

# BARNES' . . . .



Designed and  
Built by

W. F. & JOHN BARNES CO.  
ROCKFORD, ILLINOIS.

# METAL WORKING MACHINERY.



**Telegraphic Address,**

**"BARNES" ROCKFORD.**

**Codes used,**

**LIEBER'S AND OUR OWN.**

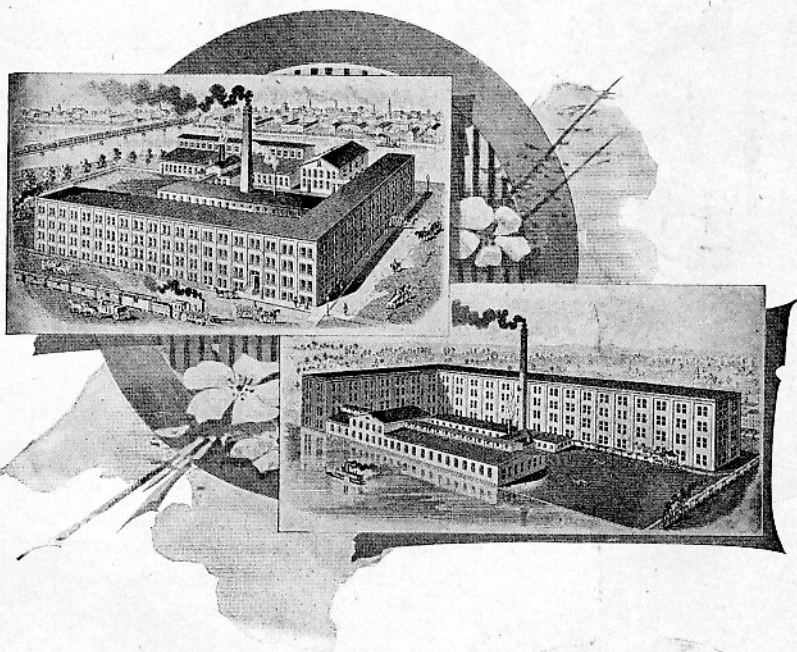
**I**N addition to the machines described in this Catalogue we make a very complete line of Foot and Hand Power Wood Working Machinery, embracing Circular Saws, Scroll Saws, Mortising, Tenoning and Moulding Machines, Lathes, etc., and we shall be pleased to mail Catalogue describing same upon application.



Price List and  
Descriptive Catalogue.

# BARNES'

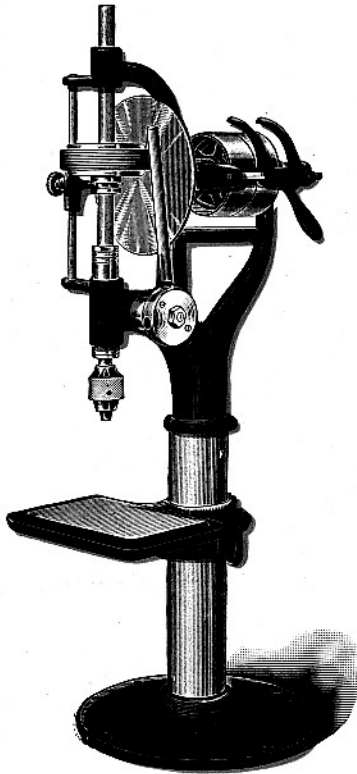
## Metal Working Machinery.



**W. F. & JOHN BARNES CO.,**  
**ROCKFORD, ILLINOIS.**

## Bench Friction Disk Drill,

**T**HIS drill we have recently brought out to meet the demand for a smaller drill embodying the same driving principle and other features of our column Friction Disk Drill, and the points of superiority we claim for that drill will be found in this—it is built on the same lines but of smaller size and capacity and for use on the bench instead of on the floor.



### CAPACITY AND DIMENSIONS.

It will drill from 0 to  $\frac{1}{4}$  inch and to the center of an  $8\frac{1}{2}$  inch circle.

Height of drill, 33 inches.

Greatest height from base of drill to spindle, 18 inches.

Greatest height from platen to spindle, 14 inches.

Distance from column to spindle,  $4\frac{1}{4}$  inches.

Diameter of column, 3 inches.

Diameter of spindle,  $1\frac{3}{8}$  inch.

Vertical travel of spindle, 3 inches.

Size of table  $5 \times 7\frac{1}{2}$  inches.

Size of tight and loose pulleys on upper horizontal shaft,  $4 \times 1\frac{1}{2}$  inches.

Speed, 0 to 1600 revolutions.

Weight, 65 pounds.

The cut shows drill chuck fitted to spindle, but it will of course be understood that the chuck is not included with the drill. We advise for use with the drill the  $\frac{5}{16}$  Almond Chuck.

Prices quoted on application.



## Barnes' Friction Disk Drill.



**T**HIS drill embodies principles not found in other tools of its class, and is simpler in construction, and more effective in operation than any drill for light work on the market.

The speed of the drill spindle can be increased or diminished instantly, or the motion reversed, without stopping machine or shifting belts.

More or less driving power can be applied to the drill spindle, as the size of the drills or the nature of the work may demand.

The feed lever is provided with a very sensitive adjustment, which with the perfect control of the operator over the speed and power makes it possible to use the smallest drills with the least possible danger of breakage. By a hand screw within convenient reach, the platen or table can be moved rapidly on the column and can be clamped firmly at any desired height.

The workmanship throughout is first-class, and the material used the best for the purpose. All bearings and wearing surfaces are especially fitted for durability, and ample provision is made for taking up wear.

We claim, therefore, for this drill, superiority both in simplicity of construction, which renders it less liable to derangement, and in effectiveness of operation on account of the variations of speed and power being so completely under the control of the operator, whereby all the adjustments are made with the least possible loss of time. It is smooth and almost noiseless in operation, and entirely free from the vibratory motion commonly found in drills of this class, where the spindle is driven by belt.

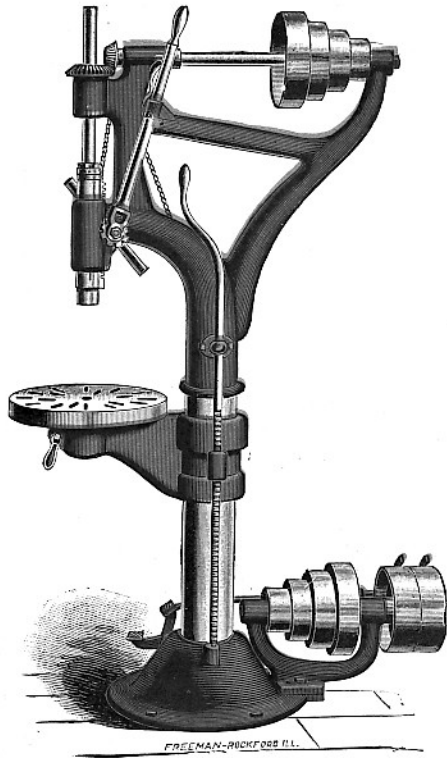
For all the uses for which such a drill is required, we believe ours to be unequalled.

### CAPACITY AND DIMENSIONS.

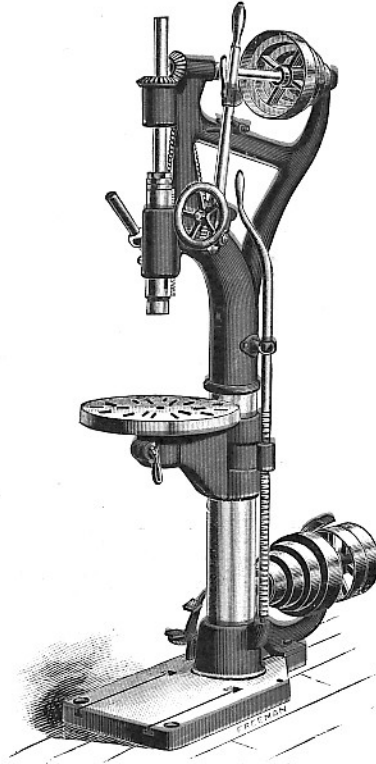
It will drill from 0 to 5-16 inch.  
 And to center of 10 inch circle.  
 Height of Drill 56 inches.  
 Greatest height from base of drill to spindle, 48 inches.  
 Greatest height from platen to spindle, 36 inches.  
 Distance from column to spindle, 5 inches.  
 Diameter of column, 3½ inches.

Diameter of spindle, ¾ inch.  
 Size of table, 10x14 inches.  
 Vertical travel of spindle, 4 inches.  
 Tight and loose pulleys, 5x2 inches.  
 The tight and loose pulleys should be speeded 350.  
 Speed, 0 to 1600 revolutions.  
 Required floor space, 22x18 inches.  
 Weight, 170 pounds.  
 Prices quoted on application.

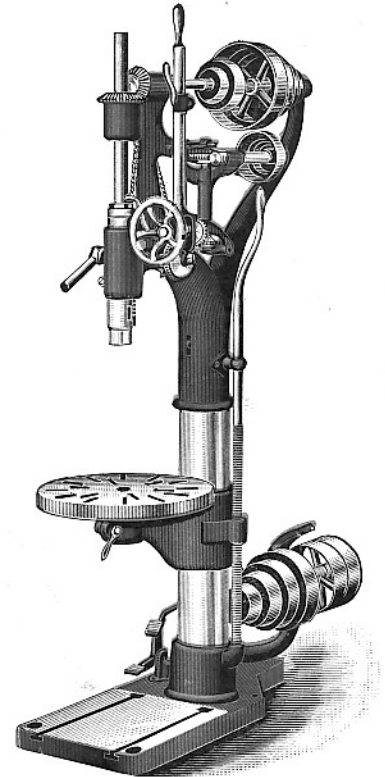
BARNES' UPRIGHT DRILL No. 1, 20-Inch Swing.



LEVER FEED.



LEVER AND WORM FEED.



SELF FEED AND AUTOMATIC STOP.



## Barnes' Upright Drill No. 1.

### 20-Inch Swing.

**C**HIS drill is now so well known and widely used that it has become the standard drill of its size on the market.

It embodies several desirable features not found in other drills. One of these is the very convenient and effective method of raising and lowering the platen, by means of a screw placed parallel with the column, the handle of which is within easy reach of the operator.

The platen turns in the arm that supports it, and by swinging the arm on the column it can be thrown out from under the drill spindle.

Both the platen and its supporting arm can be clamped firmly in place by clamping screws, which have levers attached, thus avoiding the use of wrenches or of any detached tools for adjusting the machine.

The spindle is fitted with the No. 3 Morse taper and is counterbalanced by a weight in the hollow of the column.

The bevel gearing is cut from the solid and is as nearly noiseless as it is possible for metal gearing to be.

The bearings are long and accurately fitted.

We can furnish the drill with plain lever feed, with combination lever and worm feed, or with self feed and automatic stop as shown on the opposite page.

Each drill has quick return lever.

We can supply the drill with back gearing if wanted.

We are now equipping our drills with ball bearing for spindle thrust. The ball bearing reduces friction to a minimum and makes our drills even better than heretofore.

Height of drill is 67 inches.

Diameter of column,  $5\frac{1}{4}$  inches.

Diameter of spindle,  $1\frac{5}{8}$  inches.

Vertical travel of spindle, 9 inches.

Diameter of large pulley on cone, 8 inches.

Diameter of small pulley on cone, 4 inches.

Diameter of tight and loose pulleys, 8 inches.

Diameter of bevel gear,  $4\frac{7}{8}$  inches.

Diameter of bevel pinion,  $3\frac{1}{4}$  inches.

Distance from spindle to floor (round base), 43 inches.

Distance from spindle to floor (square base), 41 inches.

The cones carry two-inch belt and have four speeds.

The tight and loose pulleys on countershaft should be speeded 225.

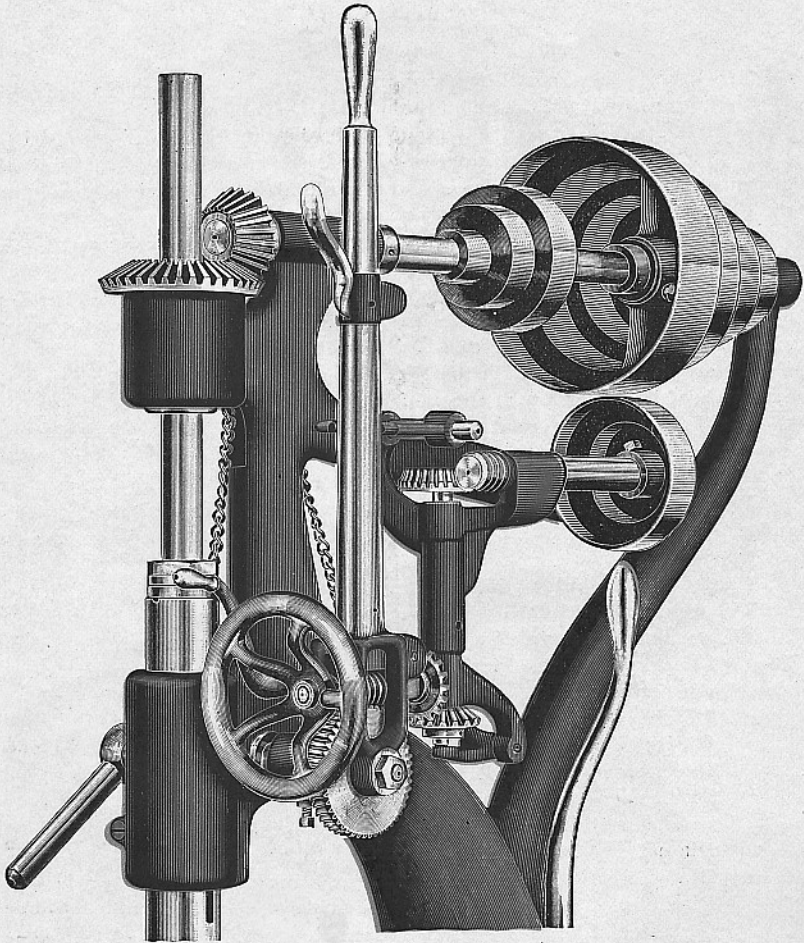
Required floor space, round base,  $34 \times 20\frac{1}{2}$  inches.

Required floor space, square base,  $43 \times 15$  inches.

Weight of drill, 500 to 560 pounds.

Prices quoted on application.

## Barnes' 20-Inch Drill with Self Feed and Automatic Stop.



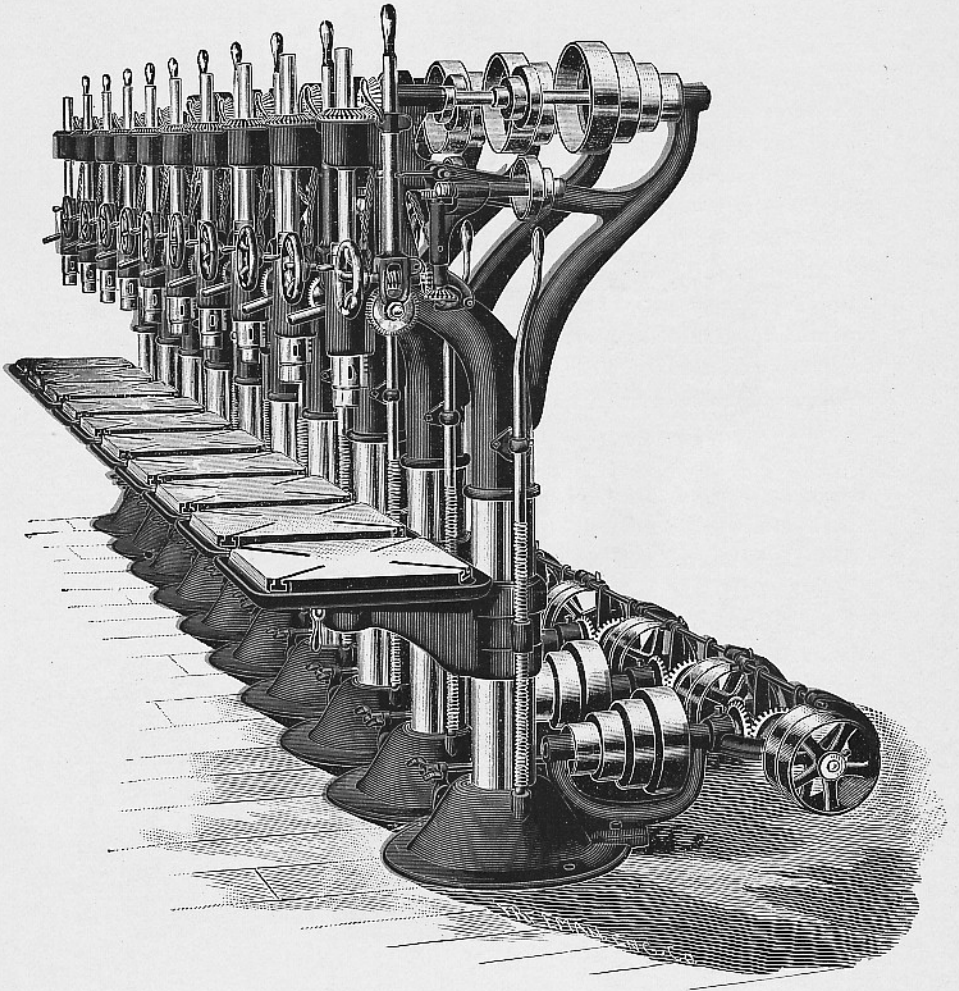
**T**HIS cut shows the application of self feed and automatic stop to our 20-inch drill, and we confidently claim that we are offering in this drill the best tool of its size ever placed on the market.

