine is portable; pan measures 28" x 25"

Code	No.	Description	CODE, WEIGHT, ETC.		
			Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Foga	585	Motor Driven Variety Oilstone Grinder.....	475	600	25

Note—Be sure to state what kind of electric current you have, giving the volts, phase and cycles.

No. 556 "Oliver" Universal-Automatic Straight Wheel Knife Grinder

30, 36 and 42-inch sizes

Advantages Never before has universal service and automatic action been so well combined in a knife grinder. By the use of the "Acme" patent Universal Knife Bar these grinders are now not only full automatic in all movements, but also entirely universal in their adaptation for grinding both thin high speed or thick laid-up knives in all industries. They are simple in adjustments and require practically no attention from the operator during the grinding process.

Frame Cored type, cast in one piece, with $24\frac{1}{2}'' \times 25\frac{1}{2}''$ base. Height to spindle, 36"; 52" high over all. Bed, slide and knife bar, exceptionally heavy and rigidly mounted, all slides scraped and ground to a bearing. Spindle of $1\frac{3}{4}''$ steel, in two $7\frac{1}{2}''$ bearings, hand scraped and wick oiling.

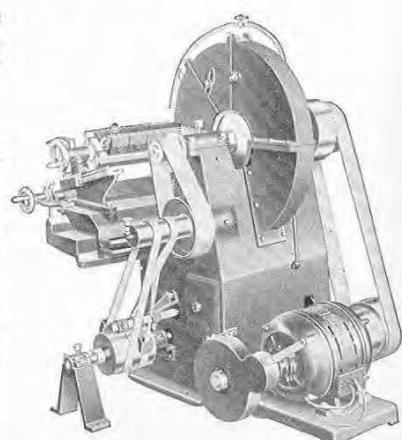
Feeds Feed works within the column, entirely protected from dust. Drive pinion of bronze, cut from the solid, running in oil. Reversing mechanism adjustable to suit length of knife.

Carriage Bed, slide and knife bar exceptionally heavy and well reinforced. Knife bar is the "Acme" patent universal type; on one side it has two T slots for holding thick laid-up knives and on one edge it is fitted with suitable finger clamps for holding thin high speed steel knives. Thus both thin and thick knives may be ground on the same knife bar by merely revolving it in position. This is a great convenience especially in shops where both thin and thick knives are used.

Water Attachments Regularly furnished unless ordered omitted. Consist of water tank, rotary pump, piping and hose, with stop cock to regulate the flow of water at the grinding contact.

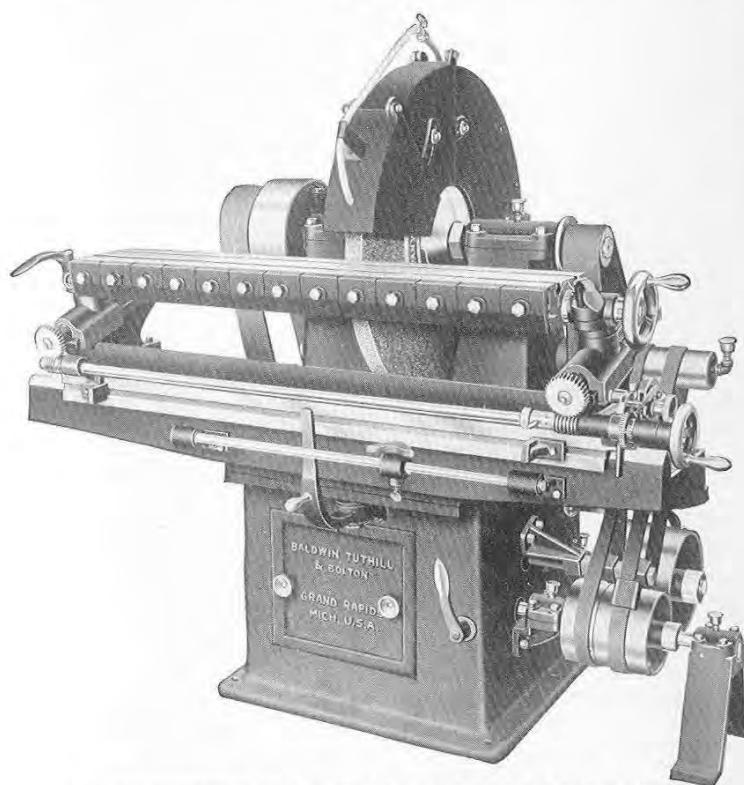
Countershaft The tight and loose pulleys are 10" diameter, $3\frac{1}{2}''$ face. Speed 700 R. P. M.

Motor Drive A very compact motor drive may be furnished as illustrated herewith. A 2 or 3 H. P. any speed 1600 to 1800 R. P. M. motor is recommended placed on motor plate attached to base of machine. At one end the motor is geared to drive shaft, at the other end it carries a two step cone pulley belted to grinding wheel arbor.



No. 556 Universal-Automatic Straight Wheel Knife Grinder

Continued



No. 556 UNIVERSAL-AUTOMATIC STRAIGHT WHEEL KNIFE GRINDER
"Most Modern Grinder Obtainable"

Equipment Each machine is fitted with a universal patented Knife Bar suitable for holding both thin high speed and thick laid-up knives, automatic traverse of knife bar adjustable to suit varying lengths of knives within the capacity of the machine, automatic cross-feed mechanism variable in rapidity as desired, automatic circulation of water, quick set and graduations to indicate angle of grind, one $26'' \times 1\frac{1}{2}''$ straight grinding wheel with safety guard and water attachment, set of bolts for knives, all internal belting, and self-contained tight and loose pulleys.

CODE, WEIGHT, ETC.			Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Code	No.	Capacity			
Fucim	556-A	30" Grinder.....	1825	2025	68
Fucol	556-B	36" Grinder.....	1925	2150	71
Fudab	556-C	42" Grinder.....	2000	2250	75

No. 334 "Oliver" Universal-Automatic Cup Wheel Knife Grinder

26-inch to 48-inch Sizes

Adaptation

This grinder is highly recommended for thin high speed steel or thick laid-up knives for use in planing, leather splitting, veneer making, beading, matching, paper cutting, tobacco cutting, excelsior making, etc. It will grind flat, bevel, concave or square edge.

Frame

This is made in the cored form, with broad floor support, 26" x 43", and carries all the working mechanism in a rigid manner. The knife carriage is heavy, with automatic feed.

Feed

The feed works are in the column, they give the carriage an even traverse and the reversing is done without jar. Stops are provided to regulate the travel. Shafts are of steel with long bearings, hand scraped and self-oiling.

Carriage

This is substantial and has hand wheel adjustment for setting knife bar to any desired angle before the wheel. Bed swings to an angle for either flat or concave grinding. The "Acme" patent Universal knife bar is regularly furnished. This knife bar has two T slots on one side for holding thick laid-up knives and on one edge it is fitted with finger clamps for holding thin high speed steel knives. Thus, by merely revolving the knife bar in position, both thin and thick knives may be ground.

Water Attachment

This is furnished regularly, but is left off whenever so required. The attachment is very complete, and takes care of the water so it does not escape. The device is good to use because it avoids the possibility of excessive heating and makes a smoother surface to the bevel of the knife.

Equipment

This consists of one cup emery wheel 12" x 4" x 1¼" rim, metal wheel guard, set of knife bolts, water attachment and tight and loose pulleys.

Advantages

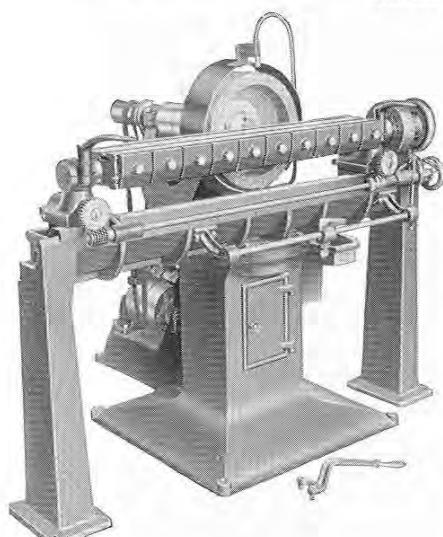
These Grinders, being full automatic in all movements, practically universal in their adaptation for all manner of knife grinding, simple in adjustments, requiring practically no attention from operator during grinding process, and being especially rapid where a heavy cut or fast grinding is important, are obviously a bargain in every respect.

Motor Drive

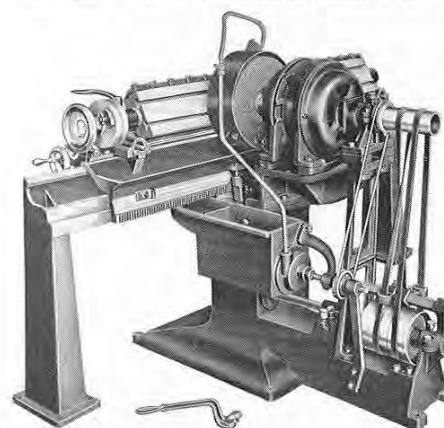
A constant speed motor 2 to 3 H. P., 1200 to 1500 R. P. M. motor, with armature shaft extended both ways, is mounted directly in place of the tight and loose pulleys and carries the cup wheel on one end and carriage driving pulleys on the other end.

No. 334 Universal-Automatic Cup Wheel Knife Grinder

Continued



Front view of Regular Belt Driven Machine, 32" size



Showing Motor Drive Arrangement—Belts and Pulleys
Guarded when so ordered

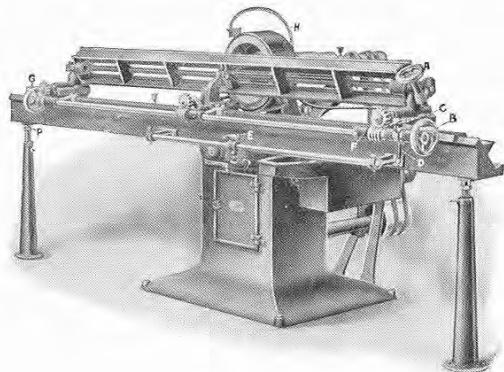
CODE, WEIGHT, ETC.						
Code	No.	Capacity	T. & L.	Speed	Weight in Crated Pounds Boxed	Cubic Feet
Fula	334-A	26"	4½" x 3¼"		1050	1200
Fulab	334-B	32"	4½" x 3¼"	1200	1150	1300
Fulef	334-C	38"	4½" x 3¼"	to	1210	1380
Fulog	334-D	44"	4½" x 3¼"	1500	1270	1460
Fulim	334-E	48"	4½" x 3¼"		1325	1525

Write us regarding your knife grinder requirements. We furnish grinders for every plant requirement as follows: Linoleum, Veneer, Paper, Pulp, Steel, Miscellaneous Metals, Fibre Board, Box Board, Wall Paper, Printing, Publishing, Lithographing, Felt, Cloth, Tanners, Wood Dishes, Stoves, Job Grinding, Machine Knife Works, Baskets, Barrels, Handles, Columns, Packages, Paper Boxes, Pianos, Machine Shops, Photographic Supplies, Vehicles and Bodies, Implements, Fire Arms, Iron Works, Egg Cases, Cash Registers, Sewing Machines, Boxes, Trunks, Woodenware, Ship Yards, Dry Docks, Crates, Showcases, Carbide, Furniture, Sawmills, Type Foundries, Bleacheries, Textiles, Tinfoils, Extracts, Gas and Oil Stoves, Cotton Seed, Boats, Caskets, Bending, Hubs, Government, State and Municipal Institutions, Turpentine, Knitting Mills, Brick Yards, Belts, Excelsior, Bobbins, Shuttles, Cars, Elevators, Derricks, Talking Machines, Tobacco, Stone Quarries, Flooring, Sash, Doors, Planing Mills, etc.

No. 444

"Oliver" Full Universal Cup Wheel Knife Grinder

Made in Twelve Sizes Ranging 26" to 156" Capacity



Adaptation Suitable for planer, hog, barker, chipper, paper, tobacco, huller, stone and veneer knives; die blocks, metal shear blades or similar heavy knives within rated capacity of the size selected. Designed for fast grinding. Will grind flat or concave bevel on any desired angle or square edge. A machine of remarkable efficiency.

Advantages These grinders, being full automatic in all movements, practically universal in their adaptation for all manner of knife grinding, simple in adjustments, requiring practically no attention from operator during the grinding process, and being especially rapid where a heavy cut or fast grinding is important, are obviously a bargain in every respect and well adapted for hard service on any knives within rated capacity of the size selected.

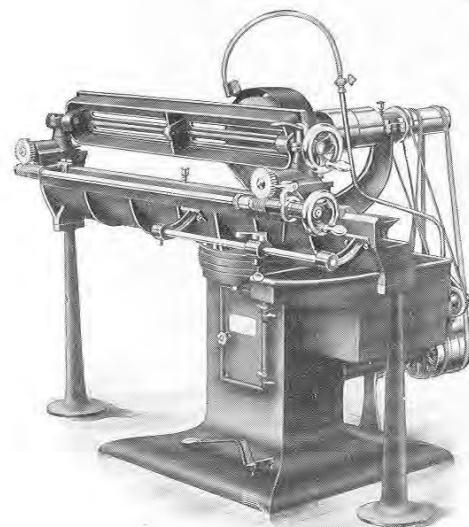
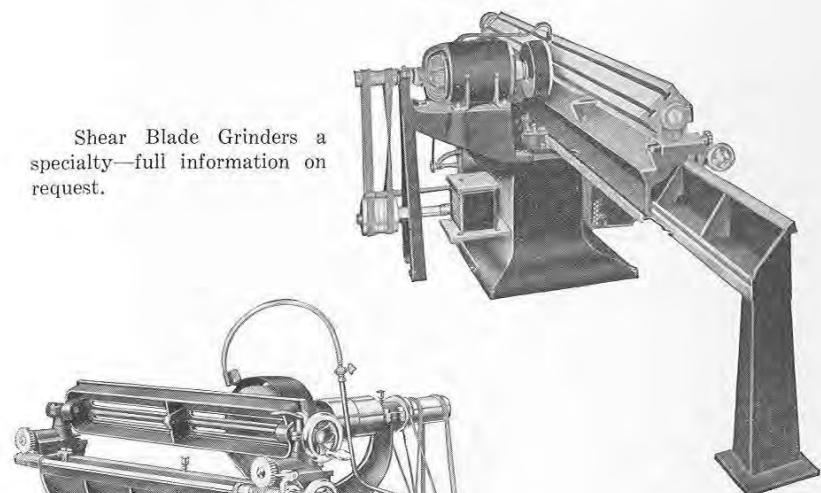
Frame Column and base are cored with ample floor support ranging from 26" x 26" to 34" x 48" corresponding to size selected. Height to spindle 33", 38½" or 44" according to size selected. Bed, slide and knife bar and the arbor bracket are rigidly mounted. Parts under stress are extra heavy and free from vibration. All slides hand scraped and ground to a bearing. Shafting of steel, with long bearings, hand scraped and self-oiling. Adjustable post supports are furnished on sizes 32" and longer.

Carriage Carriage adjustable at right angles to spindle for flat beveling, or to oblique angle for concave edge grinding, such change accomplished by slackening one bolt. Clutch on cross feed rod permits feeding one or both ends of knife bar toward wheel when lining knife with wheel.

No. 444 Full Universal Cup Wheel Knife Grinder

Continued

Shear Blade Grinders a specialty—full information on request.



130-inch Capacity Grinder, Motor Driven. Above system of motor drive applies to all sizes

32" Grinder—Belt Driven

Feed

The feed works are in the column, they give the carriage an even traverse and the reversing is done without jar. Reversing mechanism adjustable to suit the length of knife in process of grinding. Automatic crossfeed mechanism, variable in rapidity, as desired. Automatic circulation of water. Worm and gear device for adjustment of knife bar. Hand wheel and lock lever device with graduated scale for adjustment of knife bar. The Marshall Automatic Stop for the crossfeed, to predetermine and equalize the grind, furnished on order at extra cost.

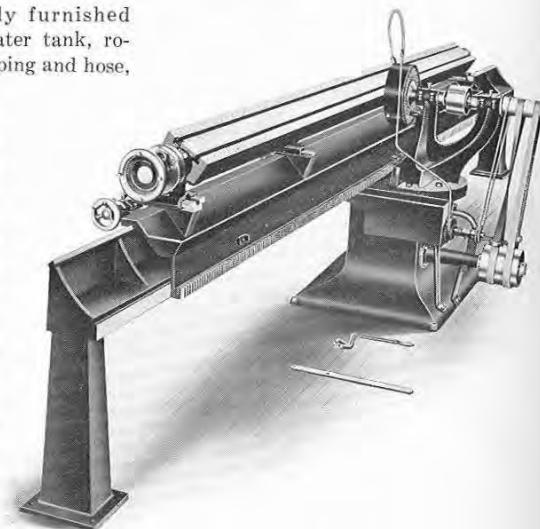
Motor Drive

We recommend 2 H. P. for 48" and smaller grinders, 3 to 5 H. P. for 60" to 108" sizes, 5 to 7½ H. P. for 130" and 156" sizes, 1800 R. P. M., without base or pulleys but with 7" extension of shaft opposite the pulley end and regular shaft at pulley end. Motor must be shipped to us for mounting.

