

Invitation *File*



CALL ATLANTIC 6281
NORTHERN MACHINERY
AND
SUPPLY COMPANY
818 LUMBER EXCHANGE
MINNEAPOLIS, MINNESOTA

Avey

THE AVEY DRILLING MACHINE CO.
(INCORPORATED)
CINCINNATI

Foreword



IN the various types and sizes of AVEY sensitive drilling machines are exemplified the latest developments in the application of ball bearings to machine construction, and the highest achievements in the designing and manufacturing of high speed drilling machines.

These machines are the combined result of years of experience in high speed drilling practice and a constant day-by-day observance by capable engineers of machines under actual conditions of operation. In manufacturing this all-ball-bearing product a close study of high speed requirements is supplemented by engineering skill and careful workmanship, together with the best materials and ball bearings obtainable.

High speed sensitive drilling practice covers a range of drill diameters from the smallest drill gauge size up to about one and one-quarter inches diameter. It has been proved that, within this range, to secure the maximum efficiency from high speed drills, with a minimum of drill grinding and breakage, the higher speeds now obtainable, together with the sensitive element in driving these drills, are essential. The corresponding speed range for the above sizes varies up to a maximum of about 12,000 R. P. M. In order to successfully handle the numerous classes of work within this range, there are now available a score of different types and sizes of regular AVEY machines. Each type or size combines all the essential elements of design and construction conducive to the fastest and most efficient operation on the class of work for which it is built.

In selecting a sensitive machine, the choice of the proper type or size is governed chiefly by the diameters of the holes and the material to be drilled, the variations in the design of these types being affected mainly by the requirements of speed and power. Bench or column types may be favored, depending on the general operating conditions, and the number of spindles on the machine is determined by the number of different machining operations required at one setting. Attention should be directed to the methods of handling the work with a view to choosing either hand or power feed.

Tapping operations on AVEY machines can be handled efficiently with AVEY tappers of all-ball-bearing design, including the AVEY Friction Tapping Attachments, the Back Geared Attachments, the Tapping Unit on the top of machine and the Tapping Unit built in the sliding head.

A survey of the following list of machines will convey some idea of the extensive requirements covered by the regular AVEY line of high speed drilling and tapping equipment.

REGULAR COLUMN MACHINES

No. 1 AVEY DRILLING MACHINE, built in units of one to six spindles, provides the requisite speeds for drilling up to $\frac{5}{8}$ -inch diameter in cast iron, with $7\frac{1}{2}$ -inch overhang and three speeds to each spindle.

No. 2 AVEY DRILLING MACHINE, one to six spindles, with speeds for drilling up to $\frac{7}{8}$ -inch diameter in cast iron, either $7\frac{1}{2}$ -inch, 12-inch or 15-inch overhang and four speeds to each spindle.

No. 3 AVEY DRILLING MACHINE, built in units of one to six spindles, has a capacity up to $1\frac{1}{4}$ inches diameter in cast iron, with 12-inch overhang and three speeds to each spindle.

No. 3 AVEY PLANETARY DRILLING MACHINE, substantially the same as above, but with the added feature of a powerful ball bearing planetary gear arrangement incorporated directly in the spindle drive pulley. This machine provides three open-belt speeds and three geared speeds for holes up to $1\frac{1}{2}$ inches diameter in cast iron. The No. 3 size is the most powerful sensitive drilling machine made and is especially suited to the drilling of forgings and cast steel parts, where production can be materially increased over that of upright or radial types of machines.

No. $\frac{1}{2}$ AVEY DRILLING MACHINE, in units of one to six spindles, represents the highest development in drilling machines, embodying, as it does, the correct principles of ball bearing mounting, lubrication, rigidity and total lack of vibration. Each spindle is tested at 18000 R. P. M., is recommended for a regular maximum speed of 12000 R. P. M., and is particularly adapted to the drilling of holes $\frac{3}{16}$ -inch and smaller. Chuck has a capacity of $\frac{3}{8}$ -inch, the overhang is $6\frac{1}{4}$ inches, and each spindle has three speeds.

No. $\frac{1}{2}$ AVEY HEAVY TYPE DRILLING MACHINE has about the same proportions as the No. $\frac{1}{2}$ above, but arranged with speeds for drilling up to $\frac{3}{8}$ -inch in cast iron; in units of one to six spindles, $6\frac{1}{4}$ -inch overhang and three speeds to each spindle.

No. $1\frac{1}{2}$ AVEY DRILLING MACHINE, in units of one to six spindles, is a much larger machine than the No. $\frac{1}{2}$ Heavy, has $7\frac{1}{2}$ -inch overhang, has three speeds to each spindle for drilling $\frac{3}{8}$ -inch holes and smaller.

REGULAR BENCH MACHINES

No. 00 AVEY BENCH MACHINE, built in a single spindle type, with round swinging table, has three speeds for drilling $\frac{3}{16}$ -inch holes and smaller, and is used for the general run of bench drilling, and in assembling small parts.

Nos. $\frac{1}{2}$, $\frac{1}{2}$ HEAVY, 1 AND $1\frac{1}{2}$ AVEY BENCH MACHINE, built in units of one to six spindles, have substantially the same specifications as the same sizes of column types.

TOOL ROOM MACHINES

No. 1 AVEY TOOL ROOM MACHINE, built in same proportions as No. 1 column type, single spindle machine, but equipped with graduated swinging and tilting table, angle plate, round table, cup and V-centers. Capacity up to $\frac{5}{8}$ -inch diameter in cast iron.

No. 2 AVEY TOOL ROOM MACHINE, built in same proportions as No. 2 single spindle, column type, $7\frac{1}{2}$ -inch overhang machine, but equipped with tool room tables, etc. Capacity $\frac{7}{8}$ -inch diameter.

ROUND TABLE MACHINES

No. 2 AVEY ROUND COLUMN MACHINE has same proportions as No. 2, single spindle, 12-inch overhang, column type, but is furnished with round, swinging, T-slot table, adjustable vertically on lower column, and has T-slotted, finished base. Capacity up to $\frac{7}{8}$ -inch diameter in cast iron.

No. 3 AVEY ROUND TABLE MACHINE has same proportions as No. 3 single spindle column machine, but has round T-slotted swinging table and T-slotted, finished base. Furnished with either plain drive and three speeds for drilling up to $1\frac{1}{4}$ inches in cast iron, or with planetary geared drive giving six speeds for drilling up to $1\frac{1}{2}$ inches diameter in cast iron.

POWER FEEDS

Nos. 1, 2 AND 3 AVEY-MATIC FEED, furnished, if required, on any corresponding size of AVEY machine, has ball bearing construction throughout, with special patented feature of engaging or disengaging the feed, or advancing and retarding the drill while feed is engaged, by means of the feed lever.

No. 3 AVEY PLAIN POWER FEED, a powerful arrangement with heavy bronze worm wheel and drop worm, can be furnished on any No. 3 AVEY machine.

TAPPERS

Nos. $\frac{1}{2}$, $\frac{1}{2}$ HEAVY, 1, $1\frac{1}{2}$, 2 AND 3 AVEY FRICTION TAPPING ATTACHMENTS can be attached to any corresponding size of machine and have a ball bearing mounted bevel gear drive and reverse, with friction cone clutches for high speed tapping.

Nos. 1, 2 AND 3 AVEY BACK GEARED TAPPING ATTACHMENTS have offset chuck and ball bearing mounted reducing gears, with 5 to 1 reduction for tapping and 3 to 1 reverse; have positive angular-face clutches running at reduced speeds. Can be attached to corresponding sizes of machines.

No. 2 AVEY TAPPING UNIT ON COLUMN, a powerful ball bearing mounted gear arrangement, providing open belt speeds for drilling, reduced speeds for tapping, and faster speeds for backing out. Has adjustable automatic trip for reverse and self-adjusting friction clutches. When not used for tapping it provides the additional reduced speeds for slower drilling, facing, counterboring, etc.

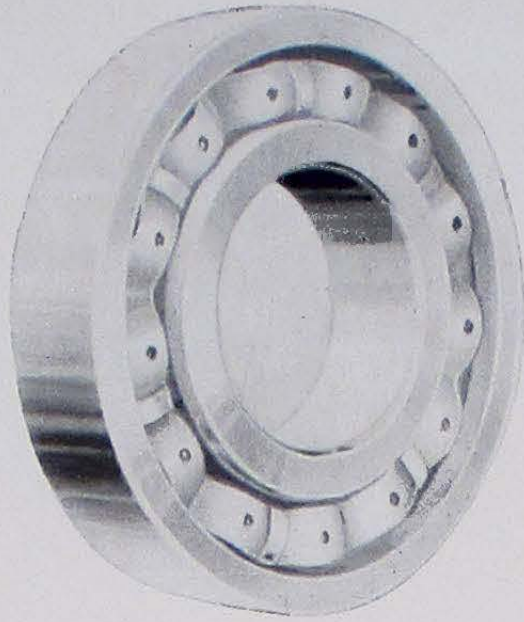
Nos. 2 AND 3 AVEY DRILLING AND TAPPING HEAD, a powerful arrangement similar in design to above Unit on Column, except that the entire mechanism is built in the sliding head.

In addition to the regular AVEY machines, we have designed and built hundreds of special types of machines for the various industries. Our engineering experts are at your service in solving drilling problems, not only of a nature requiring special machines or fixtures, but in applying the principles acquired by years of experience in rapid production in small hole drilling. Particular reference is made to the handling and jiggling of duplicate parts in connection with AVEY-MATIC semi- and full-automatic feeding of the drill.

Some of the special products designed and built by us are:

- Automatic drilling machines with sliding and indexing fixtures.
- Co-ordinated line-ups for entire machining of small parts such as carburetors.
- Two-, three- and four-way drillers.
- Angular and tilted combinations to drill several holes from different directions at one setting.
- Horizontal drilling and reaming machines with trunnion fixtures.
- Sensitive radials.
- Horizontal duplex tapping machines.
- Crankshaft drilling machines.
- Piston boring and reaming machines.
- Centering and burring machines.
- Hinged arm radials.
- Motor-on-spindle drilling machines.
- Attachable direct motor drive drilling units.

Ball Bearings



The **Ball Bearings** used in the AVEY machines are the highest grade of **ANNULAR BEARINGS**, and are provided with ball retainers as shown in cut opposite.

These bearings are made to uniform sizes adopted in general by all commercial manufacturers of ball bearings. Due to this uniformity no difficulty is experienced in replacing same in case of wear; the customer has the choice of using any standard make of commercial bearing preferred, which can be procured in any city and at competitive prices.

That there is a decided advantage in the use of the commercial bearing of the **Annular** type is evidenced by the fact that practically all of the **Automobile** manufacturers, who probably are the largest users of ball bearings, are using this class of bearing. With

but few exceptions, if any, they recognize that the making of bearings is a special industry of itself, and in consequence, buy the commercial bearing rather than manufacture them. All agree that, for service, the Annular bearing with ball separators is far superior to the cup and cone type, which was all right where the service was light or economy demanded their use.

The use of these high class bearings insures to the users of AVEY machines, the very highest satisfaction and the greatest possible durability.

The manner of mounting is so extremely simple that there is no difficulty whatever in removing or replacing bearings if necessary.

Where desired machines can be furnished with greater distance between spindles by omitting one or more intermediate top columns—thus, 2 spindles on a 3 spindle base, or 3 spindles on a 5 spindle base.

AVEY machines are covered by the following patents:

Jan. 1, 1901	Feb. 20, 1917	Others Pending
Jan. 4, 1910	Aug. 30, 1921	
Feb. 21, 1911	Nov. 29, 1921	
Aug. 3, 1915	Dec. 26, 1922	
Feb. 29, 1916	Nov. 4, 1924	

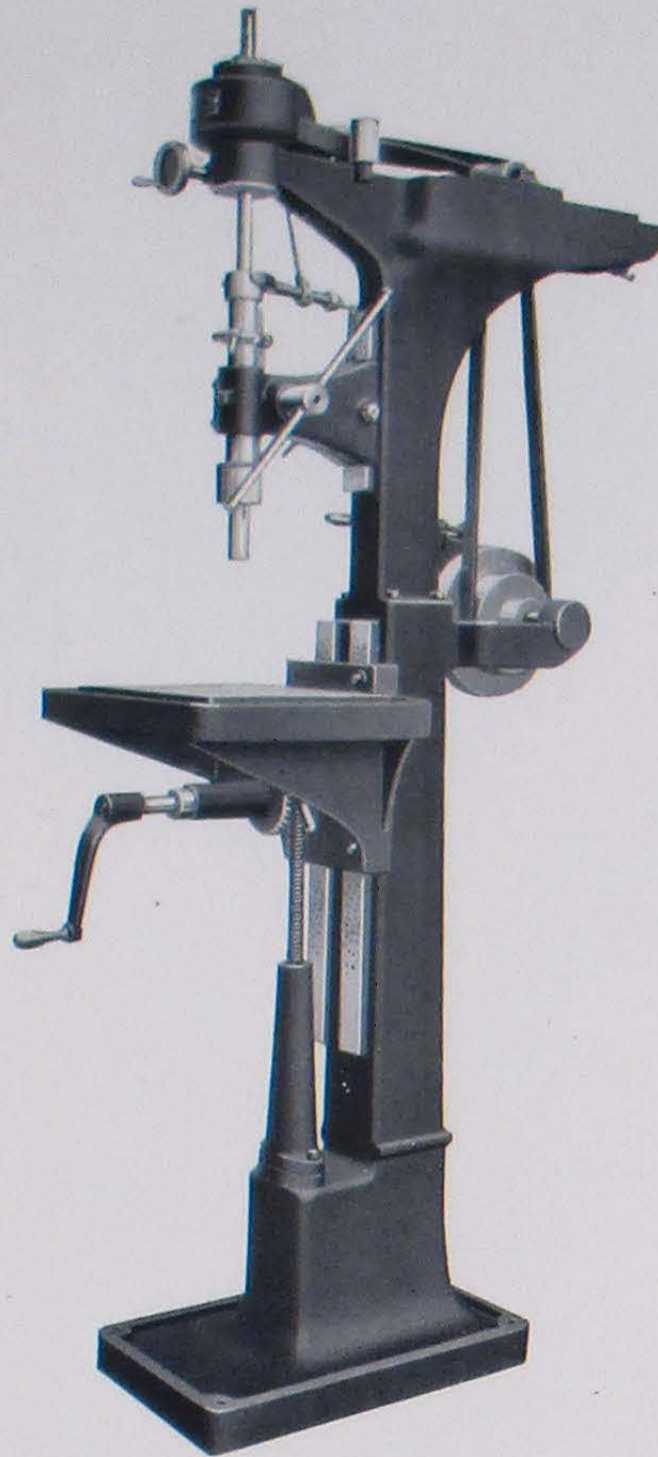
The Avey Drilling Machine Co.

Incorporated

Cincinnati



Avey



The *Avey* No. 1

High Speed Ball Bearing Sensitive Drilling Machine

Built in Combinations of One to Six Spindles

Capacity $\frac{5}{8}$ -inch in Cast Iron

Ball Bearing Throughout

A strictly modern tool of latest design and provided with every known convenience for the operator enabling rapid production.

The machine is of extra rigid construction for its capacity, thus assuring durability and accuracy.

Spindles are crucible steel and are accurately ground.

No tools are needed to make any of the operating adjustments.

These machines are furnished with plain hand feed; but can also be provided with AVEY-MATIC feed.

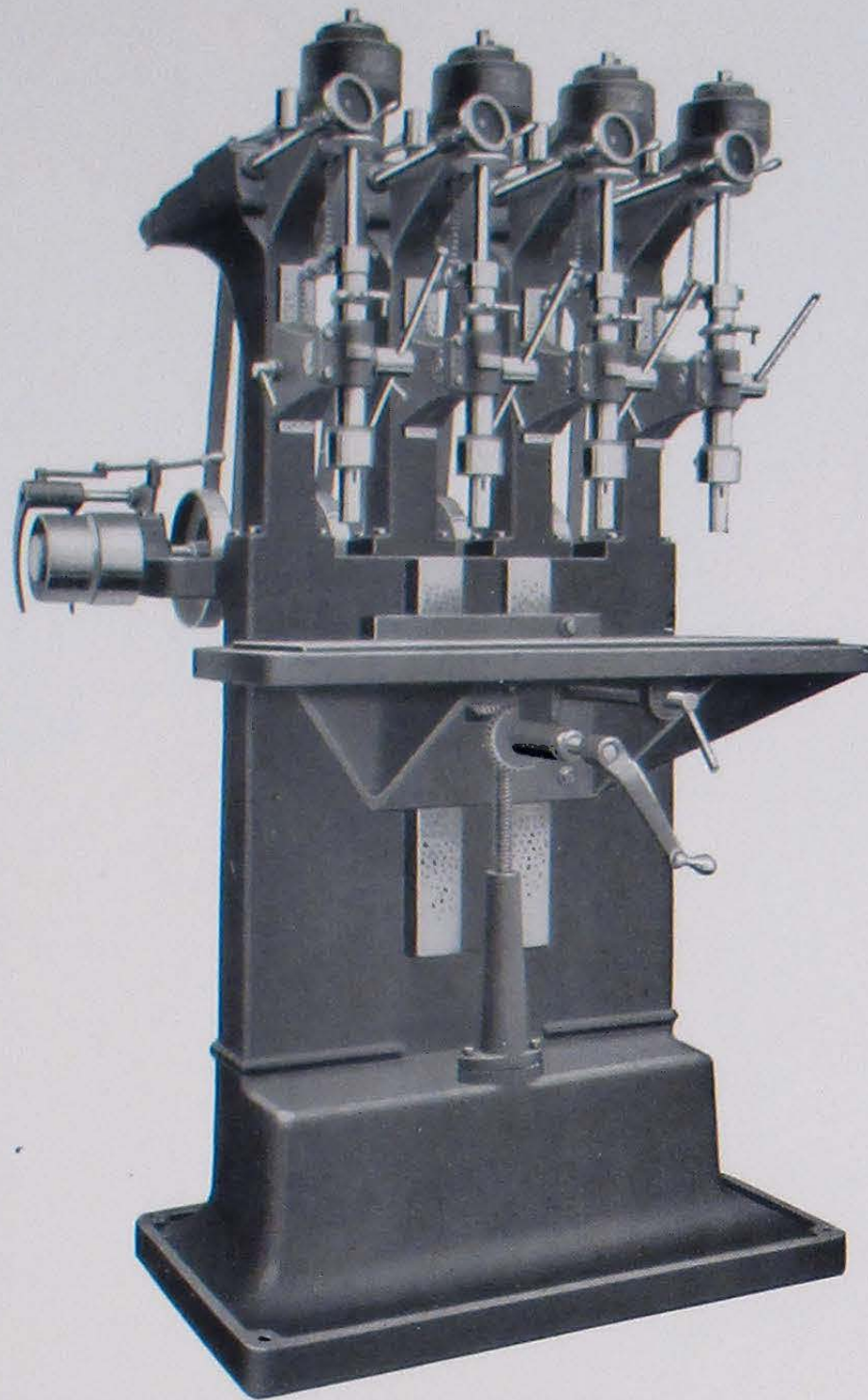
AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co.

Incorporated

Cincinnati





Spindle pulleys are guarded as shown.

The AVEY Tapping Attachment can be supplied.

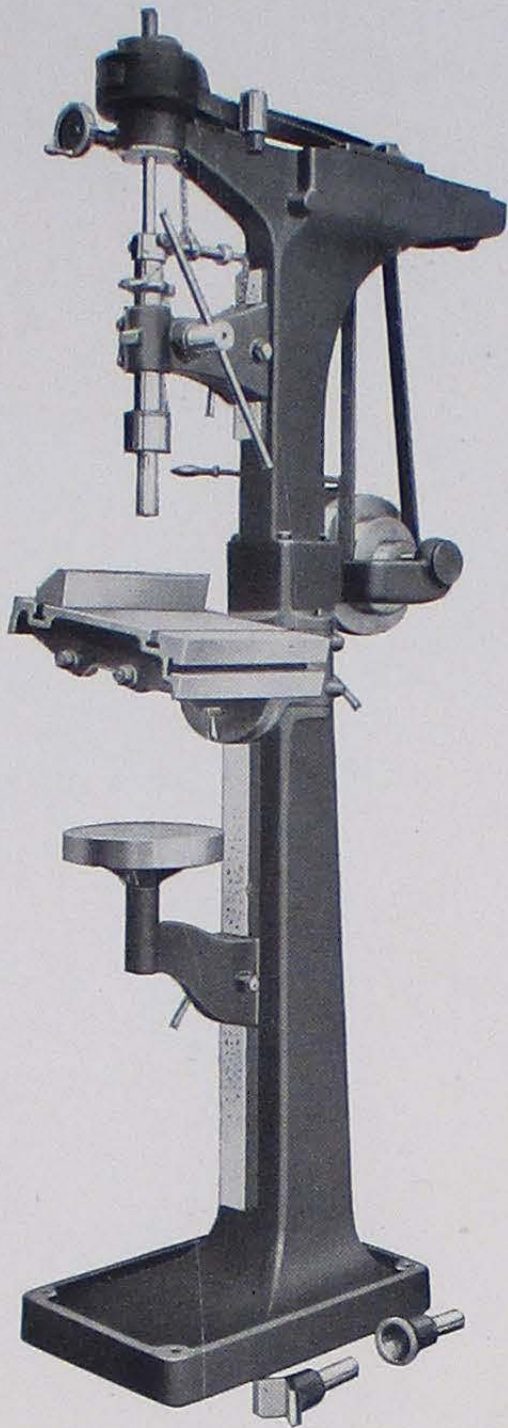
Combination Annular and Thrust ball bearing used in Spindle Sleeve allowing use of high spindle speeds when required. These bearings are entirely enclosed to prevent oil splashing.

Vertical idlers just back of the spindle pulley greatly increase the driving power of the machine and lengthen the life of belts.

Adjustable weight bars on all machines.

	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
Code Name	Cave	Cell	Cite	Cord	Cute





No. 1 Tool Room Machine

The tool room drilling machine shown is one of our specials. It is furnished with two tables, cup and V centers. The upper table is square, of angle plate style and can be swung aside when desiring to use the lower table. It is provided with angle plate and T slots as shown, and is graduated to 90 degrees each side of center. The lower table is round and is adjustable vertically; it can be removed from the table arm and the cup center or V block inserted in the arm instead.