The arrangement of the parts as shown by the cut gives the following feeds: Lever Feed, Hand Worm Feed, Power Self Feed, Automatic Stop, Quick Return.

The combination of parts by which these are effected allows each feed to be used independently of the others and without requiring any extra motion on the part of the operator.



## Drills in Series.



We are furnishing a great many of our drills arranged with self feed and automatic stop, to be set closely together to take the place of a gang or multiple spindle drill.

The points of advantage in favor of a line of separate drills are many:

1st. The number of drills that can be used in this way will be limited only by the operator's ability to keep the work supplied to the spindles.

2nd. In case of any breakage on one of the drills the others are not incapacitated, whereas with a gang or multiple spindle drill any derangement or breakage would very likely stop the use of the entire machine.

3rd. A line of separate drills are equally available on work requiring a number of spindles or only a single spindle.

4th. Work run in jigs or templates can be handled with greater effectiveness and economy of time on a line of separate drills. For example, a piece of work having a series of holes to be drilled with one or more in a different line or to be drilled at a different angle from the others would have to be rejigged if done on a gang drill, but could be handled on a line of separate drills without extra labor or loss of time. The advantage of a line of separate drills is even more clearly shown on work where holes of different sizes are to be drilled, or where there are several different operations to be performed, as for instance, drilling, counter-boring and tapping. Such work can be done without removing the work from the jigs and with less handling and consequently with greater economy than would be possible on a gang drill. For tapping, one of the drills in the line can be fitted with reversing friction countershaft.

5th. The usefulness of a gang drill is practically limited to the particular work for which it is designed, and in case of a change in the nature of the work, would very likely be entirely useless, while the separate drills would lose nothing of their value for work within their range, and could be used either as before in a line, or separately, as occasion might demand.

6th. Under pressure of work or in case of emergency, one or more drills could readily be taken from the line and put into use in some other part of the shop and afterwards replaced in the line if desired.

The cut on page 7 shows a line of ten of our 20-inch drills ordered by one of the largest bicycle factories in the country. These drills are equipped with self feed and automatic stop, with square tables with T slots and with groove for oil drip, and have a quarter turn device in the countershaft, so that the drills can be set closely together and at right angles to the line shaft to economize floor space. The cut, as stated, shows a line of the 20-inch drills, but we can furnish the larger drills arranged in the same manner.

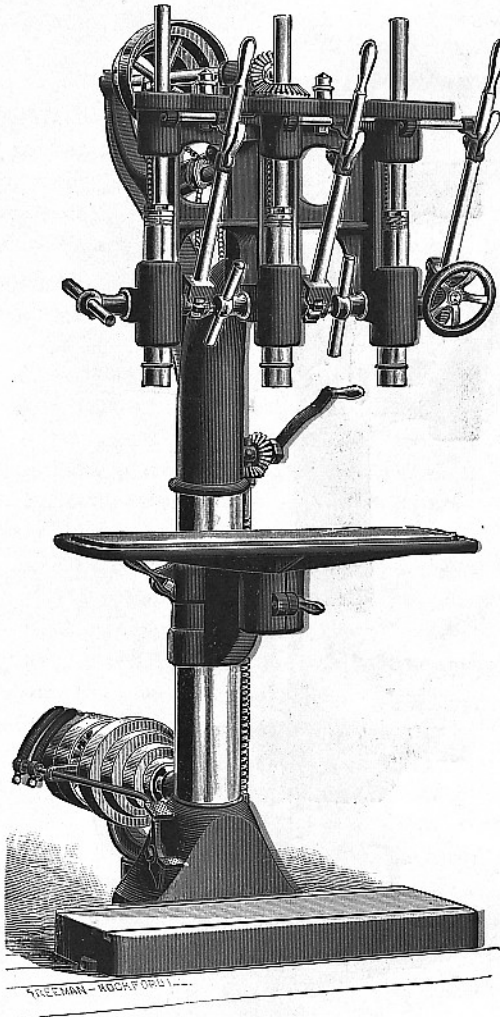
## OIL ATTACHMENT.

We can furnish any of our drills with oil pump attachment. The attachment is complete, including pump, piping, connection and reservoir for the oil.

Prices will be quoted on application.



## Barnes' Three-Spindle Drill.



THIS cut represents our three-spindle drill for light and medium work, the capacity being about the same as that of our 20-inch lever drill. We have embodied in this drill many of the features of the 20-inch drill, the spindles, levers and arrangement for raising and lowering the table being the same. This drill can be used as a one, two, or three-spindle drill. As a single spindle drill the middle spindle is used, and as a two-spindle drill, the middle spindle in connection with either the right or left-hand spindle, as may be desired. The right-hand spindle is provided with combined lever and screw feed, and the other two spindles with lever feed. All three spindles have quick return. There is a gradation in speed between the spindles of 25 per cent. The distance between spindles is 10 inches; distance from center of middle spindle to column, 9 inches; from center of outside spindles to column, 13 inches; size of table, 30 x 12 inches. The height of drill is 72 inches; diameter of column,  $5\frac{1}{4}$

inches; diameter of spindle,  $1\frac{5}{8}$  inches; vertical travel of spindle, 9 inches; distance from end of spindle to base, 43 inches; greatest distance between end of spindle and table, 26 inches.

Required floor space, 42 x 30 inches.

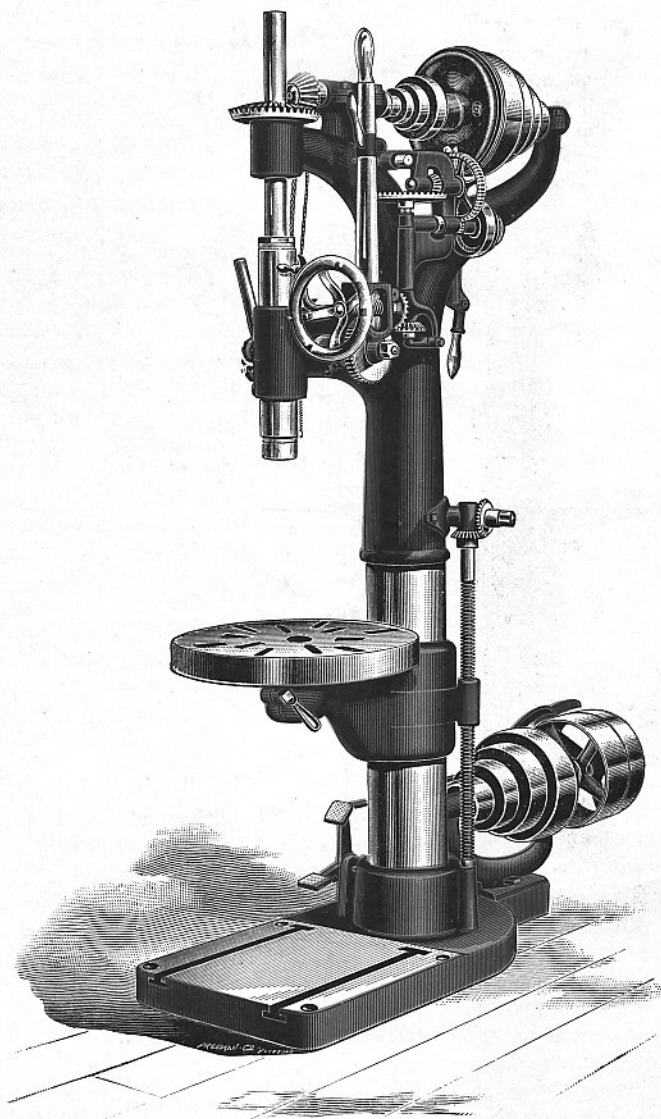
The tight and loose pulleys on countershaft are 8 x 2 inches, and should make 225 revolutions.

Weight of drill, 900 pounds.

Price quoted on application.

# Barnes' Upright Drill No. 1½.

22½ - Inch Swing.



## Barnes' Upright Drill No. 1½.

22½-Inch Swing.

**T**HIS drill we have placed on the market in response to a demand for a drill intermediate in size between the 20-inch and 25-inch drills. It is a very strong and stiff tool; thoroughly well made; high grade in every respect.

We are prepared to furnish this drill arranged in several styles, as follows:

Without back gear; with hand lever feed.

Without back gear; with combined lever and worm feed.

Without back gear; with self feed, automatic stop, combined lever and worm feed.

Back geared; with hand lever feed.

Back geared; with combined lever and worm feed.

Back geared; with self feed, automatic stop, combined lever and worm feed.

All have quick return lever for spindle.

The spindle is fitted with the No. 3 Morse taper.

We are now equipping our drills with ball bearing for spindle thrust. The ball bearing reduces friction to a minimum and makes our drills even better than heretofore.

The dimensions are as follows:

Height of drill, 74 inches.

Diameter of column, 6¾ inches.

Diameter of spindle, 1¼ inches.

Vertical travel of spindle, 12 inches.

Diameter of large pulley on cone, 10 inches.

Diameter of small pulley on cone, 4 inches.

Diameter of bevel gear, 6⅞ inches.

Diameter of bevel pinions, 3⅜ inches.

Ratio of back gearing, 5½ to 1.

Distance from spindle to base, 42 inches.

Required floor space, 52x19 inches.

The cones carry 3-inch belt, and have four steps.

The tight and loose pulleys on countershaft should make 200 revolutions.

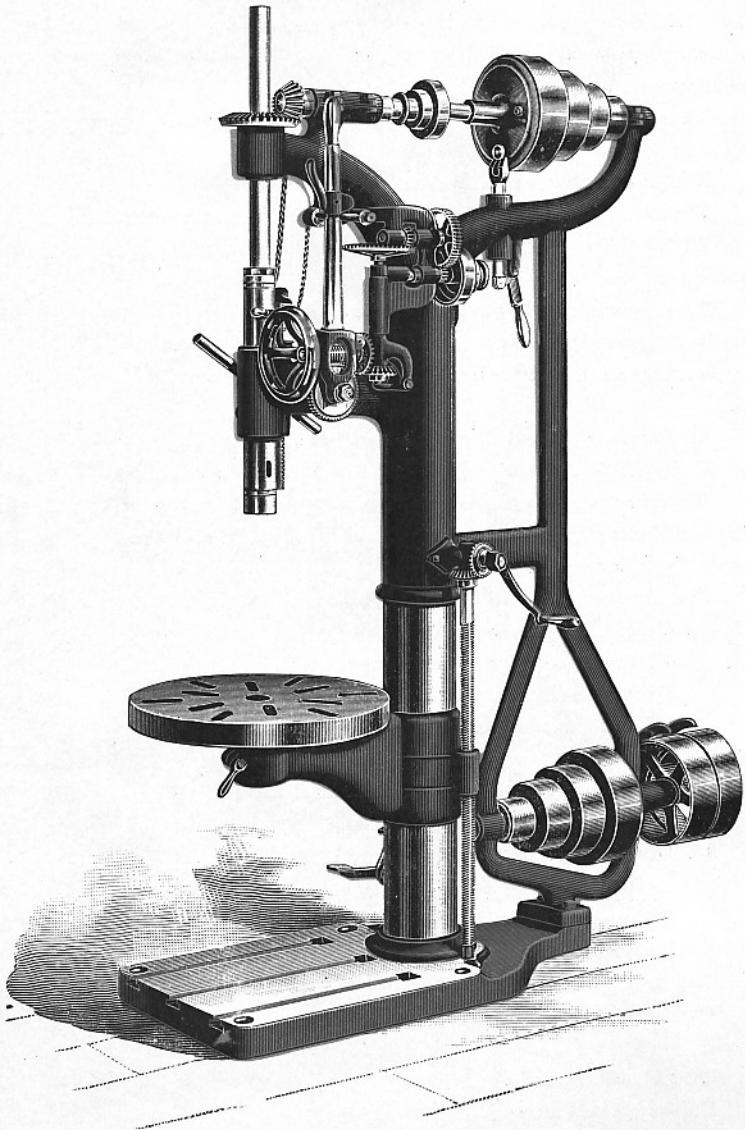
Weight, 850 pounds.

Prices quoted on application.



## Barnes Upright Drill No. 2.

25 - Inch Swing.



## Barnes' Upright Drill No. 2.

### 25-Inch Swing.

**B**ACK geared, lever and worm feed, self feed with automatic stop, and quick return lever for spindle.

The back gear is inside the cone and is very powerful, compact, durable and comparatively noiseless. It can be brought into or thrown out of use by simply dropping or raising a latch that projects from the face plate of the cone pulley. This latch is easy of access, and can be operated instantly for its designed purpose.

Automatic or self-feed is effected in this machine by use of a pair of cone pulleys, transmitting power through gearing, the mechanism being clearly shown by the cut of the drill on the opposite page.

The feed can be stopped or started instantly, by means of a small lever within easy reach of the operator. An automatic stop governing the depth of hole to be drilled is also provided.

The spindle is made of steel, is fitted with the No. 3 Morse taper, and is counterbalanced by a weight in the hollow of the column. The rack and pinion for feeding the spindle are cut from solid Norway iron.

The bevel gearing is also cut from solid iron, and is as nearly noiseless as is possible for metal gearing to be made.

We are now equipping our drills with ball bearing for spindle thrust. The ball bearing reduces friction to a minimum and makes our drills even better than heretofore.

The bearings are long and well fitted, thus insuring long wear.

Height of drill is 6 feet 6 inches.

Diameter of column,  $6\frac{1}{2}$  inches.

Diameter of spindle,  $1\frac{1}{8}$  inches.

Vertical travel of spindle,  $1\frac{3}{4}$  inches.

Diameter of large pulley on cone, 10 inches.

Diameter of small pulley on cone, 4 inches.

Diameter of tight and loose pulleys, 10 inches.

Diameter of bevel gear, 7 inches.

Diameter of bevel pinion,  $3\frac{1}{2}$  inches.

Ratio of back gearing,  $5\frac{1}{2}$  to 1.

Distance from spindle to base, 3 feet  $8\frac{1}{2}$  inches.

Required floor space,  $60 \times 19\frac{1}{2}$  inches.

The cones carry 3-inch belt and have four speeds.

The tight and loose pulleys on countershaft should be speeded 200.

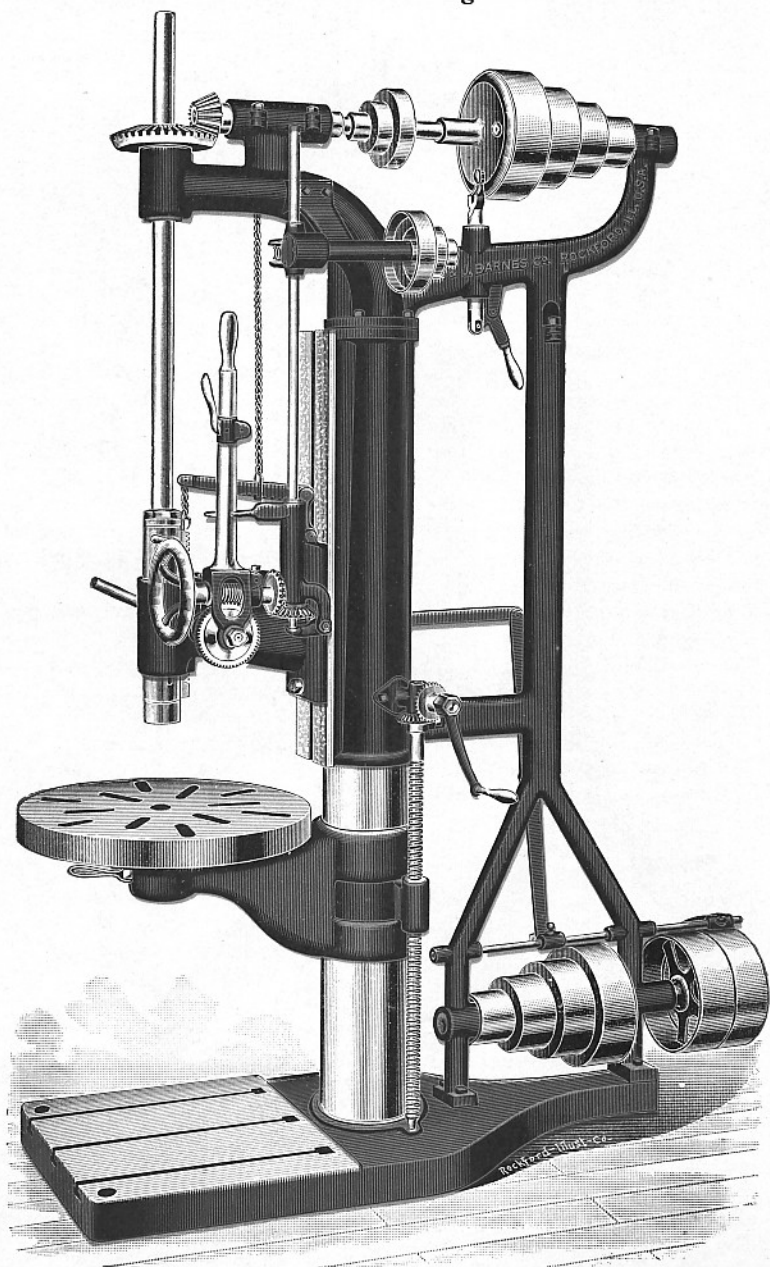
The machine will drill to the center of a 25-inch circle.