No. 444 Full Universal Cup Wheel Knife Grinder

Continued

Water Attachment Regularly furnished consists of water tank, rotary pump, piping and hose, with stop cock to regulate the flow of water at the grinding contact. Water is caught on slide and returned to tank thru the bed casting. City water or overhead tank service may be employed. Use of water avoids dust and keeps the edge of knife cool during the grinding process.



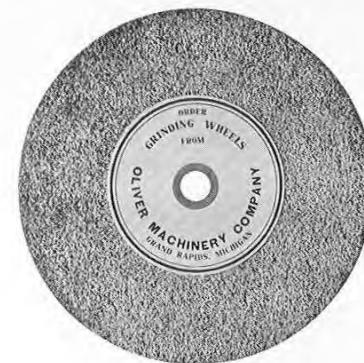
56-inch Capacity Grinder

Equipment Consists of one cup wheel (8" x 3½" for sizes 48" and less, 12" x 4" for sizes 60" and larger), all necessary internal belting, bolts for knives, guard for wheel, water attachments and self-contained tight and loose pulleys.

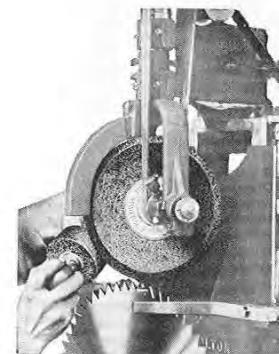
CODE, WEIGHT, ETC.

Code	No. & Capacity	T. & L.	R. P. M.	Weight in Crated	Pounds Boxed	Cubic Feet
Fupa	444-26"	4½"x3½"	1800	850	970	25
Fupab	444-32"	4½"x3½"	1800	925	1100	33
Fupec	444-38"	4½"x3½"	1800	1000	1150	40
Fufef	444-44"	4½"x3½"	1800	1050	1200	43
Fupeg	444-48"	4½"x3½"	1800	1100	1250	46
Furad	444-60"	5½"x4"		1660	1950	66
Furaf	444-66"	5½"x4"	1500	1795	2050	72
Furag	444-76"	5½"x4"	to	1865	2225	78
Fureb	444-90"	5½"x4"	1800	2050	2350	82
Furek	444-108"	5½"x4"	1500	2250	2550	88
Furib	444-130"	6"x4"	to	5650	6150	130
Furig	444-156"	6"x4"	1800	5850	6550	157

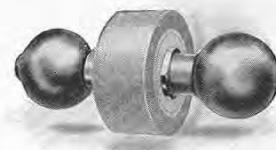
Note—For motor driven machines, add "mo" to above code words.

Alundum, Corundum and Emery Wheels

CODE, HABA

TYPE "A" METCALF HAND GRINDING WHEEL DRESSER

Type "A" Dressing "V" Edge for Cut-off Saw. (Automatic Circular Saw Sharpener)



CODE, METCALF

"The best Dresser for tool or filing room use you ever saw. It's a Wonder." Indispensable to the best results. Complete descriptive circular on request.

Recommended for turning square, round, bevel or V edges on wheels 1" thick or less.

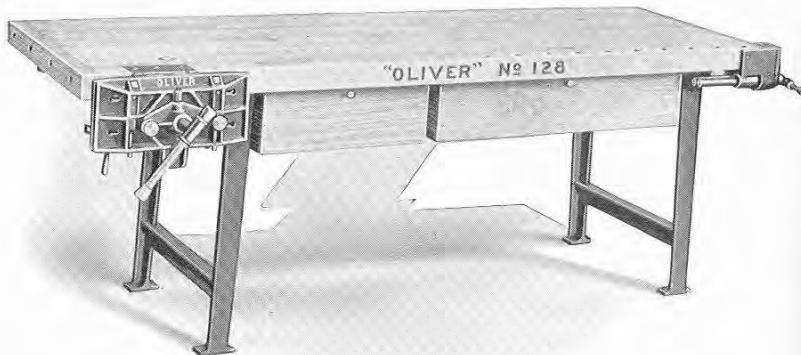
Invaluable for thin hard wheels ½" thick or less.

HUNTINGTON EMERY WHEEL DRESSER

CODE, HAGE. CODE FOR EXTRA CUTTERS, FRAY

For truing, shaping and removal of glaze from coarse grain wheels.

No. 128
"Oliver" Pattern Maker's Bench



Adaptation

This bench is well adapted for pattern shop service and was originally designed for use in the large shops where a number of benches of a durable and semi-attractive type and of uniform design were in demand. It has come into very general favor and we do not hesitate to claim it the best standard bench on the market.

Material

Like all our benches it is of the "Quality" type, made from Michigan hard maple that has been air seasoned for two years and then kiln-dried by special process. The legs are of cast iron.

Dimensions

The maple top is 8' long, 30" wide, 2 $\frac{5}{8}$ " thick, 36" high, built from strips double doweled, and glued together. It has ten square mortises at the front. The legs are cast iron. The drawers are two in number, 24" long, 20" and 36" wide and 6 $\frac{1}{2}$ " deep, all inside measurements, are carried on machine cast iron slides fitted with 2" brass lock and key. Top is oiled.

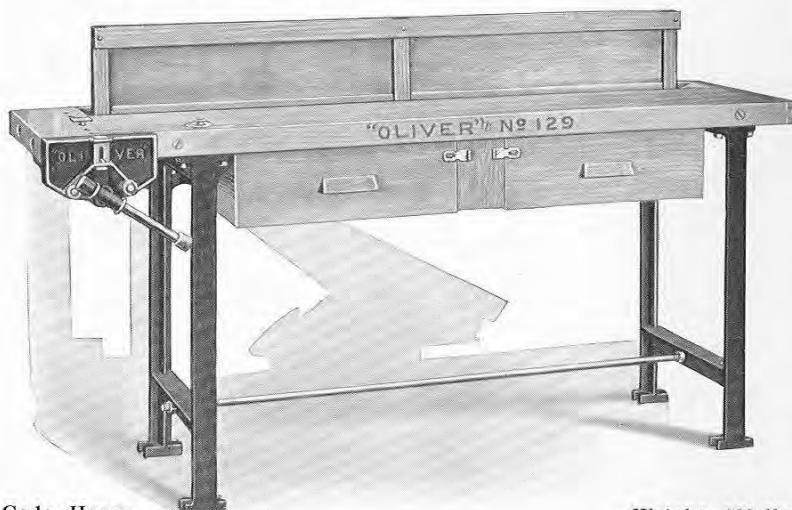
Vises

It is equipped with one No. 1 Universal Pattern Maker's front vise, one No. 221-A "Oliver" tail vise with 4" jaws, adjustable front jaw, to open 6".

CODE, WEIGHT, ETC.

Code Hearty	No.	Description	Size	Weight in Crated 700	Pounds Boxed 800	Cubic Feet 24
	128	Pattern Maker's Bench	30"x8'			

No. 129 "Oliver" Standard Work Bench



Code, Hearu

Weight, 600 lbs.

Standard Work Bench, has Michigan hard maple top, 78" long, 24" wide, 2 $\frac{5}{8}$ " thick, 36" high, glued up portion 16" wide, tool well 7" wide; mounted on two cast iron legs with tie rod and back board for rigid support; fitted with rail type tool rack, adjustable bench stop, swiveling bench dog and "Oliver" No. 151-D Quick Acting Front Vise having 10" jaws opening 12" with 1" steel dog in front jaw to clamp work across the top of bench; also fitted with two drawers 20" x 22" x 6 $\frac{1}{2}$ " having drawer pulls and safety type hinge hasps.

No. 106 "Oliver" Cabinet Maker's Bench



Code,
Hebad

Weight
250 lbs.

Cabinet Maker's Bench top is 78" long, 25" wide, 2 $\frac{5}{8}$ " thick, 34" high. Michigan maple bed is 14" wide; tool well is 10" wide. Legs 2 $\frac{3}{4}$ " x 3 $\frac{1}{4}$ '. Front vise is "OLIVER" No. 151—10" jaw, 12" opening quick acting all metal vise. Tail vise is 6" x 6" regular cabinet maker's wooden tail vise, opens 6".

No. 1250 Series "Oliver" Woodworking Benches of Quality

52 inches Long, 22 inches wide

Introduction

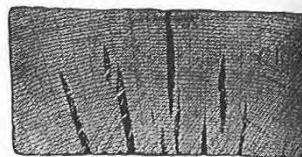
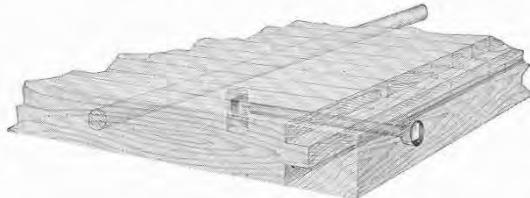
In bringing out our new line of benches we have met the demand for better constructed benches. We show only the very best types and our construction is first class.

Material

We use clear, tough and close grained Michigan Hard Maple, thoroughly air and kiln-dried. After kiln drying we store in a hot room until used.

Construction

The tops are built of narrow strips well glued and bound by our special spiral grooved dowel construction. The spiral grooved dowel holds like a wood screw. The bolsters on end of benches are both tenoned, glued and bolted in place. The tongue at this place is end grain. This is important, for the tongue might otherwise split its entire length. Full mortised and tenoned and bolted joints are used in frame.



The Other Way

Equipment

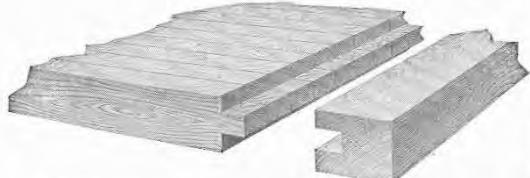
Regularly equipped as illustrated; each bench with one "Oliver" quick acting or solid nut vise, adjustable, metal planing stop, steel bench dog, tool rack. Solid cast brass drawer pulls and master keyed lock on all drawers.

Finish

Bench tops are finished with oil and varnish. Frames and drawers are varnished; drawers varnished inside.

Service

The benches shown in this catalog are stock benches. Prices on special benches will be quoted on receipt of specifications. Our factory is especially well equipped to do this work. It is our aim to make every bench an "Oliver" Salesman.



End grain in tongue where bolster is glued at end of bench and then bolted



The "Oliver" Way

General Description of No. 1250 Series Benches

All tops are 52" long, 22" wide, 2 $\frac{1}{4}$ " thick and 32" high. The built-up portion is 13" wide and tool well 8" wide. Tool rack is set flush with table. Legs and girts are 2 $\frac{3}{4}$ " x 1 $\frac{3}{4}$ ". All large drawers are 30" wide, 16" deep and 5" high. All small drawers are 14" wide, 16" deep and 5" high.

No. 1250 Series "Oliver" Benches

Continued



"OLIVER" No. 1255 BENCH



"OLIVER" No. 1251 BENCH



"OLIVER" No. 1257 BENCH

Code	Bench No.	Drawers	"Oliver Vise"	Weight
Hiar	1251	One large drawer, with either No. 151-D or 161-D	225 lbs.	
Hiar	1255	One large and 4 small either No. 151-D or 161-D	280 lbs.	
Hiar	1257	One large and 6 small either No. 151-D or 161-D	325 lbs.	

No. 1

"Oliver" Universal Patternmaker's-Woodworker's Vise

This vise was designed to overcome all objections on other makes of Universal Woodworker's Vises and has incorporated in it important features not found on any other vise now on the market, which makes it the most advanced, most adaptable, convenient and practical woodworker's vise ever produced. A trial on any awkward, special or irregular work and either large or small straight pieces which you find difficult to hold in any other Woodworker's Vise, will convince you of its superiority.

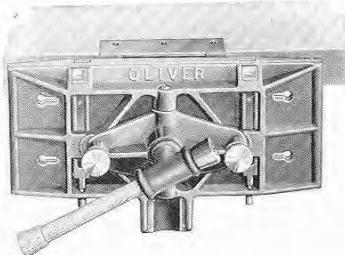


Fig. No. 1
Showing "Oliver" No. 1 Universal Vise
in its natural position. Note
rigidity of construction and
unique design

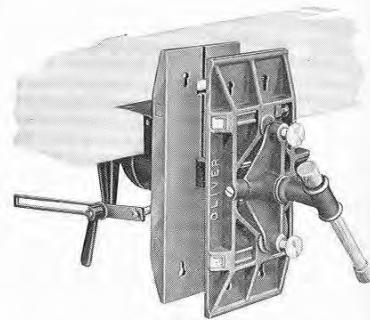


Fig. No. 3
Vise in upright position for work above
bench level



Fig. No. 4
Vise with jaws horizontal and tilting
jaw in place

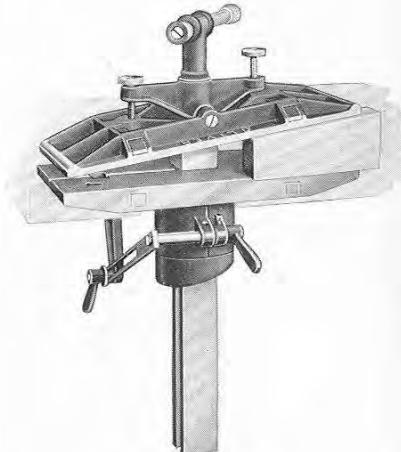


Fig. No. 5
Jaws horizontal, clamping angle piece

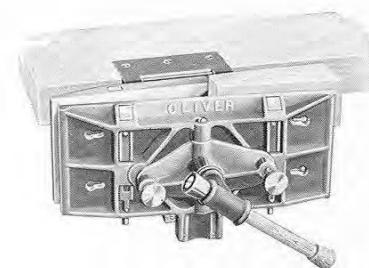


Fig. No. 6
Jaws vertical, clamping on angle

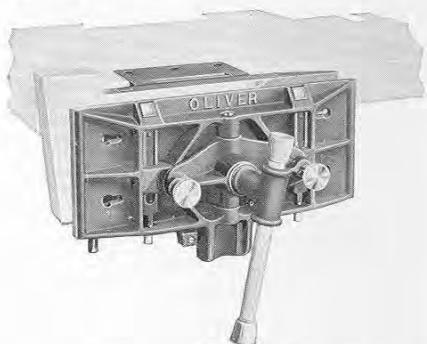


Fig. No. 7
Jaws set to clamp either parallel or wedge
shaped work

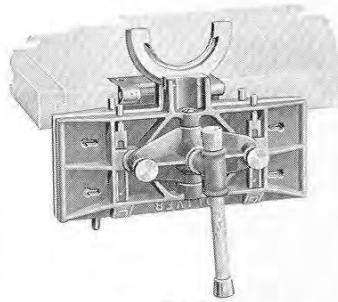


Fig. No. 8
Showing use of steel faced jaws

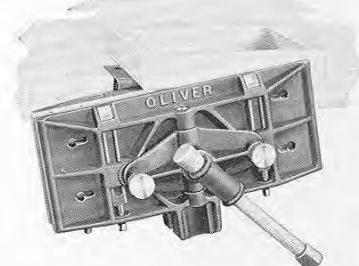


Fig. No. 9
To hold boxes or drawers above bench top

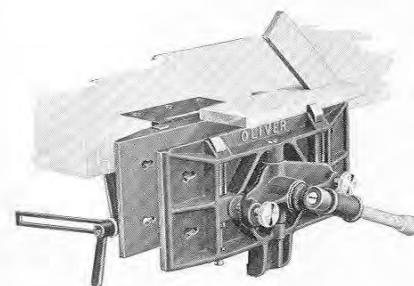


Fig. No. 10
Holding odd work between dogs

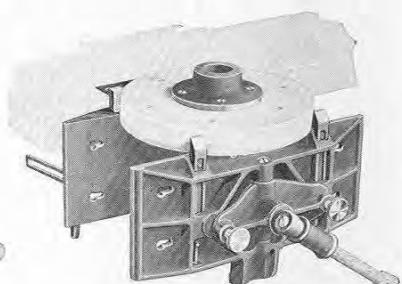


Fig. No. 11
Use of vise dogs to hold circles, ring or
segments

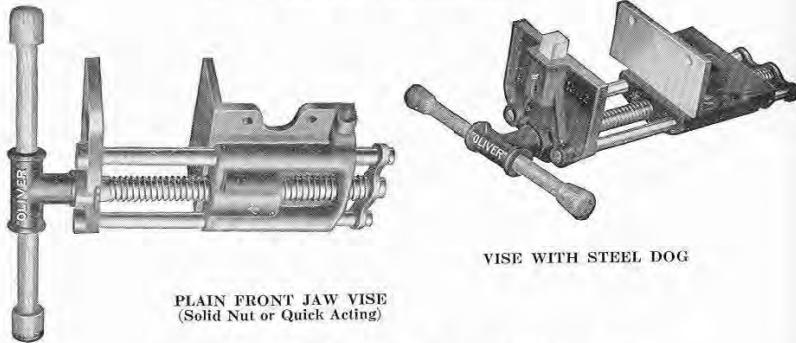
CODE, WEIGHT, ETC.						
Code Locab	No. 1	Description Universal Vise	Jaws 18"x7 1/4"	Open 16"	Boxed Weight 85 lbs.	Cubic Feet 2

No. 1 "Oliver" Universal Patternmaker's-Woodworker's Vise

Continued

"Oliver" Woodworker's Vises

SOLID NUT OR QUICK ACTING



Solid Nut or Quick Acting—Depth of Jaws, 4"

A double thread screw represents all the quick action necessary. It only differs from the quick action vise in having a solid nut in place of the half nut. The appearance, the workmanship and material all show "Oliver" quality.