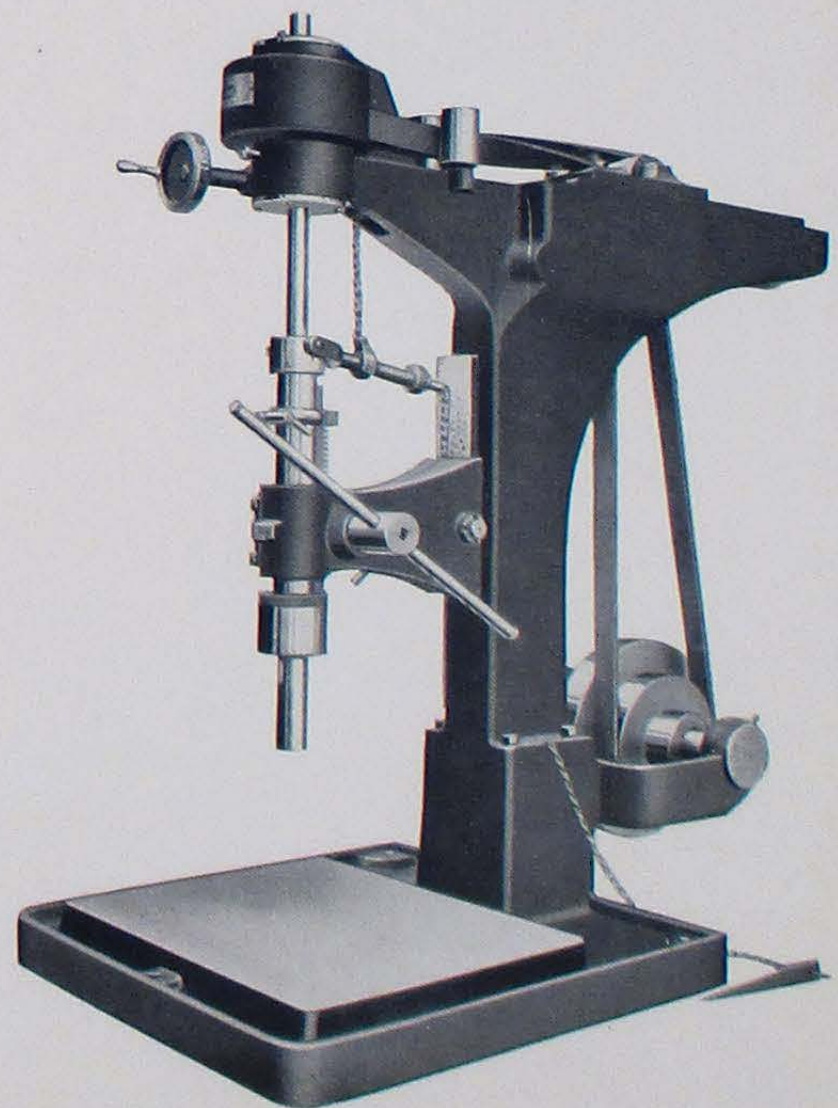
Built in two sizes, No. 1 and No. 2		No. 1	No. 2
Code Name.....		Cosy	Easy
Spindle Bore, M. T.....		No. 2	No. 2
Spindle Diameter at Drive.....		1 ³ / ₁₆ "	1 "
Traverse of feed rack.....		4 "	6 "
Distance, spindle to column face.....		7 ¹ / ₂ "	7 ¹ / ₂ "
Drive pulley diameter.....		6 "	8 "
Traverse of Round Table on Column.....		22 "	15 "
Maximum Distance Spindle to Round Table.....		36 "	36 "
Size Tilting Table.....		12"x13"	16"x17 ¹ / ₂ "
Size Round Table.....		9" Dia.	12 ¹ / ₂ " Dia.
Width belt on machine.....		1 ¹ / ₄ "	1 ³ / ₄ "
Countershaft Speed, r. p. m.....		1200	800
Weight.....		550	950

No. 1 Bench Machines

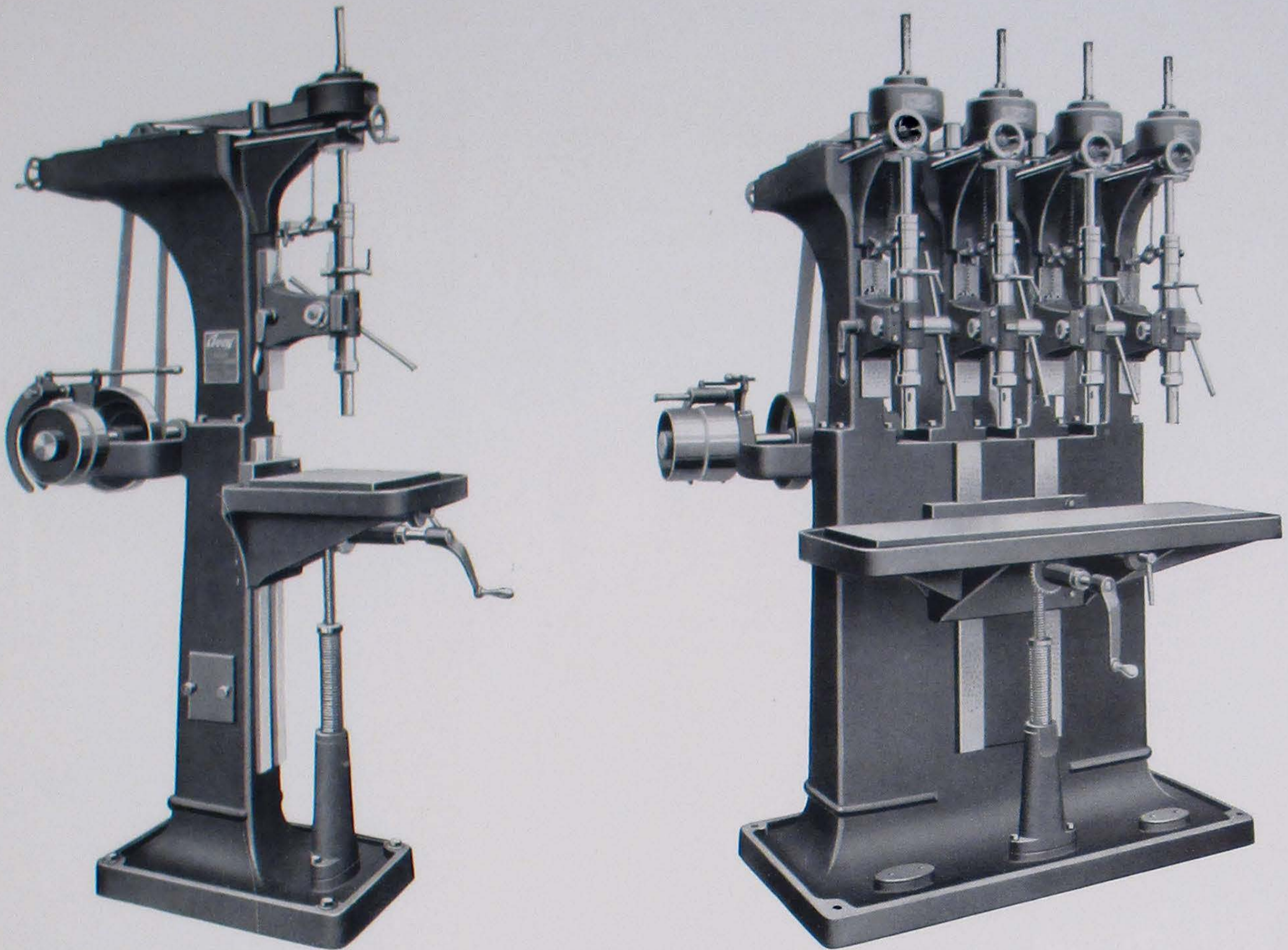
Built in Combinations of
One to Six Spindles

These machines are of same general proportions as the column machines.

	Code Name	Size Base		Weight
		Overall	Work Surface	
1 Spindle	Cart	19 ¹ / ₂ "x20"	12"x16 ¹ / ₂ "	325
2 "	Cent	19 ¹ / ₂ "x28"	12"x24 ¹ / ₂ "	575
3 "	Cist	19 ¹ / ₂ "x36"	12"x32 ¹ / ₂ "	820
4 "	Coal	19 ¹ / ₂ "x44"	12"x40 ¹ / ₂ "	1060
6 "	Cuff	19 ¹ / ₂ "x60"	12"x56 ¹ / ₂ "	1505



Avey



The *Avey* No. 2
High Duty Ball Bearing Drilling Machine
Capacity $\frac{7}{8}$ -inch in Cast Iron
Ball Bearing Throughout

Built in Combinations of One to Six Spindles

Three overhangs, $7\frac{1}{2}$ ", 12", 15".

The extra large pulleys on this machine both on the spindle and on countershaft together with the $1\frac{3}{4}$ -inch belts give great pulling power enabling the machine to do heavy duty constantly.

Spindles are crucible steel and are accurately ground.

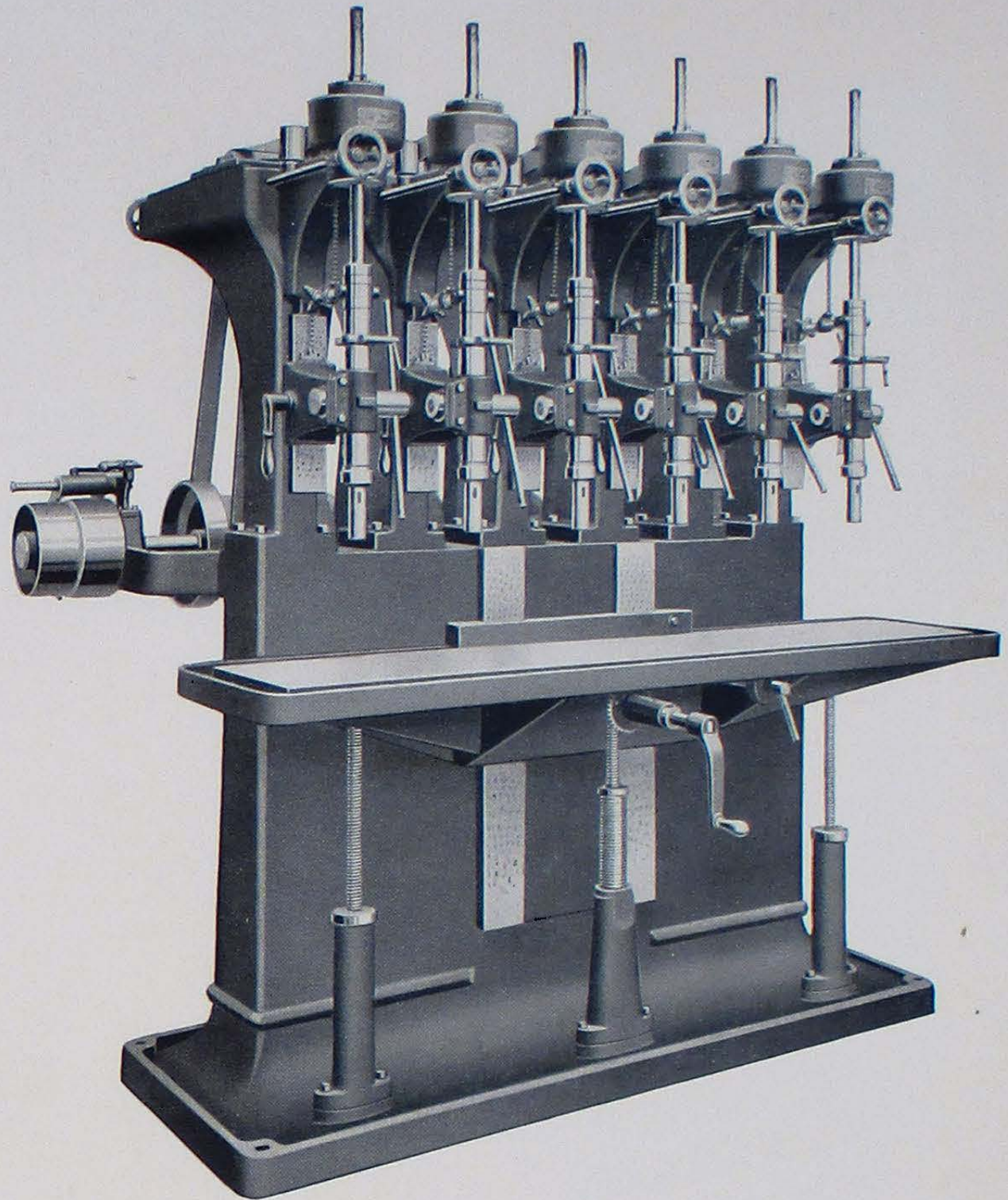
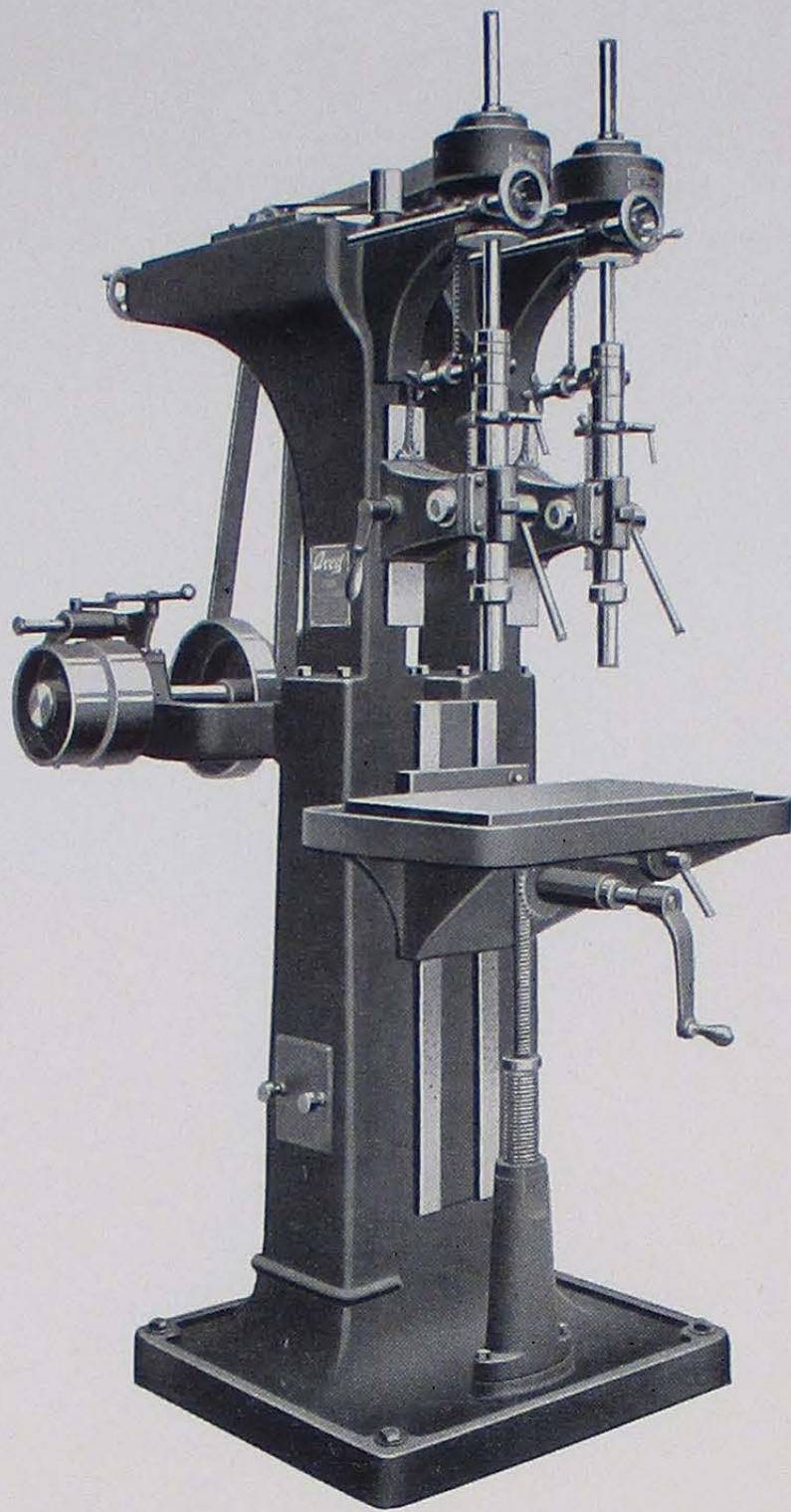
No tools are needed to make any of the operating adjustments.

These machines are furnished with plain hand feed; but can also be provided with AVEY-MATIC feed.

AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co. Incorporated Cincinnati





Spindle Bore No. 2 M. T.

Ball thrust bearings at both ends of spindle sleeve provided. Both bearings are enclosed to prevent oil splashing.

Spindle diameter at drive	1"
Traverse of feed rack	6"
Width of belt on machine	1 3/4"
Height to top of spindle pulley	77"
Maximum spindle speed recommended	2,500 r.p.m.

Adjustable weight bars on all machines. Vertical idlers just back of the spindle pulley greatly increase the driving power of the machine, and lengthen the life of belts.

		1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
Code Name	7 1/2" Overhang	Jane	Jeff	Jilt	Josh	Jump
	12" "	Jack	Jeal	Jink	Job	Jug
	15" "	Jard	Jerk	Jip	Join	Julep

Complete specifications are shown in Bulletin Q, pages 1, 2, 3 and 4.

We call particular attention to the power developed in this machine. The spindle diameters are 1" at drive, 1 1/16" at sleeve bearing, 1 5/16" at nose—comparisons should be made at the same points. The spindle drive belt is 1 3/4". The vertical idlers close up to the spindle pulley increase the belt contact 33 1/3%. These features with the large driving and driven pulleys give this machine much more power than ordinarily found in sensitive drilling machines and make it a machine that will stand up to continuous heavy work.

We call further attention to the heavy construction lines in lower columns and bases, assuring much greater rigidity than the old style undercut columns.





The tool room drilling machine shown above is one of our specials. It is furnished with two tables, cup and V centers. The upper table is square, of angle plate style and can be swung aside when desiring to use the lower table. It is provided with angle plate and T slots as shown, and is graduated to 90 degrees each side of center. The lower table is round and is adjustable vertically; it can be removed from the table arm and the cup center or V block inserted in the arm instead.

Built in two sizes, No. 1 and No. 2

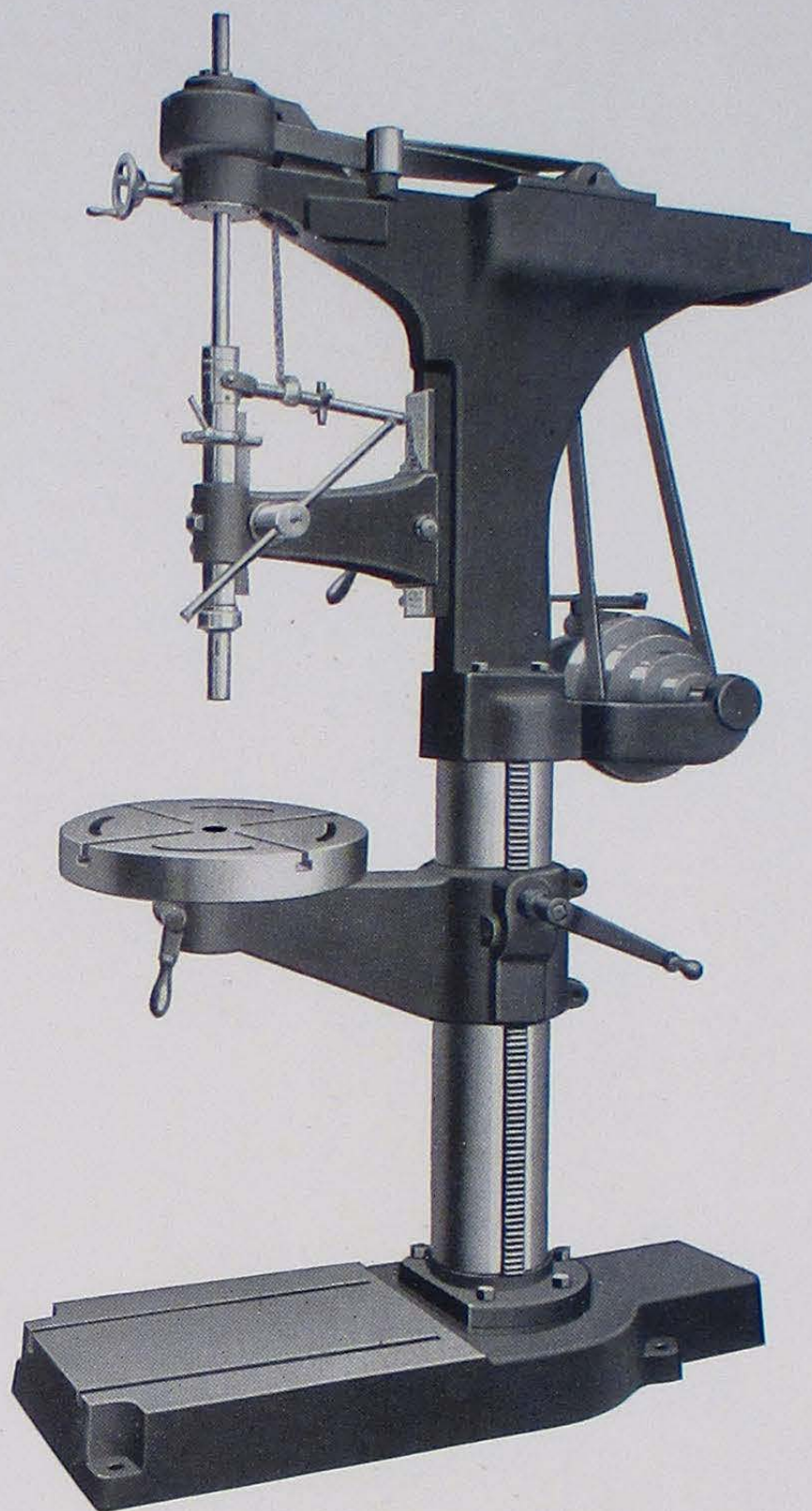
	No. 1	No. 2
Code Name	Cosy	Easy
Spindle Bore, M.T.	No. 2	No. 2
Spindle Diameter, at drive	1 ³ / ₁₆ "	1 "
Traverse of feed rack	4 "	6 "
Distance, spindle to column face	7 ¹ / ₂ "	7 ¹ / ₂ "
Drive pulley diameter	6 "	8 "
Traverse of Round Table on Column	22 "	15 "
Maximum Distance Spindle to Round Table	36 "	36 "
Size Tilting Table	12"x13"	16"x17 ¹ / ₂ "
Size Round Table, Diameter	9 "	12 ¹ / ₂ "
Width belt on machine	1 ¹ / ₄ "	1 ³ / ₄ "
Countershaft Speed, r. p. m.	1200	800
Weight	550	950

All machines are ball bearing throughout and are provided with belt tightener, graduated spindle sleeve, depth gauge and steel racks.

Spindle pulleys are guarded as shown.

The AVEY Tapping Attachment or the AVEY Tapping Unit on Column can be supplied to regular column type machines.





Round Column Drilling Machine

This is another of our specials, embodying variations in table and base to better suit certain classes of work. It is provided with general features similar to our standard type of AVEY drilling machines such as belt tightener, graduated spindle sleeve, depth gauge, steel racks, etc. It has a round table, 18 inches in diameter, which is adjustable vertically by means of rack and pinion as shown. This table can be swung around permitting use of the base, which is provided with T slots for clamping work when necessary. Base surface permits the drilling of extra long work.