Weight, 1,000 pounds.

Prices quoted on application.

# Barnes' Upright Drill No. 5.

26-Inch Swing.



## Barnes' Upright Drill No. 5.

26-Inch Swing.

**W**E have built and are placing this new drill on the market in response to a very general inquiry for a sliding head drill smaller than our 28-inch drill, and we think this new machine will meet fully the requirements for a drill intermediate in size and capacity between the 25-inch stationary head drill and the 28-inch and 34-inch sliding head drills. This new machine has been designed with special care, and we believe embodies every feature necessary to make it a complete and perfect tool. The workmanship is thoroughly first-class in every respect.

### Feed Arrangement.

The feed arrangement is specially strong, and provides for all the different feeds which can be used on a drill press. The cut shows very clearly the feed mechanism, and, as will be seen, the drill has power self-feed with automatic stop, lever and worm feed, and quick return for spindle. The feature of hand lever feed on a sliding head drill in combination with worm and power feed is new and increases the usefulness of the drill. The spindle is fitted with the No. 3 Morse taper. We are now equipping our drills with ball bearing for spindle thrust. The ball bearing reduces friction to a minimum and makes our drills even better than heretofore.

The dimensions are as follows:

- Height of drill, 7 feet.
- Greatest distance from spindle to base, 53 inches.
- Minimum, 21 inches.
- Diameter of column, 7 inches.
- Diameter of spindle,  $1\frac{1}{4}$  inches.
- Width of column face, 6 inches.
- Travel of sliding head, 21 inches.
- Travel of spindle, 11 inches.
- Diameter of large pulley on cone, 10 inches.
- Diameter of small pulley on cone, 4 inches.
- Face of pulleys, 3 inches.
- Tight and loose pulleys, 10x3 inches.
- Diameter of crown gear,  $7\frac{3}{4}$  inches.
- Diameter of bevel pinion,  $3\frac{3}{4}$  inches.
- Face of tooth,  $1\frac{3}{4}$  inches.
- Ratio of back gearing,  $5\frac{1}{2}$  to 1.
- Required floor space, 61x21 inches.
- Weight, 1350 pounds.

The tight and loose pulleys on countershaft should be speeded 175 revolutions.

Prices quoted on application.

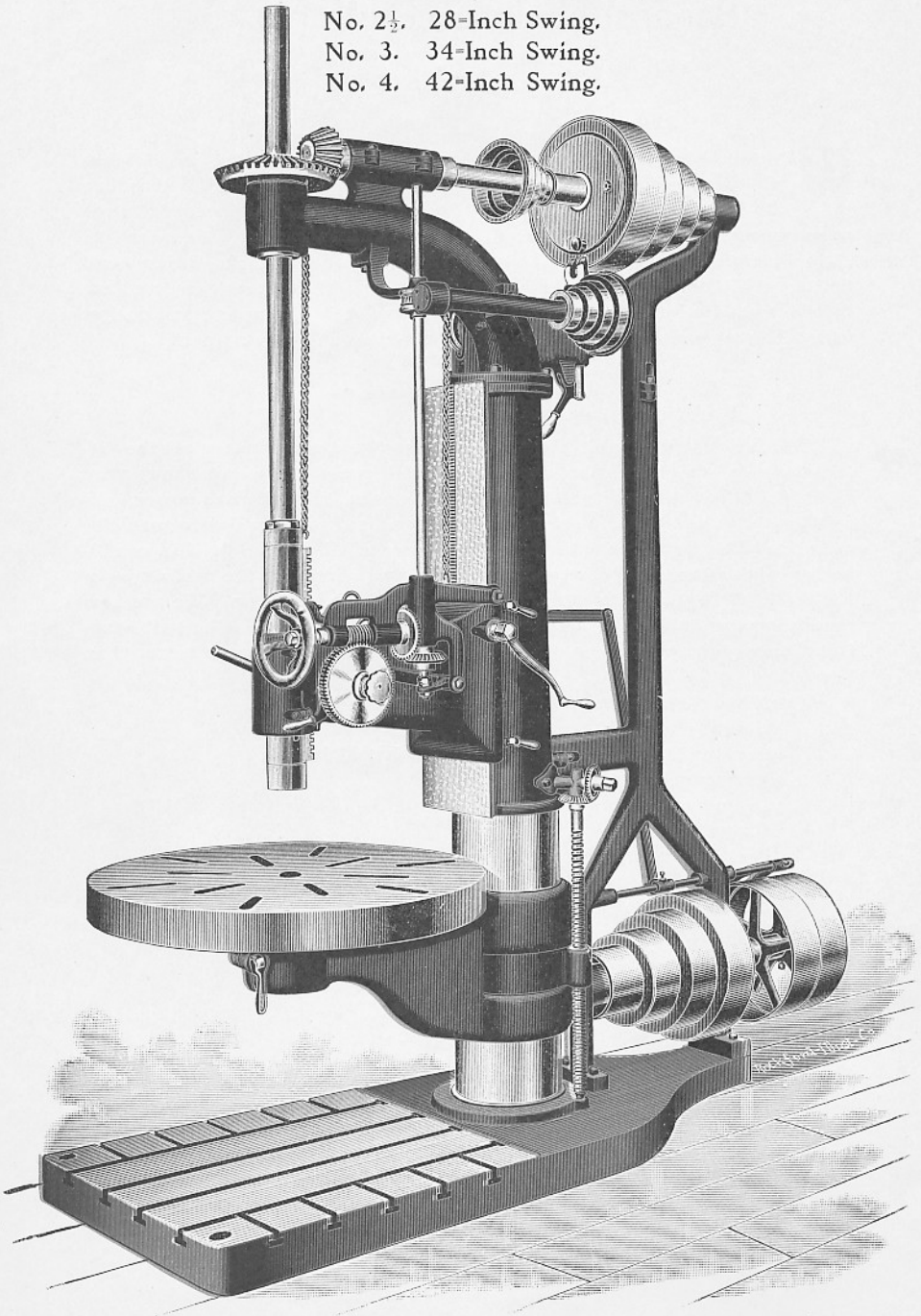


## Barnes' Upright Drills.

No. 2 $\frac{1}{2}$ . 28-Inch Swing.

No. 3. 34-Inch Swing.

No. 4. 42-Inch Swing.



## Barnes' Upright Drills.

No. 2 $\frac{1}{2}$ , 28-Inch Swing.

No. 3, 34-Inch Swing.

No. 4, 42-Inch Swing.

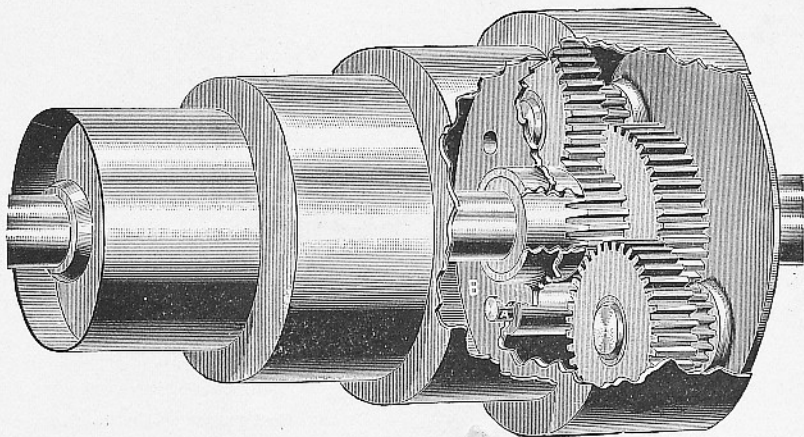
**S**LIDING head, back geared, self feed and automatic stop, and quick return lever for spindle.

These machines are designed with a view of having all the adjusting parts easy of access, and so arranged that the operator can with the least effort control their action. To stop or start the spindle, to change speed, to engage the self feed, to change from fast to slow feed, from hand to self feed, to raise or lower the sliding head on the column, to raise or lower the platen or swing it from under the spindle, to throw in or out the back gearing—all are operated instantly by permanently attached devices for these various purposes. We are now equipping our drills with ball bearing for spindle thrust. The ball bearing reduces friction to a minimum and makes our drills even better than heretofore.

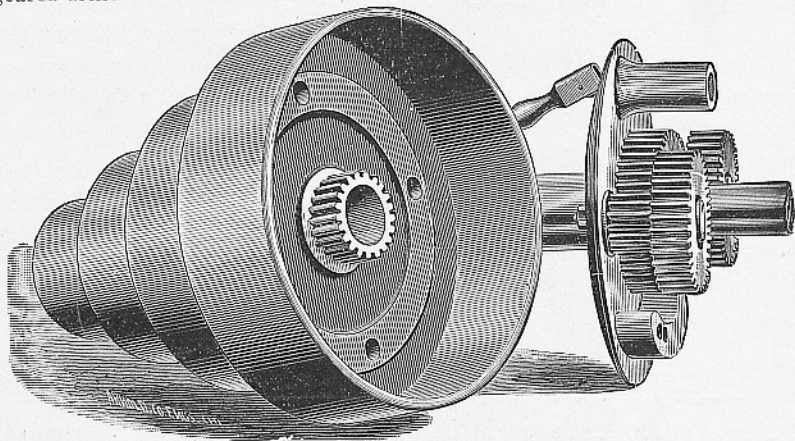
The spindles of the 28 and 34-inch drills are fitted with the No. 4 Morse taper; spindle of 42-inch drill has No. 5 taper. The sliding head and spindle are counterbalanced, all shafts are of steel, the bearings are extra long, the workmanship is first-class in every respect. The dimensions of the drills are as follows:

|  | 28-Inch Drill.      | 34-Inch Drill.          | 42-Inch Drill.             |
|--|---------------------|-------------------------|----------------------------|
| Height of drill.....                                   | 7 ft. 7 in.         | 8 ft. 2 in.             | 8 ft. 10 in.               |
| Distance from spindle to base.....                     | 54 inches           | 57 inches               | 4 ft. 10 $\frac{1}{2}$ in. |
| Diameter of column.....                                | 7 $\frac{3}{4}$ "   | 9 $\frac{1}{4}$ "       | 10 $\frac{3}{16}$ inches   |
| Diameter of spindle.....                               | 1 $\frac{13}{16}$ " | 1 $\frac{15}{16}$ "     | 2 $\frac{1}{16}$ "         |
| Width of column face.....                              | 6 $\frac{3}{4}$ "   | 8 $\frac{3}{16}$ "      | 10 "                       |
| Travel of sliding head.....                            | 25 "                | 29 "                    | 30 "                       |
| Travel of spindle.....                                 | 14 $\frac{1}{2}$ "  | 16 $\frac{1}{2}$ "      | 18 "                       |
| Diameter of large pulley on cone.....                  | 12 "                | 14 "                    | 16 "                       |
| Diameter of small pulley.....                          | 4 $\frac{3}{8}$ "   | 4 $\frac{7}{8}$ "       | 7 "                        |
| Face of pulleys.....                                   | 3 "                 | 3 $\frac{1}{2}$ "       | 4 "                        |
| Tight and loose pulleys.....                           | 12x4 "              | 14x4 "                  | 16x4 $\frac{1}{2}$ "       |
| Diameter of crown gear.....                            | 8 $\frac{5}{8}$ "   | 9 $\frac{1}{4}$ "       | 11 $\frac{1}{4}$ "         |
| Diameter of bevel pinion.....                          | 4 $\frac{1}{2}$ "   | 4 $\frac{3}{4}$ "       | 5 $\frac{1}{2}$ "          |
| Face of tooth.....                                     | 1 $\frac{15}{16}$ " | 2 "                     | 2 $\frac{1}{2}$ "          |
| Ratio of back gearing.....                             | 6 to 1              | 6 $\frac{1}{4}$ to 1    | 6 $\frac{1}{4}$ to 1       |
| Required floor space.....                              | 67x22 in.           | 76x26 $\frac{1}{2}$ in. | 90x30 $\frac{1}{2}$ in.    |
| Speed for tight and loose pulleys on countershaft..... | 175                 | 175                     | 125                        |
| Weight.....  | 1800 lbs.           | 2500 lbs.               | 4000 lbs.                  |

Prices on application.

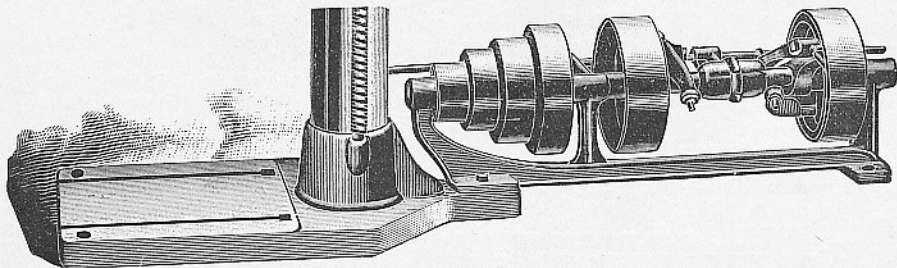


This cut shows the arrangement of back gearing inside the cone on our back geared drills.



This cut shows the cone pulley withdrawn from the shaft, and the locking plunger and lever for throwing in and out back gearing exposed to view.

## Friction Countershaft.



We can furnish any of our drills with friction countershaft, as shown in above cut, where drill is to be used for tapping.  
Prices will be quoted on application.

## Barnes' Adjustable Screw Press.

**T**HIS exceedingly convenient press is designed for use in machine shops for pressing shafts into and from pulleys, gear wheels, hubs, etc., and for straightening shafts. Its invention was the result of a constant need of such a press in our works, and we have one convenient to each of the lathes in our factory.

The engraving shows the construction and principle of operation of the machine very distinctly. From the table rise two screw guides, upon

which the cross-head is adjustably supported, having two semi-screw nuts and toggle mechanism by which the cross-head is held fast or released for vertical adjustment. The cross-head is balanced by weights, as shown, and a steadying bar connects the press cup with the press screw. On the press screw is fixed a spur-toothed ratchet wheel embraced by a forked lever-head fulcrummed to oscillate on the press screw. A double-acting spring pawl engages the teeth of the ratchet, and to the press screw a hand crank is fixed.

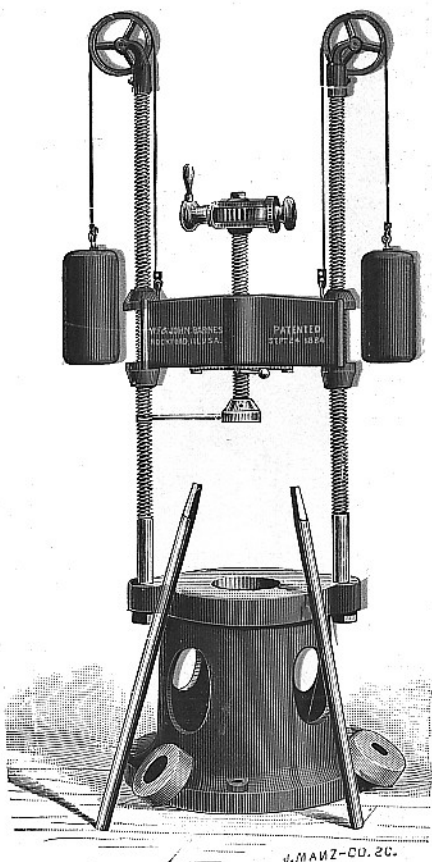
After the object has been placed in press, the cross-head in which the central screw is placed can be instantly dropped to the work, and with a few turns of the screw the required pressure is applied. An important saving in time is thus effected, as compared with the method heretofore followed of placing a quantity of blocks on the bed plate, or running a long screw up and down until it has reached the material to be pressed.