These vises have passed the experimental stage. We now say that they are better made, are more serviceable and satisfactory than any other vise.

These vises are entirely new in design and are exceptionally strong. "Oliver" Vises Nos. 150 to 221 are furnished with Buttress Thread Screws. No other vise on the market has this important feature.

The Solid Nut Continuous Screw Vises in which a double thread screw represents all the quick action necessary, differs from the quick action vise only in having a solid nut in place of the half nut.

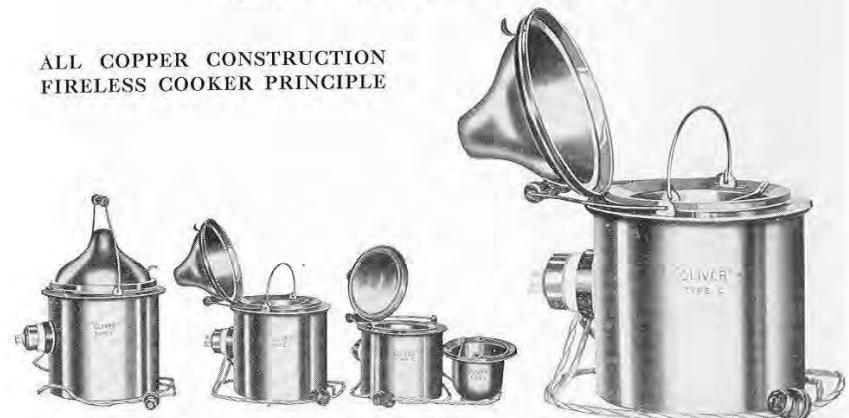
Quick action is easily secured by lifting up the screw free from contact with the nut. At any position the front jaw may be let go and the screw and nut again engaged for screwing any distance. The tighter the vise the closer the screw hugs the nut.

CODE, WEIGHT, ETC.

Code	No.	Kind	Jaw Width	Length Open	Shipping Weight
Luba	150-A	Quick Acting Vise, plain front jaw.....	7"	9"	55 lbs.
Lubab	150-D	Quick Acting Vise, 1" steel dog.....	7"	9"	55 lbs.
Lubef	151-D	Quick Acting Vise, 1" steel dog.....	10"	12"	65 lbs.
Lubo	160-A	Solid Nut Vise, plain front jaw.....	7"	9"	55 lbs.
Lubok	160-D	Solid Nut Vise, 1" steel dog.....	7"	9"	55 lbs.
Lubuf	161-D	Solid Nut Vise, 1" steel dog.....	10"	12"	65 lbs.
Lubum	221-A	Solid Nut Tail Vise, 1" steel dog.....	4"	6"	45 lbs.

Type C "Oliver" Electric Glue Heaters

ALL COPPER CONSTRUCTION
FIRELESS COOKER PRINCIPLE



First illustration shows complete heater ready for use. Second illustration shows cover open and handle of glue container up. Third illustration shows cover open and glue container removed to be cleaned or filled.

Operation

The Type C Electric Glue Heater gives three distinct degrees of heat—full, medium and low, controlled by 3-heat rotary snap switch which indicates the various temperatures. FULL HEAT is for melting only. MEDIUM HEAT holds the glue at the correct working temperature, allowing for slight radiation when the cover is open. LOW HEAT holds the glue at the correct working temperature with the cover closed.

Between outside and inner wall is an insulation—the fireless cooker principle. A separate glue container of seamless spun copper fits snugly within the inside jacket and overlaps at the top preventing leakage of heat. It is provided with a handle for carrying to the large glue cooker and re-filling without disconnecting or carrying the entire heater.

1. No water bath. No burnouts. No burnt glue.
2. Average operating cost, one cent per day (1 quart size).
3. Heavy spun copper construction—no seams or soldered joints.
4. Portable. Fits any lamp socket.
5. A Type C Glue Heater on each bench soon saves its cost in time, glue saved and more economical current consumption.
6. Deflector type cover prevents evaporation. No skin, scum or dirt on glue.
7. Freedom from hot steam pipes. No leaky valves.
8. Safety, cleanliness and economy in shops. No fire risk.
9. Three heats, Rapid melting. Uniform working temperature.
10. Consumes less current than any other electric glue heater.

Code	Capacity	High Heat Watts	Med. Heat Watts	Low Heat Watts	Shipping Weight
Maka	1 Pint.....	95	37	25	10 lbs.
Makac	1 Quart.....	168	40	30	13 lbs.
Makef	2 Quart.....	300	58	45	18 lbs.
Makek	1 Gallon.....	448	75	62	20 lbs.

Note—Information on 2, 5 and 10 gallon Glue Heater furnished on request.

"Oliver" Wood Spindle Hand Screws

These are as strong as the sturdy hickory from which they are made. Spindles are made of well seasoned second-growth hickory. Jaws are made from Michigan hard maple.

Code	No.	Diameter Screw Inches	Length Screw Inches	Length Jaw Inches	Size of Jaw Inches	Opens Inches	Net Weight Per dozen
Merino	804	1 $\frac{1}{8}$	22	18	2 $\frac{1}{4}$ x 2 $\frac{1}{2}$	12 $\frac{1}{4}$	95
Merlon	806	1	20	16	2 x 2 $\frac{1}{4}$	11	75
Mesa	808	$\frac{7}{8}$	18	14	1 $\frac{7}{8}$ x 2 $\frac{1}{8}$	10	48
Meta	810	$\frac{7}{8}$	16	12	1 $\frac{3}{4}$ x 1 $\frac{7}{8}$	8 $\frac{1}{2}$	30
Metad	810 $\frac{1}{2}$	$\frac{7}{8}$	12	10	1 $\frac{5}{8}$ x 1 $\frac{5}{8}$	5 $\frac{1}{2}$	18
Method	812	$\frac{3}{4}$	12	10	1 $\frac{1}{2}$ x 1 $\frac{5}{8}$	5 $\frac{1}{2}$	17
Metric	813	$\frac{5}{8}$	10	8	1 $\frac{3}{8}$ x 1 $\frac{3}{8}$	4 $\frac{1}{2}$	12
Mettle	814	$\frac{5}{8}$	8	7	1 $\frac{1}{8}$ x 1 $\frac{1}{8}$	3	8

Parts, either Screws or Jaws, list one-third price complete Hand Screw.

"Oliver" Steel Spindle Hand Screws

The jaws are of the best grade of Michigan hard maple properly seasoned and well machined. The spindles are made from cold rolled steel with right and left thread working in steel nuts. The handles are made from hard wood protected by a strong ferrule and secured by pins to the screws. Glue does not adhere to these spindles.

Code	No.	Diameter Screw Inches	Length Screw Inches	Length Jaw Inches	Size of Jaw Inches	Opens Inches	Net Weight Per Dozen
Micta	904	$\frac{3}{4}$	22	18	2 $\frac{1}{2}$ x 2 $\frac{1}{2}$	14	100
Micteb	906	$\frac{3}{4}$	20	16	2 $\frac{3}{8}$ x 2 $\frac{3}{8}$	12	85
Mictic	908	$\frac{5}{8}$	18	14	2 $\frac{1}{8}$ x 2 $\frac{1}{8}$	10	58
Mictof	910	$\frac{1}{2}$	16	12	1 $\frac{7}{8}$ x 1 $\frac{7}{8}$	8 $\frac{1}{2}$	48
Mictug	912	$\frac{3}{8}$	12	10	1 $\frac{5}{8}$ x 1 $\frac{5}{8}$	6	30

Peerless Screw Clamps

Jorgensen Patent

A single clamp will adjust to any of the positions shown by the cuts.

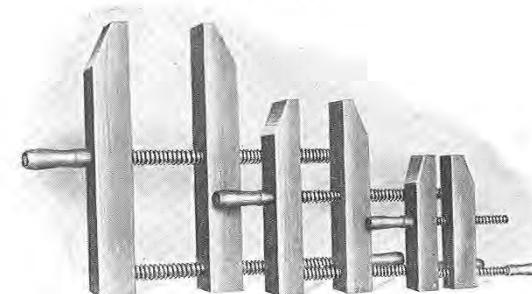
It is about twice as rapid acting as any other clamp, its screws being equipped with a right and left hand thread. Glue will not adhere to the screws and cause the threads to strip. The screws are made of fine steel, and the workmanship is right. The sockets for the spindles are also made of steel.

The jaws are made of fine quality of kiln-dried maple. One jaw can be made to overlap the other, forming a position very often desirable and obtained in no other clamp.

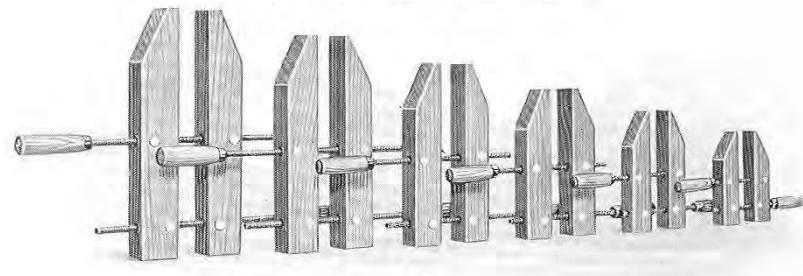
Code	No.	Length of Jaws	Opening Between Jaws	Net Weight Per Dozen
Middy	80	8"	4 $\frac{1}{2}"$	23
Mighty	81	10"	6"	30
Mignon	82	12"	8 $\frac{1}{2}"$	48
Mikado	83	14"	10"	58
Mildew	84	16"	12"	85
Militia	85	18"	14"	100

"Oliver" Hand Screws

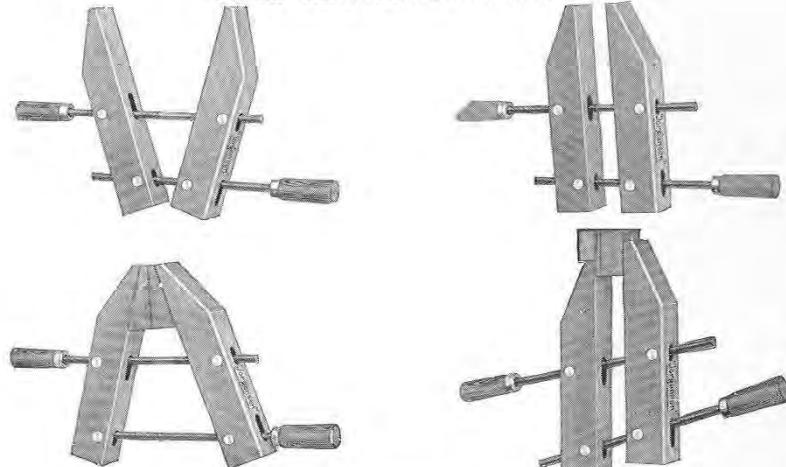
Continued



"OLIVER" WOOD SPINDLE HAND SCREWS



"OLIVER" STEEL SPINDLE HAND SCREWS



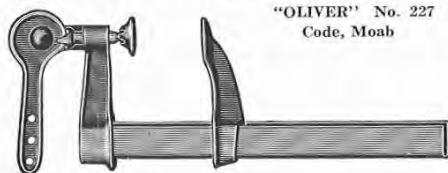
THE "PEERLESS" ADJUSTABLE SCREW CLAMPS
Jorgensen Patent

"Oliver" Handy Clamp

No. 227 Eccentric Lever Type

U Bar—All Steel

Made of the best open hearth steel plate pressed into U form while cold, which process stiffens the bar. Has a fixed head supporting an eccentric lever, and a movable jaw which has a strong fixed tongue pressing in the bottom of the U bar, making a broad, strong grip.



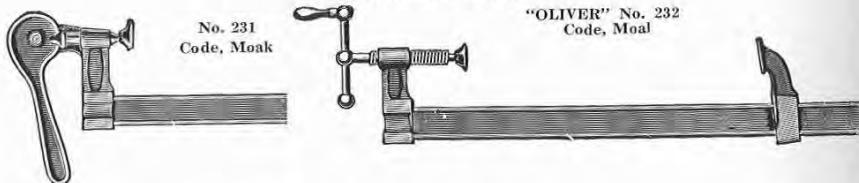
"OLIVER" No. 227
Code, Moab

Size Opens	Reach of Jaw	U Bar Size
6"	2 1/8"	1"
8"	2 3/4"	1 1/8"
10"	2 3/4"	1 1/8"
12"	2 3/4"	1 1/8"

"Oliver" Cabinet Clamp

No. 231 Eccentric Lever or No. 232 Screw Type

I Bar—All Steel



No. 231
Code, Moab

"OLIVER" No. 232
Code, Moab

This long steel bar is double flanged on each side, making it light and portable and greatly increasing its strength, and the flanges prevent it twisting. It has a fixed head supporting an eccentric lever with improved movable jaw, instant in action, perfect in work. Made with a crank or bar screw when desired.

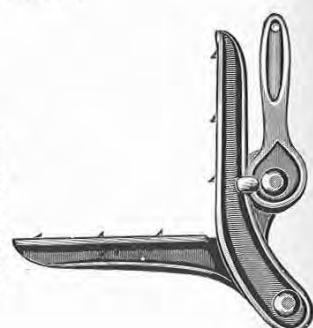
The I bar is 1 1/4" x 1/2"; reach from bar to center, 2".

Sizes, 18", 24", 30", 36", 48", 60", 72", 84", 96".

No. 226 "Oliver" Mitre Clamp

Code, Mobu

One motion of the cam sets the mitre and firmly clamps it in place, the pressure being made direct on the clamp jaw, giving it great power. Special attention has been given the design to make it light as well as strong. Positive in action, easy to apply, no springs to get out of order. Made of best refined malleable iron with tempered drill steel spurs.



No. 225

"Oliver" "C" Clamp

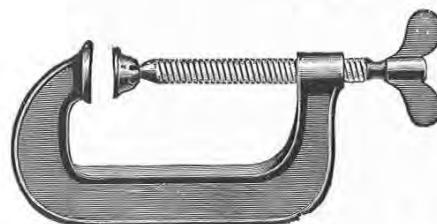
Code, Moba

This malleable iron screw "C" clamp is well proportioned, strong and durable.

Screws furnished with swivel button.

Finished in japan.

Sizes: 3", 4", 6", 8", 10", 12".



No. 222 "Oliver" Furniture Clamp



Design

The "Oliver" No. 222 Woodworker's Clamp is the result of careful study into the idiosyncrasies of various woodworking trades, more especially the furniture industries. The expert who originated and perfected this clamp is well known among Grand Rapids furniture workers as a mechanical genius. He worked painstakingly for two years in studying, designing, experimenting, testing and changing until the perfected and standardized clamp herewith was pronounced the most perfect, the most convenient and the most economical woodworker's clamp obtainable. A trial will convince you.

Details

The bar is 1 1/8" x 1 3/4", made of selected straight grain Michigan Hard Maple, air seasoned and kiln dried. The screw is of high carbon steel with uniform thread. The nut is of phosphor bronze, right length to assure wear. The clamping heads can be furnished either malleable iron or aluminum; in either case, they are faced with replaceable maple blocks. No better material can be used.

Features

The bar is light—easy to handle. Both head and tail blocks are easily removed from any bar and located on any other length bar. Clamping faces are rectangular making it possible to clamp close to the bar or at any point within two inches. Clamping pressure is applied close to the bar. Large ferruled handle provides a good grip. Bronze nut is long and easily replaceable. Tail block has safety pin to prevent bending the head too far back and breaking the spring. Tail block spring is flat and easy sliding. Either "swinging face" or "swivel button" (sold as extras) can be easily and quickly mounted on either the tail or the head block, or both, to suit special work. All parts are interchangeable.

Capacity

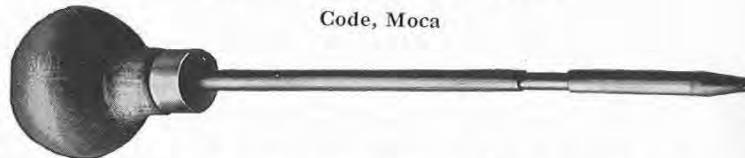
Size of clamping face, 1" x 1 1/8"; length between jaws, 6" shorter than length of bar.