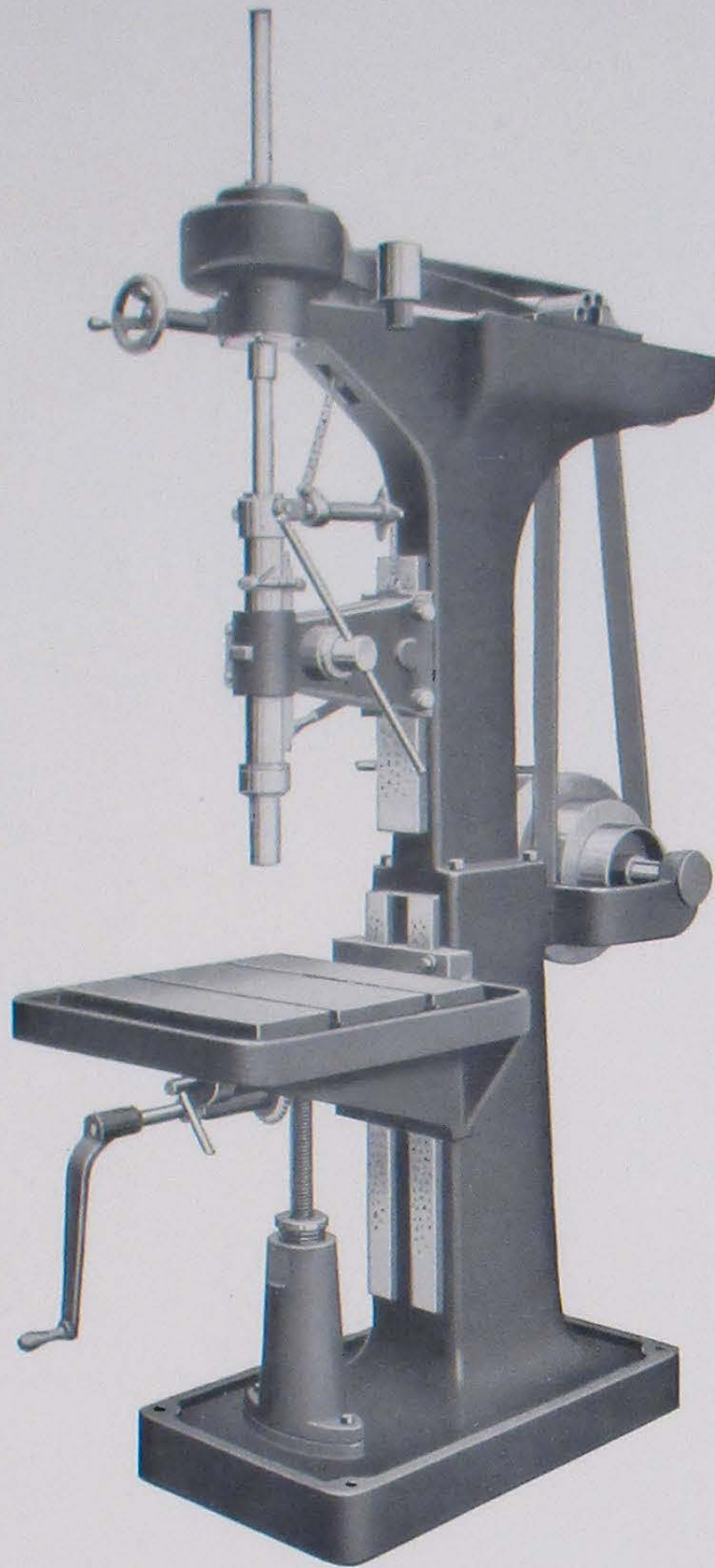
The Machine is ball bearing throughout

Spindle bore, M. T.	No. 2
Spindle diameter at drive	1 "
Traverse of feed rack	6 "
Distance, spindle to face of round column	13 ³ / ₄ "
Table diameter	18 "
Base, working surface	18 ¹ / ₄ "x21 ¹ / ₂ "
Maximum distance, spindle to base	43 ¹ / ₄ "
Width of belt on machine	1 ³ / ₄ "
Drive pulley diameter	8 "
Changes of speed	4
Weight of machine	1100 lbs.
Countershaft speed	800

Code Name—Jakey



Avey



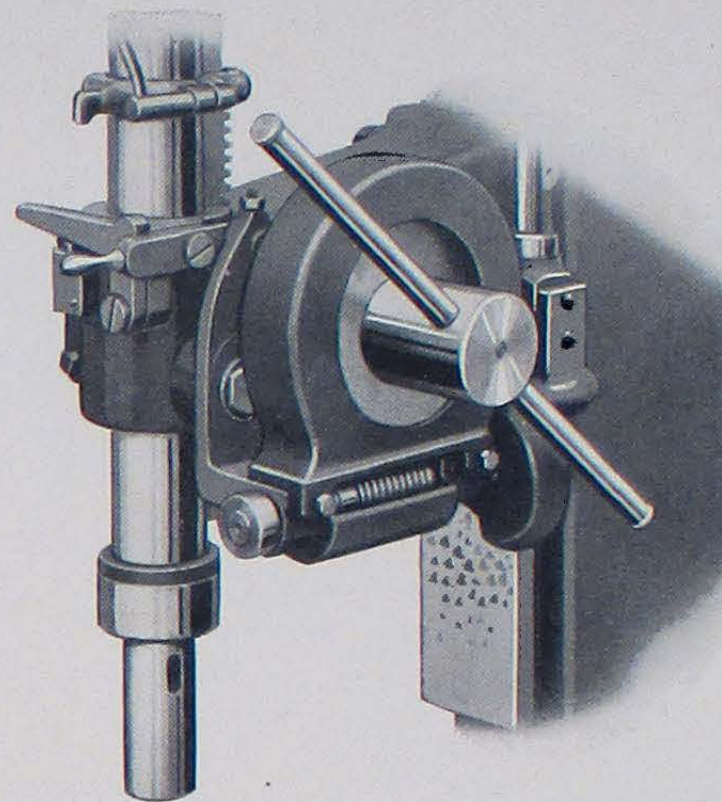
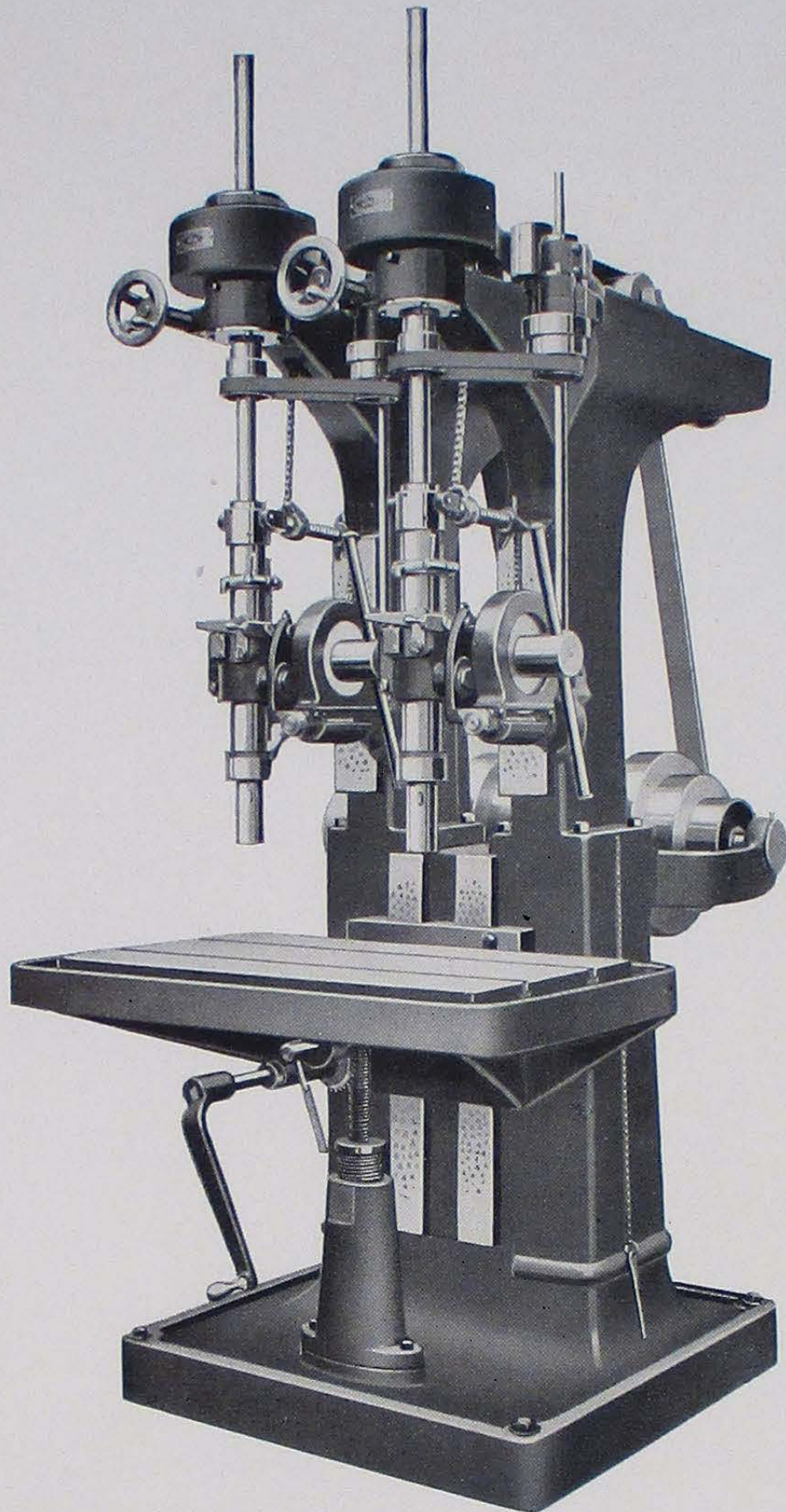
The *Avey* No. 3
Heavy Duty Ball Bearing Drilling Machine
Capacity 1¼-inch in Cast Iron
Ball Bearing Throughout

Built in Combinations of One to Six Spindles
with Plain Hand Feed or with Power Feed.

AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co. Incorporated Cincinnati





A Powerful and Rigid Drop-Worm Feed—Steel Worm and Heavy Bronze Worm Gear—Stub Tooth Rack and Pinion—Trip Lever and Trigger are of Hardened Steel.

Two Spindle Machine with Power Feed

Our No. 3 machine is designed for so much higher speeds than have been customary for holes from $\frac{3}{4}$ " to $1\frac{1}{4}$ " diameter, that in combination with finer feeds, not only cleaner work is secured, but an increase of 25 to 50% in output is possible. Ball thrust bearings at both ends of spindle sleeve provided. Both bearings are enclosed to prevent oil splashing. Vertical idlers just back of the spindle pulley greatly increase the driving power of the machine, and lengthen the life of belts. Adjustable weight bars on all machines.

Spindle diameter	$1\frac{3}{8}$ "
Traverse of feed rack	8"
Width of belt on machine	$2\frac{1}{2}$ "
Overhang	12"
Spindle bore, M.T.	No. 3
Capacity in cast iron	$1\frac{1}{4}$ "
Maximum spindle speed recommended	1500 r.p.m.

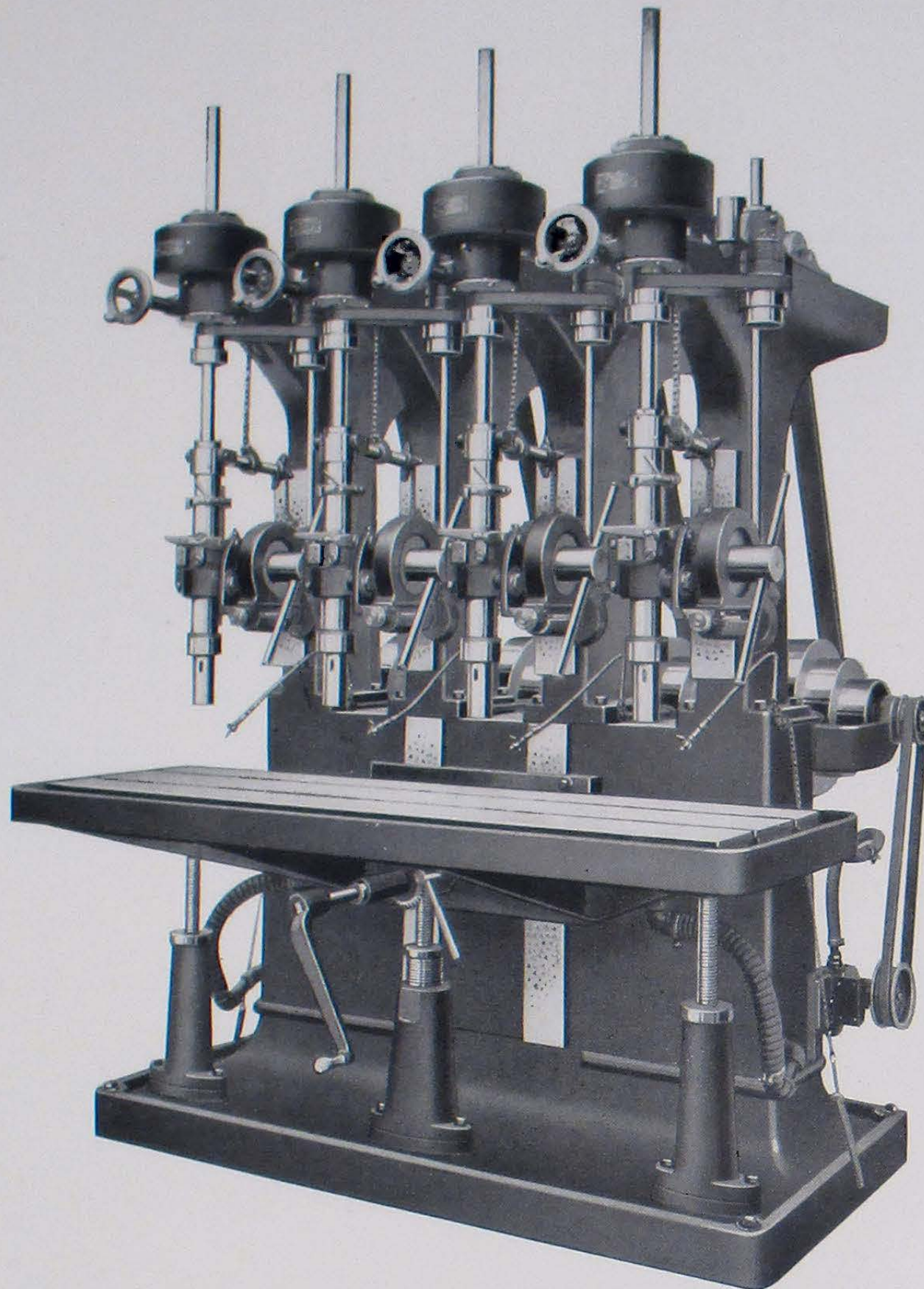
	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
Code Name, Plain Feed	Kail	Keen	Kin	Kolt	Kurd
Code Name, Power Feed	Kailif	Keenif	Kinif	Koltif	Kurdif

Complete specifications are shown in Bulletin Q, pages 1, 2, 3 and 4.

Spindles are crucible steel and are accurately ground.

All machines are equipped with Annular Ball Bearings having ball separators. These bearings are made to uniform sizes adopted in general by all commercial manufacturers of ball bearings. No difficulty is experienced therefore in replacing same in case of wear. The customer can replace these with any standard make of bearing preferred.





Four Spindle Machine With Power Feed and Lubricating Outfit

Idler Pulleys are mounted in a carriage controlled by screw feed—by means of the small hand wheels. Adjustment of this idler carriage is obtained from either front or back of the machine in the most convenient manner.

This screw feed gives positive and precise belt tension needed.

Changes of Speed are obtained by shifting the countershaft cone. It is locked in each position by ball plunger. Being keyed to the shaft its entire length, it gives a strong drive and the use of wrench is unnecessary in shifting.

Durability is assured in the construction of such wearing parts as the feed rack and pinion which **are of steel** and are practically indestructible.

The Steel Rack is inserted between shoulders in the spindle sleeve and being also secured with screws, no end play is possible.

Power Feed is as shown in above illustration. Three feeds are provided, .006, .010, and .015; these are secured through steel worm and bronze worm wheel. Quick return of spindle is by means of tripping finger and counterweight. Power feed is furnished only as an extra.

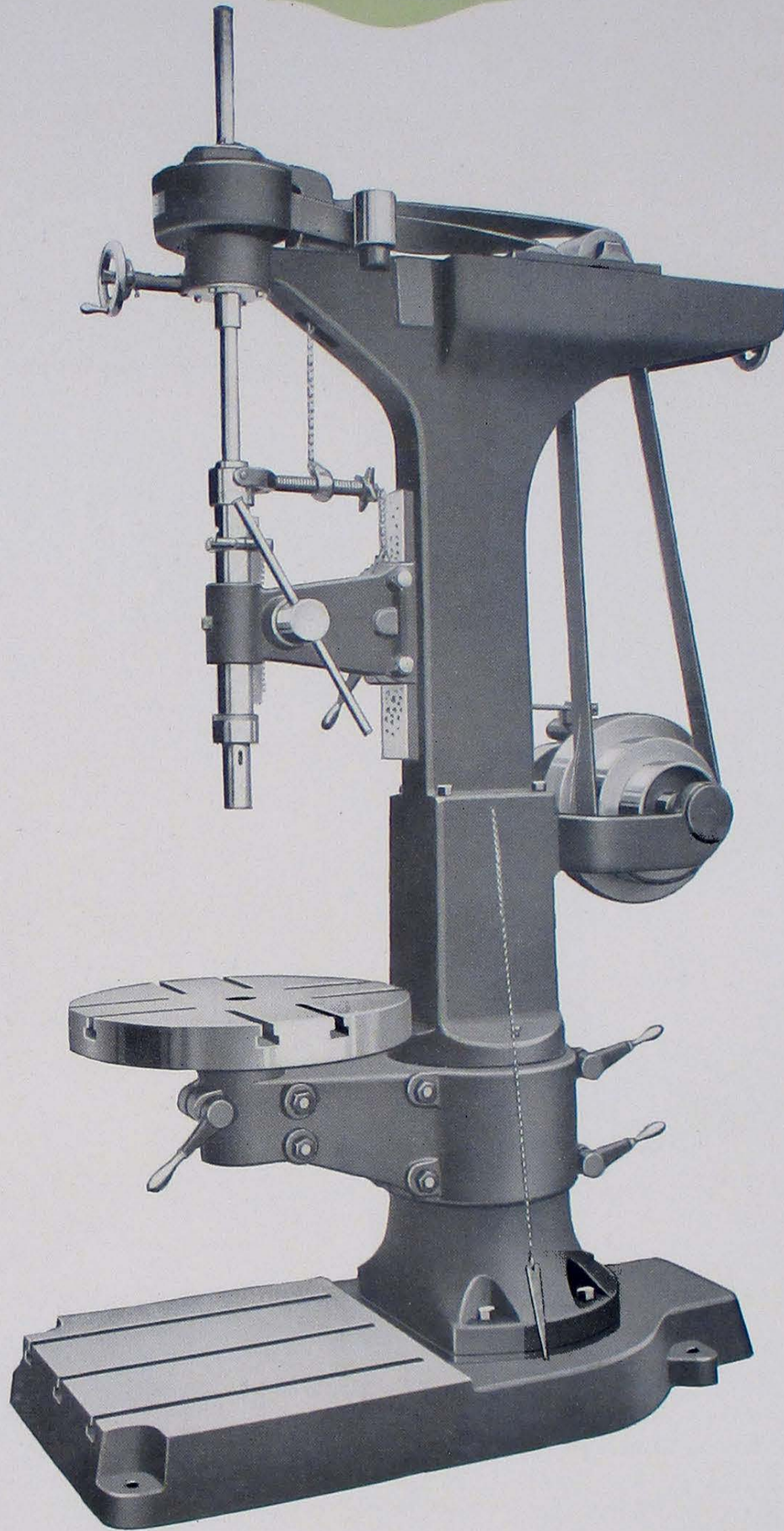
Spindle Sleeve is Graduated. Depth gauge or stop collar is mounted on the graduated sleeve; it has its own hand clamp screw permitting adjustment without use of wrench or screw driver.

Tables are provided with wide oil grooves and T slots.

For extra heavy work, planetary gearing in spindle pulley can be furnished.

Where desired, we furnish as extra equipment motor brackets or motor driven machines, lubricating outfits, tapping attachments, etc.

Avey



The *Avey* No. 3
with Round Swinging Table and Flat Working Base

General specifications are same as shown on page H-2

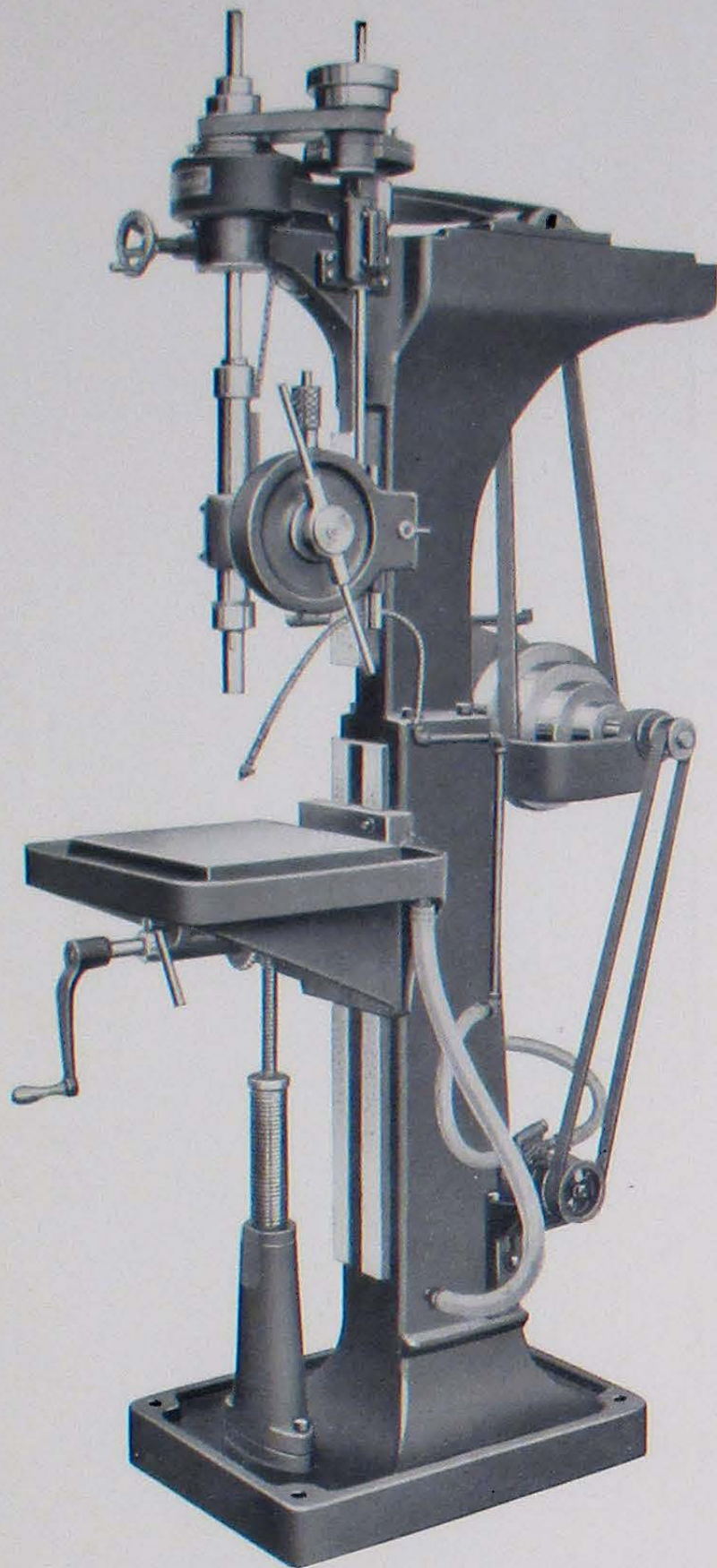
Special Specifications

Diameter of Round Table	24	"
Size of Working Base	24" x 26"	"
Maximum distance, Spindle to Round Table	18	"
Maximum distance, Spindle to Flat Base	46 $\frac{1}{4}$	"
Minimum distance, Spindle to Flat Base	17 $\frac{1}{2}$	"

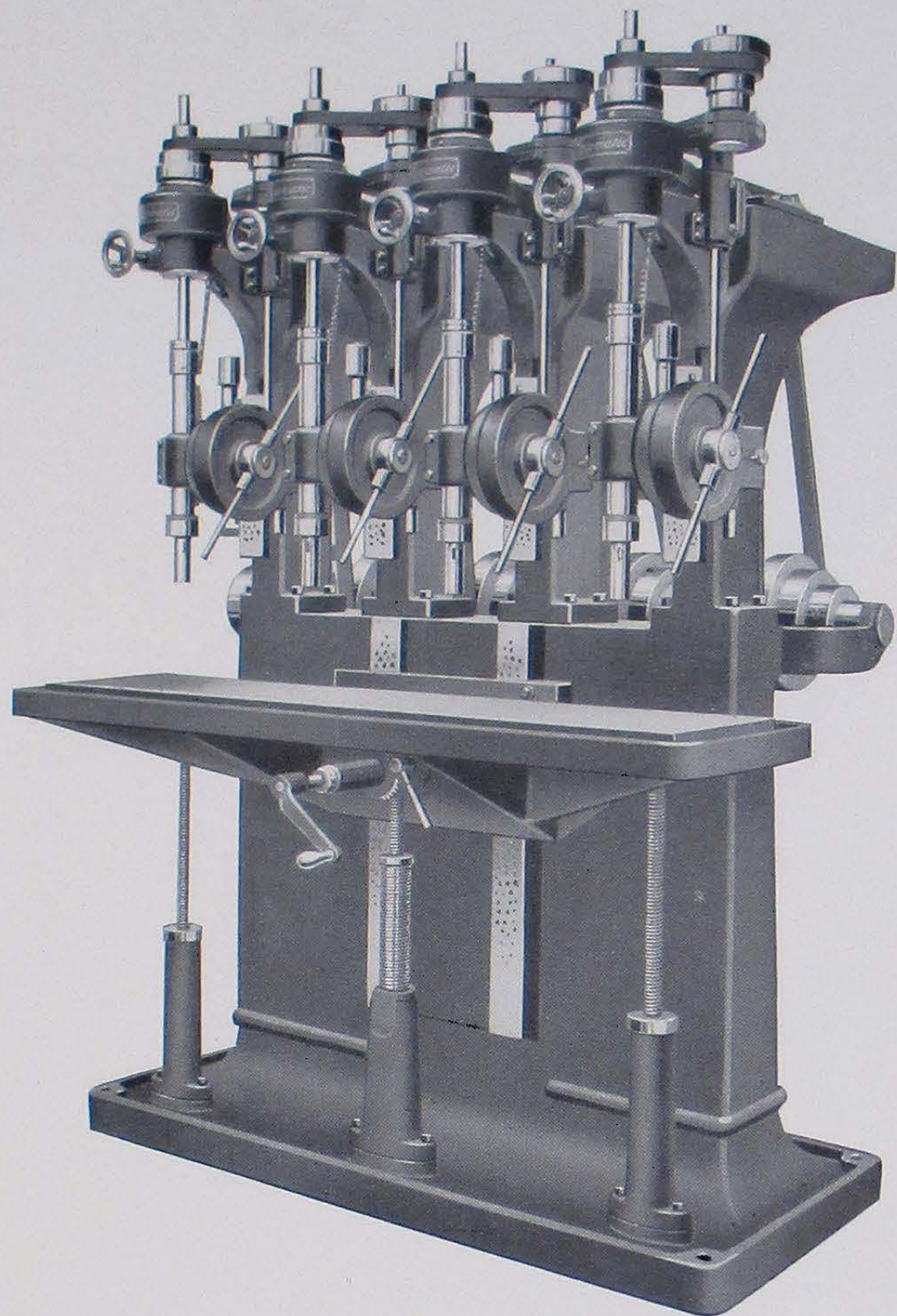
Code Name—Plain Feed—Karo

Code Name—Power Feed—Karoif





Single Spindle No. 2 Avey-matic with Lubricating Outfit



Four Spindle No. 2 Avey-matic

Avey-matic

High Speed Ball Bearing Sensitive Drilling Machine

	No. 1	No. 2	No. 3
Spindle Bore—Morse Taper.....	No. 2	No. 2	No. 3
Spindle Diameter at Drive.....	13/16"	1"	1 3/8"
Traverse of Feed Rack—Semi-Automatic.....	4"	6"	8"
Traverse of Feed Rack—Full Automatic.....	3 1/2"	4 1/2"	6 3/4"
Width of Belt.....	1 1/4"	1 3/4"	2 1/2"
Feeds, Inches per revolution.....	.0025	.003	.0068
	.0045	.006	.010
	.007	.009	.015
	.010	.012	

General specifications same as those of plain machine of same size shown in Bulletin Q, pages 1, 2, 3 and 4. Automatic cut-off to lubricant can be provided with lubricating outfit when desired.

AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co.

Incorporated

Cincinnati



Avey-matic

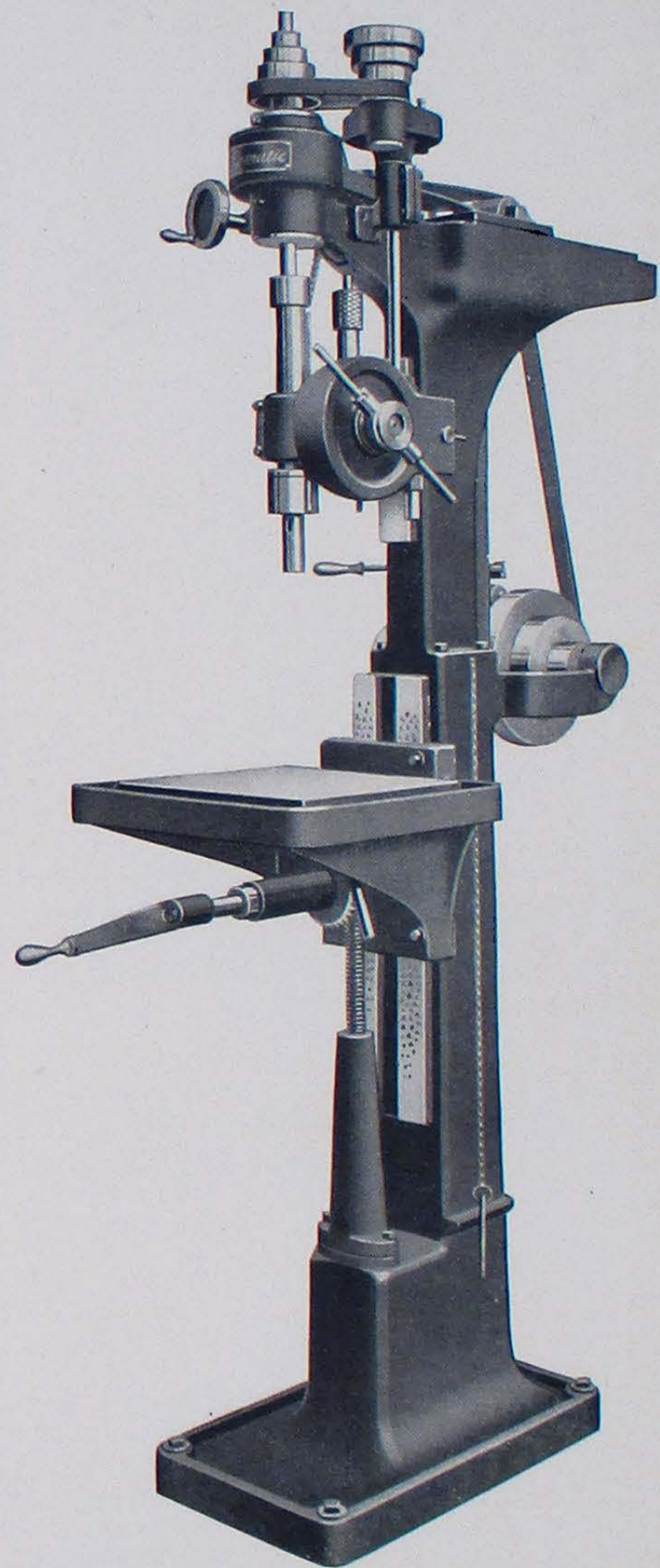
Ball Bearing Drilling Machine

(Patented)

A modern design of feeding mechanism embracing distinctive features, including recent developments in facilities for **full-automatic, semi-automatic and hand-feeding**. The general design and dimensions of the machine are substantially the same as the plain machine and it can be furnished in multiple spindle types of one to six spindles. When set for **full-automatic**, all the movements of the spindle are continuous, and the operator is required only to change the work under the spindle and **can operate as many spindles** as the nature of the work permits.

The **semi-automatic** trips out the feed and returns the spindle, but the feed is re-engaged by advancing the drill to the work by hand. The feed can be disengaged at any point of the stroke or advanced ahead of the feed by means of the hand-lever. The hand-lever can be set in any position or disengaged when automatic-feeding. The return of the spindle is controlled by a cam and adjustable spring plunger. Machine is all-ball-bearing construction. Ample oiling facilities are provided. Convenient arrangements are made for maintaining tension of both drive and feed belts.

Helical gears in the feed gear box are mounted on ball-bearings.

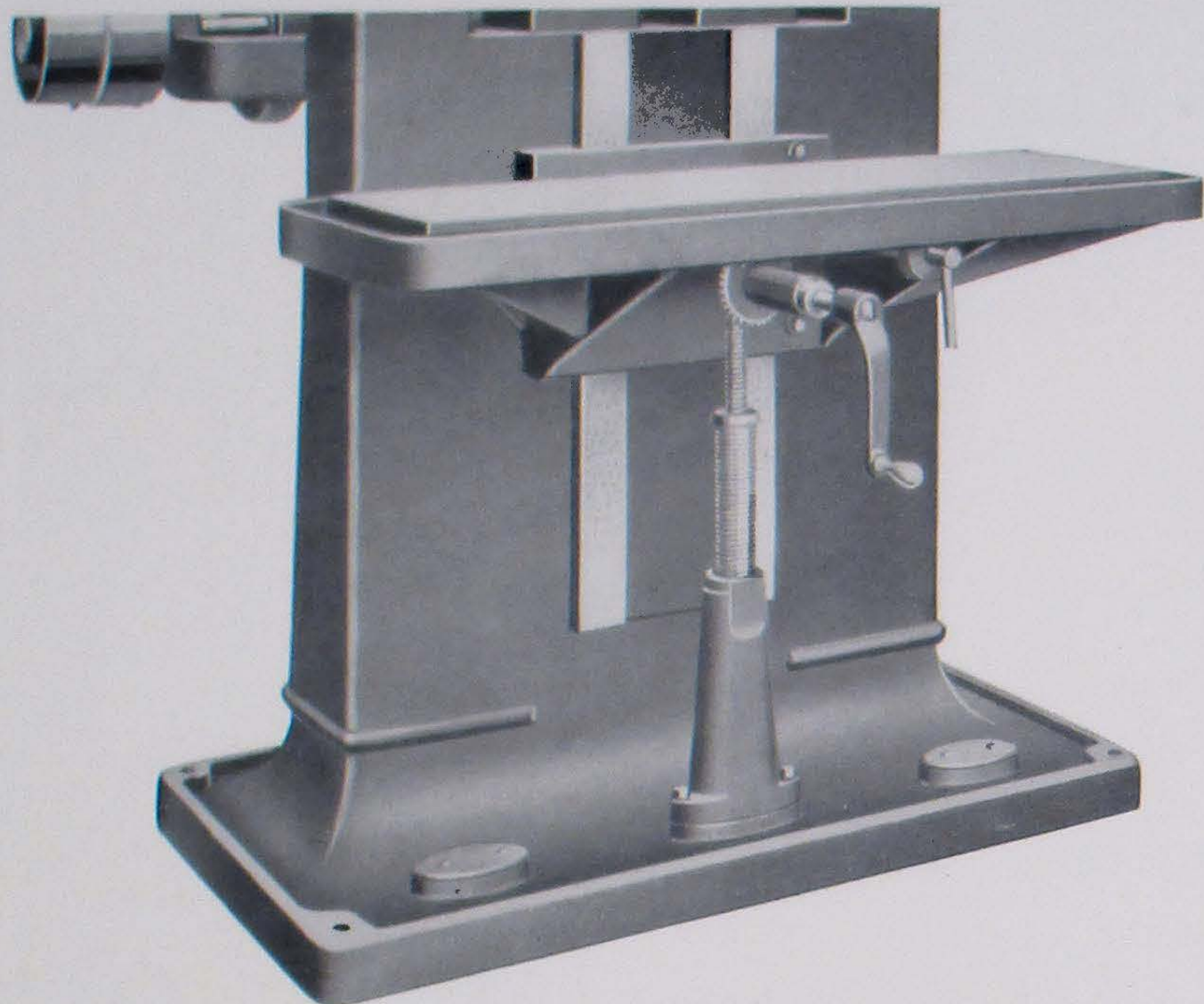


Single Spindle No. 1 Avey-matic

Code Name—Add "oto" as a suffix to regular code name of machine required.

A study of details of design of AVEY Drilling Machines will show that much careful thought has been given each of the essential details contributing to Power, Rigidity, Convenience, Simplicity, Long Life, and Pleasing Appearance.

We call attention below to a few of these important features:



Heavy Lower Column. The full width vertical lines of all lower columns provide great rigidity. As accurate work requires a machine that is free from vibration, this lower column construction is certainly worthy of consideration as compared with the undercut type of column.

Tables are heavily ribbed underneath.

Jig Guard on the back of table top prevents jigs from marring the Column ways on which the table slides.

Bases of all machines are edged with a heavy raised bead thus forming a basin retaining drippings of oil, thereby keeping floors around the machines much cleaner.

Power or Capacity—Elements contributing to power are spindle size, width of belt and pulley contact.

Spindle—A drill spindle generally has three diameters, viz.: nose, sleeve bearing and drive, the latter being the smallest really measures the spindle strength. Comparisons should be made accordingly. Spindle sizes on No. 1, 2 and 3 machines are as follows:

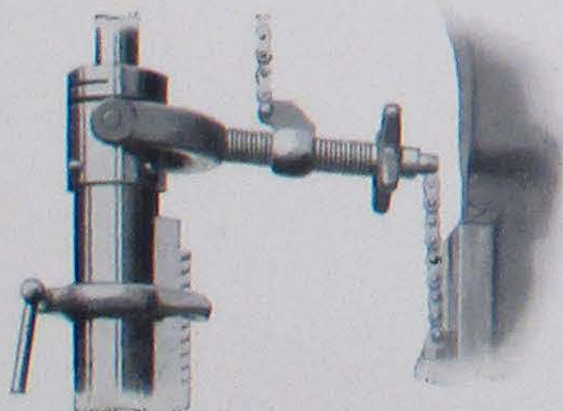
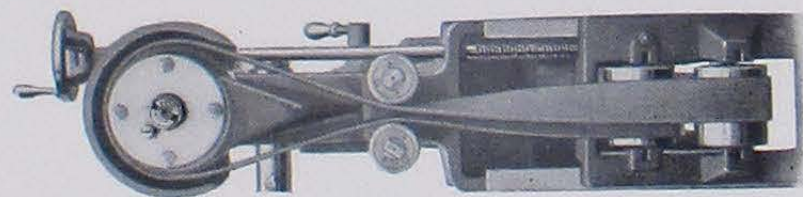
	Nose	Sleeve Bearing	Drive
No. 1.....	1 ³ / ₁₆ "	.984"	1 ³ / ₁₆ "
No. 2.....	1 ⁵ / ₁₆ "	1 ¹ / ₁₆ "	1"
No. 3.....	2"	1 ¹ / ₂ "	1 ³ / ₈ "



Belt Widths—No. 1, 1¹/₄"; No. 2, 1³/₄"; No. 3, 2¹/₂".

Belt Contact—The belt contact or hug of the spindle pulley is increased 33¹/₈% by the vertical idlers immediately in back of the pulley, thereby increasing the pull in like proportion.

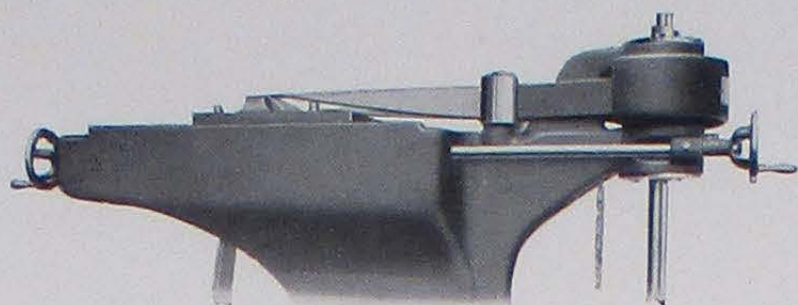
These vertical idlers also serve to hold the belt in line and lengthen the life of the belt greatly.



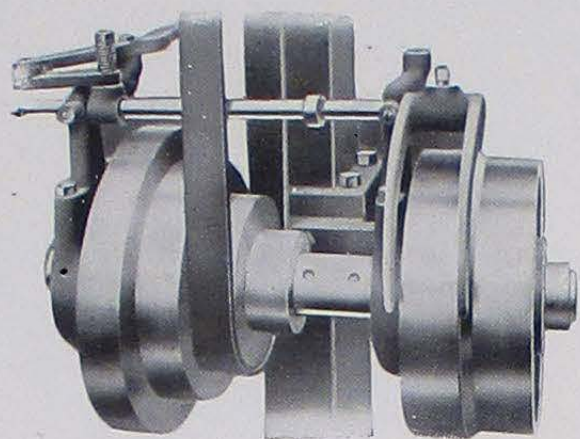
Counterbalance of spindle is by weight inside of Column. As different sizes of twist drills, chucks, tapping attachments, etc., affect this balance, compensation is made by the adjustable weight bar as shown in accompanying cut.



The following information applies in general to No. 1, 2 and 3 AVEY Drilling Machines:

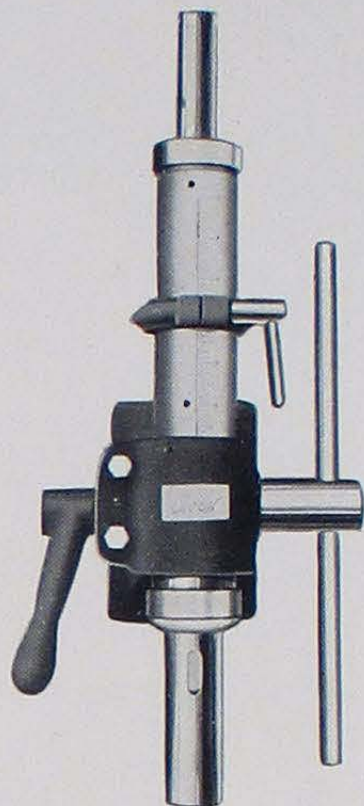


Idler Pulleys are mounted in a carriage controlled by screw feed. By means of the small hand wheels placed at both front and rear end of the screw, adjustment of this idler carriage is obtained from either front or back of the machine in the most convenient manner. This screw feed gives positive and precise belt tension needed. There are no thumbscrews to loosen and tighten each time adjustments are made.



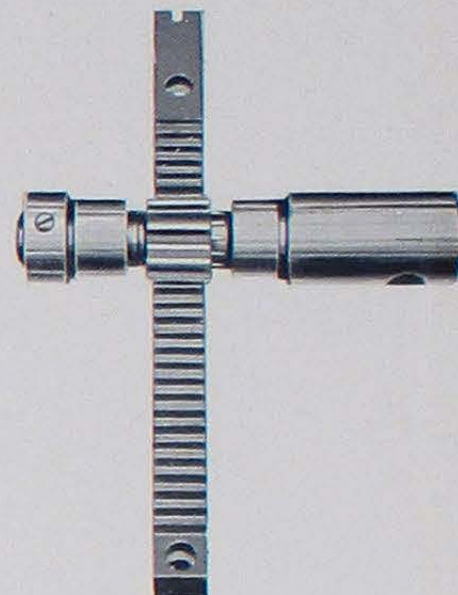
Changes of Speed are obtained by shifting the countershaft cone. It is locked in each position by ball plunger.

Being keyed to the shaft its entire length, it gives a stronger drive than a set-screw as commonly used, and the use of a wrench is unnecessary in shifting.



Spindle Sleeve is graduated. Depth gauge or stop collar is made of phosphor bronze and is mounted on the graduated sleeve. It has its own hand clamp-screw.

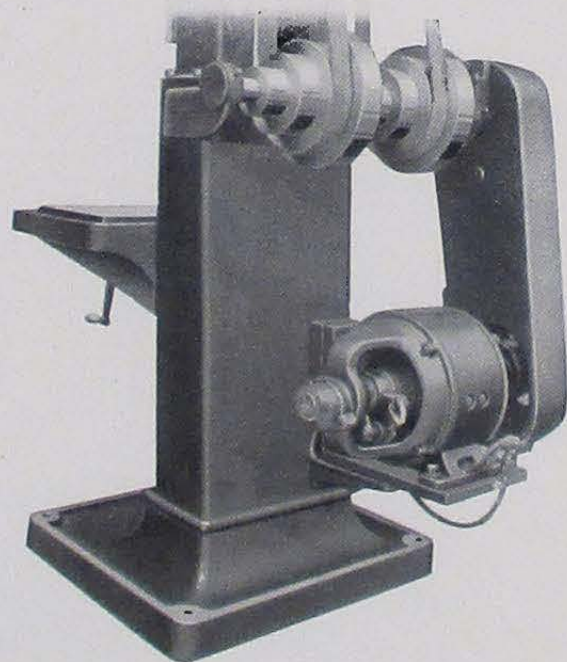
This arrangement saves time, as no scale is needed to ascertain precise depth and no screw-driver or wrench required to loosen and tighten set-screw.



Durability is assured in the construction of such wearing parts as the rack and pinion above shown, which are of steel and are practically indestructible.

The Steel Rack

is inserted between shoulders in the spindle sleeve and being also secured with screws, no end play is possible.



Motor-Driven Machines can be furnished if desired. The bracket is provided with slot, permitting adjustment as shown.

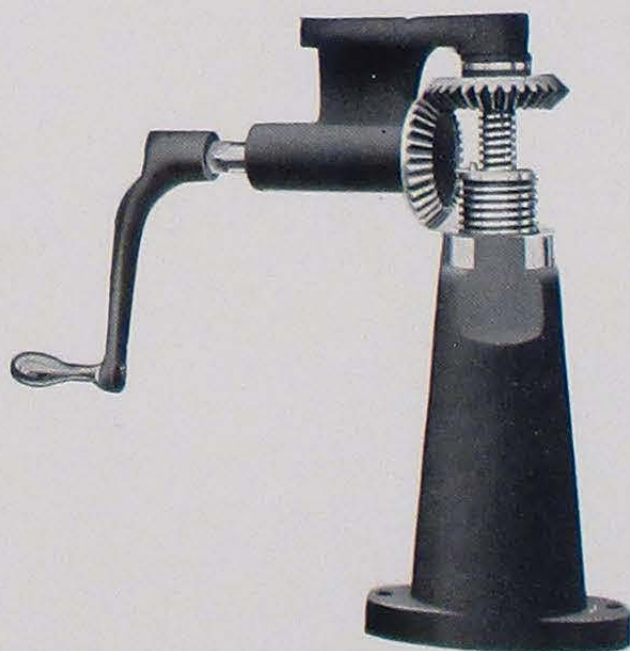
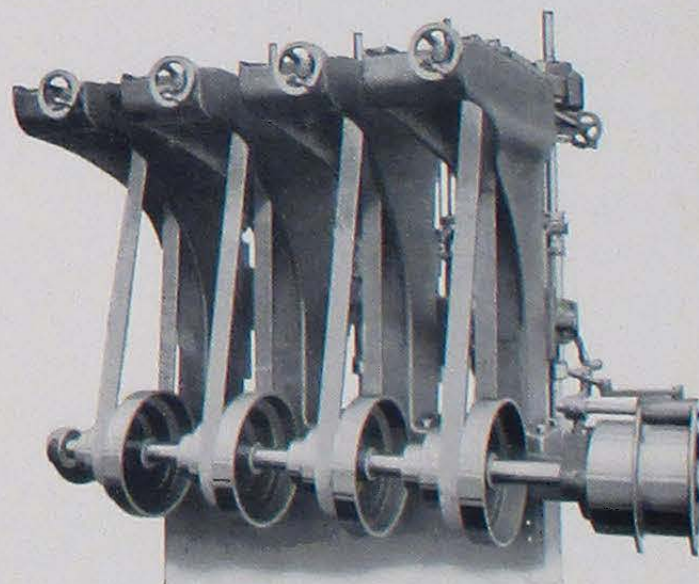


Table Elevating Device used on AVEY Ball Bearing Drilling Machines. A thrust ball bearing takes the weight of the table, permitting the gears to revolve freely.



Not only can the belt be tightened from the front of the machine, but provision is made to control the belt from the rear by means of the small hand wheel as shown.

This is desirable when shifting the belt on the rear cone.

Further information gladly furnished by

The Avey Drilling Machine Co.

Incorporated

Cincinnati



Information contained hereon is applicable in general to No. 1, 2 and 3 sizes of AVEY Drilling Machines, the design and construction of these sizes being almost identical.

The excellent performance of AVEY high speed drilling machines is due, in great measure, to a close adherence to the correct principles of design in each separate detail. Ball bearing mountings and dust proof enclosures are in accordance with the most modern practice, with special attention to lubrication and oil retaining features.

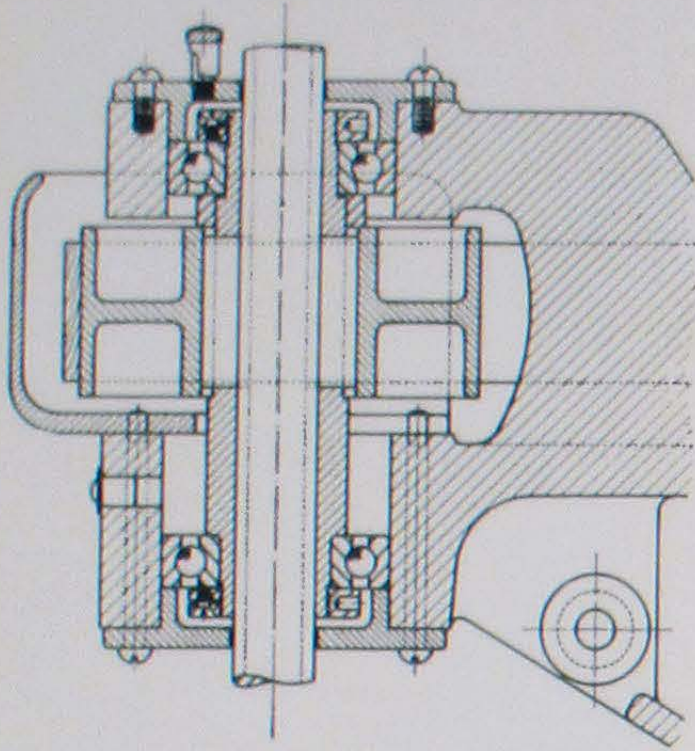


Fig. 1 Spindle Pulley

Pulley is mounted between bearings, with double key drive to spindle. Cast iron belt guard is furnished.