The operator at a lathe can turn to the machine and press on or off any work that is done on mandrels in his lathe, avoiding the necessity of pounding on the ends of the mandrels, battering or spoiling the centers or springing the mandrels. The durability of mandrels thus used is indefinite, and the risk of breaking a wheel or other object in putting

it on or taking it off the mandrel is avoided. Moreover, pulleys or gear wheels pressed on shafts by this machine are more securely fixed, and less liable to be out of true when put into service.

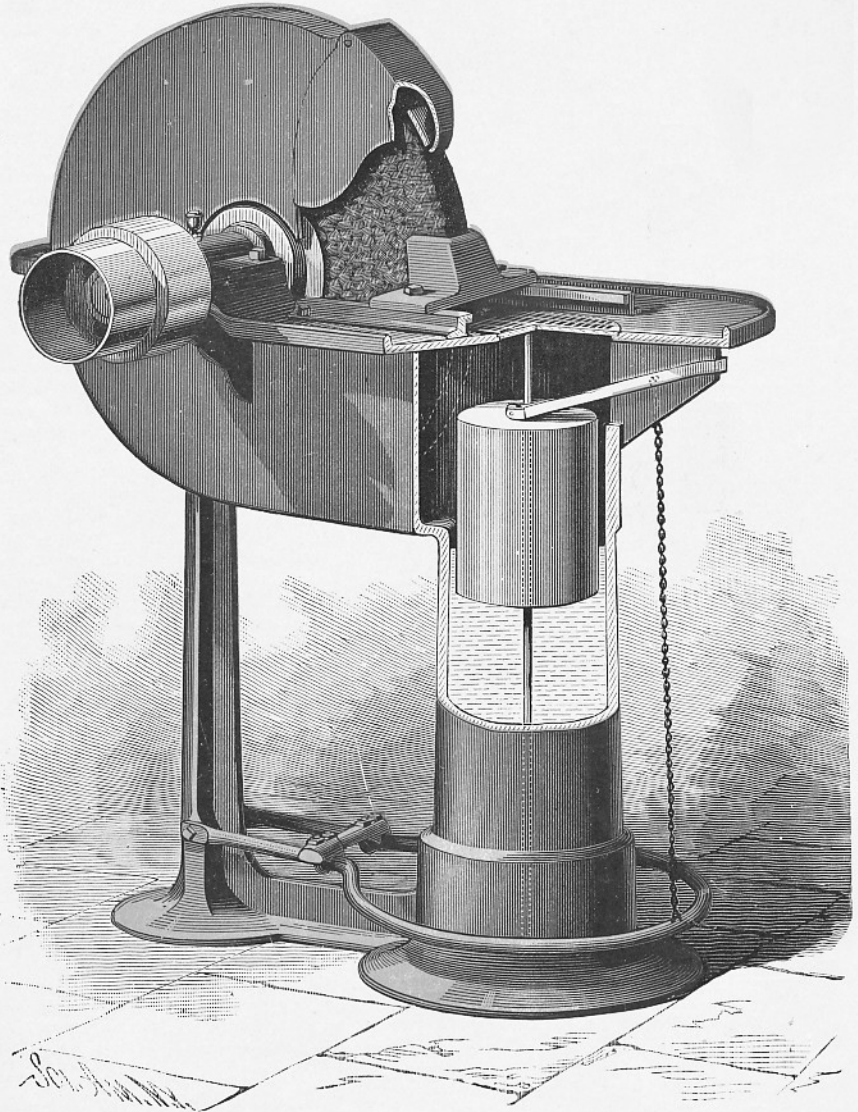
We make this press in three sizes, as follows:

|   |          |
|---|----------|
| No. 1, 12x24, capacity 20 tons pressure, weight 260 lbs.....  | \$ 65 00 |
| No. 2, 20x36, capacity 50 tons pressure, weight 870 lbs.....  | 100 00   |
| No. 3, 30x36, capacity 50 tons pressure, weight 1435 lbs..... | 125 00   |





## Barnes' Water Emery Grinder.



## Barnes' Water Emery Grinder.

THE accompanying engraving represents an improved method of mounting an emery wheel, which possesses advantages which are apparent at a glance. To the front of the treadle, which is pivoted to the rear standard and bent to encircle the water column, is attached a lever whose free end carries a float. By pressing with the foot upon the treadle, the float is made to enter the water chamber, thereby displacing the water and forcing it to rise and supply the wheel. When the machine is not in use the float rises and the water settles back out of the way of the wheel.

This arrangement does away with all pumps and valves, which are liable to get out of order, simplifies the machine and makes it more practicable under all conditions.

The chamber in which the float is suspended—resting upon the water—is divided from the chamber in which the wheel revolves by a partition, in the lower part of which is a small hole through which the water slowly enters the wheel chamber. The action of the wheel carries the water to the front upper quarter of the wheel, where it is arrested and thrown into a pocket, from whence it falls on the wheel and tool. The pocket is shown in the engraving by the outer shell broken away. Without the partition referred to the water would be flooded into the wheel in a body or rush, which would not be desirable. The small hole being in the bottom edge of the partition, allows the water to flow back into the reservoir when the float rises. The curved treadle can be conveniently reached, no matter what position the operator may assume when grinding.

This construction not only greatly simplifies the machine and renders it far more efficient, but it also allows it to be used in shops where there is no piping.

We have tried thoroughly many different makes of emery wheels, and can guarantee the wheel we use on our grinder as the best and most satisfactory wheel for wet tool grinding on the market.

The pulleys on the grinder are  $5\frac{1}{2}$  and 7 inches in diameter by 4 inches face, and on countershaft  $13\frac{1}{2}$  and 10 inches by 4 inches. The speed of countershaft should be 400; speed of wheel, 725.

Required floor space, 34 x 18 inches.

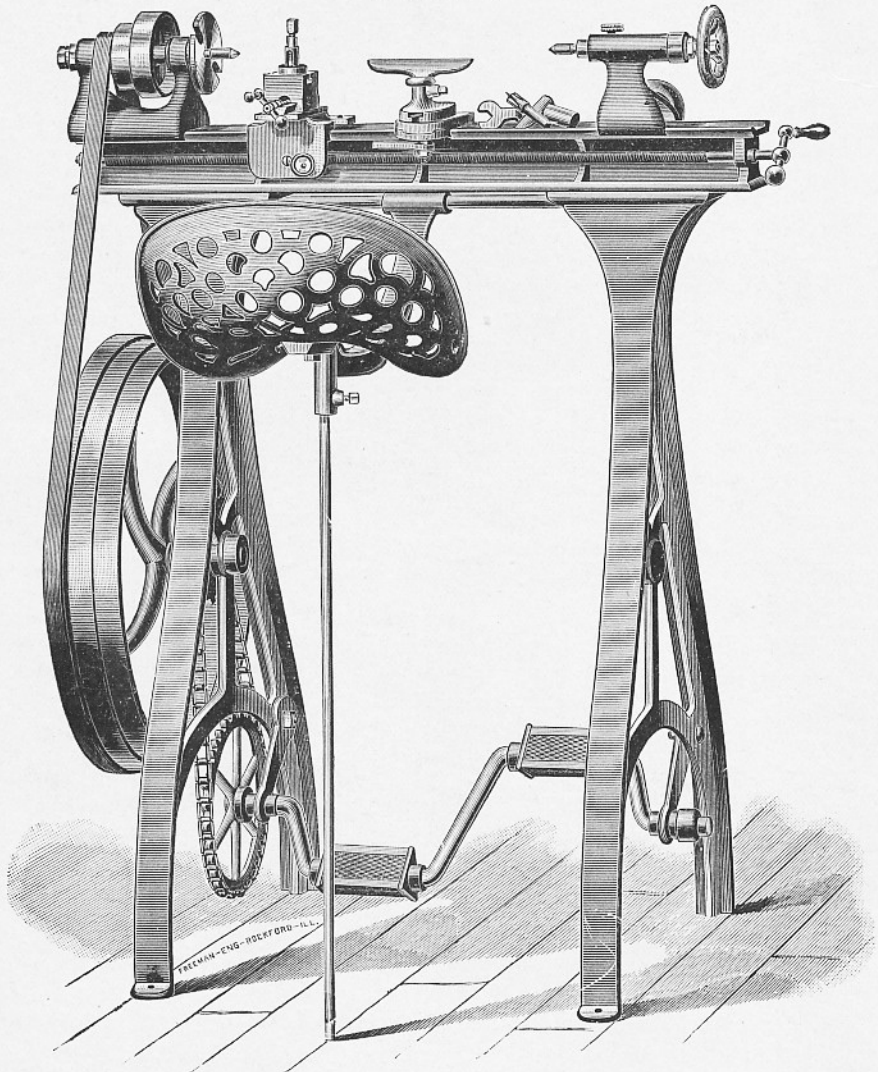
Price, including countershaft and wheel 24 x 2, \$80.00.

Weight, 750 pounds.

## Lathe No. 4.

7-Inch Swing.

Price, \$40.00.



When ordering lathes, be particular to state clearly whether wanted with foot power or countershaft; if with foot power, state whether velocipede or treadle.

## Lathe No. 4.

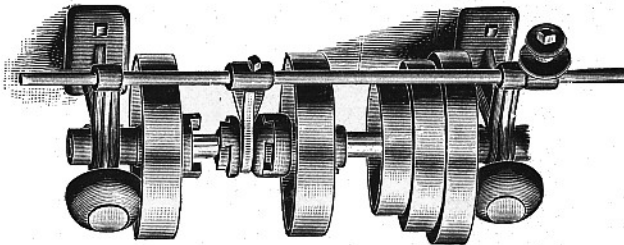
### 7-Inch Swing,

**C**HIS lathe is designed for turning both wood and iron, and for boring, drilling, polishing, etc. It is a desirable tool for small work, and has many important advantages in the construction and arrangement of its parts. It swings 7 inches and takes 20 inches between centers. It has our patent velocipede foot power, which is the best power ever applied to a foot-driven lathe. The speed can be varied from 1,000 to 2,000 revolutions per minute, and the motion can be started, stopped or reversed instantly, at the will of the operator. Greater power can be applied on the work than with any old-style foot power, and with greater ease. The lathe is made entirely of iron and steel. The bed is solid, and has V-shaped projections, over which the head and tail stocks and hand and slide rests are fitted. The lead screw for the carriage is operated by hand; by it the carriage can be traveled 20 inches, the entire distance between centers. The carriage can be engaged or disengaged instantly from the lead screw. The cross feed way on which the tool post moves can be set at any desired angle for taper turning and boring. The tail stock can be moved and set at any point desired by the simple turning of the hand-wheel; or it can be taken off entirely, thus leaving the bed free for face-plate or chuck work. The head stock spindle is hollow, size of hole  $\frac{9}{32}$  inch. The head stock spindle has taper bearings, and is capable of very nice adjustment. The tail stock center is self-discharging.

The price of the lathe is \$40.00; this includes face-plate, two pointed centers and one spur center, hand rest, wrenches and necessary belting, as shown in cut.

The lathe weighs 210 pounds.

Boxed, ready for shipment, 265 pounds.



The above cut represents a countershaft for No. 4 and  $4\frac{1}{2}$  lathes.

The pulleys on countershaft are  $7 \times 1\frac{1}{2}$  inches, and should be speeded 250 revolutions.

Price of countershaft, \$15.00.

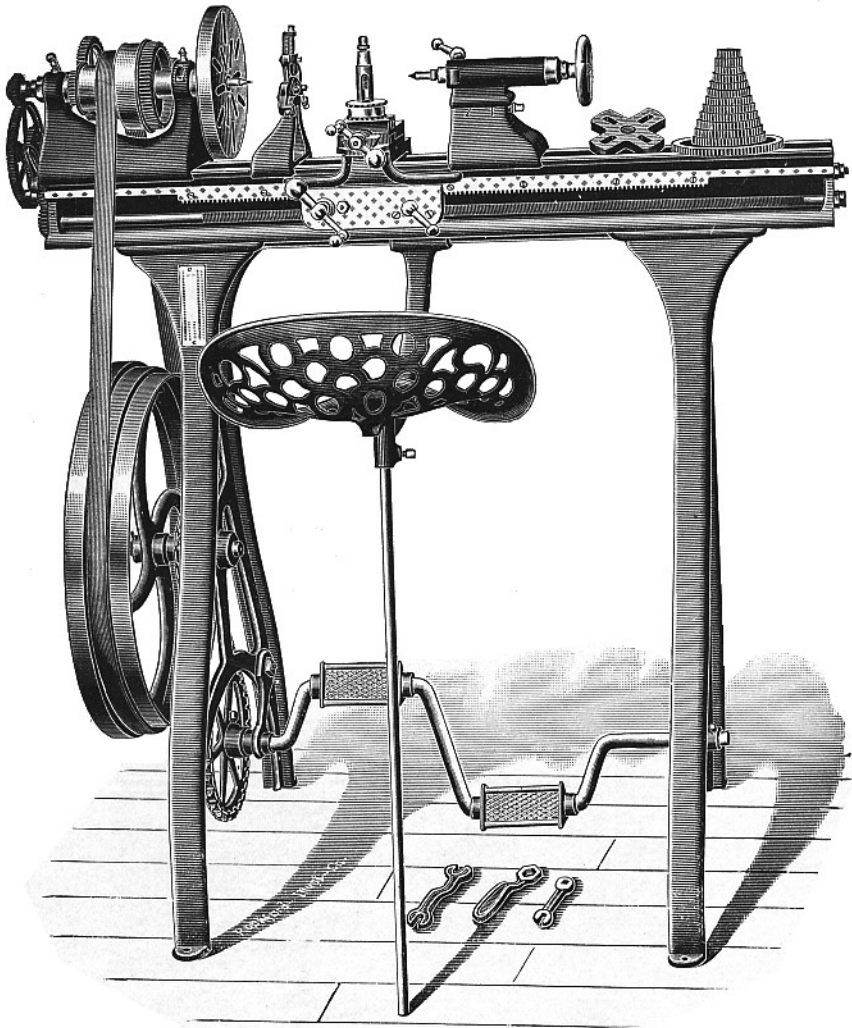
We can furnish lathe with countershaft in place of foot power at same price as with foot power.



## Screw Cutting Lathe No. 4 $\frac{1}{2}$ ,

9-Inch Swing.

Price, \$65.00.



When ordering lathes, be particular to state clearly whether wanted with foot power or countershaft; if with foot power, state whether velocipede or treadle.

## Screw Cutting Lathe No. 4½, 9-Inch Swing.

**T**HIS is the smallest back geared and screw cutting lathe we make, and we claim confidently that it is far and away the best lathe of its size on the market.

It feeds right or left, and cuts screws right or left without change of gearing. The carriage is thoroughly gibbed for taking up wear.

We do not make our lathe with automatic cross feed. Our twenty-five years' experience as lathe users and builders convinces us that on a small lathe, say less than 15 or 16 inches swing, automatic cross feed is of no particular advantage. The tool carriage on our lathes swivels so that the tool can be set to the work at any desired angle, and it also adapts the lathe for taper boring. These features, we are confident, are of greater value than automatic cross feed.

The tail stock has side movement to adjust centers for turning tapers. The head stock has hollow spindle for rods up to  $\frac{3}{8}$  inch. All the gearing is cut from solid metal. All parts are made of steel where this would best serve the purpose.

It is indexed for threads 5 to 40, and the change gears furnished can be combined for many other threads. It swings 9 inches and takes 25 inches between centers. It swings  $4\frac{3}{4}$  inches over tool carriage.