Code.....	Mobp	Mobq	Mobr	Mobs	Mobt	Mobu	Moby	Mobw	Moby
Length of bar	2' 6"	3'	4'	5'	6'	7'	8'	9'	10'



No. 280
Patent Brad Driving Tool

Code, Moca



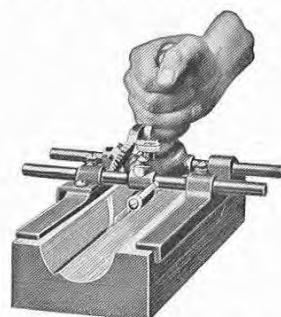
Advantages

It places brads into difficult places under any unfavorable conditions. It avoids handling brads with sticky or cold fingers, and for this reason it can be used in ordinary bradding. Brads may be driven into deep corners impossible to reach by ordinary methods.

Its Operation

The brad is magnetically picked up, inserted into and securely held in the end of the tool until with light pressure it is driven home and if desired, is countersunk. As the brads are fully supported they may be driven in without bending. Do not have to use a nail set with this tool.

No. 283 Core Box Plane



Weight, 4 3/4 lbs. Code, Mocab

Capacity

It will work out a core box from $\frac{3}{4}$ " to 6" in diameter and any length. Five cutters are furnished with it. Circles are accurate.

Adjustments

The screw in central casting at the rear determines movement of handle and thus regulates the rapidity of cutter revolution by giving pawl one or more notches of ratchet wheel. Screw in head locates steel cutter to size of core box desired and permits removal of one cutter and replacement of another. Two Screws, one on each side, in the guide locates guides at proper distance apart for the core box to be made.

How to Use

After selecting a suitably sized block, straightening top and one edge, and squaring ends, roughly mark out part to be removed with compass and scratch awl. Use gouge and mallet or a circular sawing machine to rough out the center before adjusting the plane to the work, then proceed as with an ordinary plane. The spring attached to one side may be removed when desired to cut groove in an excessively wide block.

Economic Seamless Can

For Shellac, Paint,
Varnish, Etc.

Code, Mocap

SAVES BRUSHES
PREVENTS EVAPORATION
SAVES COST



This can was formerly made of steel, but we now offer same made of aluminum which is absolutely rust-proof and prevents the contents from sticking to the can or from discoloring.

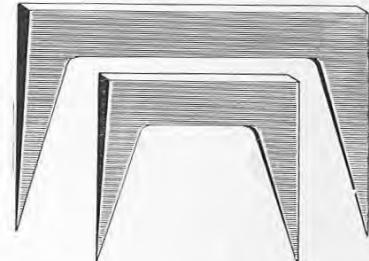
It commends itself at once to pattern and cabinet makers and all who use fine paints, varnish, shellac, etc.

Size, 9 1/2" high, 6" diameter.

"Oliver" Pinch Dogs

Code, Modam

These Pinch Dogs are forged from bar steel, have square corners over legs, making easy driving. They are indispensable to pattern or cabinet makers, wonderfully perfect in every detail, easily drawn from wood, leaving very small holes to be filled.



Length in inches.....	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	2"	3"	4"	5"	6"
Size of steel, square.....	$\frac{3}{16}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{3}{8}$ "	$\frac{7}{16}$ "	$\frac{1}{2}$ "

Corrugated Steel Fasteners

Code, Model



Packed in cartons of 1,000, 500 and 250.

In ordering, give depth and number of corrugations, and whether straight or divergent. Makes a perfect and secure joint, is simple, effective and easily applied.

No. of corrugations.....	3	4	5	7
Depth in inches.....	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "



Plain Edge 3

"Oliver" Wood Dowel Rods

Code, Model

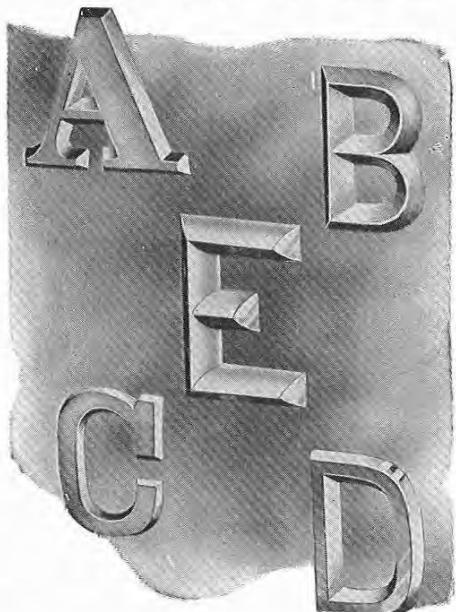


These are high grade dowel rods in every respect. They are made from white birch or other suitable hard wood—good sound stock throughout. Can be furnished with two grooves only, with pressed spiral only or with two grooves and also pressed spiral.

Diameter, inches.....	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length of each Rod.....	36"	36"	36"	36"	36"	36"	36"	36"	36"

"Oliver" Pattern Letters and Figures

Code, Motiv—White Metal. Code—Mottle, Brass.

A
Roman FlatB
Sharp Face GothicC
Flat Face Gothic, ThinD
Flat Face Gothic, ThickE
Round Face GothicHow to Measure Pattern Letter
Correctly

All our letters are measured at the center of the face with the exception of the Roman, which is measured from the outside of the face.

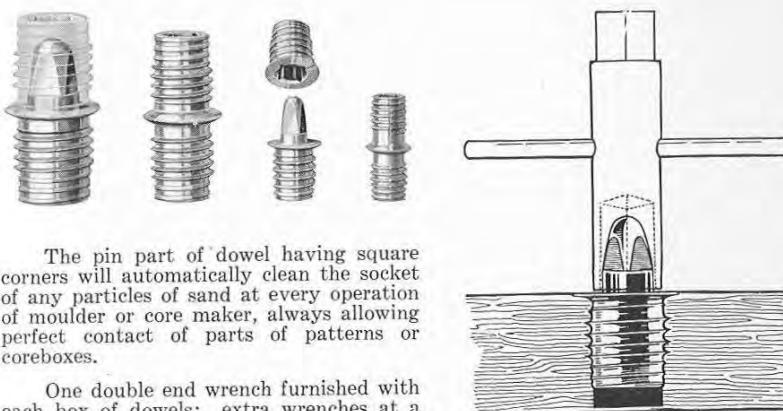
These are made of white metal and also of brass. State which is wanted. Above half-tone shows the most popular styles. State what style is wanted. When so ordered we drill them with two or more holes at extra price. Spurs and tacks cast in the back at extra price. State if desired.

Letters and figures are made in the following sizes: $\frac{1}{8}"$, $\frac{3}{16}"$, $\frac{1}{4}"$, $\frac{5}{16}"$, $\frac{3}{8}"$, $\frac{7}{16}"$, $\frac{1}{2}"$, $\frac{9}{16}"$, $\frac{5}{8}"$, $\frac{3}{4}"$, $1"$, $1\frac{1}{4}"$, $1\frac{1}{2}"$, $1\frac{3}{4}"$, $2"$, $2\frac{1}{2}"$, $3"$, $4"$.

No. 306**Improved Master Brass Dowels**

Patent Applied For

These are the most efficient pattern dowels obtainable. Both the pin and the socket have a grooved pilot, deep thin threads and a flange. The pin end has four flat sides and the inside of the socket has four deep grooves so that by using a double end socket and pin wrench each part of this wonderful dowel is screwed into place tight against its flange and removed at any time by unscrewing or tightening should it loosen by continued use in the foundry. Requires but a moment to unscrew in or out.



The pin part of dowel having square corners will automatically clean the socket of any particles of sand at every operation of moulder or core maker, always allowing perfect contact of parts of patterns or coreboxes.

One double end wrench furnished with each box of dowels; extra wrenches at a very low price.

Code	No.	Diameter of Flange	Diameter of Pin	Bit Size	Quantity in Box	Weight o Box Lbs
Mosac	306-A	$\frac{5}{16}"$	$\frac{3}{16}"$	$\frac{1}{8}"$	100	$1\frac{1}{2}$
Mosad	306-B	$\frac{3}{8}"$	$\frac{5}{32}"$	$\frac{1}{4}"$	100	2
Mosaf	306-C	$\frac{7}{16}"$	$\frac{7}{32}"$	$\frac{5}{16}"$	100	$2\frac{1}{2}$
Mosak	306-D	$\frac{5}{8}"$	$\frac{5}{16}"$	$\frac{3}{16}"$	50	$3\frac{1}{2}$
Mosam	306-E	$\frac{3}{4}"$	$\frac{7}{16}"$	$\frac{9}{16}"$	50	$5\frac{1}{2}$

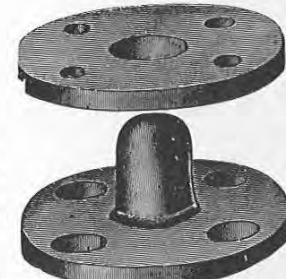
No. 305**"Oliver" Malleable Iron Dowels**

Code, Moti

Pins and Holes Finished to Fit

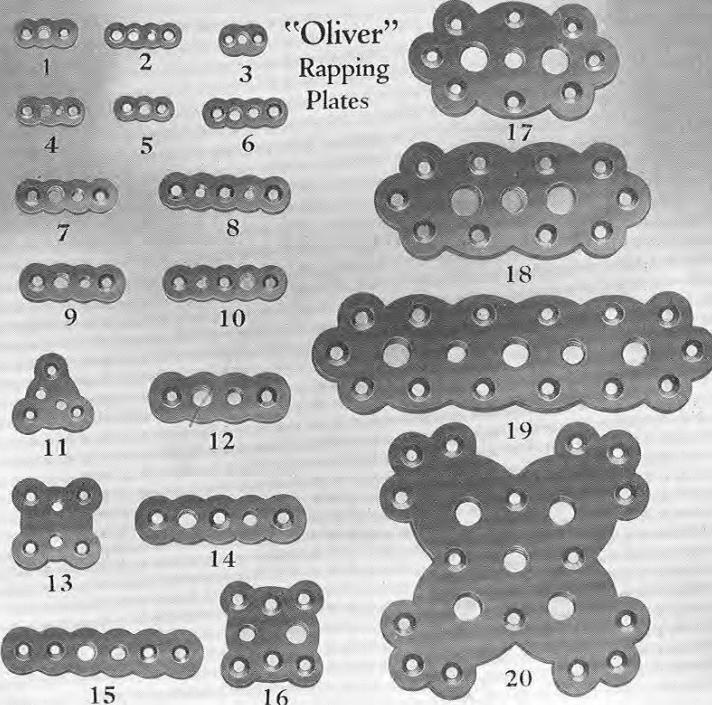
No.....	305-A	305-B	305-C	305-D
Diam. of pin.....	$\frac{1}{4}"$	$\frac{5}{16}"$	$\frac{3}{8}"$	$\frac{1}{2}"$
No.....	305-E	305-F	305-G	305-H
Diam. of pin.....	$\frac{5}{8}"$	$\frac{3}{4}"$	$\frac{7}{8}"$	$1"$

We carry a large assortment of the above and can ship promptly from stock.



Malleable Iron Rapping Plates

Code, Motid

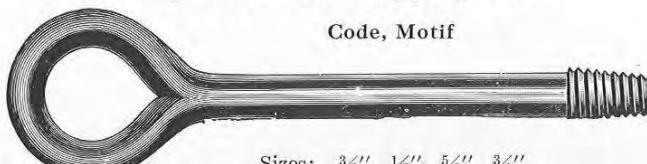


These Rapping Plates are quickly inserted, all cutting being done with bits. All runners and rough edges are carefully ground off. Guaranteed to be good, serviceable plates. We have full size diagrams showing exact size of each. Write for one.

Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
Tapped $\frac{3}{8}$, $\frac{3}{8}$, $\frac{3}{8}$, $\frac{3}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{5}{8}$, $\frac{5}{8}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{3}{4}$

Lifting Screws for Rapping Plates

Code, Motif



Sizes: $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ".

Perfect Leather Fillet



"Oliver" Leather Fillet is recognized as the BEST. It may be freely and rapidly applied on either single or compound curves or straight work by simply applying the glue and pressing to position. All tacking and clamping dispensed with. Not affected by heat, cold or moisture. Is light, neat and durable. Materially strengthens the pattern. Feather edges blend perfectly with the face of the pattern. Geometrically correct in its curved sides. Economical for constructing wood patterns for castings. It is guaranteed.

Code, Moun. Order by number or width.

Number.....	1	2	3	4	5	6	8	10	12	14	16
Radius in inches.....	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Width in inches.....	$\frac{3}{32}$	$\frac{3}{16}$	$\frac{5}{32}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{9}{32}$	$\frac{3}{4}$	$\frac{31}{32}$	$1\frac{5}{32}$	$1\frac{3}{8}$	$1\frac{9}{16}$

"Oliver" Fillet Sticker

Code, Motig



This is a wonderful tool—a new invention for easily applying any kind of fillet to wood patterns and being sure that the fillet sticks. These Fillet Stickers are correct to size, made of metal, highly polished and warranted to give satisfaction.

Style.....	A	B	C	D
For Sizes.....	$\frac{1}{16}$ " and $\frac{1}{8}$ "	$\frac{3}{16}$ " and $\frac{1}{4}$ "	$\frac{5}{16}$ " and $\frac{3}{8}$ "	$\frac{1}{2}$ " and $\frac{5}{8}$ "

Garnet Sand Paper

Code, Moxa

We furnish this in reams 9" x 11" or in rolls 24", 30", 36", 40", 42" and 48" wide. It is the best paper on the market. It is made in the following grades to suit all classes of work: Nos. 0000, 000, 00, 0, $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$ and 4.

"Perfecto" Pattern Glue

We have, after many years of study and experiment, at last discovered a scientifically perfect pattern glue. Can be furnished in crystalline golden flakes or evenly ground powder form. When ordering, state which is desired. Remember this is not ordinary glue—it is extra superfine "Perfecto" Pattern Glue. One order will convince you.

"Oliver" Oilstones

Prepared specially for Trimmer, Planer, Moulding, Paper and other knives.



Code	Style	Size
Moxad	B	3" x 1" x 1/2"
Moxah	C	4" x 1 3/8" x 1/2"
Moxak	D	6" x 1 5/8" x 3/4"
Moxam	E	8" x 2" x 1"

Code	Style	Size
Moxap	G	10" x 3" x 1"
Moxaf	L	4" x 1 1/2" x 7/8"
Moxar	N	4" x 1 7/8" x 5/8"
Moxat	O	4" x 2 1/4" x 3/4"

The "Oliver" Oilstones in Patent Boxes

Three Sizes—Stones D, E and G



Quality

These oilstones are made of the best grade of Turkish Emery one-half the thickness being medium coarse for fast cutting and the other fine for finishing a smooth, keen edge.

Patent Boxes

These are well constructed of selected cherry wood, and nicely finished in oil. Little spurs set in each corner of the box bottom prevent its slipping on the bench while in use. A reservoir of sheet steel, tin plated, is fitted snugly inside the outer case. The stone fits inside the reservoir with enough play to turn it over easily. It is held above the bottom of the reservoir by a piece of wood one-quarter of an inch thick.

The space in the center of this piece is filled with waste.

Capillary Attraction

By capillary attraction the oil, which should fill the bottom of the reservoir to the depth of the wood, is fed through the waste to the top of the stone, leaving it moist and ready for use. The stone being saturated with oil, either face will be oiled as soon as turned. It is unnecessary to put oil on the top of the stone.

Directions for use

Use kerosene or a very thin clear oil. Fill reservoir with oil until stone is saturated. Always keep a little oil in the reservoir.

CODE, SIZES, ETC.

Code	Designation	Dimensions
Muba	Style D	6" x 1 5/8" x 3/4"
Mubab	Style E	8" x 2" x 1"
Mubac	Style G	10" x 3" x 1"

No. 180

"Oliver" Factory Truck Metal Parts

Be your own Truck Maker, save freight, furnish your own lumber, do your own assembling. Produce your trucks at lowest possible cost.

FACTORY TRUCKS

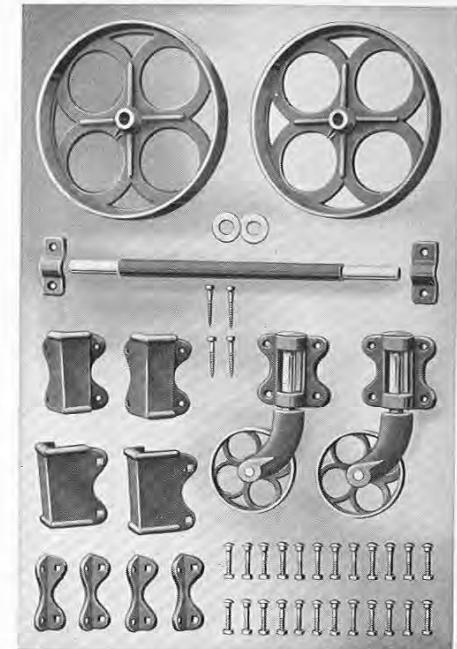
Permit you to keep your product on wheels. Keeping your product on wheels from the time you receive it, as it goes to and from machines, in storeroom and out means big savings.