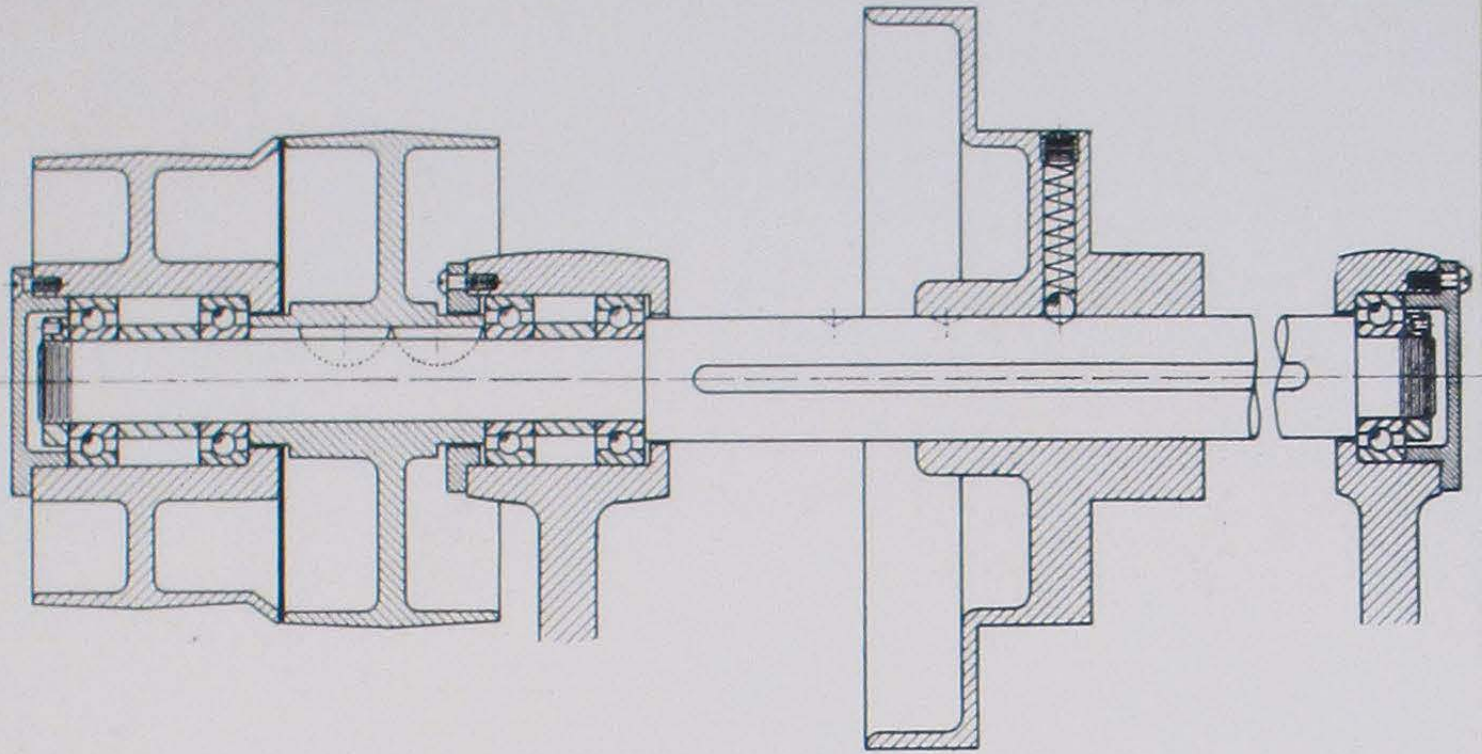


Fig. 2 Countershaft

Countershaft and loose pulley are mounted entirely on ball bearings. Tight and loose pulleys are crowned and sliding cone at each spindle is provided with spring plunger to instantly locate cone when changing speeds.

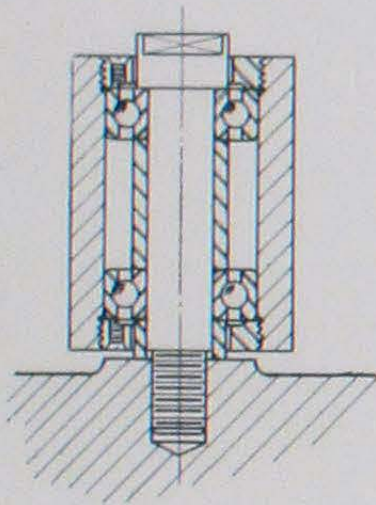


Fig. 3 Vertical Idler

Two of these ball bearing idlers are located directly back of the spindle pulley on the No. 1, 2 and 3 AVEY. Provide an increased arc of belt contact with a corresponding increase in power and a longer life for the belt.

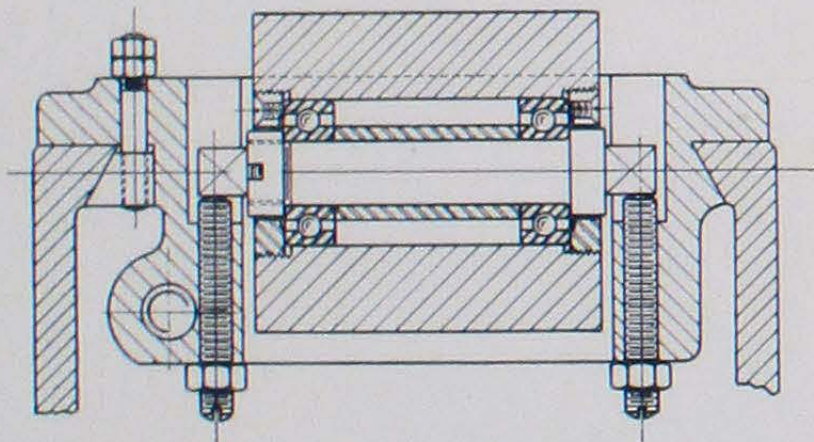
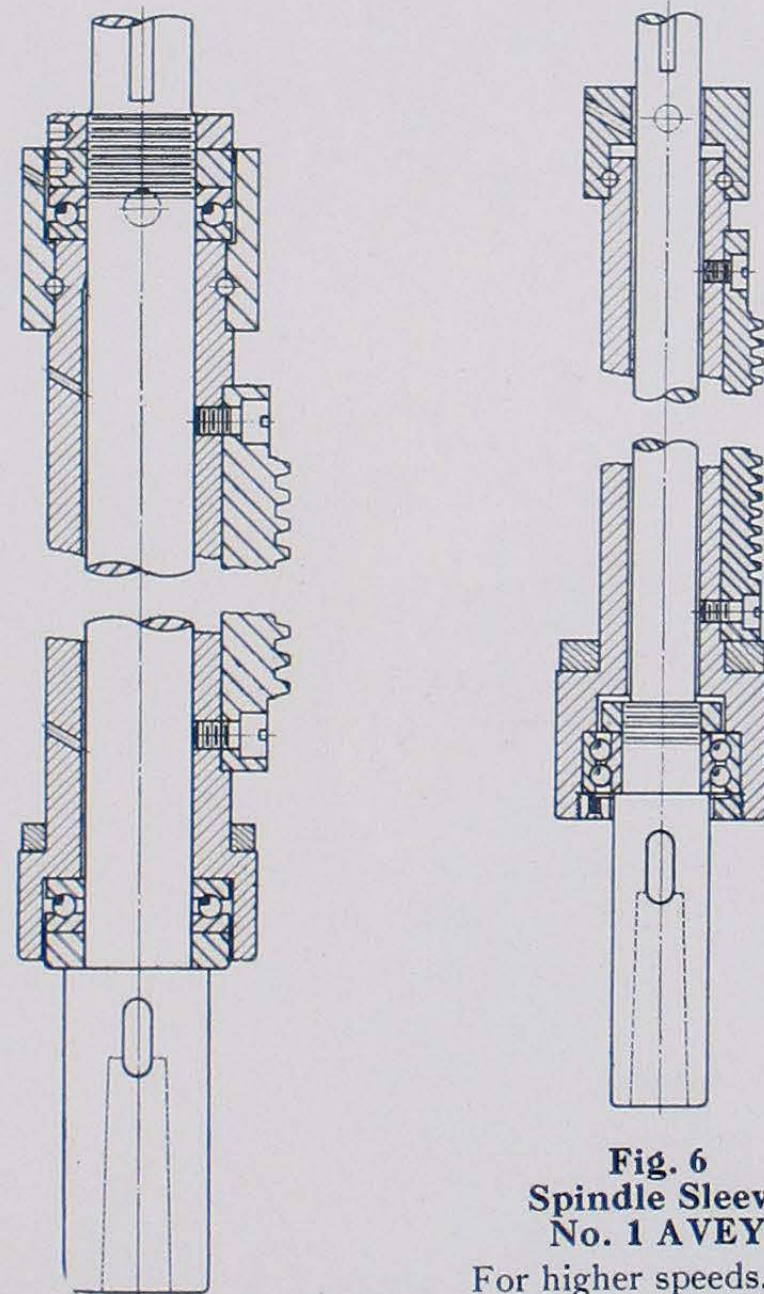


Fig. 4 Carriage and Horizontal Idler

Ball bearing idlers can be lifted out for oiling and for changing belt. Carriage is dovetailed on column and adjustable gib eliminates all possibility of jar or vibration.



**Fig. 5 Spindle Sleeve
No. 2 and No. 3 AVEY**

Ample oiling facilities and ball thrust bearing at both ends of sleeve, completely enclosed to prevent oil splashing.

**Fig. 6
Spindle Sleeve
No. 1 AVEY**

For higher speeds. Has double row radial thrust type annular ball bearing completely enclosed.

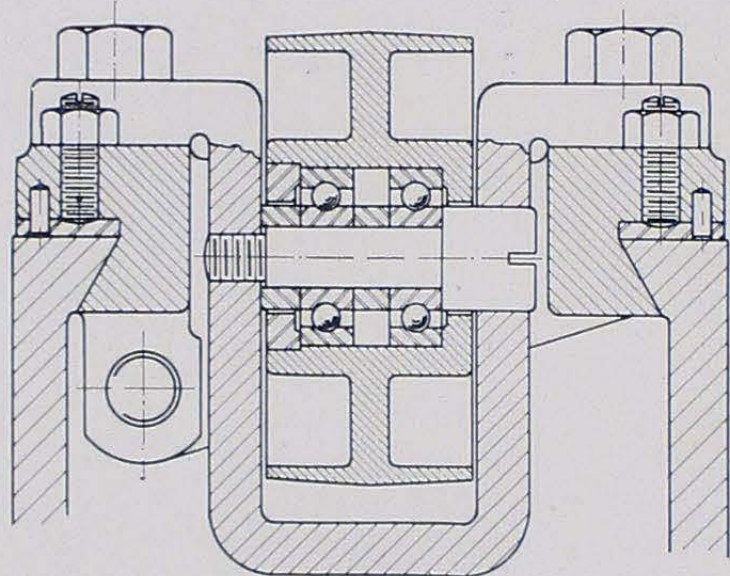


Special Precision Features of No. 1/2, No. 1/2 Heavy and No. 1 1/2 AVEY Machines

The line drawings below show the construction of certain portions of the No. 1/2, No. 1/2 Heavy and No. 1 1/2 AVEY Drilling Machines.

The unusually high speeds at which these machines are designed to be run necessitate an extreme nicety of construction which is clearly indicated in the drawings.

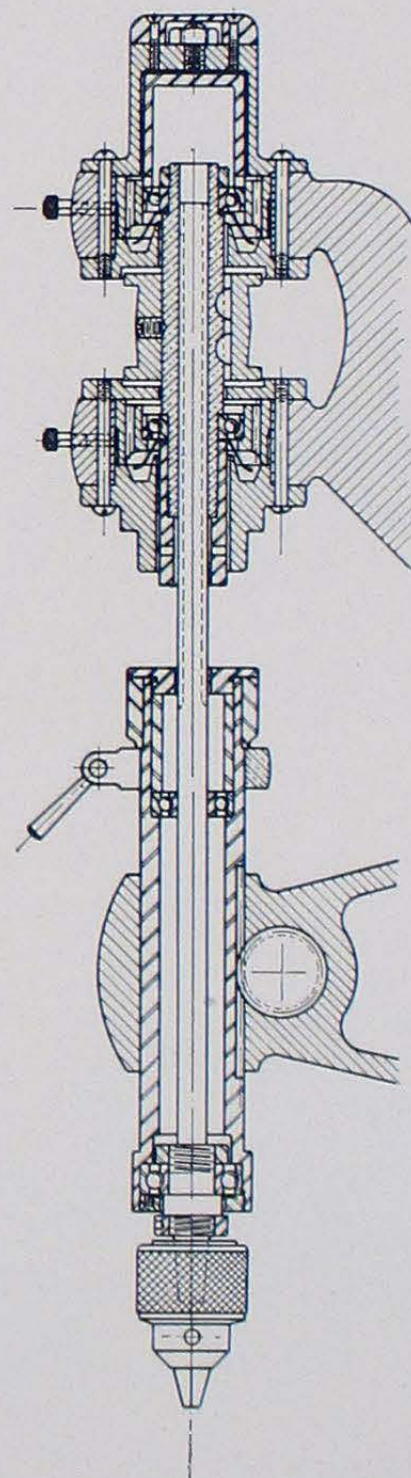
It should be borne in mind that the No. 1/2, No. 1/2 Heavy and No. 1 1/2 machines are designed for speed, rather than much power, consequently are especially adapted to light work—either as to size of hole or as to hardness of material.



The Idler Carriage

is gibbed and dovetailed with the top column yoke so that the speed of the belt does not cause chatter or vibration.

Flat endless canvas belts are furnished for driving each spindle. These are essential as the extreme speeds at which the belts travel require belts of greater flexibility than those made of leather. These belts are flat, do not cut across metal corners—have more pulling power and are much **more durable** than **round** canvas belts.



The **Spindle** is carried entirely in annular ball bearings its full length—does not project above the dust cap on the upper bracket, thus eliminating vibration or whipping.

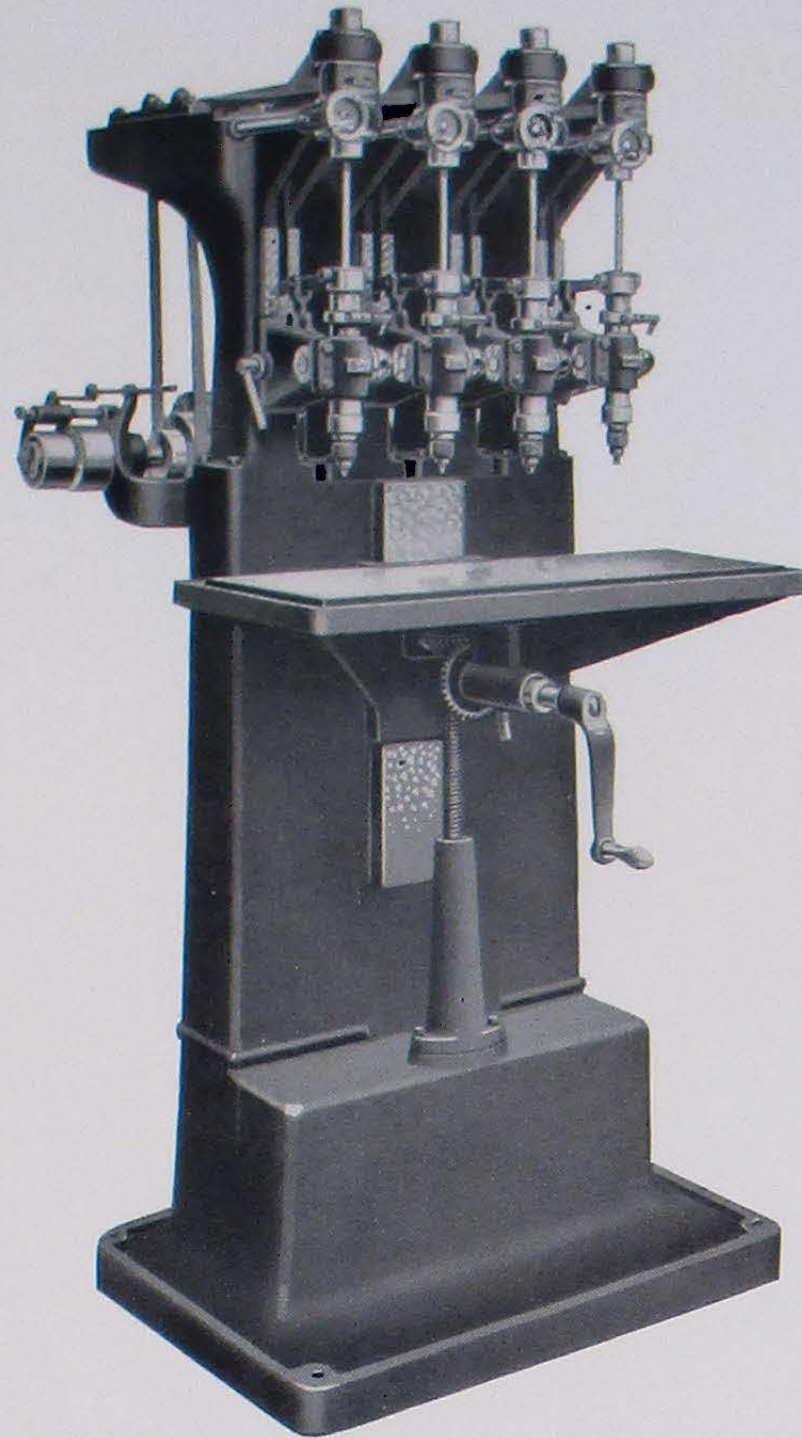
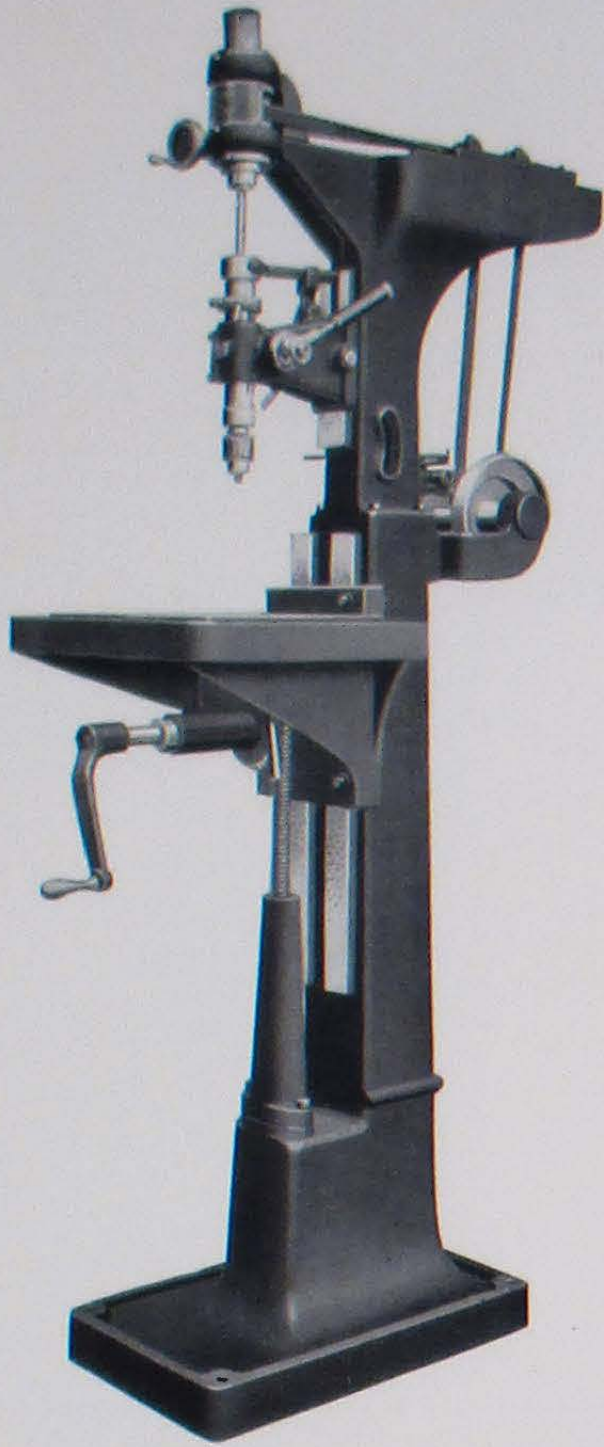
Each spindle is fitted with a carefully balanced chuck.

The bearings in the upper column brackets are lubricated by splash from oil flingers.

The Avey Drilling Machine Co.

Incorporated

Cincinnati



The *Avey* No. 1/2

Ball Bearing Drilling Machine

Ball Bearing Throughout. Speeds 12,000 R. P. M.
 Built in Combinations of One to Six Spindles
 Overhang 6 1/4 inches.

Spindle Diameter .....	.472 at drive
Width Belt on Machine	3/4"
Traverse of Feed Rack	2 1/2"
Maximum Spindle Speed recommended, r. p. m.	12000
Particularly adapted to work under	3/16"

Extreme speeds are essential for drilling holes under certain sizes, dependent on material, not only that maximum output may be obtained, but that the breakage of the small twist drills may be avoided.

With insufficient spindle speeds there is a tendency to tear rather than cut, particularly at the breaking through point; or the hand feed pressure on a small twist drill may be too great, causing it to bend and snap.

But with the extreme speeds up to 12000 r.p.m. available on this No. 1/2 machine, the twist drill cuts all the way.

The breakage of these brittle high speed twist drills is thereby reduced to a minimum, clean, accurate holes are assured, and a decided saving in time is effected.

	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
Code Name—Without foot treadle—Column Type....	Brace Black	Breed Blend	Bride Blight	Broth Bloom	Brute Blush
Code Name—Without foot treadle—Bench Type.....					

Complete specifications in Bulletin Q, pages 1, 2, 3 and 4.

AVEY machines are covered by patents—Jan.1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922, Nov. 4, 1924; others pending.

The Avey Drilling Machine Co.

Incorporated

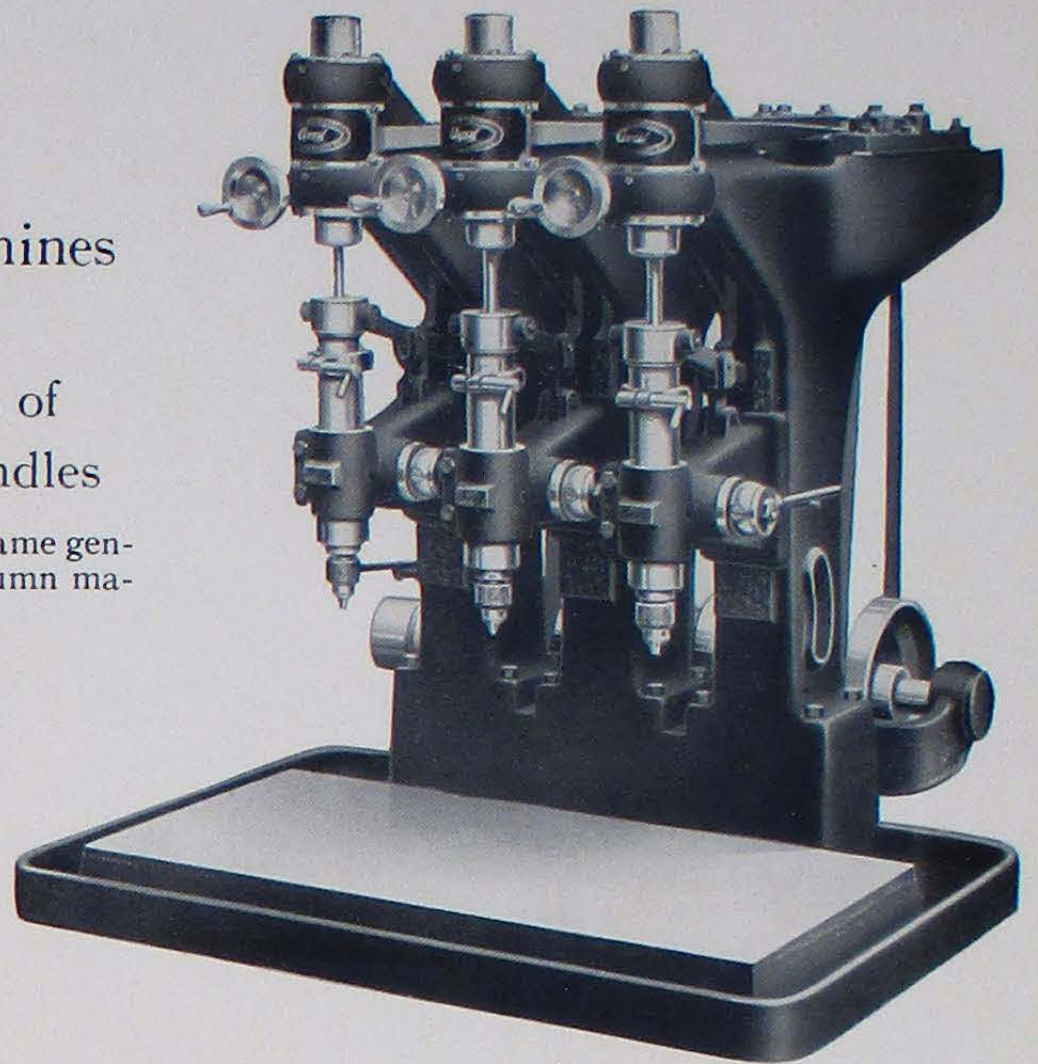
Cincinnati





No. 1/2
Bench
Drilling Machines
Built in
Combinations of
One to Six Spindles

Bench machines are of same general proportions as column machines.