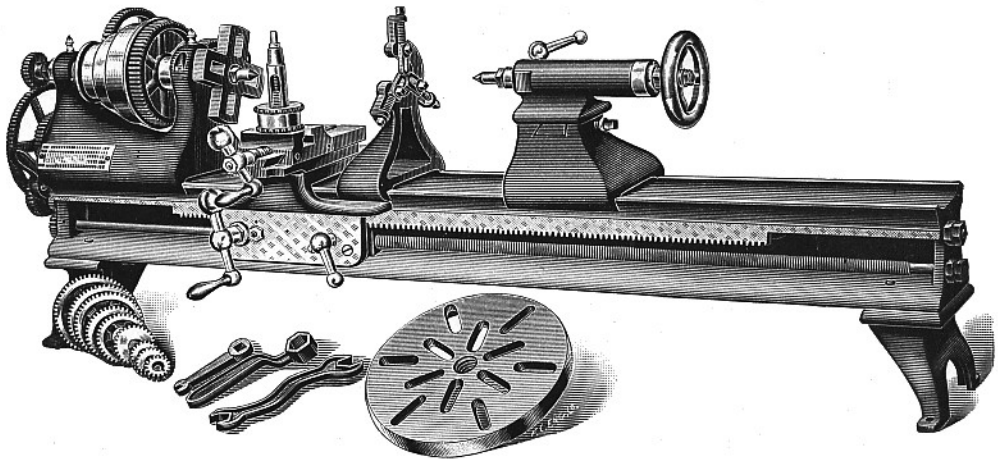
The small pulley on cone is  $2\frac{1}{2}$  inches; the large pulley  $4\frac{1}{2}$  inches.

The lathe weighs 270 pounds.

Boxed, ready for shipment, 340 pounds.

Price, \$65.00.

## Bench Lathes.



We have frequent calls for the Nos. 4½ and 5 Lathes to be arranged with short bench legs instead of with regular legs and foot power, and we are prepared to furnish these bench lathes as shown in above cut.

Prices, without Countershaft:

|   |         |
|---|---------|
| No. 4½ Lathe, bench legs.....                         | \$55 00 |
| No. 5 Lathe, regular length bed, with bench legs..... | 80 00   |
| No. 5 Lathe, extra length bed, with bench legs.....   | 85 00   |

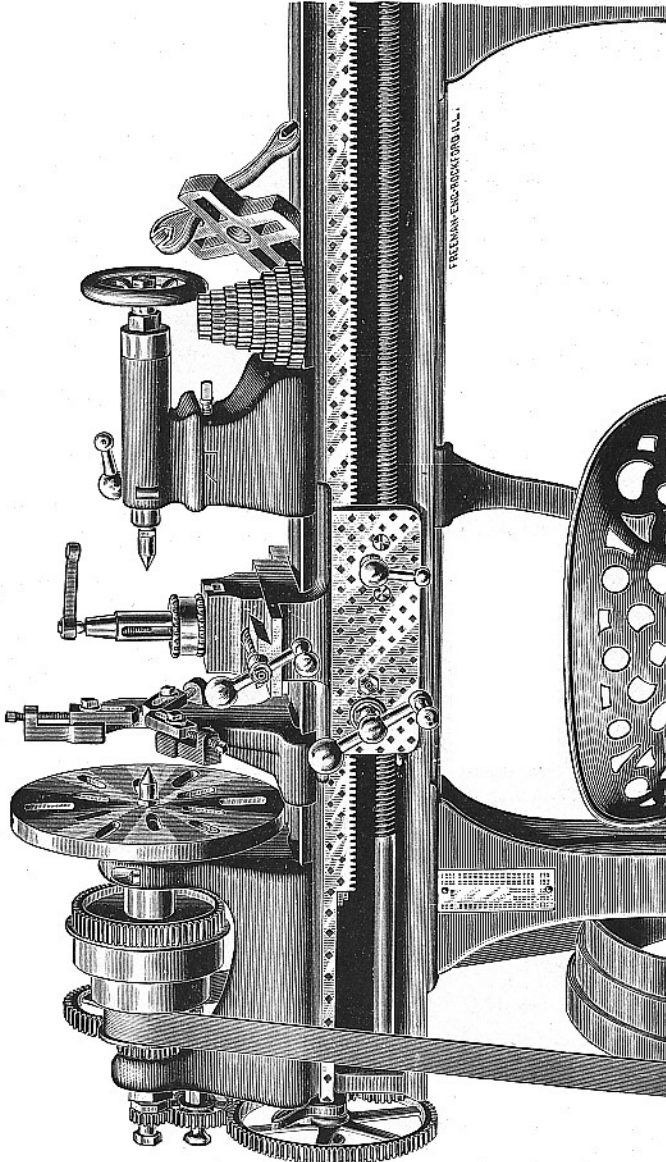
Prices with Countershaft:

|                                       |         |
|---------------------------------------|---------|
| No. 4½ Lathe.....                     | \$65 00 |
| No. 5 Lathe, regular length bed ..... | 90 00   |
| No. 5 Lathe, extra length bed.....    | 95 00   |

# Screw Cutting Lathe No. 5,

11-Inch Swing,

Price, \$90.00.



The above cut shows sectional view of the bed and upper portion of the lathe. The velocipede foot power is the same as shown in cut of No. 4½ Lathe.

When ordering lathes be particular to state clearly whether wanted with foot power or countershaft; if with foot power, state whether velocipede or treadle.

## Screw Cutting Lathe No. 5.

### 11-Inch Swing,

**T**HIS lathe swings 11 inches on the face plate,  $6\frac{3}{8}$  inches over the tool carriage, and is 34 inches between centers.

The head-stock has a steel spindle with  $\frac{1}{2}$ -inch hole through its entire length. The boxes are accurately fitted to the spindle, with provision to keep them true and to take up wear. The tail-stock can be readily set at any desired point, or taken altogether from the lathe bed, thus leaving it free for face-plate or chuck work. It can also be set over for turning tapers. The spindles of both head and tail stocks are of steel, with positively true taper holes for the reception of the centers, and the tail-stock center is self-discharging. The tool carriage is a model of convenience and accuracy, and is *gibbed* to the bed. We do not make our lathes with automatic cross feed. Our twenty-five years' experience as lathe users and builders convinces us that on a small lathe, say less than 15 or 16 inches swing, automatic cross feed is of no particular advantage. The tool carriage on our lathes swivels so that the tool can be set to work at any desired angle, and it also adapts the lathe for taper boring. These features, we are confident, are of greater value than automatic cross feed. All the works are securely protected from chips and dirt, thus insuring long wear and durability to the most costly and vital parts of the lathe. It is indexed for threads 4 to 40, and the change gears furnished can be combined for many other threads. As a right or left screw-cutting lathe it is simply perfect. All the gearing is cut from solid metal in the best machinery known for gear-cutting, and is as true and noiseless as it is possible for metal gearing to be.

The price of the lathe complete, as described, is \$90.00.

It weighs 385 pounds.

Boxed, ready for shipment, it weighs 500 pounds.

### Bed — Extra Length.

For gunsmiths' and other classes of work, greater distance between centers than 34 inches is required, and we can furnish the No. 5 Lathe with bed to take 40 inches between centers at an advance of \$5.00, making price of lathe with long bed \$95.00.

We can furnish blocks for raising head and tail stocks and tool post to make swing of lathe 17 inches, for turning and boring.

Price of raising blocks, \$10.00.

### Countershaft.

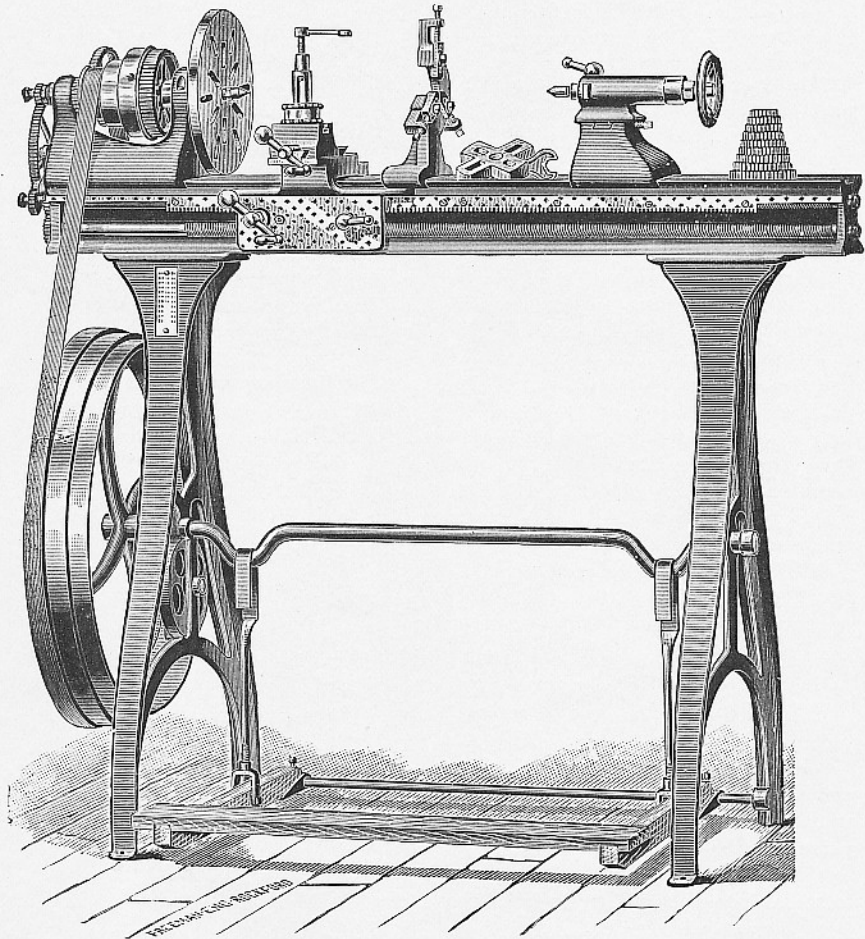
We furnish for the No. 5 Lathe a friction clutch countershaft similar to the one shown by cut on page 31. The pulleys are 7x2 inches and should be speeded 225. Price, \$15.00.



## Screw Cutting Lathe No. 5,

11-Inch Swing.

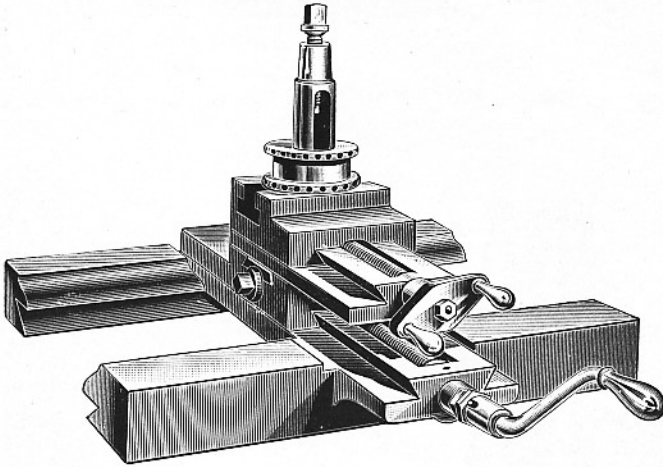
Showing Treadle Foot Power.



We regard the velocipede power as the very best for a foot lathe, but are prepared to furnish our lathes with treadle power as shown above, when for any reason it is preferred. This treadle power we guarantee to be equal to any on the market.

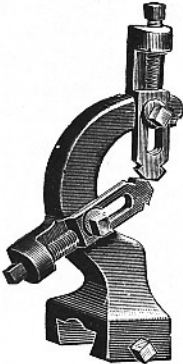
Both styles same price.

## Compound Rest.



We can furnish any of our lathes (except No. 4) with compound rest, as shown in cut, in place of the ordinary rest. The extra cost for the compound rest is \$8.00 for No. 4½ Lathe, \$10.00 for No. 5 Lathe, \$12.00 for Nos. 5½ and 6 Lathes.

The prices given are not for compound rest separately, but represent the additional cost of the lathe with compound rest in place of the ordinary or plain rest. For example, the price of No. 4½ Lathe with the plain rest is \$65.00, or with compound rest \$73.00.



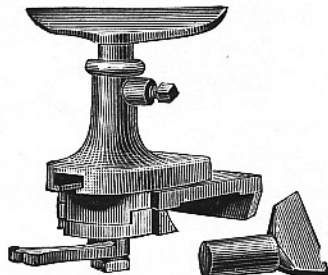
## Follower Rest.

The cut shows a follower rest, which we can furnish, the price of same being for No. 4½ Lathe \$2.50; for No. 5 Lathe, \$3.00; and for Nos. 5½ and 6 Lathes, \$4.00.

## Hand Rest.

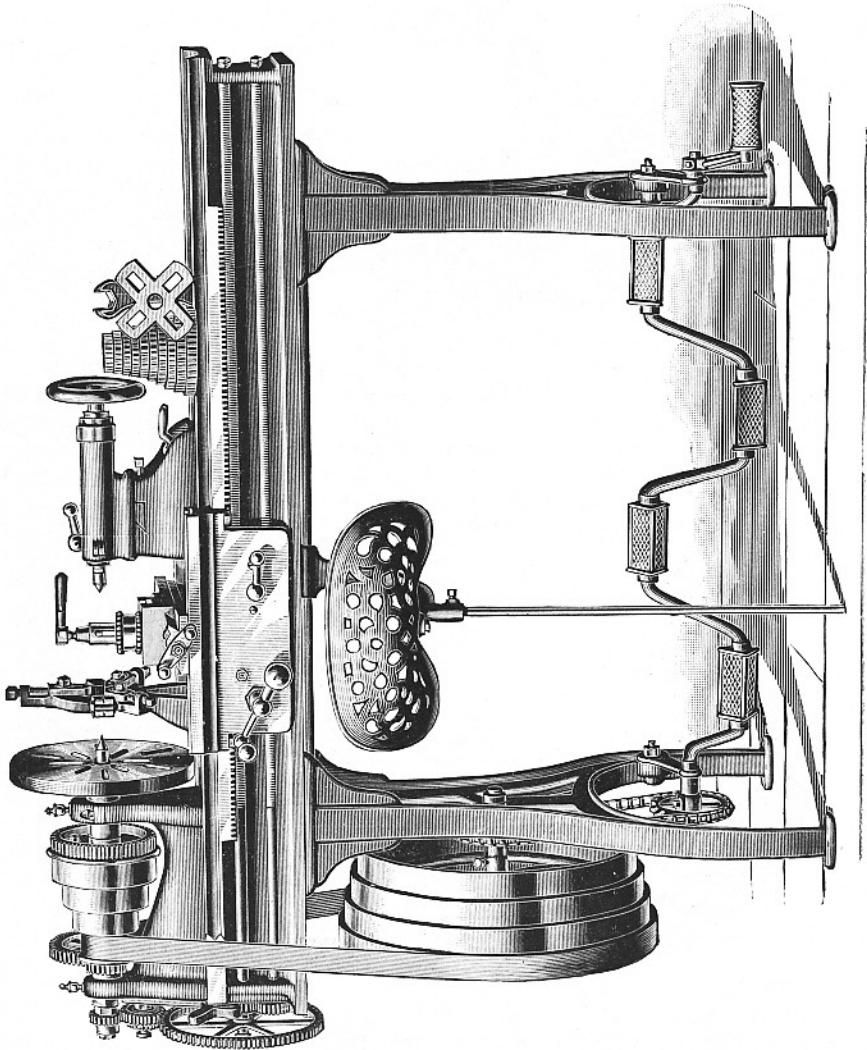
The lathes Nos. 4½, 5, 5½ and 6 are built for metal turning, but can be speeded high enough so that wood turning can be done to very good advantage.

For wood turning a hand rest is required, which we can furnish; the price of this rest for No. 4½ Lathe being \$2.50; for No. 5 Lathe, \$3.00; and for Nos. 5½ and 6 Lathes, \$3.50.



# Screw Cutting Lathe No. 5½,

13-Inch Swing.



When ordering lathes, be particular to state clearly whether wanted with foot power or countershaft; if with foot power, state whether velocipede or treadle.

## Screw Cutting Engine Lathe No. 5½, 13-Inch Swing.

**C**HIS Lathe and the No. 6 Lathe are the largest lathes in our line and are designed to do as heavy work as is practical by the use of foot power. They are strong, thoroughly well-made tools in every particular and are the best lathes of their size made for a job or manufacturing shop.

The No. 5½ Lathe has our patent twin screw feed and screw cutting combination, which makes change of feed in the tool carriage instead of in the head-stock. This greatly simplifies and reduces the number of parts commonly used for these purposes.

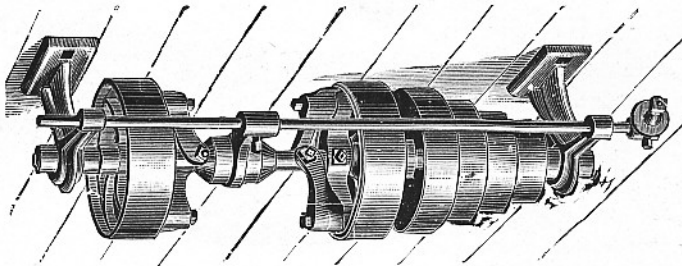
The tail-stock has side movement to adjust centers for turning tapers. The head-stock has hollow spindle for rods up to one-half inch. All the gearing is cut from solid metal. The description of No. 6 Lathe except as relates to the feed, will apply equally to the No. 5½ Lathe. It is indexed for threads 4 to 36, and the change gears furnished can be combined for many other threads.