METAL PARTS

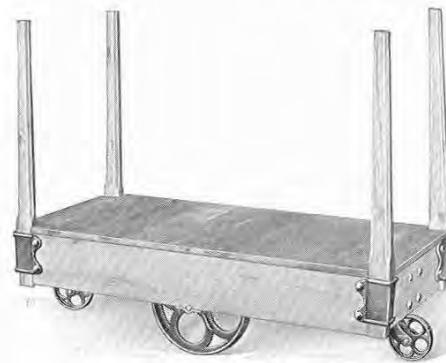
For factory trucks are here offered at foundry prices. You save on both purchase price and freight.

BLUE PRINT

Of wood parts to make the truck illustrated below is furnished (when requested) with every order. You can easily vary these plans to meet your particular requirement, the same metal parts serving. For example, the axle and two big wheels may be placed at one end and the two swiveling castor wheels at the other end. Various sizes of platforms and superstructures may be built to suit.



Complete Set of "Oliver" No. 180 Factory Truck Metal Parts Completely Machined ready for assembling



No. 180 Factory Truck Assembled

LIST OF PARTS

No. 180 "Oliver" Factory Truck Metal Parts, consist of one axle, two 14-inch big wheels, two 1-inch washers, two axle caps, four lag screws, two 8-inch castor wheels, two castor shafts, two castor forks, two 3/4-inch washers, two fork brackets, two right hand stake pockets, two left hand stake pockets, four corner irons, twenty-four carriage bolts.

Code	Description	Wgt.
Mutra	Metal Parts	75
Muva	Wood Parts	65
Muveb	Complete Truck	140

No. 130 “Oliver” Down Draft Forges

Single or Double

Introduction This forge is the result of a thorough investigation of the needs in educational institutions for this class of machinery. In it we have incorporated those features that have been clearly indicated as essentials for a perfect working, convenient and cleanly device.

Installation These forges may be set absolutely in line whether the underground tiling or exhaust ducts are so located or not. This means that it will make no difference whether the exhaust or blast connections come in the center of the pedestal or at either side so long as they come within the base dimensions. Contractors are sometimes careless or indifferent as to the exactness of following the drawings for laying the blast and exhaust ducts, and the construction of our forge forestalls any inconvenience in making connections.

Forge Pan Forge Pan is heavy cast iron, 32" square, 29" from floor. Fitted with cast iron combined water tank and coal box. Supported by one iron leg and a pedestal.

Pedestal Pedestal is massive cast iron in the cored form. Placed over underground openings. Encases all exhaust and blower connections. Door on inner side of pedestal provides easy access for regulating volume, damper, connecting blast pipe, or cleaning out any clinkers which may drop down through exhaust hood.

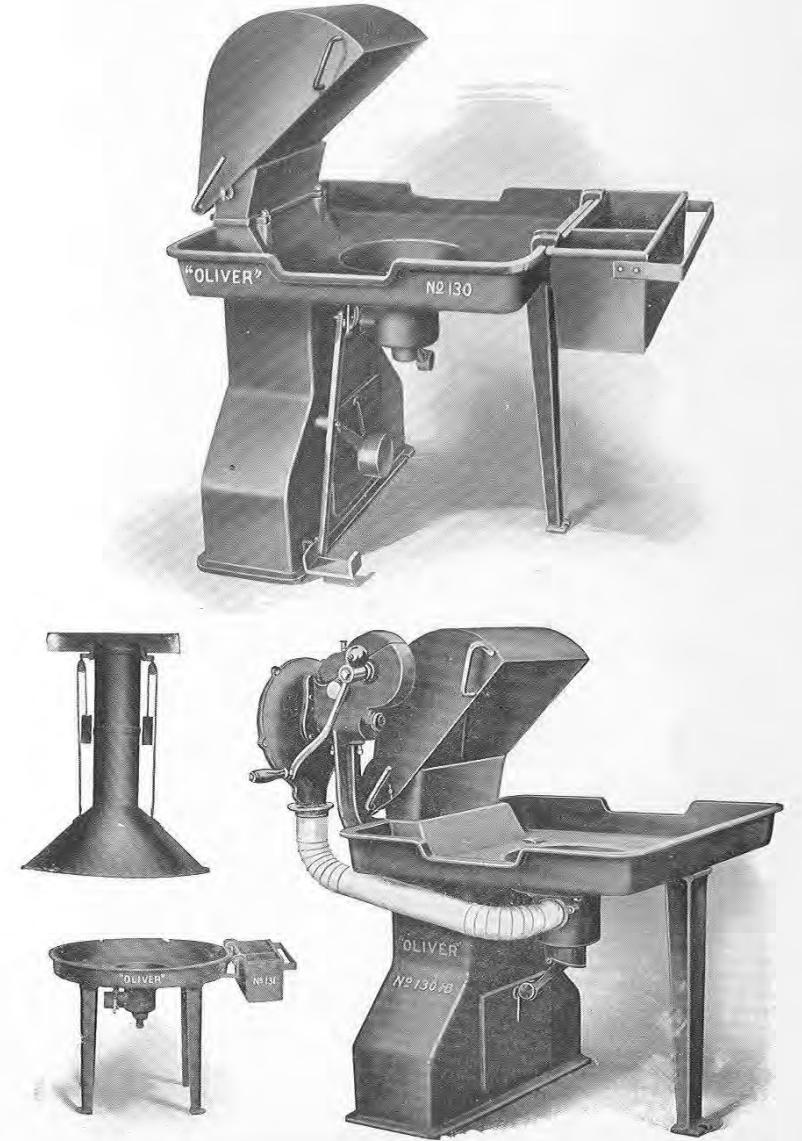
Down Draft Hood Down Draft Hood is cast iron, made heavy to withstand heat and prevent warping. It consists of one adjustable hood held by substantial locking device.

Exhaust Exhaust is drawn through down draft hood into the hollow pedestal thence through a conically shape $\frac{1}{4}$ " mesh wire screen into a 7" galvanized exhaust pipe which has volume damper and leads to exhaust duct.

Clinker Guard This latter consists of a conical shaped screen made of heavy wire $\frac{1}{4}$ " mesh, covering the 7" exhaust pipe, which prevents cinders and clinkers getting into the exhaust ducts. This is of special value because it avoids the necessity of a large clean-out pit. Instead of raking or washing them out of the underground ducts, we simply open a door in the pedestal and rake them out.

No. 130 “Oliver” Down Draft Forges

Single or Double
Continued

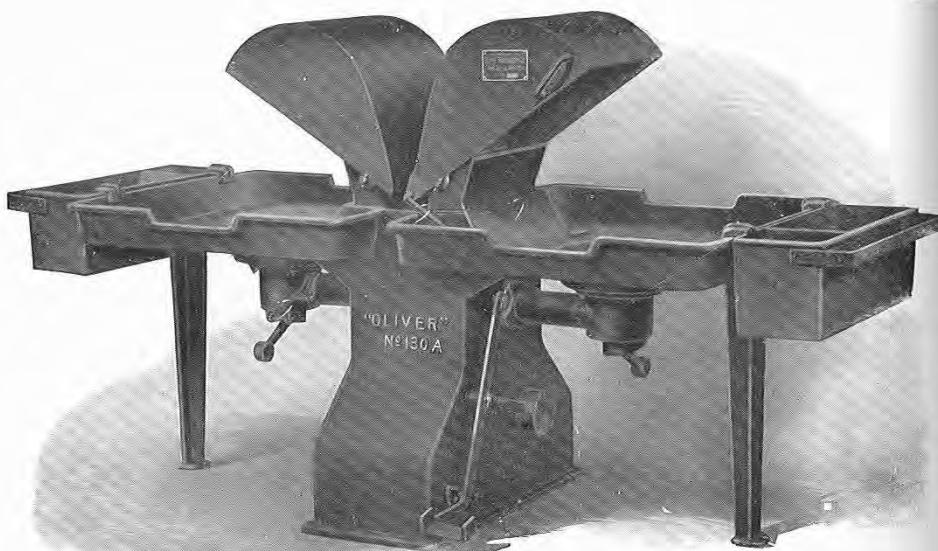


No. 131 INSTRUCTOR FORGE

No. 130 Forge equipped with a ball bearing hand blower

No. 130 "Oliver" Down Draft Forges**Single or Double**

Continued

**"OLIVER" No. 130 DOUBLE DOWN DRAFT FORGE Weighs 1100 Pounds**

Oliver Forges are quality forges, scientifically proportioned and thoroughly reliable. They are all cast iron to insure durability. Coal gas rusts sheet steel very rapidly, rust eats steel more rapidly than iron. Fix in mind that a single forge of the "Oliver" make weighs 700 pounds, and a double forge 1100 pound. A steel one could be made that would weigh less than half as much and look fairly well, but soon rusts out.

INSTRUCTORS UP DRAFT FORGE**See Picture on Preceding Page**

Fertio Code Ferti. No. 131 with sheet metal hood adjustable up and down, 36" diameter cast iron fire pan, 9" exhaust, 3" blow pipe connection, cast iron legs, cast iron tuyere with large air chamber, arranged with self-closing clinker device, weighs 500 pounds.

Fertion Code Fertin. No. 131, same as above except equipped with 12" ball bearing hand blower mounted on forge, weighs 550 pounds.

No. 130 "Oliver" Down Draft Forges**Single or Double**

Continued

Blast Pipe

Blast Pipe is galvanized iron 3" diameter. Is enceased by the pedestal. Connects with tuyere through a simple valve, with which the blast is easily regulated. Has foot treadle blast control; self-closing.

Blast Connections

These come up through the floor opposite the exhaust connection and on the inside of the smoke chamber, thus being protected from damage and out of the way. A door in the smoke chamber permits of easy access when necessary to get at the volume damper and blast pipe.

Tuyere

This is the simplest and best made. There are no hinged joints on the interior and the dumping device is self-closing. It has a large air chamber and suitable opening to permit a uniform volume of air for blowing the fire. The tuyere cover is of cast iron, easily removable when necessary.

Foot Treadle Blast Control

By means of this treadle connection the control of the blast is regulated by the operator's foot, and blast is shut off when the operator leaves the forge for an indefinite period. The destruction of the work by burning the metal is thus avoided.

Hand Power

This style of forge is exactly the same as our No. 130 Single Down Draft Forge, except that it is equipped with a ball bearing hand blower mounted on cast iron bracket attached to forge column. Blast gate and foot treadle control are not furnished on this type forge.

Equipment

Equipment consists of forge complete with everything complete above the floor line.

Floor Space

Floor space of No. 130 Single is 30" x 30½" and No. 130 Double is 30" x 85" on floor, 32" x 41½" maximum for the single.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Pounds Crated	Weight in Pounds Boxed	Cubic Feet
Ferti	130	Single Down Draft Forge.....	700	850	20
Fertile	130	Double Down Draft Forge.....	1170	1370	62
Fertio	131	Instructor's Up Draft Forge.....	500	700	40
Fertin		12" Ball Bearing Hand Blowers.....	50	50	3

"Oliver" 30-inch and 26-inch Extra Heavy Duty Engine Lathes

All Geared Head—Single Pulley Drive
Either Motor or Belt Driven

The "Oliver" 30" and 26" Extra Heavy Duty Engine Lathes are the result of a demand for lathes powerful enough to completely utilize the capabilities of the most enduring steel tools under modern, most severe, high speed, extra heavy duty requirements.

In beauty of outline, strength of materials, practicability of design, distribution of weight where needed, accuracy of workmanship and thoroughness of mechanical finish the "Oliver" 30" and 26" Extra Heavy Duty Engine Lathes cannot be excelled.

Notwithstanding the exceptional capacity, extraordinary power, weight and rigidity of these lathes, the control by the operator is simple and easy, requiring for lathes of this capacity comparatively little effort because of the proper distribution of weight and proportion of mechanisms. You will agree with us upon the careful perusal of the following specifications, or, better still, upon examining the lathes themselves.

All parts are manufactured to gauges and jigs and fixtures, thereby assuring the most perfect interchangeability.

SPECIFICATIONS

NOTE—These specifications are subject to change as improvements direct.

Capacity	Swing over bed, 32" for the 30" size; 28½" for the 26" size. Swing over carriage, 20" for the 30" size; 18" for the 26" size. Distance between centers, for both sizes, 72". Spindle speeds 12, ranging from 8 to 300 R. P. M. Threads, 33 in number; range per inch, 1 to 16. Feeds, range per revolution, .021" to .332".
Head Stock	Base length, 52"; spindle length, total 63". Spindle Front Bearing, 6½" x 10"; rear, 4½" x 7"; nose, 8". Hole through spindle, 3½"; spindle threads, per inch, 4.
Carriage	Length of saddle on shears, 40"; width of bridge, 12". Compound rest angular travel, 9"; cross slide travel, 12".
Tail Stock	Base Length, 24"; spindle diameter, 4"; movement, 12".
Lead Screw	Diameter, 2¼"; threads per inch, 2.
Bed	Regular length, 13' 6"; height, 19"; width across shears, 24¾".

CODE, WEIGHT, ETC.

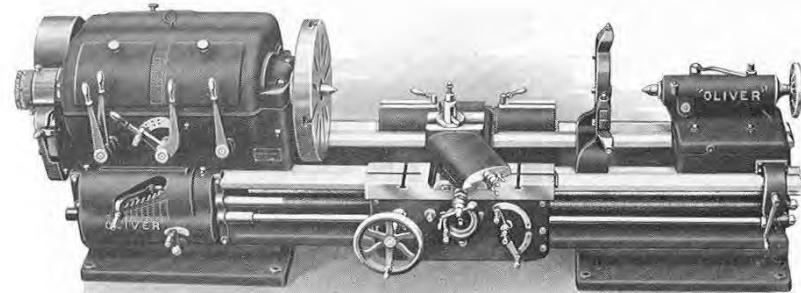
Code	No.	Description	Weight in Crated	Pounds Boxed	Meas. Cu.ft.
Rag		30-inch Lathe, English system.....	14000	16000	300
Ragrur		30-inch Lathe, Metric system.....	14000	16000	300
Raf		26-inch Lathe, English system.....	12600	14000	260
Rafrur		26-inch Lathe, Metric system.....	12600	14000	260

EXTRAS

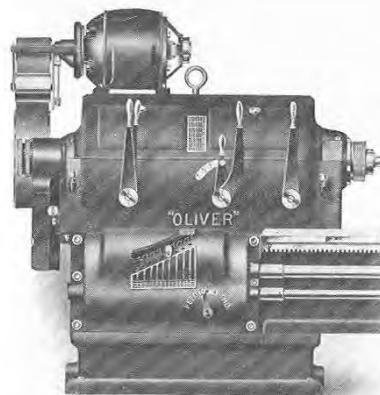
We can furnish all desirable extras for above lathes, such as Motor Drive, Taper attachment, Follow Rest, Square Tool Post, Turret Head, Chuck Plate, etc. State your requirements. Send for special complete circulars.

30-inch and 26-inch Extra Heavy Duty Engine Lathes

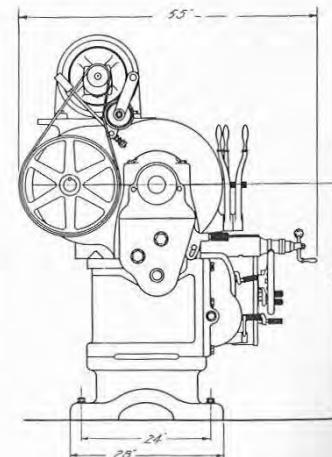
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"OLIVER" 26-INCH ENGINE LATHE, BELT DRIVE, REGULAR BED 13' 6"
"Oliver" 30-inch Engine Lathe is Similar to Above



Motor Drive Arrangement
Any Kind of Motor can be Used



End View Showing
Motor Drive

18-inch and 16-inch "Oliver" Heavy Duty Engine Lathes

Three Step Cone, Double Back Geared or Rapid Production Type
Either Motor or Belt Driven

The "Oliver" 18" and 16" Heavy Duty Engine Lathes embody in their construction the newest ideas in design. They are built with "Oliver" precision, have ample power and are rigid enough for heavy and fast cuts. Special circulars giving complete details will be gladly furnished on request.

SPECIFICATIONS

NOTE—These specifications are subject to change as improvements direct.

		16-inch	18-inch
Capacity	Swing over shears.....	17½"	19¾"
	Swing over carriage.....	10"	12"
	Distance between centers.....	38"	41"
	Feeds, 32 in number, range per inch.....	9-138	9-138
Headstock	Back gear ratio, first.....	2.9 to 1	3.13 to 1
	Back gear ratio, second.....	9.02 to 1	10 to 1
	Number of spindle speeds.....	18	18
	Spindle speeds, range, r.p.m.....	14-335	14-335
	Driving cone diameters.....	7", 8½", 10½", 9", 11½", 14"	
	Driving cone, belt (width).....	3¾"	4"
	Hole through spindle.....	1½"	2½"
	Front spindle bearing.....	3½"x5"	4"x5½"
	Spindle nose, diameter.....	3"	3½"
	Spindle nose, length.....	2"	2¼"
	Spindle nose threads, per inch.....	5	5
	Size centers, Morse taper.....	No. 4	No. 6
	Rear spindle bearing.....	2½"x3¾"	3"x4½"
Tailstock	Tailstock spindle, diameter.....	2½"	3"
	Tailstock spindle, travel.....	8"	12"
Lead Screw	Lead Screw, diameter.....	1½"	1½"
	Lead screw, threads per inch.....	4	4
	Threads, 32 in number: 3, 3½, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 16, 18, 20, 22, 23, 24, 26, 28, 32, 36, 40, 44, 46.....		Same
Carriage	Size tools.....	7/8"x2"	7/8"x2"
	Angular travel, compound rest.....	4"	4"
	Width of carriage on bridge.....	7"	7"
	Cross slide travel.....	14"	14"
	Saddle on shears, length.....	24½"	24½"
Bed	Bed, height for either size 13", width.....	15"	15"
	Length of bed.....	7' 2"	8' 2"
Pump and Pan	Pump (rotary type) takes piping.....	1½"	1½"
Countershaft	Pan (size).....	8'x24"x3"	9'x24"x3"
	Countershaft pulley speeds.....	180-220	160-220
	Countershaft pulleys.....	14"x4"	14"x4"

CODE, WEIGHT, ETC.