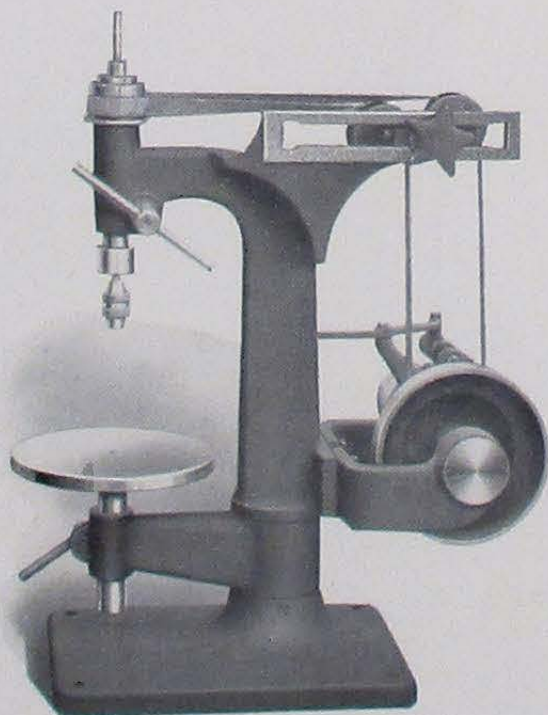
All Materials used throughout these machines, both column and bench types, are of the kind that have been found, after much experimenting, careful testing, and regardless of higher cost, to be best adapted to the purposes to be attained. High speed, such as attained on this machine, necessarily limits the size of bearings that may be used—consequently it should be borne in mind that this machine is designed for light work and high speeds rather than load. The speeds it affords are not only unnecessary, but impracticable for larger work. We have other machines for heavier work to be run at suitable speeds. Machines can be arranged for motor drive; Tapping Attachments and lubricating outfits can be furnished where called for.

Special Jackshaft Drive

In some instances a special jackshaft is desired in order to secure higher speeds than regular lineshaft would permit, except by use of excessively large pulley. Furnished only as an extra.

No. 1/2 Heavy—This machine is of same general specifications as the standard No. 1/2 machine, except that the spindle is heavier, being 5/8" diameter, as compared with .472"—this necessitates use of larger bearings, and with the wider belt used, 1 1/4", increases its capacity to 3/8" holes in cast iron. Maximum speed 4500 r. p. m.

	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
Code Names—No. 1/2 Heavy—Bench Type.	Band	Berg	Biff	Bolo	Buty
Code Names—No. 1/2 Heavy—Column Type	Bass	Bevy	Bias	Boat	Buoy



The AVEY No. 00
Drilling Machine

Bench or Column Type
Single Spindle only.

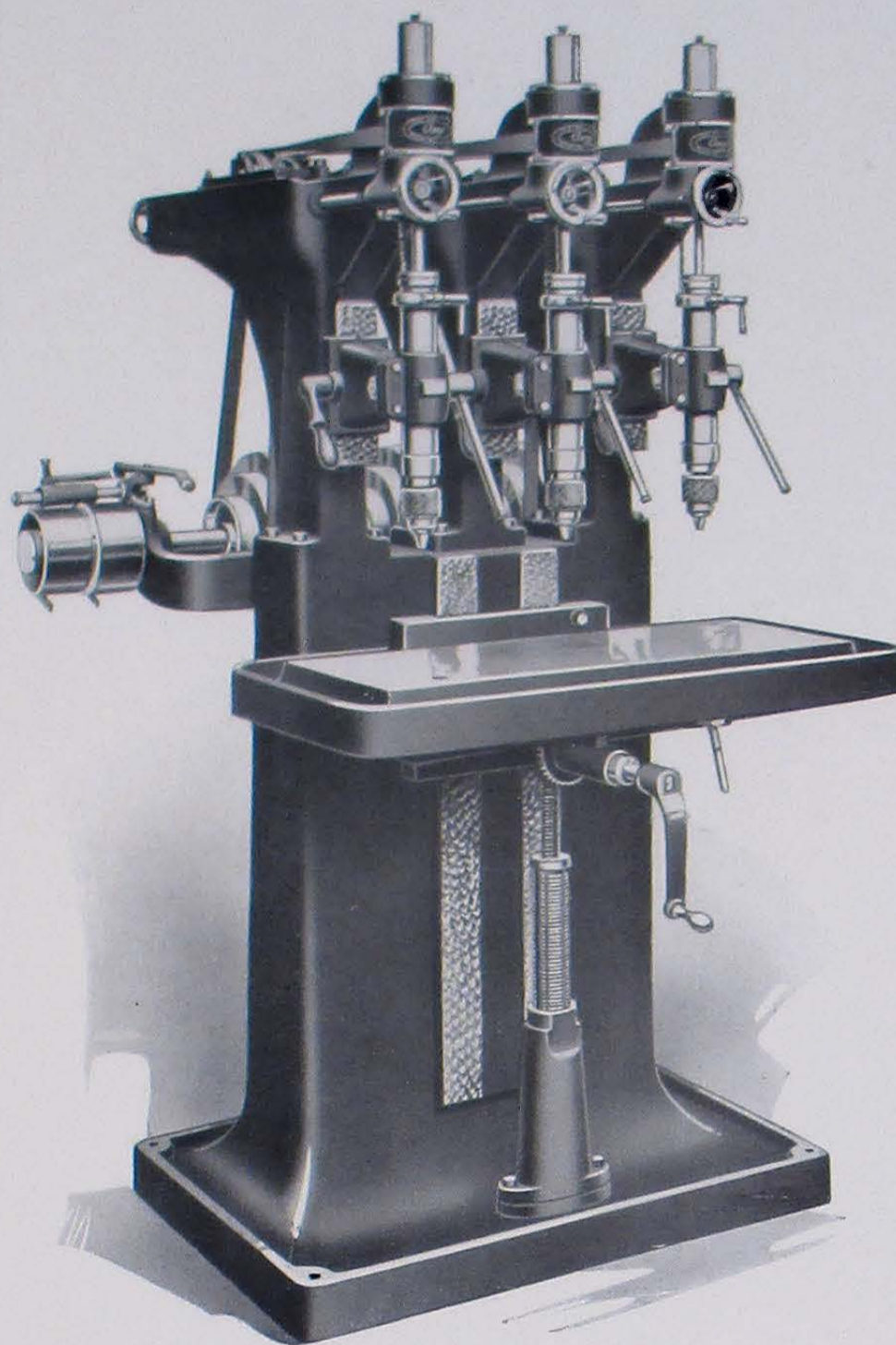
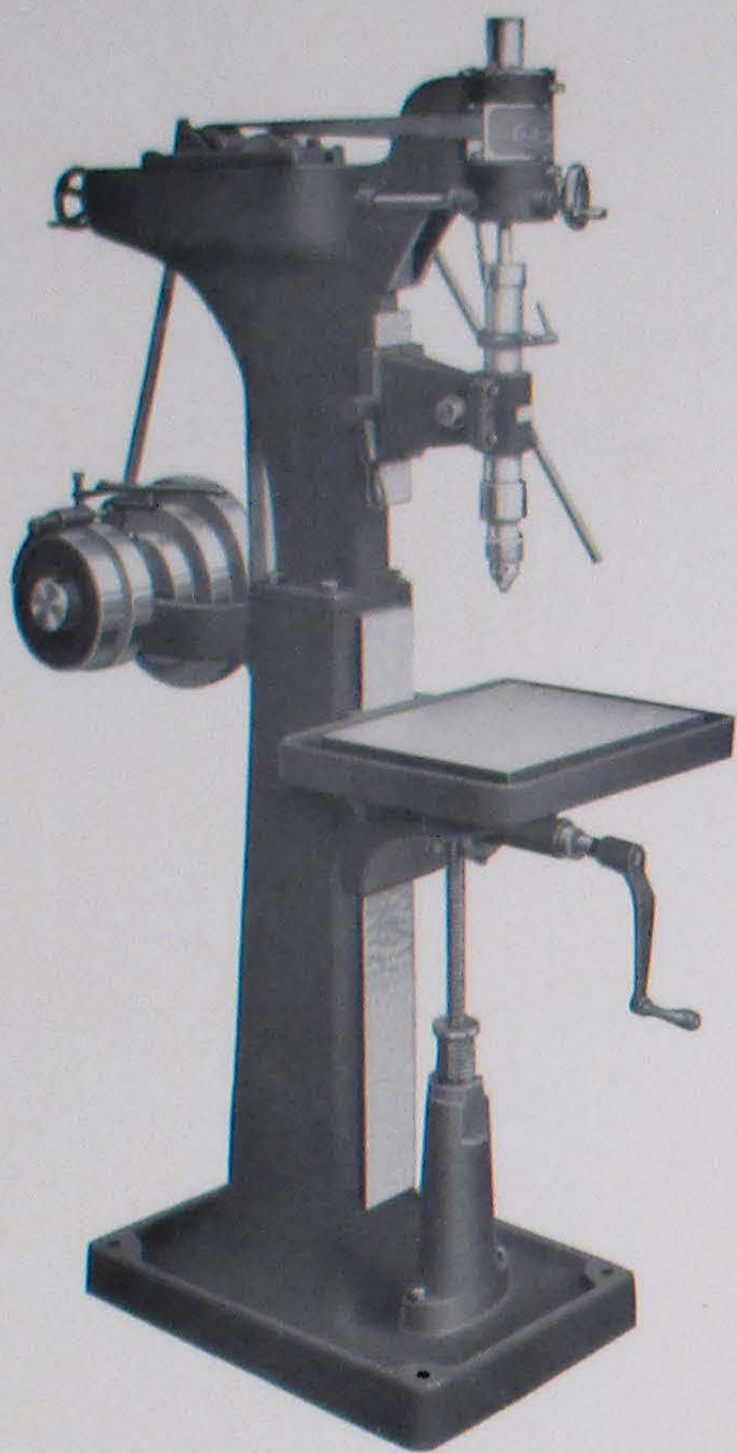
Code Name—Bench Type Abba
Code Name—Column Type Abcol

A light machine equipped with ball bearings, of high class workmanship, capable of being run at spindle speeds of 5000 r. p. m.

Capacity 3/16"
Speed Changes 3
Overhang 5"
Traverse of Feed Rack 1 1/2"



Avey



The *Avey* No. 1½
Ball Bearing Drilling Machine

Combinations of One to Six Spindles
Speeds—7000 R. P. M. Capacity ⅜-inch in Cast Iron

Ball Bearing Throughout

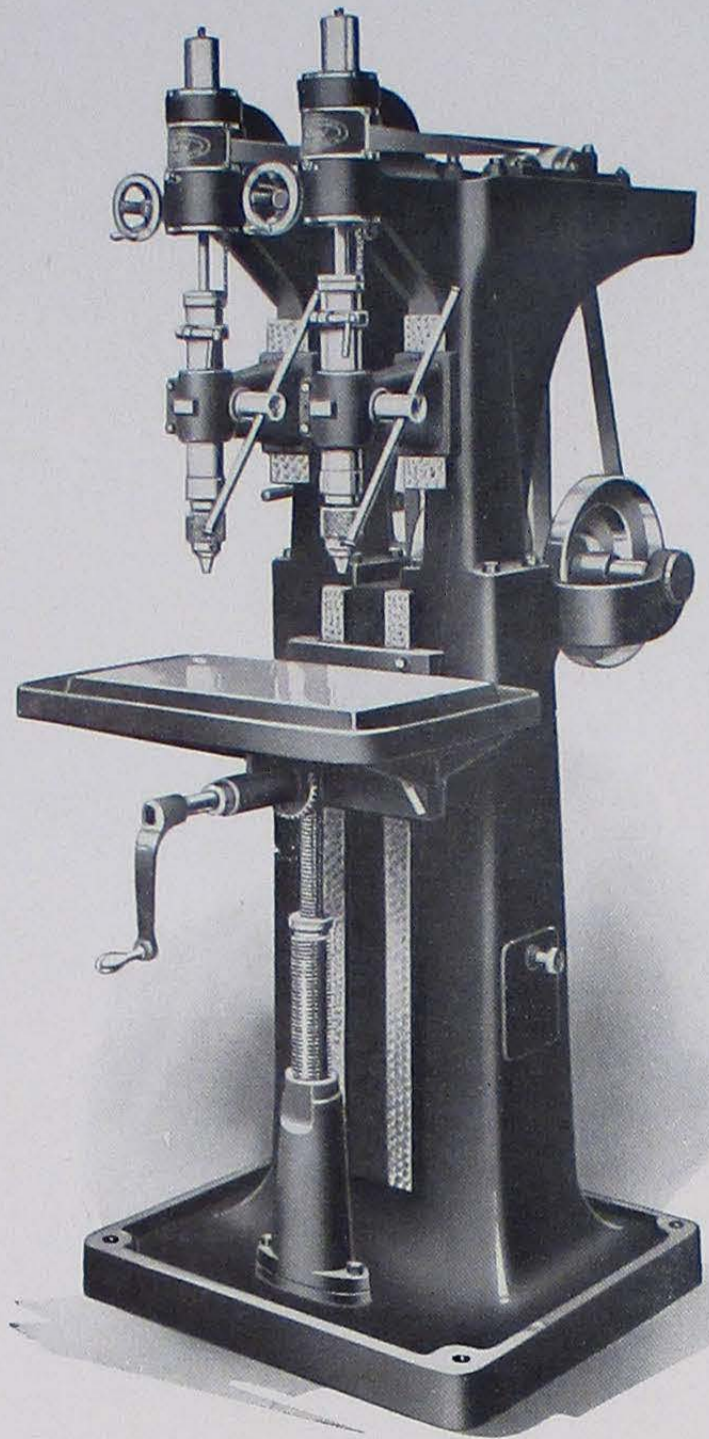
Practically every manufacturer has recognized the productive advantage of high speed twist drills, especially in medium and larger sizes, but an equally large number of users have complained that the smaller twist drills made of high speed steel break or snap too easily, hence become an expensive luxury. This is due entirely to lack of sufficient speed to cut continuously. With proper speeds, breakages are eliminated, grinding of drills is reduced fifty to sixty per cent and production increased in proportion to comparative speeds.

Our No. 1½ AVEY Drilling Machine successfully solves the problem in providing a high class machine on which sufficient speed may be attained and in being of such rigid construction and of a design in which vibration, caused by high speeds, is entirely overcome. Its superiority in accuracy is particularly noted in fine holes of considerable depth, a class of work which has always heretofore proved troublesome to all manufacturers.

AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co. Incorporated Cincinnati





SPECIFICATIONS

Spindle Diameter at Drive.....	5/8"
Traverse of Feed Rack.....	5 "
Width of Belt on Machine.....	1 1/4"
Overhang.....	7 1/2"
Maximum Speed Recommended.....	7000
CAPACITY POSSIBLE—Soft Material.....	9/16"
Specially adapted to 3/8" and under.	

Complete Specifications are shown in Bulletin Q, pages 1, 2, 3 and 4.

Machines can be arranged for motor drive.

Lubricating outfits can be furnished where called for.

We make a Special Tapping Attachment for this No. 1 1/2 machine.

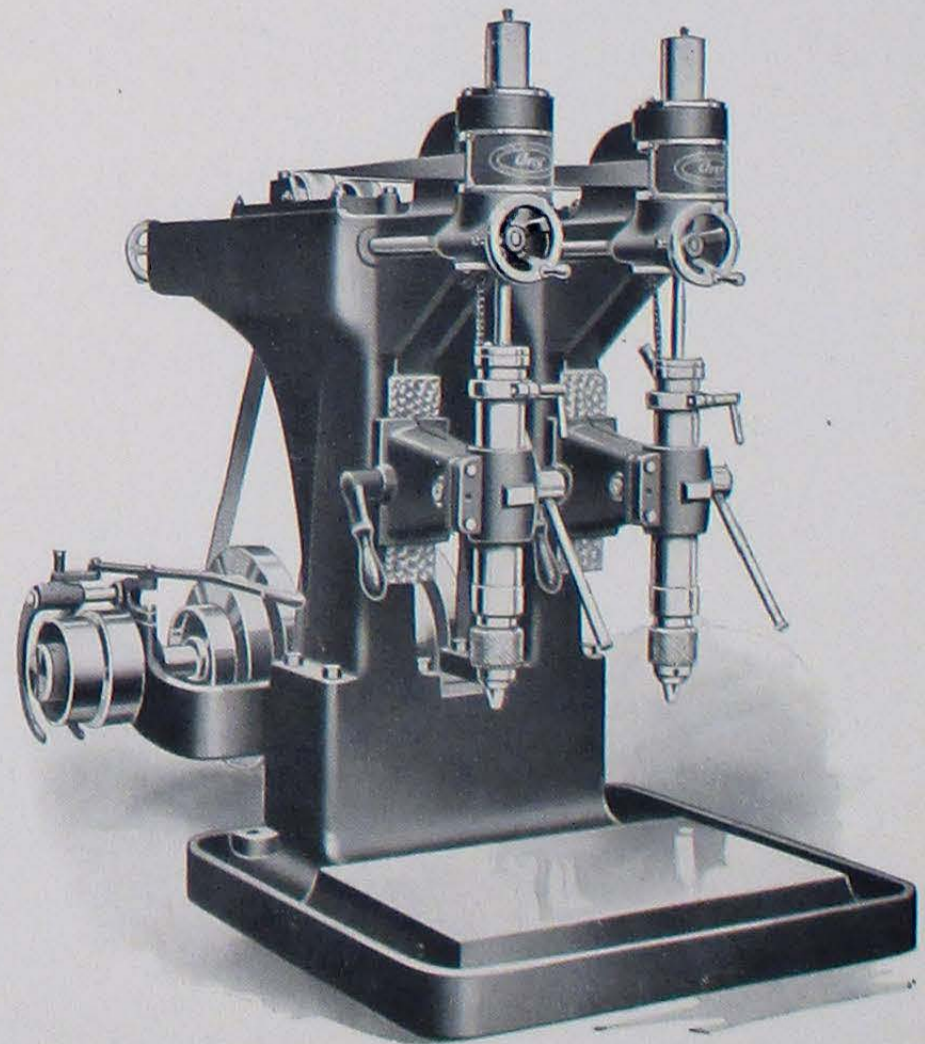
	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
Code Name—Bench type..	Dart	Dell	Dike	Dory	Duke
Code Name—Column type	Dash	Deed	Disk	Dock	Dust

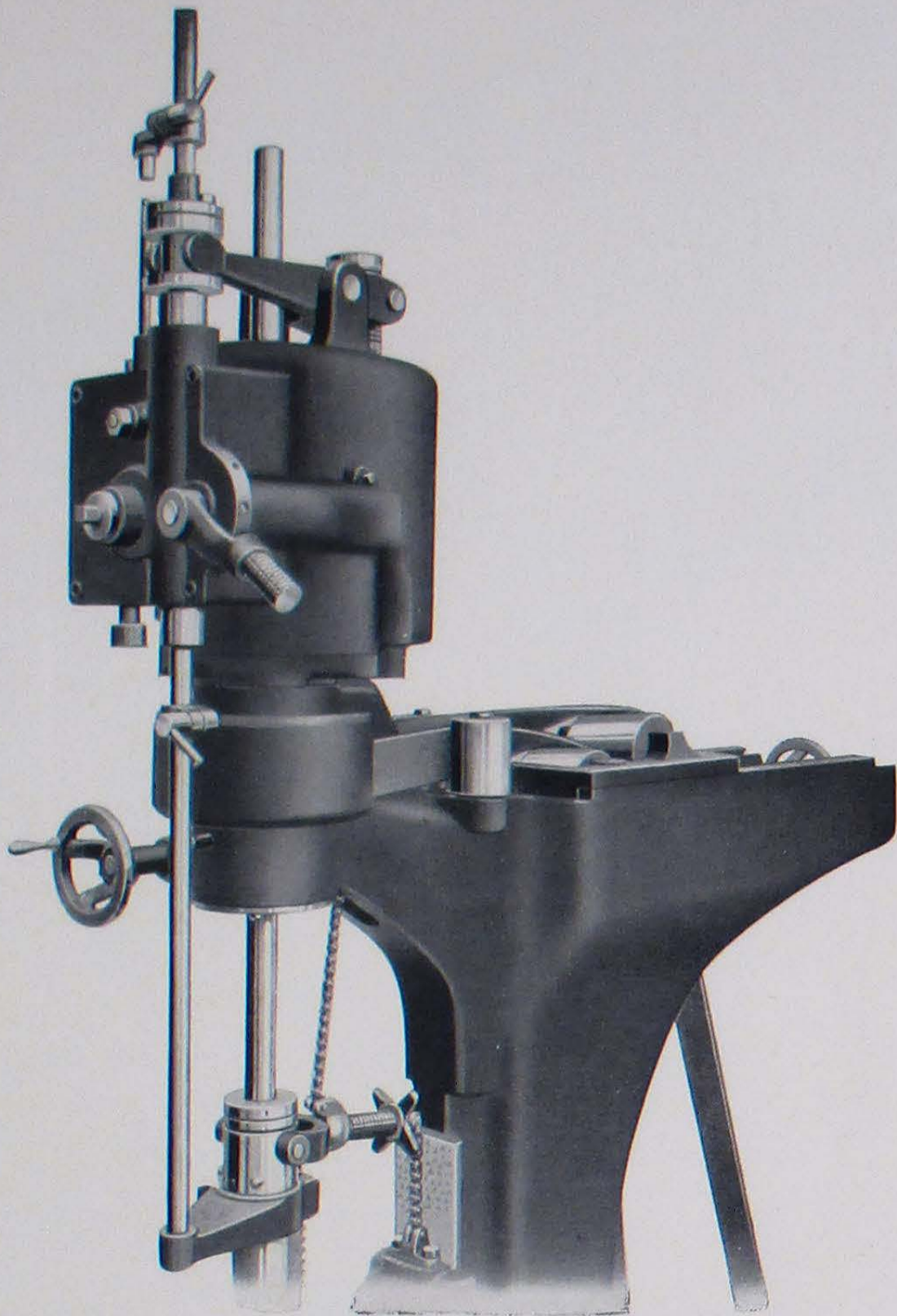
**No. 1 1/2
Bench Machines**

Built in Combinations of
One to Six Spindles

These machines are of same general proportions as the column machines.

	Size Base		Weight
	Overall	Work Surface	
1 Spindle.....	18 1/2" x 22"	12 1/2" x 16"	350 lbs.
2 Spindle.....	18 1/2" x 27"	12 1/2" x 21"	650 "
3 Spindle.....	18 1/2" x 37"	12 1/2" x 31"	990 "
4 Spindle.....	18 1/2" x 47"	12 1/2" x 41"	1,270 "
6 Spindle.....	18 1/2" x 67"	12 1/2" x 61"	1,970 "





Avey

No. 2 Tapping Unit

Capacity—Cast Iron 1" Tap
Steel ½" Tap

Designed for application to the regular No. 2 AVEY high-speed sensitive drilling machines.

Open Belt speeds for **Drilling**.

Gear Reduction four to one for **Tapping**.

Faster speeds for **Backing Out**.