The dimensions and prices are as follows:

| Length of Bed. | Distance Between Centers. | Swing on Face Plate | Swing over Tool Carriage. | Hollow through Spindle. | Weight of Lathe. | Weight Boxed. | Price.   |
|----------------|---------------------------|---------------------|---------------------------|-------------------------|------------------|---------------|----------|
| 5 ft.          | 33 in.                    | 13 in.              | 8 in.                     | 17-32 in.               | 640 lbs.         | 775 lbs.      | \$125 00 |
| 6 ft.          | 45 in.                    | 13 in.              | 8 in.                     | 17-32 in.               | 690 lbs.         | 850 lbs.      | 135 00   |
| 7 ft.          | 57 in.                    | 13 in.              | 8 in.                     | 17-32 in.               | 740 lbs.         | 890 lbs.      | 145 00   |
| 8 ft.          | 69 in.                    | 13 in.              | 8 in.                     | 17-32 in.               | 790 lbs.         | 950 lbs.      | 155 00   |
| 10 ft.         | 93 in.                    | 13 in.              | 8 in.                     | 17-32 in.               | 950 lbs.         | 1150 lbs.     | 175 00   |

We can furnish blocks for raising head and tail stocks and tool post to make swing of lathe 18 inches, for turning and boring.

Price of Raising Blocks, \$15.00.



The above cut represents a Friction Clutch Countershaft for No. 6 Lathe.

The pulleys on this Countershaft are 7x2 inches, and should be speeded 225.

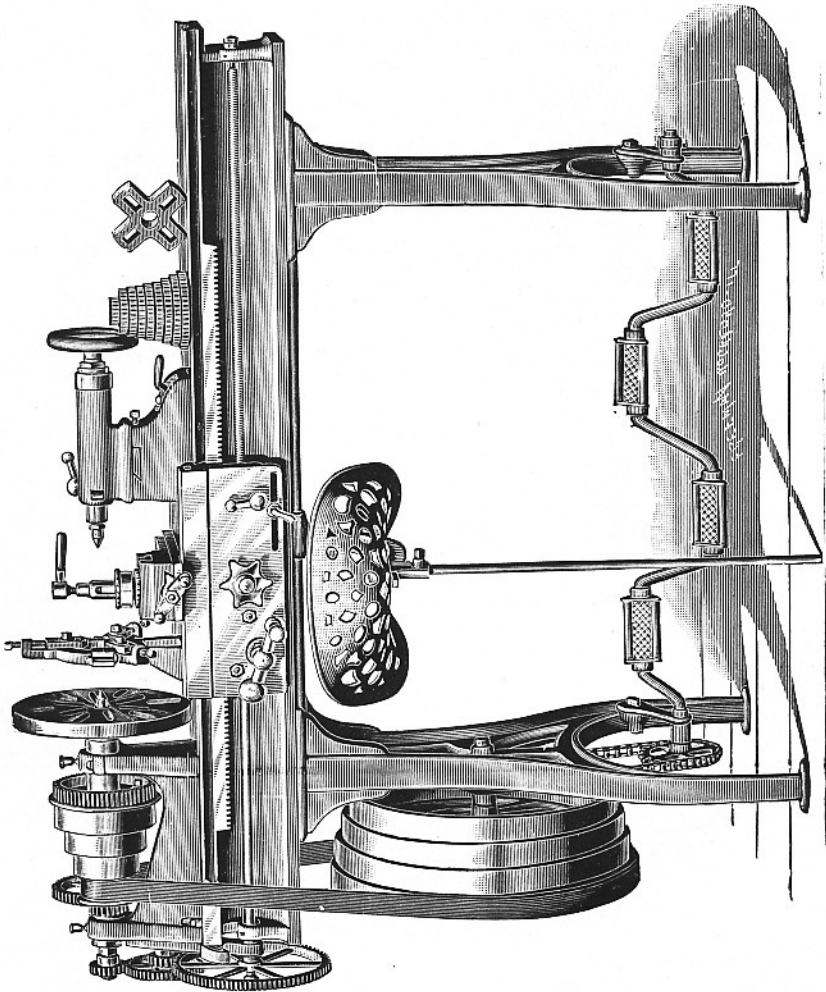
Price of Countershaft, \$20.00.

The prices on No. 5½ Lathe advance \$5.00 where Countershaft is taken instead of foot power.



## Screw Cutting Engine Lathe No. 6.

13-Inch Swing.



When ordering lathes, be particular to state clearly whether wanted with foot power or countershaft; if with foot power, state whether velocipede or treadle.

## Screw Cutting Engine Lathe No. 6,

### 13-Inch Swing.

**T**HIS Lathe corresponds in dimensions to the No. 5½ Lathe, but differs from it in having a splined screw, giving rod feed for turning, reserving the screw for thread cutting only.

It has our patent velocipede foot power, which is the best power ever applied to a foot-driven lathe.

Motion can be started, stopped or reversed instantly, at the will of the operator, and greater power can be applied on the work than with any old style foot power, and with greater ease. The seat can be moved readily to any part of the bed that the work requires.

The head stock has a hollow steel spindle that will take a half-inch rod through its entire length. The boxes are accurately fitted to the spindle, with provision to keep them true and to take up wear. The tail stock can be readily set at any desired point, or taken altogether from the lathe bed, without removing nuts or bolts.

It can also be set over for turning tapers. The spindles for both head and tail stocks are of steel, with positively true taper holes for the reception of the centers, and the tail stock center is self-discharging. The tool carriage is a model of convenience and accuracy, and is *gibbed* to the bed.

We do not make our lathes with automatic cross feed. Our twenty-five years' experience as lathe users and builders convinces us that on a small lathe, say less than 15 or 16-inch swing, automatic cross feed is of no particular advantage. The tool carriage on our lathe swivels so that the tool can be set to the work at any desired angle, and it also adapts the lathe for taper boring. These features, we are confident, are of greater value than automatic cross feed.

It is indexed for threads 4 to 36, and the change gears furnished can be combined for many other threads.

All the works are securely protected from chips and dirt, thus insuring long wear and durability to the most costly and vital parts of the lathe.

By a lever in the apron of the tool carriage, the feed can be graduated instantly from coarse to fine, and vice versa.

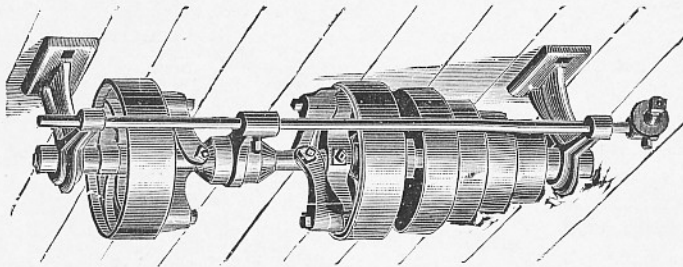
The dimensions and prices are on the next page.

## Lathe No. 6,

| Length of Bed. | Distance Between Centers. | Swing on Face Plate. | Swing over Tool Carriage. | Hollow through Spindle. | Weight of Lathe. | Weight Boxed. | Price.   |
|----------------|---------------------------|----------------------|---------------------------|-------------------------|------------------|---------------|----------|
| 5 ft.          | 33 in.                    | 13 in.               | 8 in.                     | 17-32 in.               | 640 lbs.         | 775 lbs.      | \$140 00 |
| 6 ft.          | 45 in.                    | 13 in.               | 8 in.                     | 17-32 in.               | 690 lbs.         | 850 lbs.      | 150 00   |
| 7 ft.          | 57 in.                    | 13 in.               | 8 in.                     | 17-32 in.               | 740 lbs.         | 890 lbs.      | 160 00   |
| 8 ft.          | 69 in.                    | 13 in.               | 8 in.                     | 17-32 in.               | 790 lbs.         | 959 lbs.      | 170 00   |
| 10 ft.         | 93 in.                    | 13 in.               | 8 in.                     | 17-32 in.               | 950 lbs.         | 1150 lbs.     | 190 00   |

We can furnish blocks for raising head and tail stocks and tool post to make swing of lathe 18 inches, for turning and boring.

Price of Raising Blocks, \$15.00.



The above cut represents a Friction Clutch Countershaft for No. 6 Lathe.

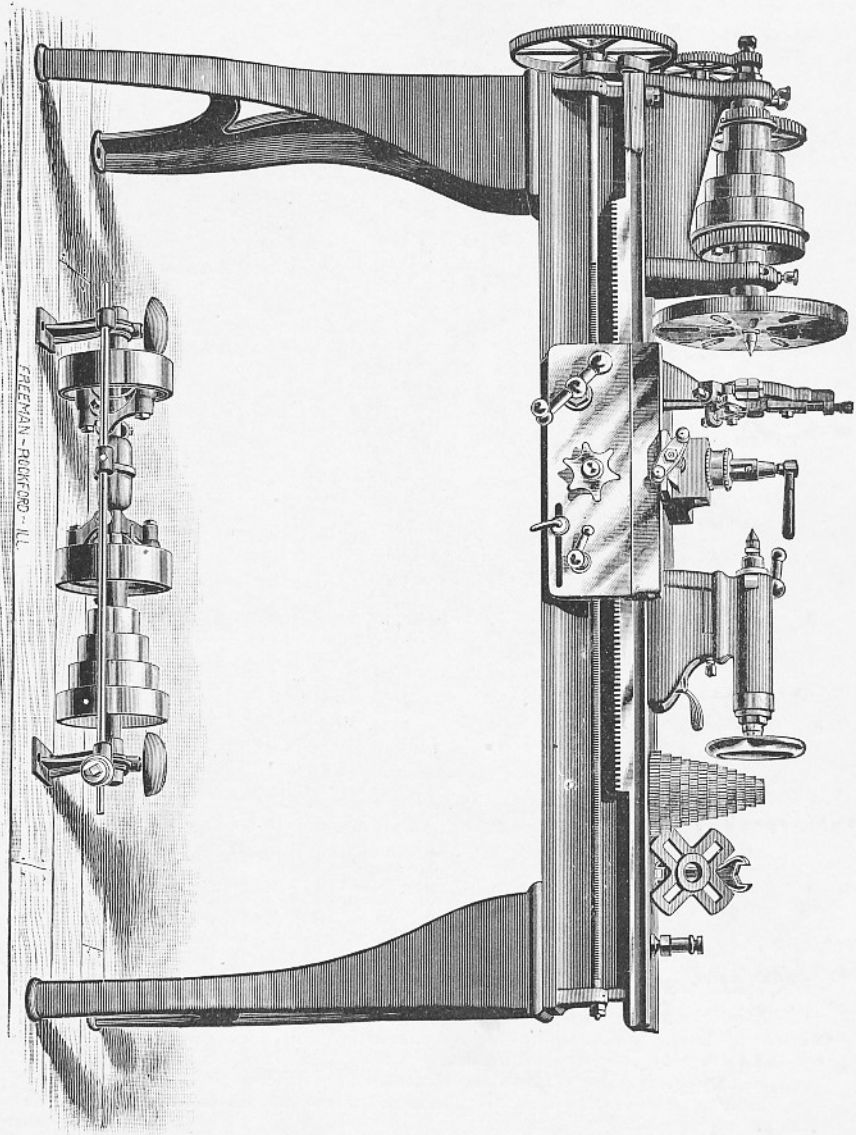
The pulleys on this Countershaft are 7x2 inches, and should be speeded 225.

Price of Countershaft, \$20.00.

The prices on No. 6 Lathe advance \$5.00 where Countershaft is taken instead of foot power.

# Lathe No. 6,

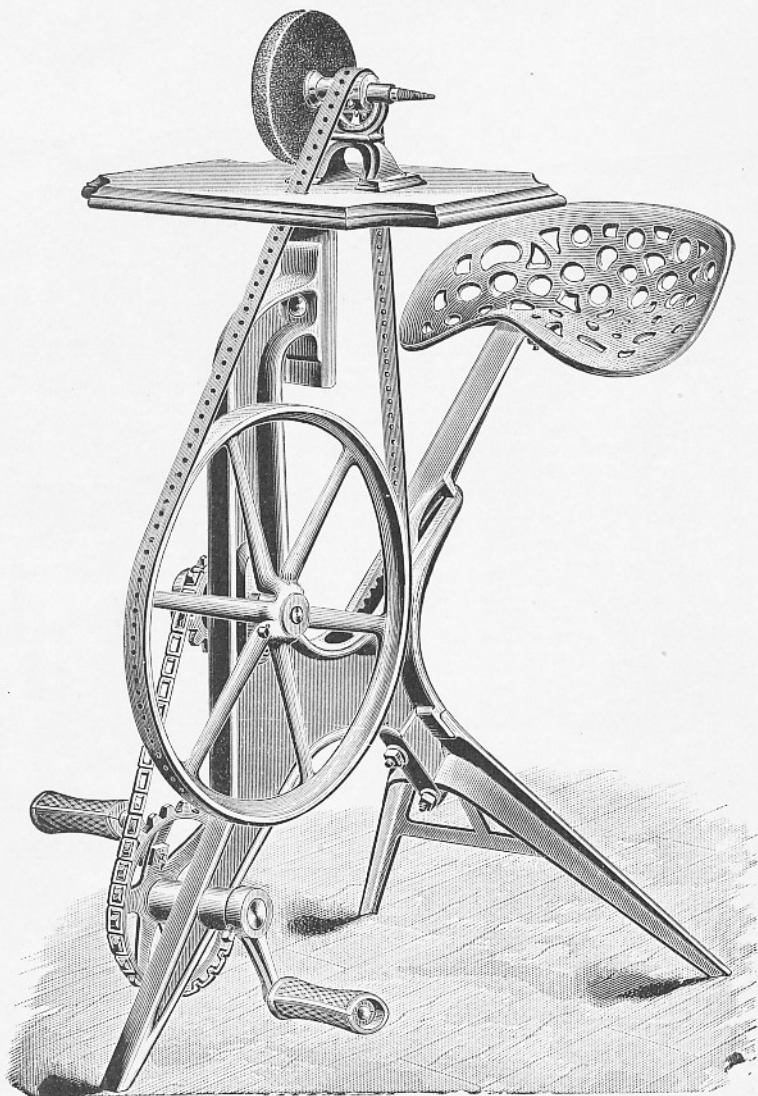
13-Inch Swing.



The cut on this page shows the No. 6 Lathe with Countershaft instead of Foot Power.



## Grinding and Polishing Machine,



This machine is designed for light work, carrying emery and buffing wheels up to six inches diameter by one inch face.

It is used by jewelers, dentists, glass workers and others.

For light grinding on razors, skates, cutlery, etc., it is unsurpassed.

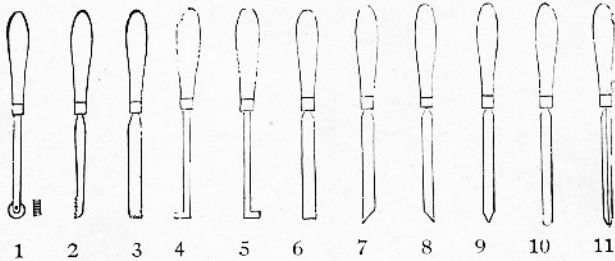
The head has a cone screw on one side, and a nut and collar on the other side, for emery wheels, etc.

Weight of machine, 85 pounds; boxed for shipment, 115 pounds.

Price, \$18.00.

The cut shows emery wheel on the spindle of the machine, but this is for purpose of illustration only; no emery wheel is included with the grinder.

## Hand Turning Tools.



- No. 1. Milling tool, one knurl, \$1.00; extra knurls, 40c. each.  
 Nos. 2, 3. Chasers, for cutting screws from 10 to 48 threads to the inch, 75c. per pair for each thread.  
 Nos. 4, 5. Bent inside tools, for brass, ivory, hardwood, etc., 25c. each.  
 No. 6. Flat tools, for brass, ivory, hardwood, etc.,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ -inch, 25c. each.  
 Nos. 7, 8. Side tools, right and left, for brass, ivory, hardwood, etc.,  $\frac{1}{4}$ ,  $\frac{1}{2}$ -inch, 25c. each.  
 No. 9. Point tools, for brass, ivory, hardwood, etc.,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ -inch, 25c. each.  
 No. 10. Round point tools, for brass, ivory, hardwood, etc.,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ -inch, 25c. each.  
 No. 11. Square gravers, for metal,  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ -inch, 25c. each.