Code	Size	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Rabreh	16"	Heavy Duty, regular equipment	3800	4200	121
Racreh	18"	Engine Lathe, regular equipment	4500	4900	155

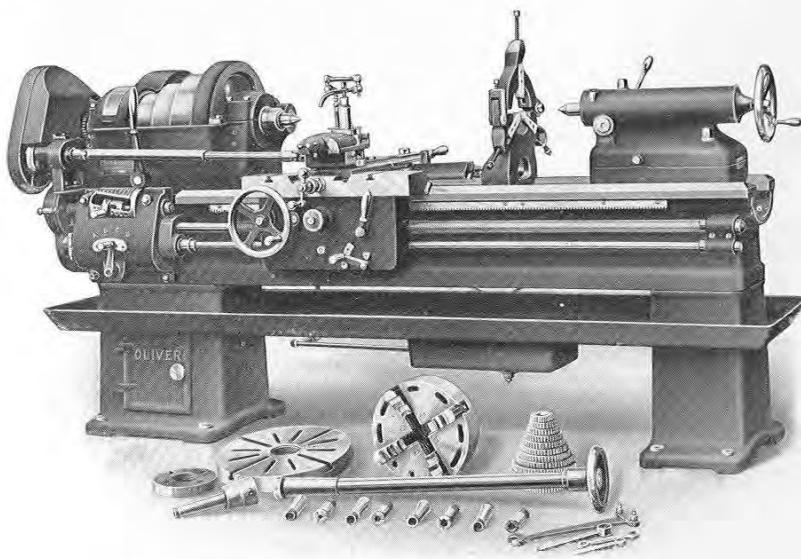
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For either 16 or 18-inch Lathe

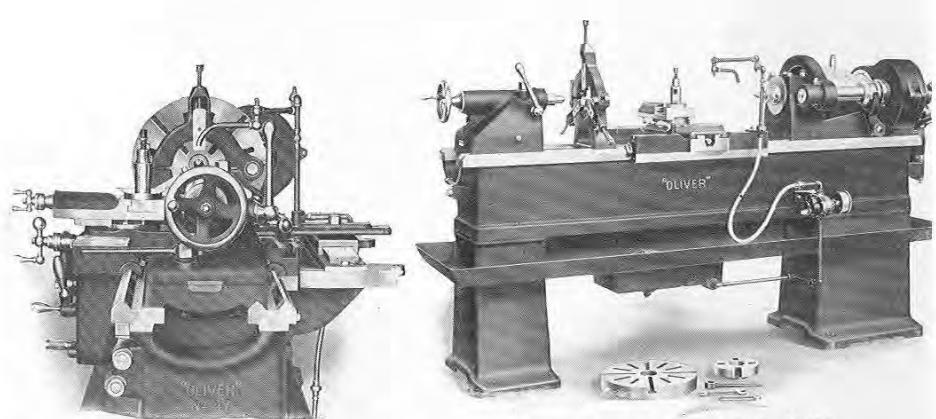
We can furnish all desirable extras for above lathe, such as Motor Drive, Taper Attachment, Follow Rest, Square Tool Post, Turret Head, Chuck Plate, etc. State your requirements. Send for special complete circular of these machines.

18-inch and 16 inch "Oliver" Heavy Duty Engine Lathes

Continued



18-INCH "OLIVER" TOOL ROOM ENGINE LATHE
We also build 18-inch Production Lathes



End View of
"Oliver" 16-inch Engine Lathe

Rear View "Oliver" 16-inch Engine Lathe
Every Buyer is a Booster

"Oliver" 10, 12 and 14-inch High Quality Screw Cutting Engine Lathes

Cone Pulley Head—Single Back Geared, or

All Steel Geared Head—Single Pulley Drive

The "Oliver" 10", 12" and 14" Screw Cutting Engine Lathes are the product of over thirty-five years of careful designing and high grade manufacturing experience supported by patented features and improvements not found in any other line of small lathes.

These Engine Lathes are complete in every function and contain all of the features of Engine Lathes recognized and required by modern engineering practice. We recommend them for use in government shops, tool rooms, automobile factories, garages, repair shops, experimental shops, vocational schools, colleges, universities, and for general manufacturing purposes.

SPECIFICATIONS

NOTE—These specifications are subject to change as improvements direct.

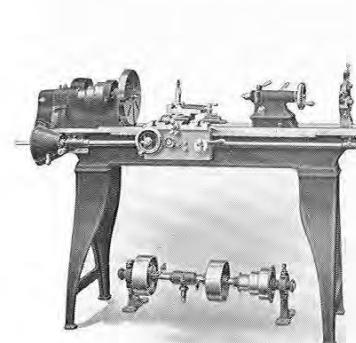
	10" Size	12" Size	14" Size
Capacity	Swing Over Bed, actual.....	11"	13"
	Swing Over Carriage, actual.....	8"	9"
	Length between Centers, tail-stock flush.....	25"	36"
Headstock	Threads, all standard threads, Range.....	3 to 40	3 to 40
	Feeds, range per revolution.....	.0025" to .039"	all sizes
	Base Length.....	14"	16"
	Spindle Length, total.....	16"	19"
	Spindle Speeds (6), cone head.....	25 to 500	25 to 500
	Spindle Speeds (6), geared head.....	32 to 500	32 to 500
	Spindle Nose Diameter and Threads.....	1 5/8", 10	1 5/8", 10
	Front Spindle Bearing.....	1 1/16" x 2 1/4"	1 1/16" x 3"
	Rear Spindle Bearing.....	1 1/16" x 2 1/4"	1 1/8" x 2 1/4"
	Hole Thru Spindle, diameter.....	1"	1 1/16"
	Center Size, Morse Taper No.....	2	2
	Cone Pulley Diameters.....	3 1/2", 4 3/4", 6", 6", 3", 4 1/2", 6", 4", 6", 8"	
	Width of Belt.....	1 1/2"	2"
	Driving Pulley Diameter, geared head.....	6" x 2 1/2"	8" x 3"
	Driving Pulley Speed, geared head.....	380 r.p.m.	380 r.p.m.
Tailstock	Base Length.....	6 1/2"	8 1/2"
	Amount of Set-Over.....	5/8"	1 1/8"
	Spindle Diameter.....	1 3/16"	1 1/2"
	Spindle Movement.....	4"	4 1/2"
Carriage	Center Size, Morse Taper No.....	2	2
	Length of Saddle on Shears.....	11"	14 1/2"
	Bridge Width.....	3 3/4"	5"
	Compound Rest Travel.....	2 1/4"	3 1/8"
	Cross Slide Travel.....	6 3/4"	7 1/4"
	Tool Post (standard) Takes Tools.....	1/2" x 3/4"	1/2" x 1 1/8"
Thread Cutting	Lead Screw Diameter.....	15/16"	15/16"
	Lead Screw Threads per Inch.....	5	5
	Ratio of Feeds to Threads.....	9 to 1	9 to 1
	Cuts Threads per Inch Range.....	3 to 40	3 to 40
Bed	Standard Length, actual.....	4' 3"	5' 3"
	Height or Depth of Bed.....	6 1/4"	7 3/4"
	Width of Bed.....	7 5/8"	9 3/8"

EXTRAS

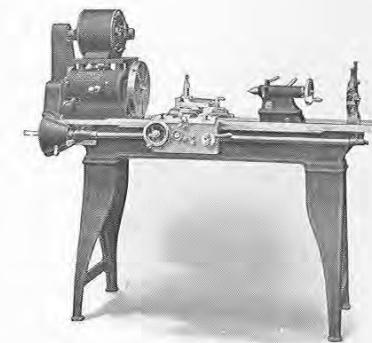
We can furnish extras for above lathes, such as Motor Drive, Taper Attachment, Follow Rest, Gap Bed, Oil Pan, Pump and Piping, Extra Bed Lengths, Milling Attachment, Turret on Carriage, Turret on Bed, Draw-In Attachment, Metric Transposing Gears, Metric Lead Screw, Bench Legs, Chuck Plate, Chucks of any Make, etc.

"Oliver" 10, 12 and 14-inch Screw Cutting Engine Lathes

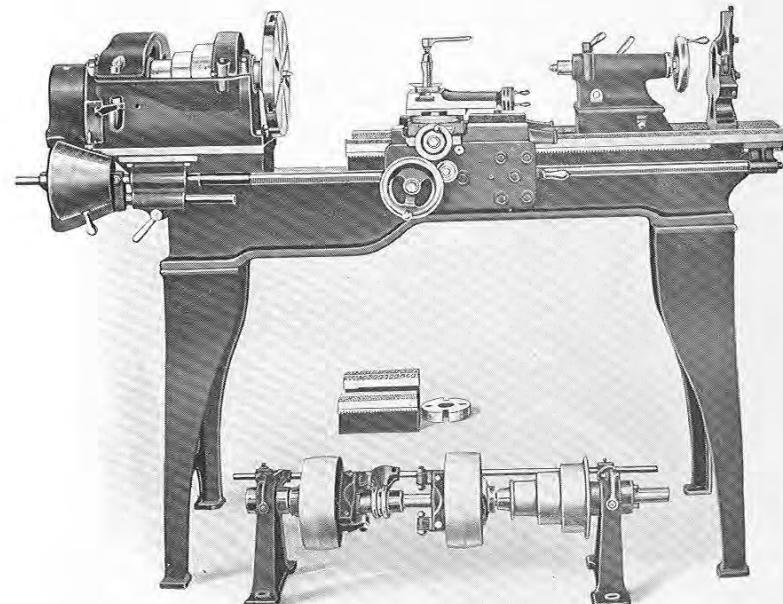
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"Oliver" 12" Cone Head Lathe
Double Friction Countershaft



12" Geared Head Lathe
Motor Driven



"Oliver" 12-Inch Cone Head Belt Driven Engine Lathe with Gap Bed Having Bridge Removed.
Gap Bed is also furnished with Geared Head Lathes, 10-inch and 14-inch Sizes
are Similar in Design but Proportionate in Size and Weight

No. 406 and No. 404 "Oliver" High Power Die Filing Machines

Rearwin Patent

The Rearwin Patent Die Filing Machine is the result of many years experience in the manufacture of machines of this type. It is thoroughly patented in all of its essential features, many of which are not to be found in any other Filing Machine. It is a heavy powerful filing machine, capable of doing the accurate work of a small bench machine as well as handling the largest capacity of work. It has a wide range of adjustments, which guarantee increased production, decreased cost and makes it possible for the inexperienced tool maker or apprentice to do accurate filing much faster than the expert can accomplish by the ordinary hand method. This machine is designed for general purpose service in the tool room and die shop, for filing, sawing and trimming templates, punches, metal patterns, jigs, special gauges and cutters of many kinds too numerous to mention. It is also useful in the manufacturing shop for filing and sawing plain or irregular shapes from sheet metal and doing other accurate work in experimental shops.

Detailed circulars furnished on request.

SPECIFICATIONS

NOTE—These specifications are subject to change as improvements direct.

		No. 406	No. 404
Capacity	Length of files will take	3" to 14"	3" to 12"
	Length of stroke, adjustable	1/2" to 7"	1/2" to 7"
	Strokes per minute range	80 to 320	80 to 320
	Distance front of file to front of slide	9"	6 1/2"
	Height of work maximum	9"	5"
	Height of work constant filing	6"	3"
Table	Universal Tilting Table, size	20" x 24"	17" x 18"
	Height from floor	38"	38"
Steel Head	Total length	22"	20"
	Release of file on up stroke	3 1/2"	3 1/2"
Floor Space	Base of machine	23" x 38"	22" x 33"
Drive Shaft	Friction Pulley	12" x 2 1/8"	12" x 2 1/8"
	Speed, r. p. m.	160	160
	Cone pulley steps, diameter	4" to 8"	4" to 8"
	Width of belt	2"	2"

MOTOR DRIVE

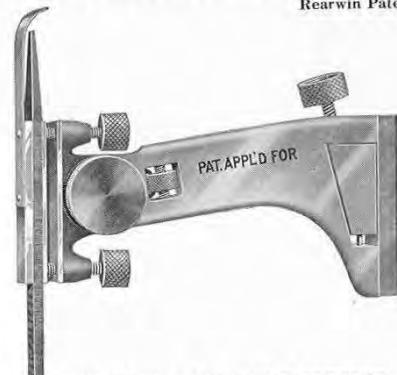
Motor drive can be furnished for any of these machines; the arrangement consists of $\frac{1}{2}$ H. P. 1800 R. P. M., motor mounted on the motor bracket and belted to a speed reducing jackshaft which has a yoke support to the regular parts of the machine, making the entire outfit self contained.

CODE, WEIGHT, ETC.

Code	No.	Description	Weight in Crated	Pounds Boxed	Cubic Feet
Subad	406	Filing Machine, belt driven	650	750	33
Tabad	404	Filing Machine, belt driven	550	650	30
Stabef		Motor drive arrangement for either filer.			

"Oliver" No. 406 and No. 404 Die Filing Machines

Rearwin Patent—Continued



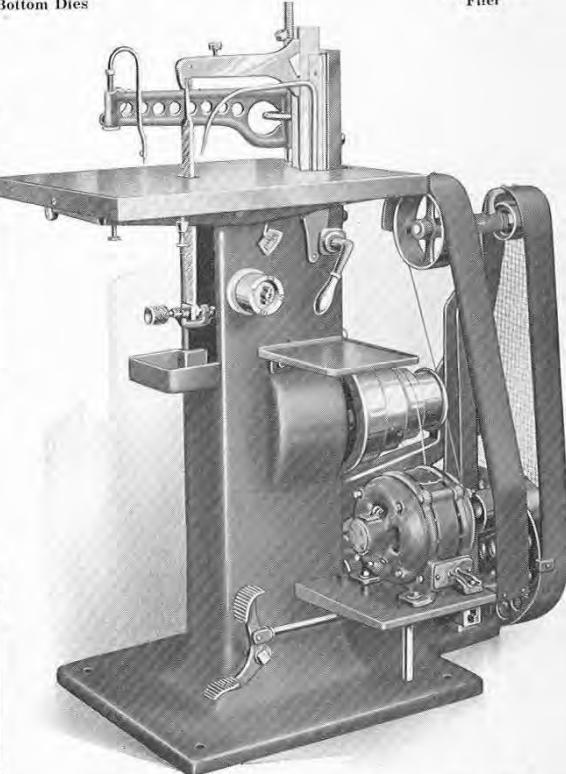
INDEPENDENT OVERHEAD SUPPORT
For Supporting Files From Above.
For Filing Closed Bottom Dies



Regular
Belt Driven
Filer



By Hand, 5 hours
By Machine, 2 hours



By hand, 4 hours
By machine, 1 1/4 hours

Rearwin Patent "Oliver" No. 406 High Power Filing Machine.
The No. 404 is like No. 406 in design but smaller

"Oliver" Equipment in Government Shops

The United States Government has for many years been a steady and large buyer of "Oliver" machinery for the equipping of numerous Public Buildings, Departments, Bureaus, Navy Yards, Ships, Arsenals, Depots, Hospitals, Fields, Camps, Laboratories, Homes, Schools, etc., subject to Government ownership, maintenance or control, as listed below:

DEPARTMENTS	
Agriculture	Air Service Flying Fields
Commerce	Bureau of Aircraft Production
Interior	Hazelhurst Field
Labor	General Hospitals
Navy	Govt. Printing Office
War	Hawaiian Ordnance Depot
Post Office	Hygienic Laboratory
State	Isthmian Canal Commission
Treasury	Indian Training Schools
NAVY YARDS	Library of Congress
Puget Sound	Leavenworth Penitentiary
Cavite	Post Quartermasters
Charleston	Post Office Buildings
Mare Island	Public Health Service
New Orleans	Railroad Administration
Norfolk	U. S. Veterans Bureau
Pearl Harbor	Weather Bureau
Philadelphia	Langley Field
Portsmouth	Selfridge Field
Washington	Signal Corps Supply Depots
Brooklyn	Wilbur Wright Field
ARSENALS	Army Medical Supply Depot
Augusta	Naval Academy—Annapolis
Frankford	Army School Auto Mechanics
Picatinny	Army Medical Supply Depot
Rock Island	Aberdeen Proving Grounds
Springfield	Bureau of Insular Affairs
Watervliet	Bureau of Animal Industry
Submarine Bases	Bureau of Standards
St. Mary's Canal	Bureau Engraving & Printing
U. S. Senate	U. S. Coast Guard
Soldier's Homes	Coast Artillery School
Training Ships	Commissioner of Immigration
Lighthouses	Coast & Geodetic Survey
U. S. Mints	Dept. Terrestrial Magnetism
Federal Board Trg. Centers	Dept. of Public Roads
Forest Products Laboratory	Marine Carpenter Shop
Great Lakes Training Station	Motor Transport Depots
Govt. Philippine Islands	Naval Ordnance Plants
General Engineer Depots	Naval Magazines
Geological Survey	Naval Torpedo Stations
Aviation Schools	Naval Air Stations
Aircraft Eng. Design Lab.	Naval Engineering Camps
Aviation Repair Depots	Naval Exp. Stations
Aeronautical Exp. Stations	Naval Med. Supply Depot
Airplane Eng. Dept.	Naval Vessels

U. S. Railroad Administration

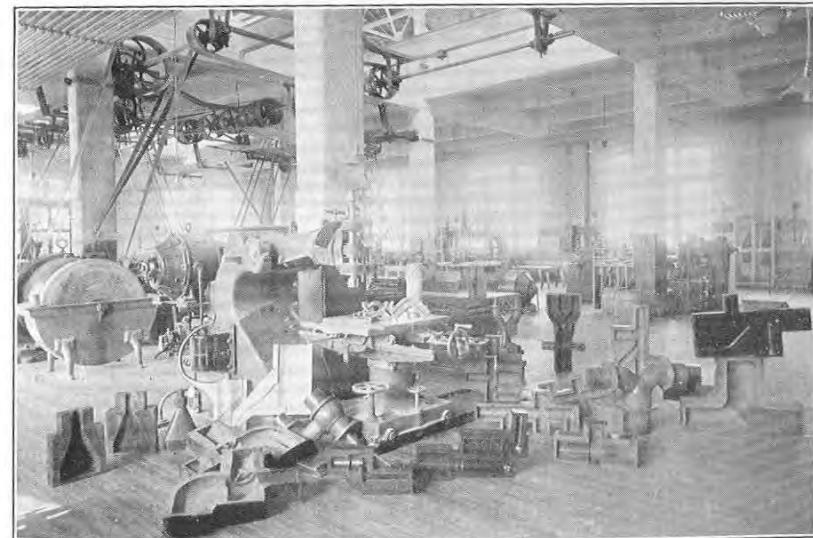
The woodworking shops of the Army, Navy, and Technical Departments of leading nations of the world are equipped in large measure with "Oliver" machinery in departments where accuracy and dependability are desired.

"Oliver" Equipment in Government Shops

Continued



Wood Shop in a U. S. Government Arsenal



Pattern Shop in a U. S. Government Navy Yard

"Oliver" Equipment in Industrial Plants

The Greatest Industrial Plants of National and International Renown are Customers of the Oliver Machinery Company

"Oliver" machinery is employed by many thousands of plant operators throughout the United States, and is marketed to over 40 different foreign countries. Its superior quality, finish and efficiency render it especially desirable for the Machine Tool, Car and Locomotive Builders, Arsenals, Navy and Ship Yards, Steel Mills, Engineering, Automobile and General Machinery Plants, the Paper and Textile Trades, and for the manufacture of quality Furniture, Musical Instruments, Interior Finish and high class Woodwork of every description.

The character and commercial importance of customers for Oliver Machinery and the wide range of distribution will be obvious from the following names of well-known Corporations, Plants, or Products:

Bethlehem Steel	Bausch Machine Tool
Fore River Ship	Beloit Iron Works
Keystone Driller	International Paper
Waterbury Clock	Imperial Furniture
Armstrong Cork	Kellogg Corn Flakes
Mesta Machine	Standard Steel Car
American Tool	Union Pacific Ry.
American Seating	N. Y. O. & W. Ry.
Arlington Mills	Maine Central R. R.
American Tube	P. C. C. & St. L. Ry.
American Rolling	Atlantic Coast Line
American Hoist	Pittsburgh Plate Glass
J. G. Brill Co.	Edgar Allen Steel
Brier Hill Steel	Howard Safe & Lock
Brown & Sharpe	N. Y. Central R. R.
Indiana Steel	Hyl. Pressed Brick
American Bridge	C. C. C. & St. L. Ry.
American Steel & Wire	E. I. duPont deNemours
Brown Hoisting	Grand Rapids Showcase
Bell Telephone	International Harvester
Pittsburgh Coal	American Tin Plate
Standard Oil Co.	Canadian Pacific Ry.
Babcock & Wilcox	Illinois Central Ry.
J. L. Mott Iron Wks.	Atlantic Terra Cotta
Baldwin Locomotive	Brown Ketchum Iron
Norton Grinder	Canadian Govt. Rys.
Goodrich Tire	Harbison Refractories
C. B. & Q. Ry.	Cerro dePasco Copper
P. & R. Ry.	Colo. Iron & Steel
American Brass	Ingersoll-Rand
American Blower	Jones & Laughlin
National Carbon	Lackawanna Steel
Standard Tube	National Casket
Bath Iron Wks.	Goodyear
Moltrup Steel	Cramp Shipyard
Ball Engine	Heinz
Beacon Light	U. S. Steel
Alamo Iron	Ames Plow
Corbin Lock	Amoskeag
Berkey & Gay	Link-Belt
American Thread	Atlantic Sugar
Westinghouse Electric	Globe Wernicke
Canadian Pacific	Anaconda Copper
Anglo Newfoundland	U. S. Sanitary
International Ship	Victor Talking
Marion Steam Shovel	Atlas Cement
Tenn. Coal & Iron	Calumet & Hecla
Norfolk & Western Ry.	Morgan & Wright
Central R. R. of N. J.	Chicago Ry.
St. L. & S. F. Ry.	Worthington Pump
American Radiator	E. W. Bliss
Continental Rubber	Allis Chalmers
	Rowser Tank
	U. S. Radiator
	Dietzgen
	Keuffel & Esser
	Pratt & Whitney
	Lodge & Shipley
	Standard Milling
	Niles Tool
	White Dental
	Mengel Box
	Pullman Car
	American Car
	Anniston Pipe
	Sessions Clock
	Bristol Rod
	Eastman Kodak
	Laconia Car
	Winchester Arms
	Cleveland Frog
	Dominion Bridge
	Grand Trunk Ry.
	Southern Pacific
	Postum Cereal
	United Fruit
	C. & A Ry.
	Otis Elevator
	General Electric
	Steinway
	Royal Furniture
	Michelin Tire
	Penna. R. R.
	C. & O. Ry.
	P. & L. E. Ry.
	Boston & Albany
	Globe Knitting
	Cluett Peabody
	Pacific Mills
	Hood Rubber
	Seal Shipt
	Van Camp Packing
	American Can
	Waltham Watch
	Cincinnati Car
	Singer Sewing
	White Sewing
	National Lamp
	Bigelow Carpet
	Welsbach
	Blake Pump
	Platt Iron Wks.
	Bosch Magneto
	Union Carbide

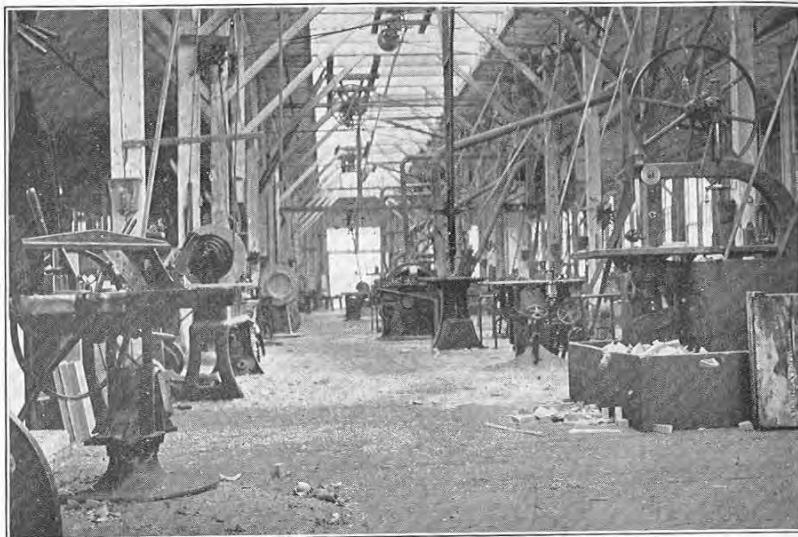
"Oliver" Equipment in Industrial Plants

Continued

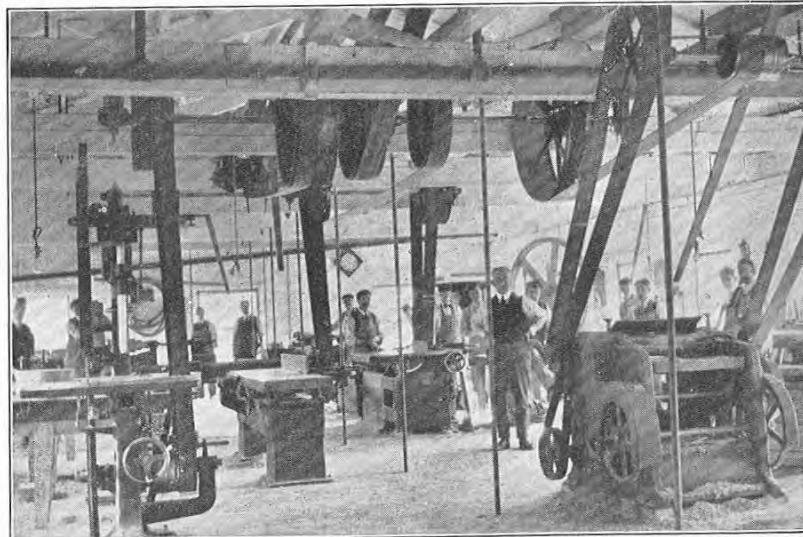
Amer. Brake Shoe	Auto Wheel
Apperson Auto	Calumet & Ariz.
Carnegie Steel	Int. Steam Pump
Amer. Loco.	Banner Buggy
Great Lakes Ship	Downey Shiphldg.
Ford	Bernard & Leas
Cadillac	Diamond Match
Packard	Canadian Vickers
Pierce Arrow	Doenbecker
Willys-Overland	Edison Phonograph
Buick	Knowles Pump
Knabe	Johns-Manville
Celluloid Co.	Wilmart Showcase
Carborundum	Boston Rubber
Pete Marquette	Boston Elevated
Great Northern Ry.	Burgess Sulphite
Atlantic Coast Line	Cottrell Press
L. S. & M. S. Ry.	Follansbee Bros.
Northern Pacific	Lima Locomotive
Boston & Maine Ry.	Heywood-Wakefield
C. M. & St. P. Ry.	Hercules Wheel
Rock Island Ry.	Crocker-Wheeler
Lehigh Valley R. R.	Parke Davis
Honolulu Iron Wks.	Bethlehem Ship
Carver Cotton Gin	Govt. Porto Rico
Nova Scotia Steel	Lehigh Coal & Nav.
Kelly Springfield	Remington Arms
Campbell Wyant Fdy.	Revere Rubber
Potter & Johnston	Ridgway Dynamo
Richardson Piano Case	St. John Iron Wks.
Seco-Lowell Shops	Samson Tractor
St. Maurice Lumber	Sprague Electric
Standard Shiphldg.	Standard Gauge
International Nickel	Erie Railroad
New Departure Mfg.	Kentucky Wagon
Springfield Traction	Kissel Car
Amer. Mang. Steel	Griffith Studio
Cheney Piano Action	Firestone
Birdsboro Steel Fdy.	General Motors
Romano Americana	Chickering
New London Ship & Eng.	E. T. Burrows
Pressed Steel Car	Pabst Brewing
Sales Bleachers	Portsmouth Steel
International Motors	National Iron
Oliver Chilled Plow	Sheffield Car
Pratt & Lethworth	Long Bell Lumber
Rice, Barton & Fales	Menasha Woodenware
Rome Loco. & Mach.	Nash Engineering
St. L. Frog & Switch	Ohio Steel Fdry.
Continental Motors	Santa Fe Railway
Federal Shipbuilding	B. & O. R. R.
Nicholson File	Durant Motors, Inc.
Amer. Steel Fdry.	Case Plow
Amer. Laundry Mch.	Champion Fibre
Oklahoma Iron Wks.—Mexico	Clark Thread
Deere & Company	Elk Tanning Co.
French & Hecht	Union Tanning Co.
Dow Chemical	Duplan Silk Mills
Great Lakes Engrg.	Illinois Watch
Curtis Aeroplane	Goessling Box
Canadian Copper	Hendey Machine
Oil Well Supply	Brunswick-Balke
Brinly-Hardy	Wagner Electric
Panama Railway	DeLaval Steam Tur.
H. K. Porter Company	Kelsey Wheel
Republic Iron	Union Bag & Paper
Maxwell Motors	Globe Shipbuilding
Chicoutimi Pulp	Hoyt Metal.
Advance-Rumely	Phila. Electric
Algoma Steel	Moore Ship
Apollo Steel	Hayes Ionia Co.
Anseco	Reeves Pulley
American Sugar	Republic Rubber
Atlantic Refining	Rolls-Royce Auto
Auto Body	Semet Solvay

"Oliver" Equipment in Industrial Plants

Continued



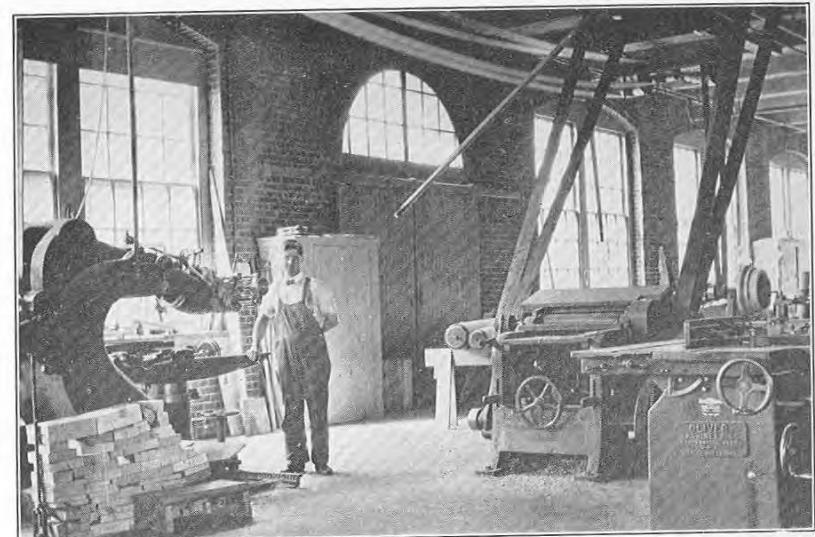
American Locomotive Co., Schenectady, N. Y.



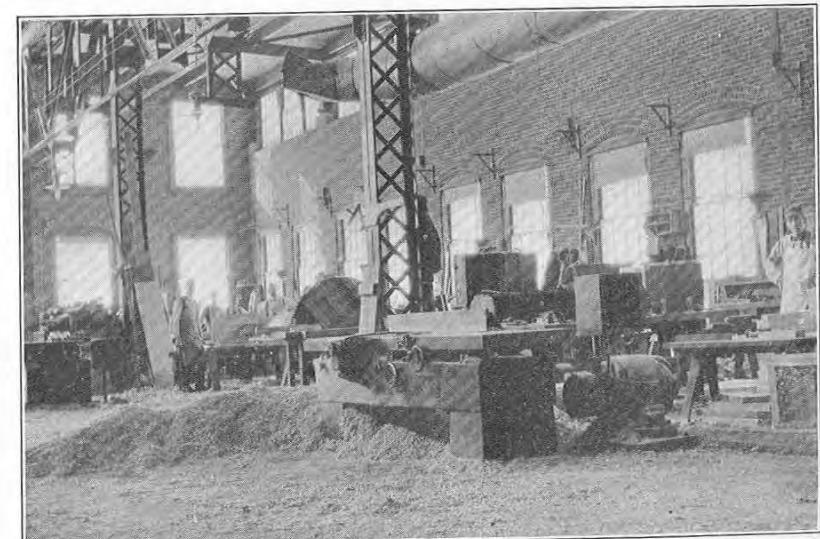
Farrell Foundry and Machine Co., Ansonia, Conn.