BALL BEARING

This tapping unit embodies all the features necessary for the rapid production of tapped holes up to one-inch diameter. All gears and shafts are mounted on annular ball bearings, gears are drop forged steel and pinions are hardened and ground. Open belt speeds are obtainable with no gears in mesh. Movement of a single lever engages the gears for tapping or disengages all gears for drilling. Automatic trip to reverse the tap can be accurately set for tapping bottom holes. Forward and reverse clutches are of cup and fibre cone type running at high speeds, and provision is made for quick adjustment for wear. The driving friction can be adjusted to easily pull a one-inch tap, or can be lightly set to provide a slipping friction drive so that very small taps can be used without danger of excessive tap breakage or spoiled work.

The advantages of this unit over former types with pin clutches and plain bearings are obvious.

Entire mechanism is self-contained and is mounted directly on top of the regular No. 2 AVEY sensitive drilling column. The all-ball-bearing design, the compact and rigid construction and the highest grade materials and workmanship make this unit a desirable adjunct to the AVEY High Speed Drilling Machines.

Code name "tapon" as a suffix to code name of machine desired.

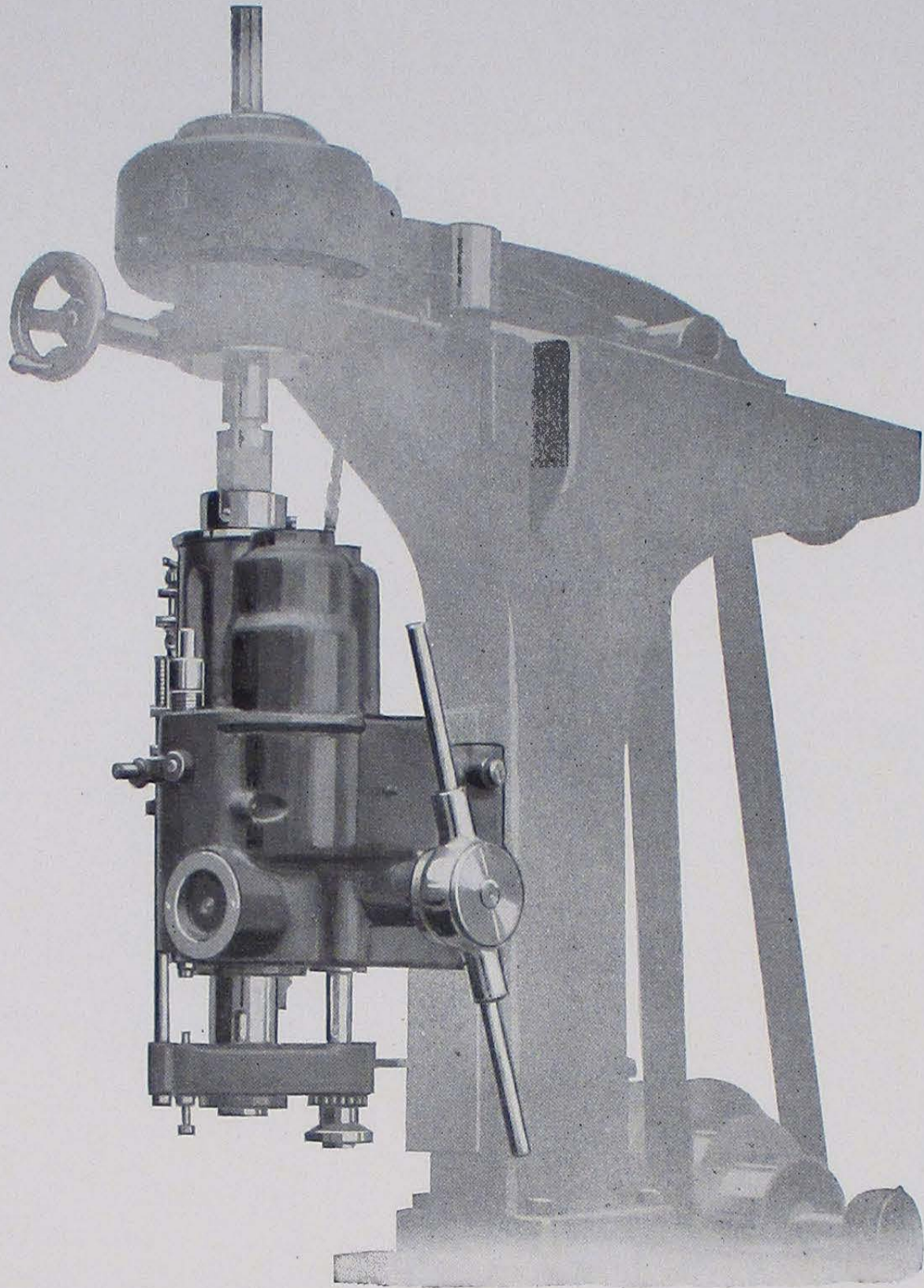
AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co.

Incorporated

Cincinnati





Avey

No. 3 Tapping and Drilling Head

Capacity—Cast Iron 1½" Tap
 Steel 1" Tap

A powerful tapping and drilling unit built entirely in the sliding head of the AVEY No. 3 ball bearing sensitive drilling machine.

- Open Belt** speeds for **Drilling.**
- Gear Reduction** four to one for **Tapping.**
- Faster Speeds** for **Backing Out.**

BALL BEARING

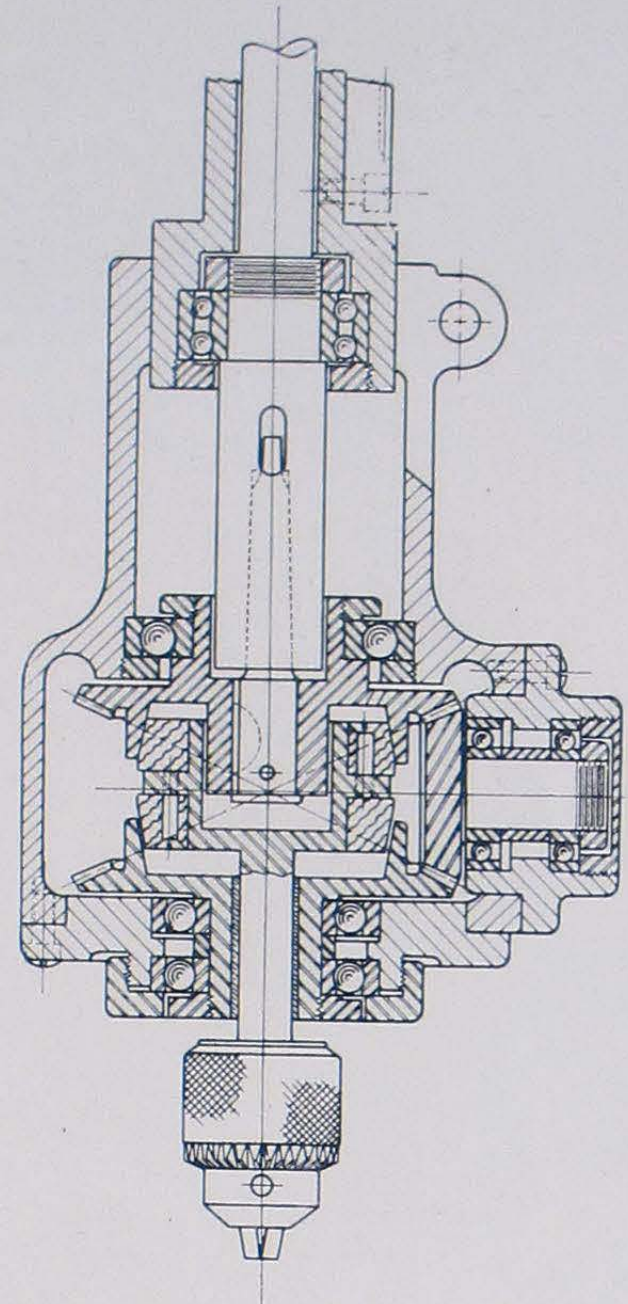
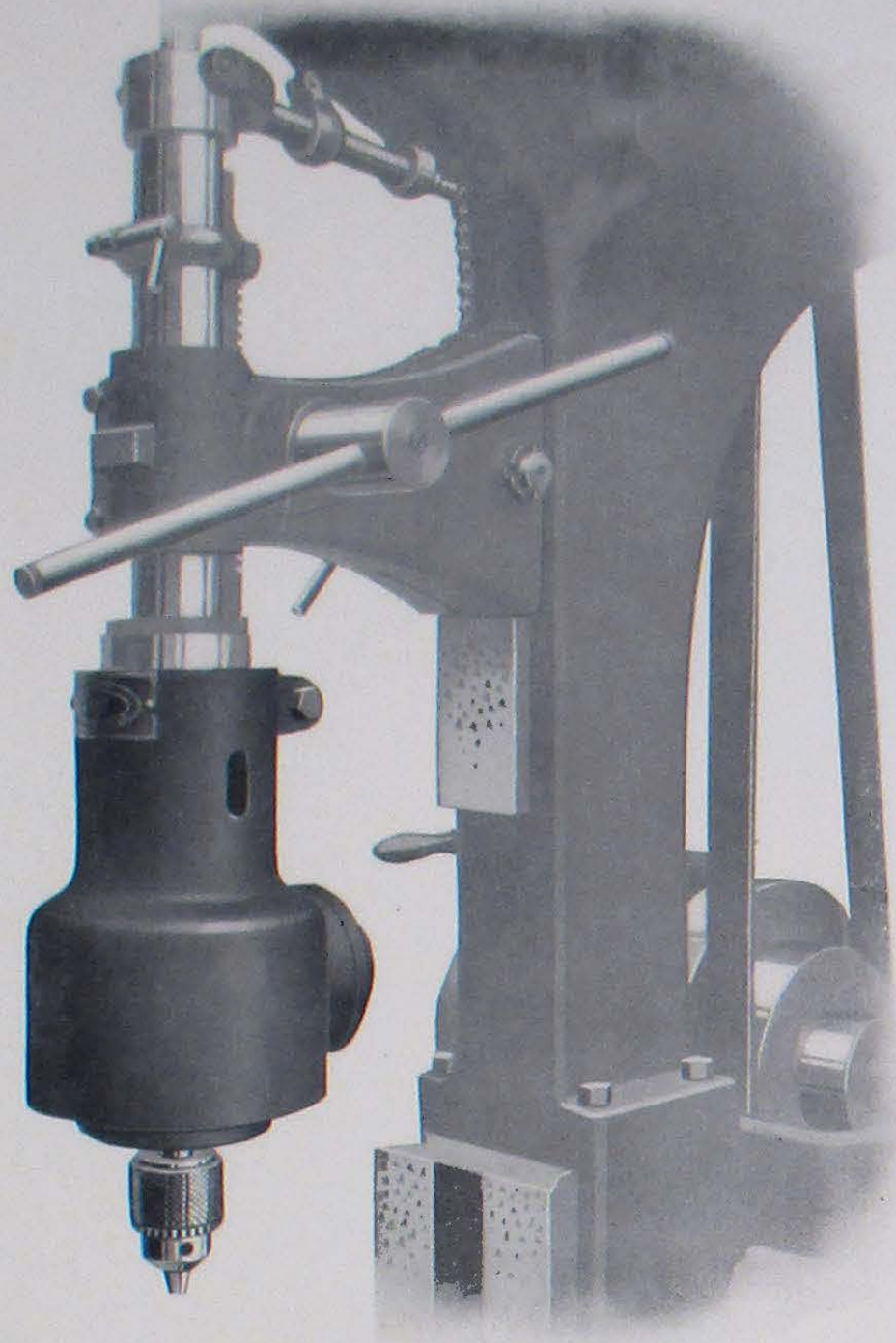
All gears and shafts are mounted on annular ball bearings, gears are drop-forged, high-carbon steel and pinions are hardened and ground. Speeds can be quickly changed from drilling to tapping and vice versa. Automatic trip for reverse to tap can be accurately set for tapping bottom holes. Forward and reverse clutches are of cup and fiber cone type and provision is made for instant adjustment for wear. Driving friction can be quickly adjusted to pull a tap inch-and-a-half diameter or can be set so that a slipping friction drive is obtainable for use with very small taps. Drive for tapping is delivered directly to the spindle nose through the back gears, and the drilling speeds are obtainable with all gears disengaged. Entire mechanism is built directly in the head, forming a compact and rigid unit, to which the highest grade workmanship and the best materials obtainable are applied.

Code name "taped" as a suffix to code name of machine desired.

AVEY machines are covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co. Incorporated Cincinnati





Avey Tapping Attachments

Friction Type — High Speed — Ball Bearing

These attachments are designed for light tapping at high speeds and are suitable for application to corresponding sizes of AVEY sensitive drilling machines. No change in regular sleeve or spindle is necessary. Bevel gears are drop-forged, high carbon steel. The cup and cone frictions provide a drive that insures successful tapping at high speeds without danger of excessive tap breakage. Chuck is furnished with each attachment.

SPECIFICATIONS

	No. 1/2	No. 1/2 H	No. 1 1/2	No. 1	No. 2	No. 3
Size.....	3/16"	3/8"	3/8"	3/8"	1/2"	1/2"
Capacity—Cast Iron.....						
Maximum Speed Recommended, R. P. M.....	7500	4500	4500	4500	2500	1500
Extends below spindle nose.....	5"	6 1/2"	6 1/2"	6 1/2"	7 3/4"	8 1/4"
Weight including chuck—pounds..	5	12	12	13	20	25
Code—Code ending.....	...tap	...tap	...tap	...tap	...tap	...tap

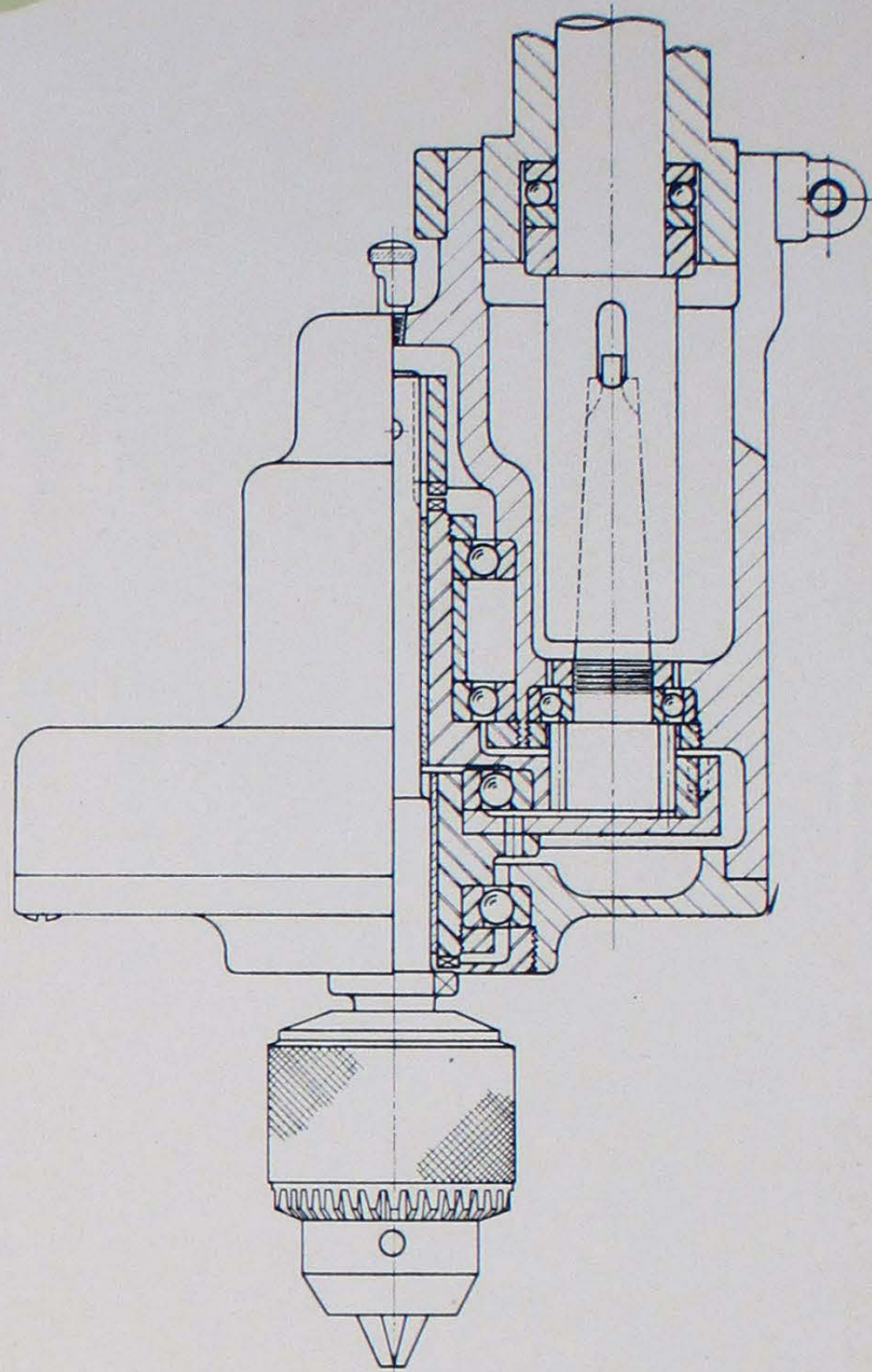
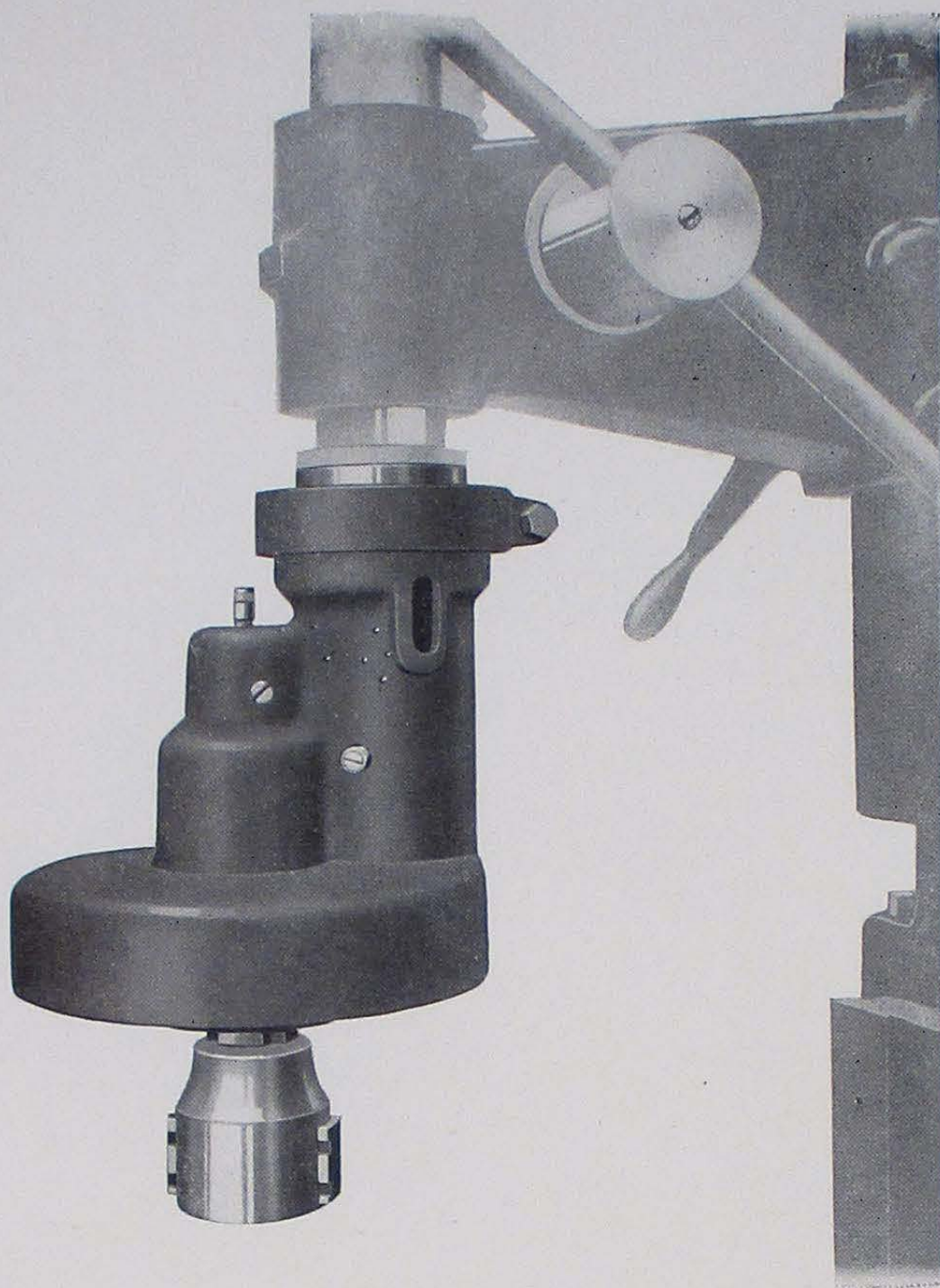
AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co.

Incorporated

Cincinnati





Avey Tapping Attachments

Back Geared Type — Off-set — Ball Bearing

This style of tapping attachment is recommended for light tapping in steel and for brass and cast iron tapping requiring slower speeds. Can be attached to corresponding sizes of AVEY drilling machines without change in regular spindle and sleeve. Angular face, positive clutches and a gear reduction provide an unusually powerful drive. Reverse speed is one and two-thirds times tapping speed. Chuck furnished with each attachment.

SPECIFICATIONS

	No. 1	No. 2	No. 3
Size.....	1/2"	3/4"	1"
Capacity—Cast Iron.....	1/4"	3/8"	1/2"
" Steel.....	5 to 1	5 to 1	5 to 1
Gear Reduction—Forward.....	5 3/4"	6 1/2"	7 1/4"
Extends below spindle nose.....	2"	2.16"	2.65"
Offset from spindle center.....	12	18	28
Weight including chuck—pounds.....	..tapper	..tapper	..tapper
Code—Code ending.....			

AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

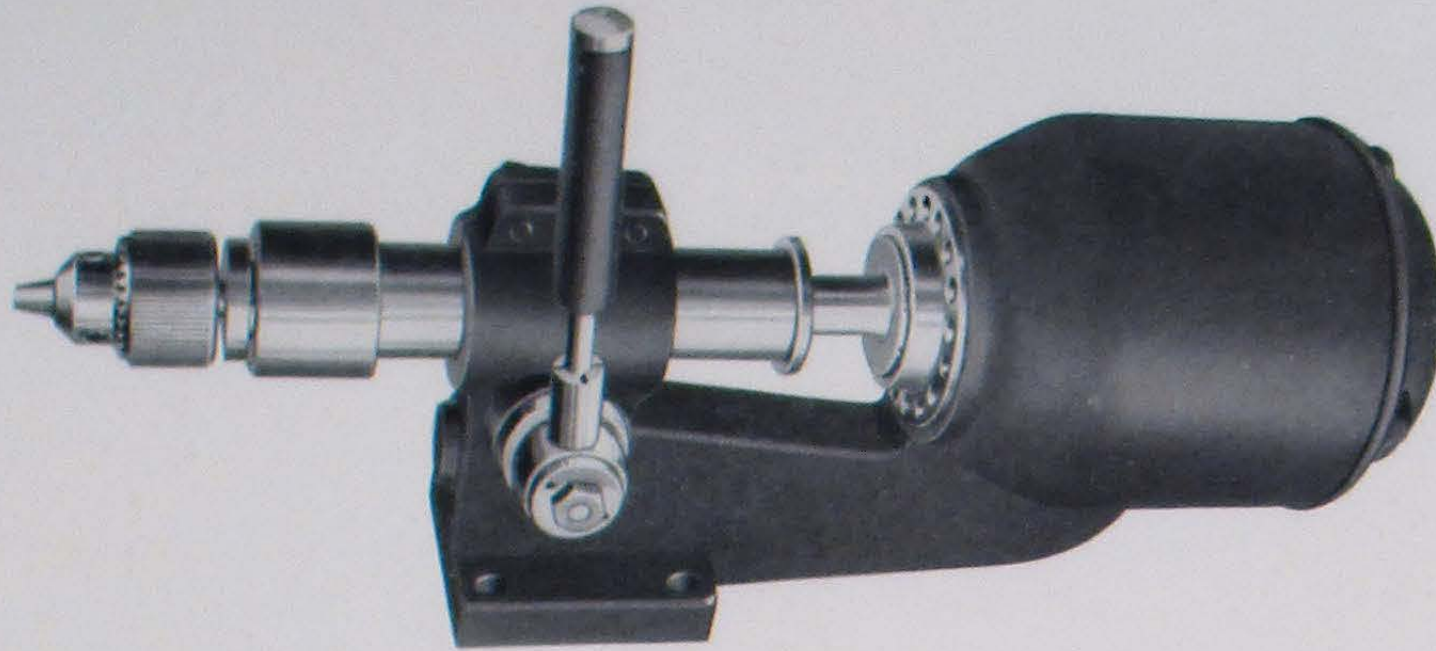
The Avey Drilling Machine Co.