## Lathe Tools.

|                     |                                    |                                     |                                    |
|---------------------|------------------------------------|-------------------------------------|------------------------------------|
| For Lathe,.....     | No. 4.                             | Nos. 4½, 5.                         | Nos. 5½, 6.                        |
| Size of Steel,..... | $\frac{1}{4} \times \frac{1}{2}$ . | $\frac{5}{16} \times \frac{3}{8}$ . | $\frac{3}{8} \times \frac{3}{4}$ . |
| Price,.....         | 30c.                               | 30c.                                | 40c.                               |



Right-Hand Diamond Point.



Left-Hand Diamond Point.



Right-Hand Side Tool.



Left-Hand Side Tool.



Bent Right-Hand Side Tool.



Cut-Off Tool.



Thread Tool.

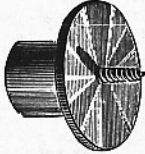


Bent Thread Tool.

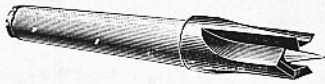


Inside or Boring Tool.

## Screw Chuck.



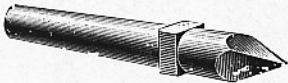
For Lathes, Nos. 4, 4½ and 5.....\$1 50 each.  
 For Lathes, Nos. 5½ and 6..... 2 00 each.



Spur Center.....\$1 50

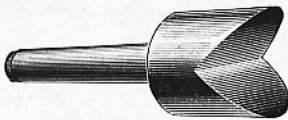


Cup Center.....\$1 50



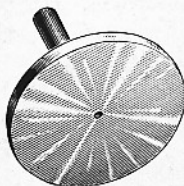
Square Center, for Iron.....\$1 50

## Crotch Center.



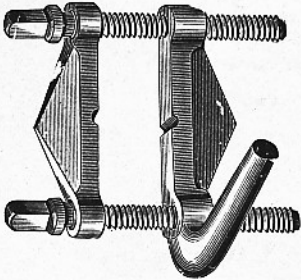
For Lathe No. 4½.....\$1 50  
 For Lathe No. 5..... 1 75  
 For Lathes Nos. 5½ and 6..... 2 00

## Drill Pad.



For Lathe No. 4½ .....\$1 50  
 For Lathe No. 5 ..... 1 75  
 For Lathes No. 5½ and 6..... 2 00

## Lathe Dogs.



### Steel Clamp Dog.

|        |                              |        |
|--------|------------------------------|--------|
| No. 1. | 1¾ inch between screws.....  | \$1 50 |
| No. 2. | 2½ " " " .....               | 2 00   |
| No. 3. | 2¾ " " " .....               | 2 50   |
|        | Price, per set of three..... | 5 50   |

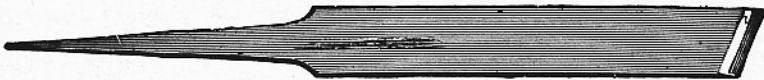
### Common Dog.



|             |      |
|-------------|------|
| ¼ inch..... | 25c. |
| ⅜ " .....   | 25c. |
| ⅝ " .....   | 35c. |
| 1 " .....   | 35c. |
| 1¼ " .....  | 50c. |
| 1½ " .....  | 50c. |

## W. Butcher's Cast Steel Turning Chisels.

Warranted.



|        |     |     |     |     |     |     |     |     |     |     |     |     |              |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| Size,  | ⅛   | ⅜   | ¼   | ⅜   | ½   | ⅝   | ¾   | ⅞   | 1   | 1¼  | 1½  | 1¾  | 2 inch.      |
| Price, | .25 | .25 | .25 | .27 | .30 | .33 | .37 | .41 | .48 | .60 | .77 | .93 | \$1.10 each. |

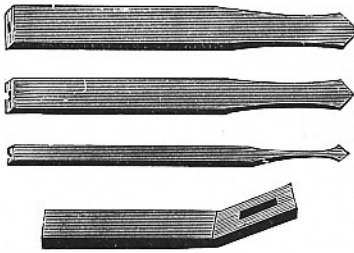
## W. Butcher's Cast Steel Turning Gouges.

Warranted.



|        |     |     |     |     |     |     |     |     |     |     |        |        |              |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|--------|--------------|
| Size,  | ⅛   | ⅜   | ¼   | ⅜   | ½   | ⅝   | ¾   | ⅞   | 1   | 1¼  | 1½     | 1¾     | 2 inch.      |
| Price, | .32 | .32 | .32 | .36 | .40 | .43 | .51 | .58 | .65 | .85 | \$1.11 | \$1.31 | \$1.60 each. |

## Chuck Drills.

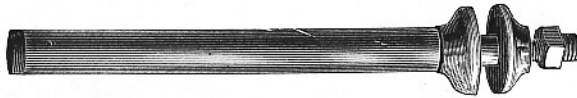


These Drills are made of Flat Tool Steel, and have center drilled in back end to rest on center of tail stock of Lathe. The piece represented below is to be fastened to the slide rest, so that the slot comes opposite the hole to be bored, the point of drill is to be passed through the slot, which holds it steady while the work is revolved by the lathe.

In this way a very straight and true hole can be made. We have these drills in sets of seven, for drilling from  $\frac{1}{8}$  to  $\frac{1}{2}$ -inch hole. The drills are all 5 inches long. Price per set, including holder, \$2.00. Larger sizes made to order.

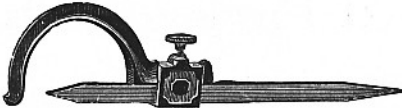
## Steel Lathe Arbors.

For Holding Saws, Emery Wheels, Etc.

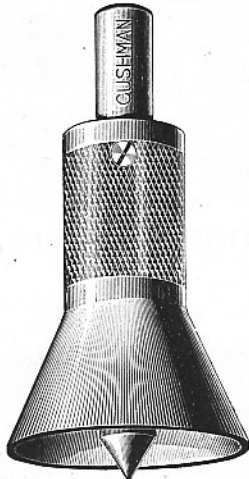


|               |               |               |               |       |
|---------------|---------------|---------------|---------------|-------|
| Diameter..... | $\frac{1}{2}$ | $\frac{3}{8}$ | $\frac{3}{4}$ | inch. |
| Price.....    | \$1.75        | \$2.50        | \$3.00        | each. |

## Turner's Sizer.



Price .....\$1.25 each.



## Bell Centering Punch.

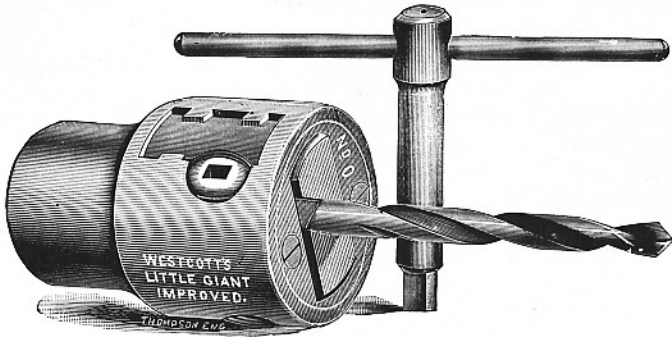
This is a full size illustration of a very handy and useful tool. It needs no explanation, as every machinist knows its usefulness and that his kit of tools is incomplete without it.

It is very accurate, finely finished and made of the best material suitable. Its capacity is up to  $1\frac{1}{2}$  inch; weight, 5 ounces.

Price.....\$1.00.



# Westcott's Little Giant Drill Chuck, Improved.

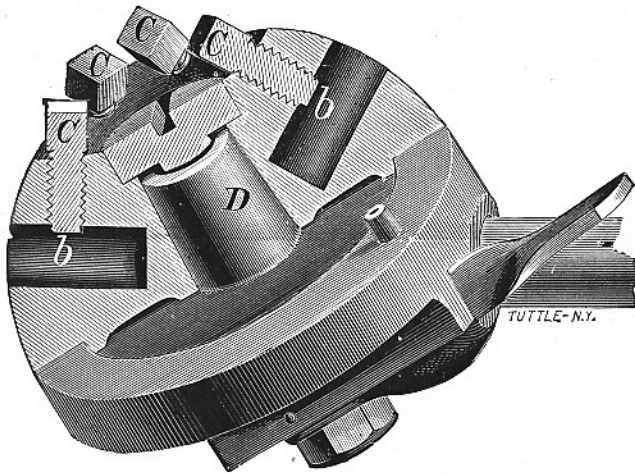


| No.     | Diameter.    | Holding Drills.  | Price.              |
|---------|--------------|------------------|---------------------|
| 00..... | 1¼ inch..... | 0 to ¼ inch..... | \$ 7 00             |
| 0.....  | 2¼ ".....    | 0 to ½ ".....    | 8 00                |
| 1.....  | 2¾ ".....    | 0 to ⅝ ".....    | 9 00                |
| 2.....  | 3½ ".....    | 0 to 1 ".....    | 10 00               |
| 2½..... | 4 ".....     | 0 to 1 ".....    | Ex. Strong... 11 00 |

These Chucks are self-centering and hold firmly without injuring drills, bits or rods of any size or shape within limits named for such size. They have holes through the center and rods can be held in them for cutting off. For this purpose they are much cheaper than Lathe Chucks.

The jaws and screws are within the body of the Chuck and are made of the best steel, carefully tempered. There is no shearing or bending of the drill in these Chucks. Each tooth to the jaw has an opposite to it, holding the drill firmly as in a vise.

## A New Turret-Head Lathe Tool,



The tool herewith presented is an inexpensive tool that may be used in an ordinary Lathe for many purposes for which a Turret Lathe would be used. It consists of two pieces, one of which is rigidly fastened to the center, while the other revolves upon it, being suitably guided and interlocked to make it reliable. The revolving piece has six holes to receive tools, and by the latch is instantly locked, so as to hold either of the tools in position to do its particular work.

Size 3¼ inches in diameter. Price, \$13.00.

## Westcott's Patent Combination Lathe Chuck.

THE advantage of these Chucks consists in not only making the jaws reversible, by which arrangement the small sized chucks can be used with facility in holding screws, pipes and drills, but also in making them act independently of each other when required, as well as to act concentrically and simultaneously. Thus the jaws are both *Universal* and *Independent*. This Chuck is therefore enabled to seize and firmly hold round, oval, oblong or other eccentric shapes, as well as to hold work in an eccentric position.

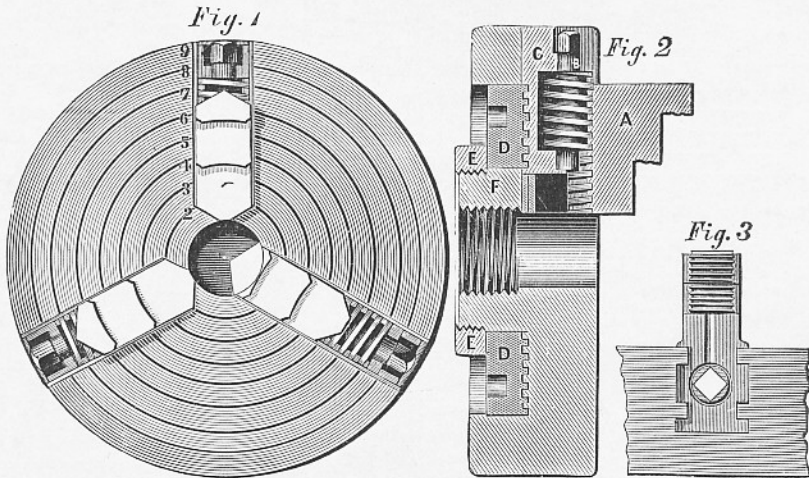


Fig. 1 is a front view of the Chuck with one of the jaws reversed.

Fig. 2 is a vertical section showing the manner in which the ring D engages in box C; also showing the position of screw B.

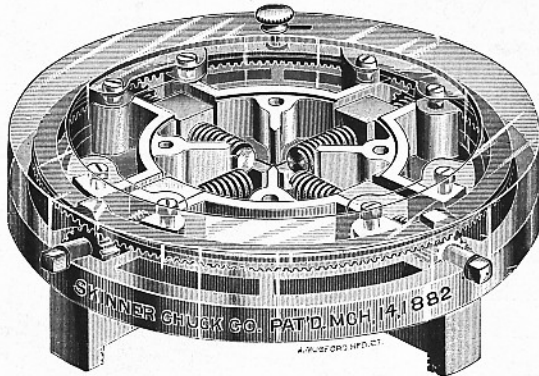
Fig. 3 is a section of the Chuck showing end of screw and box C; also the strong and durable manner in which all the parts are secured to the body of the Chuck. All screws and the boxes carrying the jaws are made of the best cast steel, the wrenches and scroll rings of the best hammered iron, made especially for this work. The jaws are of steel and all wearing parts are thoroughly hardened.

### PRICES.

| Three Jaws.                              |   |         | Four Jaws.                               |   |         |
|--|---|---------|--|---|---------|
| Diameter.                                | Will Hold Inside Jaws.                  | Price.  | Diameter.                                | Will Hold Inside Jaws.                  | Price.  |
| 4 <sup>9</sup> / <sub>16</sub> inch..... | 5 <sup>1</sup> / <sub>2</sub> inch..... | \$24 00 | 4 <sup>9</sup> / <sub>16</sub> inch..... | 5 <sup>1</sup> / <sub>2</sub> inch..... | \$30 00 |
| 7 <sup>1</sup> / <sub>2</sub> " .....    | 8 " .....                               | 26 00   | 7 <sup>1</sup> / <sub>2</sub> " .....    | 8 " .....                               | 32 00   |
| 10 <sup>1</sup> / <sub>8</sub> " .....   | 12 " .....                              | 34 00   | 10 <sup>1</sup> / <sub>8</sub> " .....   | 12 " .....                              | 42 00   |
| 13 <sup>1</sup> / <sub>4</sub> " .....   | 15 " .....                              | 44 00   | 13 <sup>1</sup> / <sub>4</sub> " .....   | 15 " .....                              | 56 00   |

Prices of larger Chucks mailed on application.

# The Skinner Patent Combination Chuck.



**T**HE above cut shows the entire mechanism of "The Skinner Chuck," which is independent as well as universal, thus combining two chucks in one.

It has all the movements and conveniences obtainable in both the independent and universal chucks at much less cost than for both.

This Chuck is made of the very best materials. The shell is of the very best grade of cast iron, highly and accurately finished. The jaws are made of steel drop forgings, thoroughly case hardened and ground true. The gearing and screws are made of steel.

The manufacturers of the Skinner Chuck fully guarantee it, and claim for it the following points of merit: Greatest strength, most powerful grip, perfect accuracy, largest capacity, simplicity and ease in operation.

## Price List of Skinner's Combination Chuck.

### With Reversible Jaws.

| Three Jaws. |         | Four Jaws.  |         |
|-------------|---------|-------------|---------|
| Diameter.   | Price.  | Diameter.   | Price   |
| 4 inch..... | \$22 00 | 4 inch..... | \$26 00 |
| 6 " .....   | 26 00   | 6 " .....   | 32 00   |
| 9 " .....   | 34 00   | 9 " .....   | 42 00   |
| 12 " .....  | 44 00   | 12 " .....  | 56 00   |

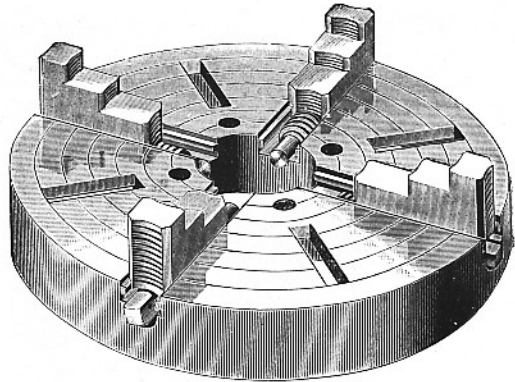
Prices of larger Chucks mailed on application.

## Independent 4-Jaw Chuck,

Reversible Jaws,

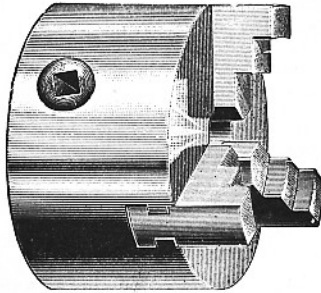
Price List, Including Keys  
and Bolts,

|              |         |
|--------------|---------|
| 4½ inch..... | \$14 00 |
| 6 " .....    | 18 00   |
| 9 " .....    | 24 00   |
| 12 " .....   | 30 00   |
| 15 " .....   | 35 00   |
| 18 " .....   | 44 00   |
| 20 " .....   | 50 00   |
| 22 " .....   | 55 00   |
| 24 " .....   | 65 00   |



## Amateur's Geared Scroll Chuck.

Diameter, 2 Inches.



Especially adapted to Foot Lathes, and as a Drill Chuck for general machinists' and brass and wood workers' use, it has no superior in quality or price. It can be fitted to any lathe with face-plate, holes being tapped in the back and screws furnished with each Chuck.