"Oliver" Equipment in Industrial Plants

Continued



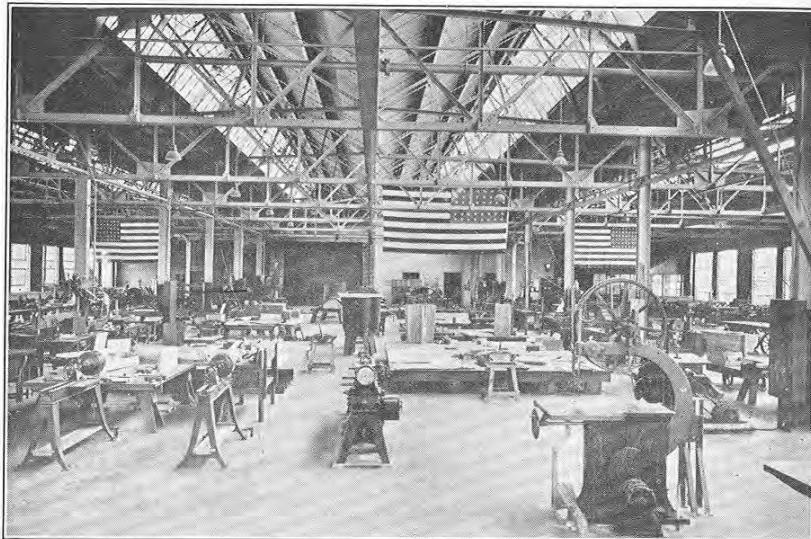
Standard Cast Iron Pipe and Foundry Co., Bristol, Pa.



Baker & Shevlin, Saratoga Springs, N. Y.

"Oliver" Equipment in Industrial Plants

Continued



Westinghouse Electric and Manufacturing Co., Essington, Pa.

"Oliver" Equipment in Industrial Plants

Continued



Bethlehem Steel Co., South Bethlehem, Pa.



Mesta Machine Co., Pittsburgh, Pa.

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Wood Shop, Laskey Studio, Hollywood, Cal.

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"Oliver" Equipment in Educational Institutions

The Oliver Machinery Company was a pioneer and has been continuously progressive as a manufacturer of wood and metal working machinery, tools and appliances, well designed, thoroughly safeguarded, equipped and highly efficient for the requirements of Institutes and Schools of Technology, Universities, Agricultural Colleges, Mining, Normal, Teachers' Training, Trade and Industrial Schools affording technical or mechanical courses, shop practice, etc., and Vocational, High, Grammar and Intermediate Schools, State, Municipal, Endowed or similar institutions such as Homes, Asylums, Hospitals, Sanitariums, Houses of Refuge or Correction, Reformatories, Prisons, etc.

Industrial education is constantly broadening in scope and usefulness and gaining in popularity. Its effect upon industry, trade, and foreign commerce in many countries has been of tremendous and far reaching importance. Its vocational forms are especially practical.

Long time experience in manufacture and the making of plans, layouts, and estimates for educational installations enables us to offer our services with confidence in our ability to be helpful and useful to instructors, directors, superintendents, purchasing departments, and members of educational and institutional boards.

The following Universities, Colleges, Institutes, etc., represent a partial list of Technical and Engineering Institutions using "Oliver" equipment.

Alabama	Colorado	Leland Stanford	North Carolina	Southern
Arizona	Columbia	Lewis	North Dakota	Stout
Arkansas	Concordia	Loomis	Ohio	Tennessee
Armour	Connecticut	Louisiana	Oklahoma	Texas
Baltimore	Cornell	Maine	Oregon	Tillson
Berkley	Delaware	Maryland	Peabody	Tufts
Billings	Drexel	McPherson	Pratt	Tuskegee
Bradley	Fisk	Maori, N. Z.	Pennsylvania	Utah
Brown	Georgia	Massachusetts	Porto Rico	Vermont
Bucknell	Girard	Mechanics	Purdue	Virginia
California	Hawaii	Michigan	Rensselaer	Washington
Carnegie	Howard	Mississippi	Rice	Wentworth
Case	Indiana	Missouri	Roberts-Turkey	Wilberforce
Catholic	Illinois	Montana	Rose	Wisconsin
Chicago	Iowa	Morgan	Rutgers	Wilmerting
City of N. Y.	Kansas	New Hampshire	Swarthmore	Worcester
China	Kentucky	Nelson	Shepherd	West Virginia
Cincinnati	Latter Day Sts.	New Mexico	Stevens	Washington, Mo.
Clarkson	Lehigh	New York	South Dakota	Xavier

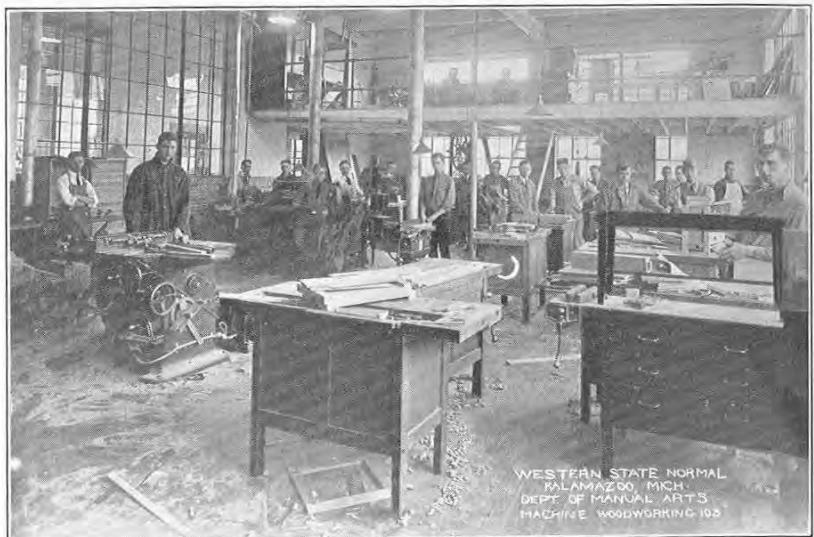
Hundreds of Normal Schools, Teachers' Colleges, Agricultural and Mining Schools, Industrial, Trade, Vocational and Continuation Schools employ Oliver Machinery Company equipment.

More than 1,500 High, Grammar and Intermediate Schools with manual training departments employ Oliver Machinery Company equipment.

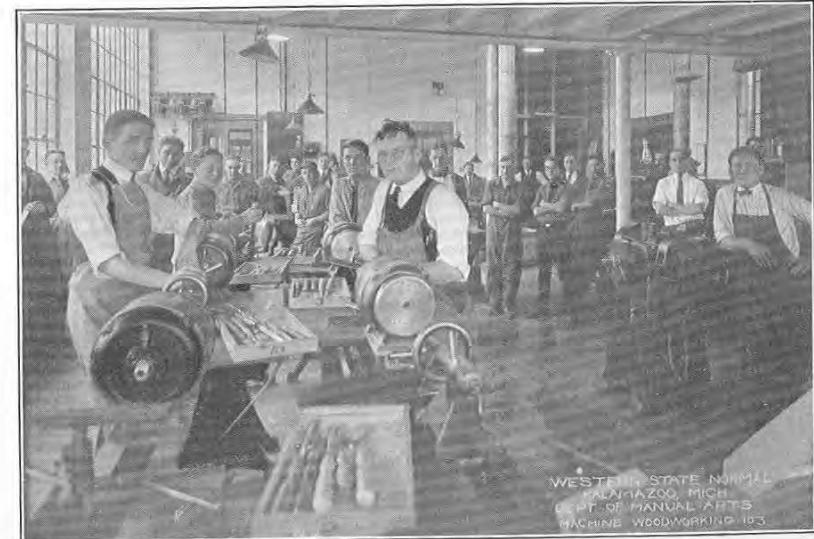
Numerous State, Municipal and Welfare Institutions employ Oliver Machinery Company equipment.

"Oliver" Equipment in Educational Institutions

Continued



Cabinet Making Department, Western State Normal, Kalamazoo, Mich.



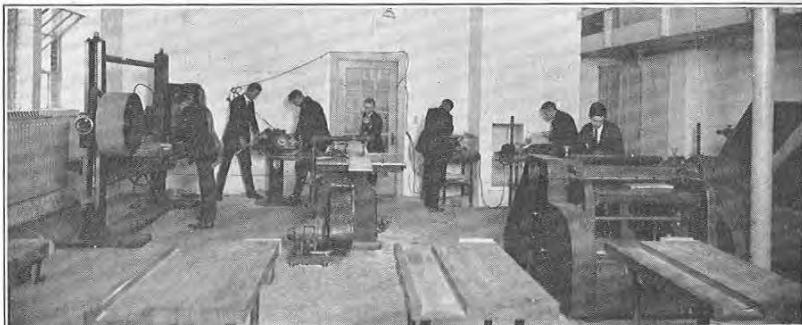
Wood Turning Department, Western State Normal, Kalamazoo, Mich.

"Oliver" Equipment in Educational Institutions

Continued

The board of education at Minneapolis, Minn., with its repeated purchases from the Oliver Machinery Company has shown its full appreciation of the high quality of "Oliver" machines. Only complete satisfaction could be the cause of repeat orders as follows:

- 1908: 25 Lathes; 1 Surfacer; 2 Band Saws.
- 1909: 21 Lathes.
- 1910: 36 Lathes; 2 Band Saws; 1 Saw Bench; 1 Grindstone; 20 Forges; 1 Blower; 1 Exhauster.
- 1912: 8 Forges; 1 Blower; 1 Exhauster.
- 1913: 10 Forges; 2 Lathes.
- 1914: 10 Forges; 6 Lathes; 2 Band Saws; 2 Jointers; 1 Surfacer; 1 Mortiser; 1 Grinder.
- 1918: 1 Swing Saw.
- 1919: 1 Swing Saw Table.
- 1922: 74 Lathes; 5 Grinders; 5 Surfacers; 6 Jointers; 2 Jig Saws; 2 Belt Sanders; 4 Saw Benches; 2 Trimmers; 2 Disc Sanders; 2 Mortisers; 2 Band Saws.



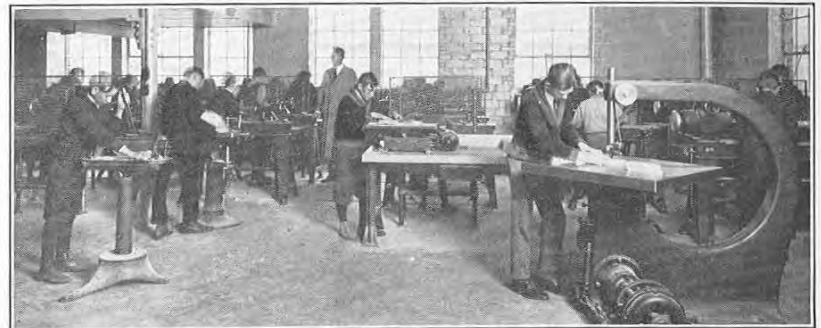
Wood Working Room, Edison Junior High School, Minneapolis, Minn., Schools



Jordan Junior High School, Minneapolis, Minn., Schools

"Oliver" Equipment in Educational Institutions

Continued



Pattern Shop, Roosevelt Senior High School, Minneapolis, Minn., Schools



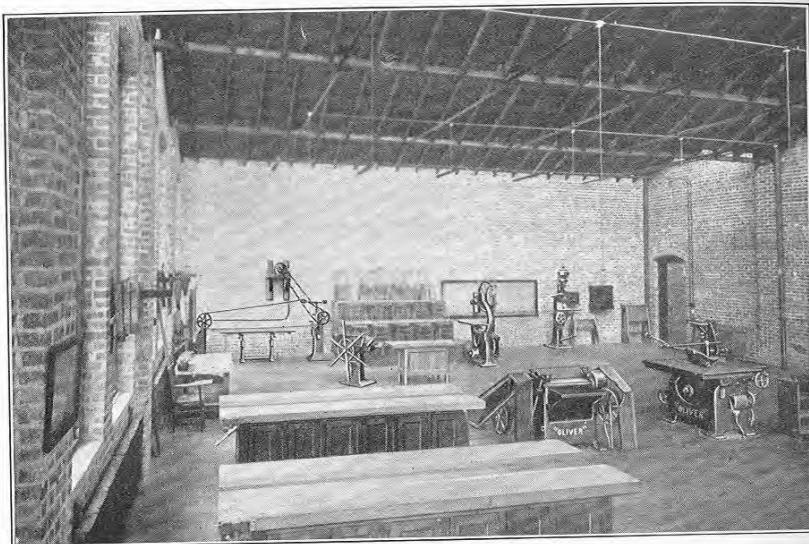
Wood Working Room, Roosevelt Senior High School, Minneapolis, Minn., Schools



Wood Working Machine Room, Edison Junior High School, Minneapolis, Minn., Schools

"Oliver" Equipment in Educational Institutions

Continued



Advance Woodworking Shop, State Manual Training Normal, Pittsburg, Kansas



Wood Turning and Pattern Making Shop, State Manual Training Normal, Pittsburg, Kansas

Proof of Excellence of "Oliver" Packing

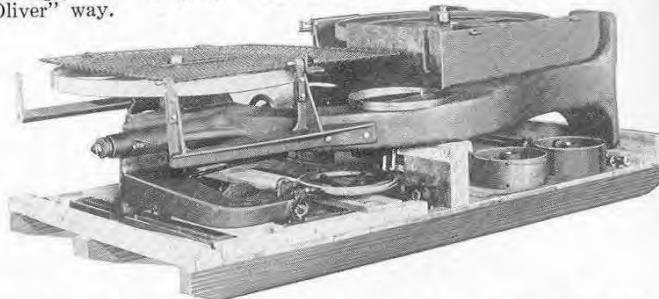


Above illustrations show "Oliver" machinery being hauled to the Engineering Department of Robert College, Constantinople, Turkey, to whom we shipped a complete equipment of woodworking machinery and forges in 1912. The Dean of the Engineering Department at Robert College stated that of all shipments received from various sources in Europe and America, the "Oliver" shipment "was the only one received in perfect condition."

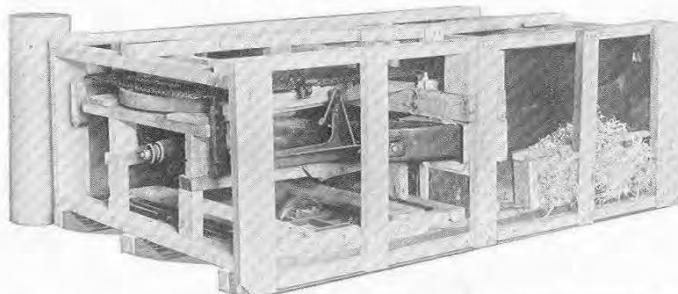
"Oliver" Packing Methods are Unexcelled

Doing a world-wide business, the "Oliver" Shipping Department has developed experts in packing—men who fully realize the importance of good packing and who keenly feel a sense of responsibility in the work they are doing. Foreign customers repeatedly declare that no one has ever excelled "Oliver" in packing.

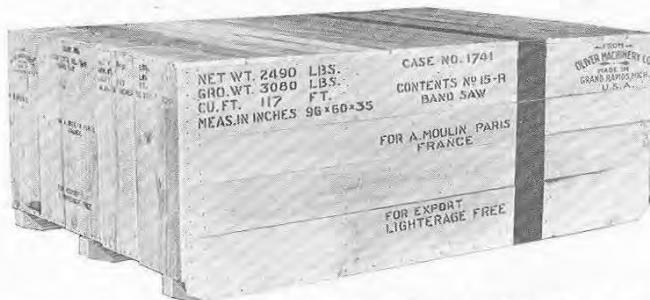
Note how securely and safely all "Oliver" export shipments are packed. Damage, shortage, and annoying delay are all avoided when your goods are packed the "Oliver" way.



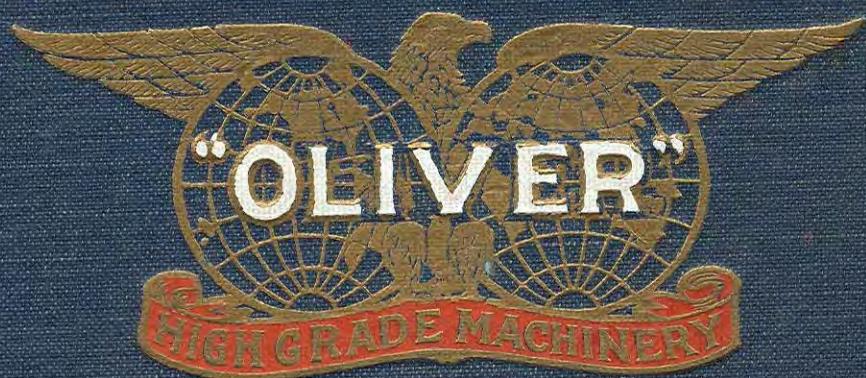
Showing the machine "knocked down" and mounted on a rigid frame the base of which is formed by three heavy skids. This takes the least possible space in vessel thus saving freight



A heavy frame is built around the machine. Braces are placed to prevent shaking or moving of machine
A heavy water proofed material is then rolled around the entire frame



Frame is now securely covered with heavy lumber. Box is completely marked showing net weight, gross weight, cubical contents, measurements, case number, contents, consignee, and shipper, and a three-inch red band painted around box. This red band readily identifies and easily locates any "Oliver" shipment in any warehouse



CATALOGUE
No. 22

OLIVER MACHINERY CO.
GRAND RAPIDS, MICHIGAN, U.S.A.