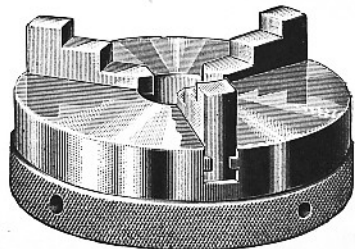
With two sets of jaws, \$7 50.

## Amateur's Lever Chuck.

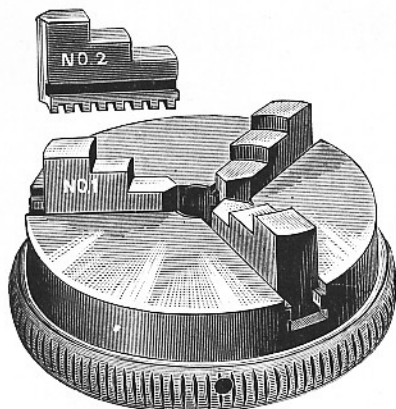
This Chuck, which is now made in four sizes, is especially for light work and foot lathes, being very light in weight, still it is well made and of good material. It is attached to the lathe by the face-plate, or can be screwed on the spindle.

PRICE LIST—With Two Set Jaws.

|             |        |
|-------------|--------|
| 2 inch..... | \$5 75 |
| 3 " .....   | 6 75   |
| 4 " .....   | 8 00   |
| 5 " .....   | 9 00   |



## Champion Scroll Chucks.



These Chucks, which are now made in seven sizes, are very tastily designed, and are intended particularly for use on foot and light power Lathes. They are light but strong, the shells being made from Malleable Iron, and the Scrolls and Jaws of Steel.

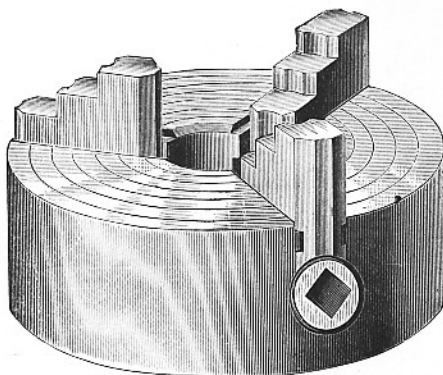
### Price List.

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| 2 inch, with two sets of Jaws, \$5.75 | 5 inch, with two sets of Jaws, \$9.00 |
| 2½ " " " " " " 6.25                   | 6 " " " " " " 12.00                   |
| 3 " " " " " " 6.75                    | 7½ " " " " " " 14.00                  |
| 4 " " " " " " 8.00                    |                                       |

## Champion Independent Jaw Chucks.

This is an entirely new line of Independent Jaw Chucks for all kinds of light work. They are made in nine sizes, and are especially adapted for foot and light power Lathes.

In size and appearance they are quite similar to the Scroll Chucks, but are provided with three or four *Independent Reversible Steel Jaws*, each of which is operated by a separate screw. These Chucks will hold with great firmness and will take pieces considerably larger than the diameter of the Chuck—a 5-inch Chuck holding a 6-inch piece without difficulty.

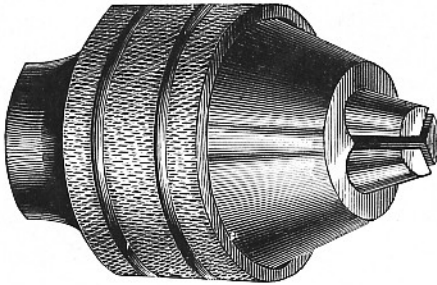


### Price List.

| Diameter.   | 3 Jaws.      | 4 Jaws  |
|-------------|--------------|---------|
| 2 inch..... | \$ 6.50..... | \$ 8.00 |
| 2½ " "..... | 7.50.....    | 9.00    |
| 3 " ".....  | 8.50.....    | 10.00   |
| 4 " ".....  | 10.00.....   | 12.00   |
| 5 " ".....  | 12.00.....   | 14.00   |
| 6 " ".....  | 14.00.....   | 16.00   |
| 7½ " "..... | 16.00.....   | 18.00   |
| 9 " ".....  | 18.00.....   | 20.00   |
| 10 " "..... | 20.00.....   | 22.00   |



## The Almond Drill Chuck.



This Chuck has now been in use many years and has been received with great favor not only in the United States, but in every foreign country where drill chucks are used. In the Almond Chuck are embodied almost all the features of an ideal tool, which to be satisfactory should be simple in construction, perfect in its action, strong, durable,

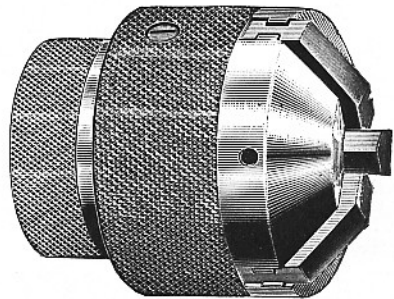
true and cheap. The body of the chuck is one continuous piece of machinery steel and is divided into three converging guide-ways, into which the jaws are fitted. The jaws are made of Stubs steel, their gripping edges being left as hard as possible. No damage is done to the chuck by drilling a full size hole through the center. We regard the Almond Chuck as one of the very best drill chucks made.

It is furnished in three sizes as follows:

|                                       |        |
|---------------------------------------|--------|
| To hold 0 to $\frac{3}{16}$ inch..... | \$5 50 |
| To hold 0 to $\frac{5}{16}$ inch..... | 5 50   |
| To hold 0 to $\frac{1}{2}$ inch.....  | 9 00   |

## The Acme Drill Chuck.

Is all made of steel. Holds drills from 0 to  $\frac{1}{2}$ -inch. Perfectly true and firm, and is the best Drill Chuck for the price on the market. Price, \$4.00.



## Taps.

We carry a stock of the J. M. Carpenter Taps, both Machinists' Hand Taps and Machine Screw Taps, and will be pleased to quote prices on application.

# Morse Patent Twist Drills.

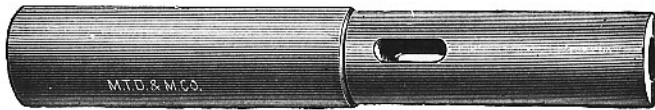
| Taper Shanks        |                   |             |  | Straight Shanks     |                   |                  |             |
|---------------------|-------------------|-------------|--|---------------------|-------------------|------------------|-------------|
| Diameter of Drills. | Length in Inches. | Price Each. |  | Diameter of Drills. | Length in Inches. | Price per Dozen. | Price Each. |
| 1-4                 | 6½                | 60          |  | 1-16                | 2½                | \$1 00           | 09c         |
| 9-32                | 6¾                | 65          |  | 5-64                | 2¾                | 1 10             | 10          |
| 5-16                | 6¾                | 70          |  | 3-32                | 2¾                | 1 20             | 11          |
| 11-32               | 6¾                | 75          |  | 7-64                | 3                 | 1 30             | 12          |
| 3-8                 | 6¾                | 80          |  | 1-8                 | 3                 | 1 45             | 13          |
| 13-32               | 7                 | 85          |  | 9-64                | 3½                | 1 60             | 15          |
| 7-16                | 7¼                | 90          |  | 5-32                | 3½                | 1 80             | 16          |
| 15-32               | 7½                | 95          |  | 11-64               | 3½                | 2 00             | 18          |
| 1-2                 | 7¾                | 1 00        |  | 3-16                | 3½                | 2 20             | 20          |
| 17-32               | 8                 | 1 10        |  | 13-64               | 3½                | 2 40             | 21          |
| 9-16                | 8¼                | 1 20        |  | 7-32                | 3¾                | 2 65             | 23          |
| 19-32               | 8½                | 1 30        |  | 15-64               | 3¾                | 2 90             | 26          |
| 5-8                 | 8¾                | 1 40        |  | 1-4                 | 4                 | 3 15             | 28          |
| 21-32               | 9                 | 1 50        |  | 17-64               | 4½                | 3 40             | 30          |
| 11-16               | 9¼                | 1 60        |  | 9-32                | 4½                | 3 65             | 32          |
| 23-32               | 9½                | 1 70        |  | 19-64               | 4½                | 3 90             | 35          |
| 3-4                 | 9¾                | 1 85        |  | 5-16                | 4½                | 4 20             | 37          |
| 25-32               | 9¾                | 2 00        |  | 21-64               | 4½                | 4 50             | 40          |
| 13-16               | 10                | 2 15        |  | 11-32               | 4¾                | 4 80             | 42          |
| 27-32               | 10¼               | 2 30        |  | 23-64               | 4¾                | 5 10             | 45          |
| 7-8                 | 10½               | 2 45        |  | 3-8                 | 5                 | 5 40             | 48          |
| 29-32               | 10¾               | 2 60        |  | 25-64               | 5½                | 5 70             | 50          |
| 15-16               | 10¾               | 2 75        |  | 13-32               | 5½                | 6 00             | 53          |
| 31-32               | 10¾               | 2 90        |  | 27-64               | 5½                | 6 40             | 55          |
| 1                   | 11                | 3 00        |  | 7-16                | 5½                | 6 80             | 59          |
| 1-32                | 11½               | 3 20        |  | 29-64               | 5½                | 7 20             | 63          |
| 1-16                | 11¾               | 3 40        |  | 15-32               | 5¾                | 7 50             | 65          |
| 1-32                | 11¾               | 3 60        |  | 31-64               | 5¾                | 7 75             | 67          |
| 1-8                 | 11¾               | 3 80        |  | 1-2                 | 6                 | 8 00             | 70          |
| 1-5-32              | 11¾               | 4 00        |  |                     |                   |                  |             |
| 1-3-16              | 12                | 4 20        |  |                     |                   |                  |             |
| 1-7-32              | 12½               | 4 40        |  |                     |                   |                  |             |
| 1-1-4               | 12½               | 4 50        |  |                     |                   |                  |             |
| 1-9-32              | 14½               | 4 65        |  |                     |                   |                  |             |
| 1-9-16              | 14½               | 4 80        |  |                     |                   |                  |             |
| 1-11-32             | 14½               | 5 00        |  |                     |                   |                  |             |
| 1-3-8               | 14½               | 5 20        |  |                     |                   |                  |             |
| 1-13-32             | 14½               | 5 40        |  |                     |                   |                  |             |
| 1-7-16              | 14½               | 5 60        |  |                     |                   |                  |             |
| 1-15-32             | 14½               | 5 80        |  |                     |                   |                  |             |
| 1-1-2               | 15                | 6 00        |  |                     |                   |                  |             |
| 1-17-32             | 15½               | 6 30        |  |                     |                   |                  |             |
| 1-9-16              | 15½               | 6 60        |  |                     |                   |                  |             |
| 1-19-32             | 15½               | 6 90        |  |                     |                   |                  |             |
| 1-5-8               | 15½               | 7 20        |  |                     |                   |                  |             |
| 1-11-16             | 15¾               | 7 50        |  |                     |                   |                  |             |
| 1-11-32             | 15¾               | 7 80        |  |                     |                   |                  |             |
| 1-23-32             | 15¾               | 8 10        |  |                     |                   |                  |             |
| 1-9-16              | 16                | 8 40        |  |                     |                   |                  |             |
| 1-25-32             | 16½               | 8 60        |  |                     |                   |                  |             |
| 1-13-16             | 16½               | 8 80        |  |                     |                   |                  |             |
| 1-27-32             | 16½               | 9 00        |  |                     |                   |                  |             |
| 1-7-8               | 16½               | 9 20        |  |                     |                   |                  |             |
| 1-29-32             | 16½               | 9 35        |  |                     |                   |                  |             |
| 1-15-16             | 16½               | 9 50        |  |                     |                   |                  |             |
| 1-31-32             | 16½               | 9 65        |  |                     |                   |                  |             |
| 2                   | 16½               | 9 80        |  |                     |                   |                  |             |

| Numbered Sizes by Stubs' Steel Wire Gauge |                   |                  |             |
|---|-------------------|------------------|-------------|
| Number by Gauge                           | Length in Inches. | Price per Dozen. | Price Each. |
| 1 to 5                                    | 4                 | 28               | 35          |
| 6 to 10                                   | 4 11-16           | 28               | 35          |
| 11 to 15                                  | 4 1-2             | 28               | 35          |
| 16 to 20                                  | 4 1-4             | 1 95             | 19          |
| 21 to 25                                  | 4 1-8             | 1 75             | 17          |
| 26 to 30                                  | 4 1-16            | 1 55             | 15          |
| 31 to 35                                  | 4 3-16            | 1 40             | 14          |
| 36 to 40                                  | 4 5-16            | 1 35             | 12          |
| 41 to 45                                  | 4 7-16            | 1 10             | 10          |
| 46 to 50                                  | 4 1-2             | 95               | 9           |
| 51 to 60                                  | 4 3-4             | 90               | 9           |
| 61 to 70                                  | 4 1-2             | 90               | 8           |



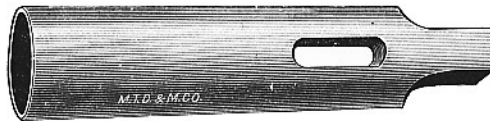
## Steel Sockets for Taper Shank Drills,



### MORSE TAPER SOCKETS.

|   |        |
|---|--------|
| No. 1 holds $\frac{1}{4}$ to $\frac{19}{32}$ inch, inclusive..... | \$1 80 |
| No. 2 holds $\frac{3}{8}$ to $\frac{11}{16}$ inch, ".....         | 1 80   |
| No. 3 holds $\frac{15}{16}$ to $1\frac{1}{4}$ inch, ".....        | 2 50   |
| No. 4 holds $1\frac{13}{32}$ to 2 inch, ".....                    | 4 00   |

## Steel Sleeves for Taper Shank Drills,



|   |        |
|---|--------|
| No. 1, Fitted to No. 2 or 3 Socket..... | \$1 80 |
| No. 1, Fitted to No. 4 Socket.....      | 3 00   |
| No. 2, Fitted to No. 3 Socket.....      | 2 40   |
| No. 2, Fitted to No. 4 Socket.....      | 3 00   |
| No. 3, Fitted to No. 4 Socket.....      | 3 00   |

### PRICES OF DRILLS PER SET.

|  |         |
|--|---------|
| Set of Taper Shank Drills, $\frac{1}{4}$ to 1 in., varying by 16ths.....   | \$20 00 |
| Set of Taper Shank Drills, $\frac{3}{8}$ to $1\frac{1}{4}$ in., varying by 16ths.....                                    | 34 50   |
| Set of Taper Shank Drills, $\frac{3}{8}$ to $\frac{3}{4}$ in. by 32ds, $\frac{3}{4}$ to $1\frac{1}{4}$ in. by 16ths..... | 42 00   |
| Set of Drills, straight shanks, $\frac{1}{16}$ to $\frac{1}{2}$ in. by 64ths, mounted.....                               | 10 00   |
| Set of Drills, straight shanks, $\frac{1}{16}$ to $\frac{1}{2}$ in. by 32ds, mounted.....                                | 5 40    |
| Set of Drills, steel wire gauge, from No. 1 to 60, mounted.....  | 8 10    |
| Half Set of Drills, alternate Nos. 1 to 60, mounted.....   | 4 30    |

### PRICE LIST OF EMERY WHEELS.

These are guaranteed to be the best Emery Wheels in the market.

#### Thickness of Wheels in Inches.

| Diameter of Wheels in Inches. | $\frac{1}{4}$ | $\frac{3}{8}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | 1     | $1\frac{1}{2}$ | 2      |
|-------------------------------|---------------|---------------|---------------|---------------|-------|----------------|--------|
|                               | 3             | \$ 50         | \$ 65         | \$ 80         | \$ 95 | \$1 10         | \$1 40 |
| 4                             | 75            | 95            | 1 10          | 1 35          | 1 60  | 2 10           | 2 60   |
| 5                             | 1 00          | 1 20          | 1 40          | 1 80          | 2 20  | 3 00           | 3 80   |
| 6                             | 1 40          | 1 60          | 1 75          | 2 40          | 3 05  | 4 35           | 5 65   |
| 8                             | 2 10          | 2 35          | 2 60          | 3 60          | 4 60  | 6 60           | 8 60   |
| 10                            | 3 00          | 3 35          | 3 65          | 5 00          | 6 35  | 9 05           | 11 75  |
| 12                            | 3 60          | 3 80          | 4 00          | 6 00          | 7 40  | 10 70          | 14 00  |
| 14                            | 4 05          | 5 15          | 6 25          | 8 45          | 10 65 | 15 05          | 19 45  |
| 16                            |               |               |               | 10 85         | 13 70 | 19 40          | 25 00  |

Prices of larger wheels quoted on application.



Catalogue 49.

April 15, 1898.