Incorporated

Cincinnati



Avey



$\frac{3}{8}$ " Unit $\frac{3}{8}$ H. P. Motor 3600 R. P. M.

The *Avey* Motor-Driven Drilling Unit

High-speed ball-bearing drilling units of compact and rigid design, suitable for a variety of applications.

The entire arrangement is self-contained and can be attached anywhere by means of four screws. Can be mounted in any position—horizontal, vertical or angular, and is especially suitable for attaching to any machine where it is desired to drill an extra hole at the same time a different machining operation is being performed, in this manner saving an additional handling and machining of the work.

Spindle is mounted entirely on ball-bearings and a stationary guard covers the revolving spindle at all points of the rack travel.

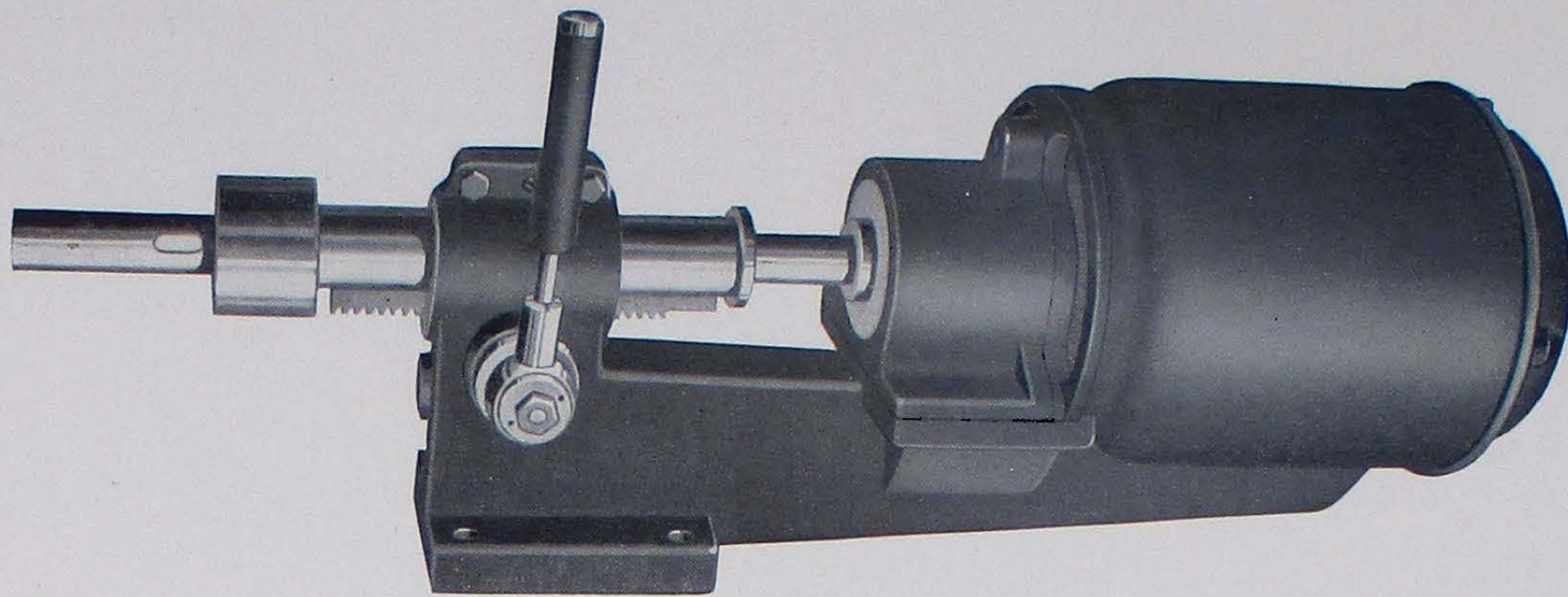
Motor is drawn-shell type, designed for alternating, 60 cycle current, and can be wired for 110, 220 or 440 volts, 3 or 2 phase.

(Over)

AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co. Incorporated Cincinnati





5/8" Unit 5/8 H. P. Motor Back Geared

Rotor is bronze bushed and mounted on ball-bearings. For ventilation, an auxiliary fan is provided that maintains a constant circulation of air entirely around the windings. Air inlets are screened.

The 3/8" Unit has a 3/8-H. P. motor and can be furnished with a spindle speed of either 1800 or 3600 R. P. M. The 5/8" and 7/8" Units have 5/8 and 7/8-H. P. motors, respectively, and can be furnished with spindle direct-connected to motor at 1200 R. P. M., or with ball-bearing mounted back gears to provide any set spindle speed as low as 500 R. P. M.

Units can be attached to the tables of regular AVEY Drilling Machines, with feed-pinions connected to AVEY-MATIC or plain power feed, so that all spindles feed together. Various combinations can be arranged with spindles set at different angles to drill numerous holes simultaneously at one setting. Two units placed horizontally opposed on a suitable working base make a compact horizontal duplex drilling machine for drilling two opposite holes in a piece with the movement of one feed lever. The adaptability of the units can be further increased by attaching multiple spindle drill heads or tapping attachments.

SPECIFICATIONS

Size	3/8"-3600	3/8"-1800	5/8"-1200	5/8" Geared	7/8"-1200	7/8" Geared
Capacity.....	3/8"	3/8"	5/8"	5/8"	7/8"	7/8"
Spindle Diameter.....	5/8"	5/8"	13/16"	13/16"	1"	1"
Spindle Nose.....	Chuck	Chuck	No. 2 Morse	No. 2 Morse	No. 2 Morse	No. 2 Morse
Motor H. P.....	3/8	3/8	5/8	5/8	7/8	7/8
Motor Speed R. P. M.....	3600	1800	1200	1200	1200	1200
Rack Travel—no stop collar.....	3"	3"	4 1/2"	4 1/2"	5 3/4"	5 3/4"
Rack Travel—with stop collar.....	2 1/2"	2 1/2"	3 3/4"	3 3/4"	5"	5"
Code.....	Lace	Lest	Lift	Lock	Lute	Lyre

AVEY machines covered by patents—Jan. 1, 1901; Jan. 4, 1910; Feb. 21, 1911; Aug. 3, 1915; Feb. 29, 1916; Feb. 20, 1917; Aug. 30, 1921; Nov. 29, 1921; Dec. 26, 1922; Nov. 4, 1924; others pending.

The Avey Drilling Machine Co.

Incorporated

Cincinnati





Specifications



Ball Bearing Sensitive Drilling Machines

Size and Type	No. 1			No. 2				No. 3				No. 00	No. 1/2	No. 1/2 heavy type	No. 1 1/2
	Standard	Avey-matic	Tool Room	Standard	Avey-matic	Tool Room	Round Column	Standard	Power Feed	Planetary back geared	Round Table				
Capacity—Cast Iron	5/8"	5/8"	5/8"	7/8"	7/8"	7/8"	7/8"	1 1/4"	1 1/4"	1 1/2"	1 1/4"	3/16"	3/16"	3/8"	3/8"
Maximum Spindle Speed	4500	4500	4500	2500	2500	2500	2500	1500	1500	1500	1500	5000	12000	4500	7000
Spindle Bore—Morse Taper	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 3	No. 3	No. 3	No. 3	Chuck	fitted	to Spindle	
Spindle Nose Diameter	1 3/16"	1 3/16"	1 3/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	2"	2"	2"	2"	Nose—	No Ta	per Ho	le.
Spindle Diameter at Bearing	.984	.984	.984	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	.393"	.669"	.787"	.787"
Spindle Diameter at Drive	1 3/16"	1 3/16"	1 3/16"	1"	1"	1"	1"	1 3/8"	1 3/8"	1 3/8"	1 3/8"	1 1/32"	.472"	5/8"	5/8"
Width of Spindle Drive Belt	1 1/4"	1 1/4"	1 1/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3/4"	3/4"	1 1/4"	1 1/4"
Traverse of Feed Rack	4"	4"	4"	6"	6"	6"	6"	8"	8"	8"	8"	1 1/2"	2 1/2"	2 1/2"	5"
Total Traverse of Spindle	8"	8"	8"	13"	13"	13"	13"	18"	18"	18"	18"	1 1/2"	6 1/2"	6 1/2"	9"
Between Spindle Centers	8"	8"	8"	10"	10"	10"	10"	15"	15"	15"	15"	8"	†8"	†8"	10"
Standard Overhang [Ⓢ]	7 1/2"	7 1/2"	7 1/2"	7 1/2"	7 1/2"	7 1/2"	7 1/2"	12"	12"	12"	12"	5"	6 1/4"	6 1/4"	7 1/2"
Diameter Swing at Column Gap	16"	16"	16"	18 1/4"	18 1/4"	18 1/4"	18 1/4"	26 1/4"	26 1/4"	26 1/4"	26 1/4"	10"	13 1/2"	13 1/2"	18 1/4"
Maximum Distance Spindle to Table—Bench*	11 1/4"	11 1/4"	.....	.....	.....	.....	.....	.....	.....	.....	.....	7"	8 1/4"	8 3/4"	11"
Maximum Distance Spindle to Table—Column*	20 1/2"	20 1/2"	.....	28 1/4"	28 1/4"	.....	.....	23 1/4"	23 1/4"	23 1/4"	.....	7"	19 1/4"	20"	26"
Number of Speeds to Each Spindle	3	3	3	4	4	4	4	3	3	6	3	3	3	3	3
Width of Oil Trough on Table	2 1/8"	2 1/8"	.....	2 1/2"	2 1/2"	.....	.....	3"	3"	3"	.....	.....	2 1/8"	2 1/8"	2 1/2"
Recommended Countershaft Speed	1600	1600	1200	800	800	800	800	500	500	550	500	1100	2400	1500	1500
Countershaft Drive Pulley Diameter	6"	6"	6"	8"	8"	8"	8"	10"	10"	10"	10"	3 1/2"	3 1/2"	5"	6"
Spindle Pulley Diameter	4"	4"	4"	5"	5"	5"	5"	8 1/8"	8 1/8"	8 1/8"	8 1/8"	1 3/4"	1 3/4"	2 3/8"	2 1/2"
Cone Step Diameters	9"	9"	9"	10 1/2"	10 1/2"	10 1/2"	10 1/2"	14 5/8"	14 5/8"	14 5/8"	14 5/8"	7"	7"	7 1/2"	12"
	6"	6"	6"	8 1/8"	8 1/8"	8 1/8"	8 1/8"	11"	11"	11"	11"	5"	5"	5"	9"
	3"	3"	3"	5 7/8"	5 7/8"	5 7/8"	5 7/8"	7 3/8"	7 3/8"	7 3/8"	7 3/8"	3"	3"	2 1/2"	6"
Rated Spindle Speeds, R. P. M.	3600	3600	2700	1300	1300	1300	1300	900	900	1000	900	4400	9600	4750	7200
	2400	2400	1800	940	940	940	940	675	675	500	675	3140	6850	3160	5400
	1200	1200	900	560	560	560	560	450	450	225	450	1880	4100	1900	3600
Power Feeds—Inches per Rev.	.0025	.0025	.....	.003	.003	.....	.....	.007	.007	.....	.....	.....	.....	.....	.....
	.0045	.0045	.....	.006	.006	.....	.....	.010	.010	.....	.....	.....	.....	.....	.....
	.007	.007	.....	.009	.009	.....	.....	.015	.015	.....	.....	.....	.....	.....	.....
	.010	.010	.....	.012	.012	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maximum Distance Spindle to Square Table	.....	.....	13 3/4"	.....	.....	14 1/4"	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maximum Distance Spindle to Round Table	.....	.....	32 3/4"	.....	.....	28 3/4"	29 1/4"	.....	.....	.....	22"	.....	.....	.....	.....
Maximum Distance Spindle to Base	.....	.....	.....	.....	.....	43 1/4"	.....	.....	.....	.....	46 1/4"	.....	.....	.....	.....

*Dimensions shown for Nos. 00, 1/2, 1/2 Heavy, and 1 1/2 give distance from bottom of chuck to table.

ⓈNo. 2 size built also in 12" and 15" overhang.

†Bench Type 6".

The Avey Drilling Machine Co.

Incorporated

Cincinnati





Table Sizes



Ball Bearing Sensitive Drilling Machines

Working Surfaces

Standard Column Machines

	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle	Width of Oil Trough
No. 1/2.....	12" x15"	12" x23"	12" x31"	12" x39"	12" x55"	2 3/4"
No. 1/2 Heavy.....	12" x15"	12" x23"	12" x31"	12" x39"	12" x55"	2 3/4"
No. 1.....	12" x15"	12" x23"	12" x31"	12" x39"	12" x55"	2 3/4"
No. 1 1/2.....	14" x16"	14" x26"	14" x36"	14" x46"	14" x66"	3 1/4"
No. 2—7 1/2" Overhang.	14" x16"	14" x26"	14" x36"	14" x46"	14" x66"	3 1/4"
No. 2—12" ".....	21 1/4" x22"	21 1/4" x32"	21 1/4" x42"	21 1/4" x52"	21 1/4" x72"	3 1/4"
No. 2—15" ".....	21 1/4" x22"	21 1/4" x32"	21 1/4" x42"	21 1/4" x52"	21 1/4" x72"	3 1/4"
No. 3.....	20" x22"	20" x35"	20" x50"	20" x65"	20" x95"	3 3/4"

Bench Machines

	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle	Width of Oil Trough
No. 1/2.....	12 1/4" x16 1/2"	12 1/4" x22 1/2"	12 1/4" x28 1/2"	12 1/4" x34 1/2"	12 1/4" x46 1/2"	1 3/4"
No. 1/2 Heavy.....	12 1/4" x16 1/2"	12 1/4" x22 1/2"	12 1/4" x28 1/2"	12 1/4" x34 1/2"	12 1/4" x46 1/2"	1 3/4"
No. 1.....	12 1/4" x16 1/2"	12 1/4" x24 1/2"	12 1/4" x32 1/2"	12 1/4" x40 1/2"	12 1/4" x56 1/2"	1 3/4"
No. 1 1/2.....	12 1/2" x16"	12 1/2" x21"	12 1/2" x31"	12 1/2" x41"	12 1/2" x61"	3"

Tool Room Machines

No. 1.....	Tilting Table 12"x13"	Round Table 9" Dia.
No. 2.....	Tilting Table 16"x17 1/2"	Round Table 12 1/2" Dia.

Round Column Machine

No. 2.....	Round Table 18" Dia.	Base-working Surface 18"x21 1/2"
------------	----------------------	----------------------------------

Round Table Machine

No. 3.....	Round Table 23 1/2" Dia.	Base-working Surface 24"x26"
------------	--------------------------	------------------------------

The Avey Drilling Machine Co.

Incorporated

Cincinnati





Weights



Ball Bearing Sensitive Drilling Machines

Net Weight—Pounds

Standard Column Machines

	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
No. 1/2.....	410	670	950	1220	1775
No. 1/2 Heavy.....	480	785	1075	1400	2025
No. 1.....	550	900	1200	1575	2280
No. 1 1/2.....	750	1350	2150	2750	4200
No. 2—7 1/2" Overhang.....	875	1575	2300	2950	4500
No. 2—12" ".....	1000	1775	2550	3300	4900
No. 2—15" ".....	1025	1825	2625	3400	5050
No. 3.....	1500	2700	3950	5200	7600

Bench Machines

	1 Spindle	2 Spindle	3 Spindle	4 Spindle	6 Spindle
No. 1/2.....	210	365	520	675	1000
No. 1/2 Heavy.....	275	480	645	850	1250
No. 1.....	350	595	770	1030	1505
No. 1 1/2.....	350	650	990	1270	1970

Tool Room Machines

No. 1.....	550
No. 2.....	950

Round Column Machine

No. 2.....	1100
------------	------

Round Table Machine

No. 3.....	2150
------------	------

The Avey Drilling Machine Co.

Incorporated

Cincinnati





Motor and Speed Information



Ball Bearing Sensitive Drilling Machines

When ordering machines with individual motor drive, customer should provide suitable motor in accordance with specifications given in table below. On receipt of motor dimensions we attach motor bracket of correct size and type to fit the motor selected.

Customer may attach motor after receipt of machine, or motor may be sent directly to us for attaching and wiring complete. Motor belt furnished with machine.

Motor pulleys should be furnished by customer. If proper size is not obtainable, a nominal charge will be made for each pulley furnished by us.

If customer prefers, we are prepared to furnish motors which will be quoted at prevailing motor list prices.

Spindle speeds shown below are the regular rated speeds for average working conditions, but these can be varied to meet requirements, in which case the countershaft speed will be different from that indicated.

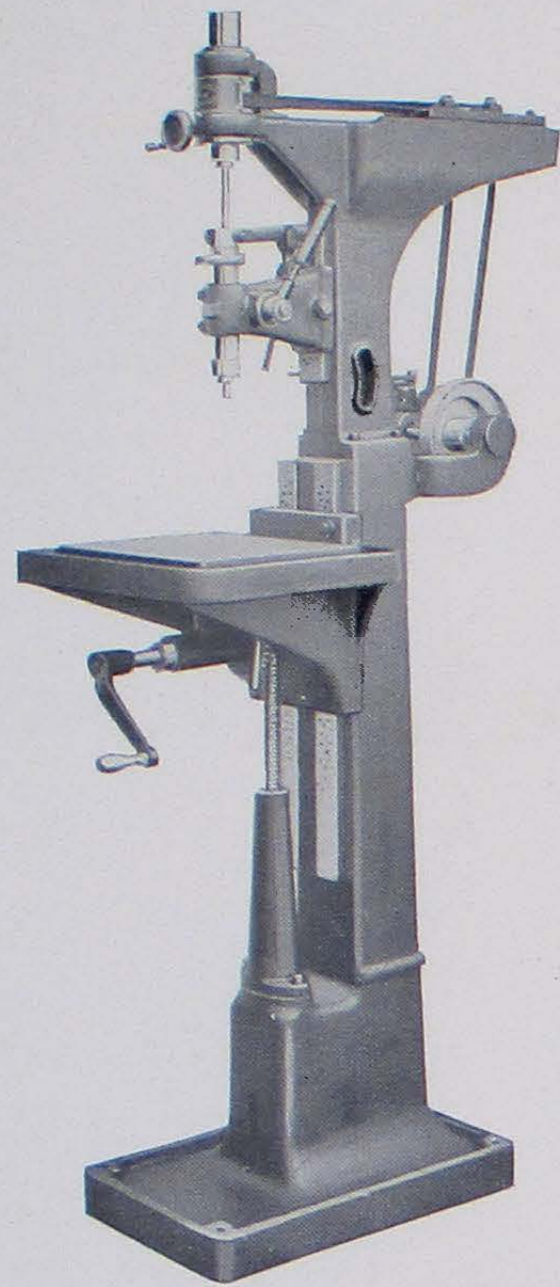
	No. 1	No. 2	No. 3	No. 3 Bk. Geared	No. 00	No. 1/2	No. 1/2H	No. 1 1/2
Spindle Speeds—R. P. M.....	3600	1680	900	1000	4400	9600	4750	7200
	2400	1300	675	750	3140	6850	3160	5400
	1200	940	450	500	1880	4100	1900	3600
		560		300				
				225				
				150				
C-S. Speed—R. P. M.....	1600	800	500	550	1100	2400	1500	1500
Countershaft Drive Pulley Diameter and Face								
{ 1 Spindle.....	6"x1 3/4"	8"x1 3/4"	10"x2 9/16"	10"x2 9/16"	3 1/2"x1 1/4"	3 1/2"x1 1/4"	5"x1 1/4"	6"x1 3/4"
{ 2 Spindle.....	6"x2 5/8"	8"x2 5/8"	10"x2 9/16"	10"x2 9/16"	.....	3 1/2"x1 1/4"	5"x1 1/4"	6"x2 5/8"
{ 3 Spindle.....	6"x2 5/8"	8"x2 5/8"	10"x3 5/8"	10"x3 5/8"	.....	3 1/2"x1 3/4"	5"x1 3/4"	6"x2 5/8"
{ 4 Spindle.....	6"x3 1/8"	8"x3 1/8"	10"x3 5/8"	10"x3 5/8"	.....	3 1/2"x1 3/4"	5"x1 3/4"	6"x3 1/8"
{ 5 and 6 Spindle.....	6"x3 1/8"	8"x3 1/8"	10"x3 5/8"	10"x3 5/8"	.....	3 1/2"x1 3/4"	5"x1 3/4"	6"x3 1/8"
Motor Speed—R. P. M.....	1800	1200	1200	1200	1200	1800	1800	1800
Motor Pulley Diameter.....	5 1/2"	5 1/2"	4 1/4"	4 1/2"	3 1/4"	4 3/4"	4 1/4"	5"
Motor H. P. { 1 Spindle.....	1	1 1/2	2	2	1/2	1/2	1	1
{ 2 Spindle.....	1 1/2	2	3	3	.....	3/4	1 1/2	1 1/2
{ 3 Spindle.....	1 1/2	2	3	3	.....	1	1 1/2	1 1/2
{ 4 Spindle.....	2	3	5	5	.....	1	2	2
{ 5 and 6 Spindle.....	3	5	7 1/2	7 1/2	.....	1 1/2	2	2

The Avey Drilling Machine Co. Incorporated Cincinnati

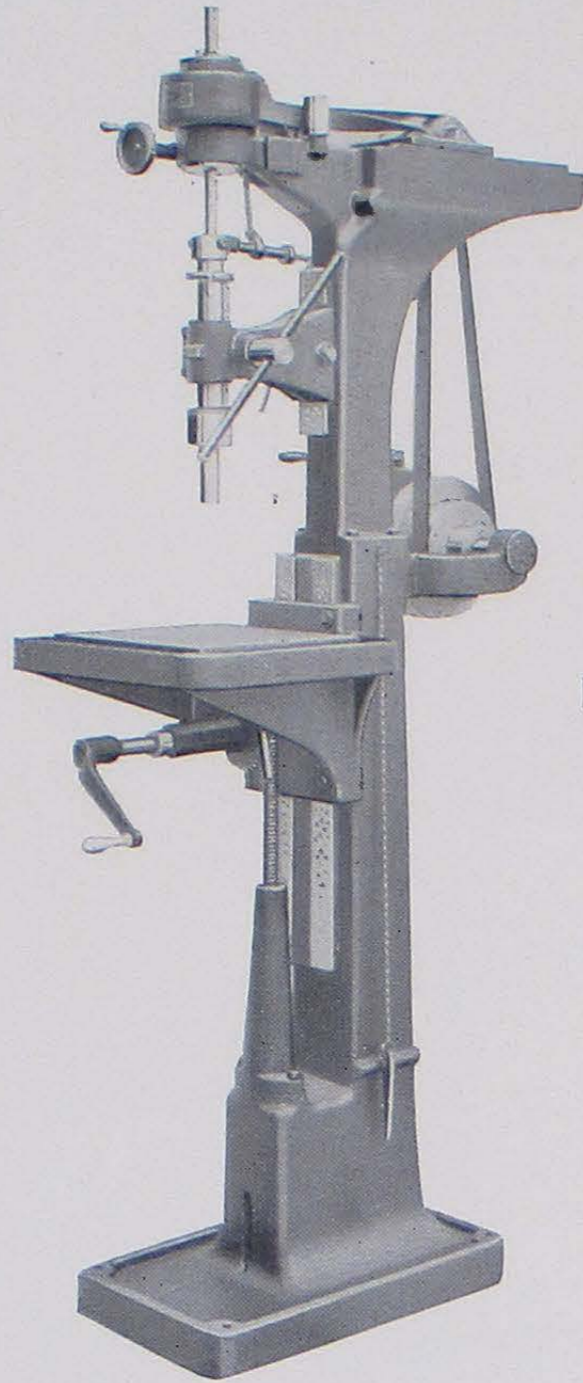


Comparative Sizes of Standard AVEY Machines

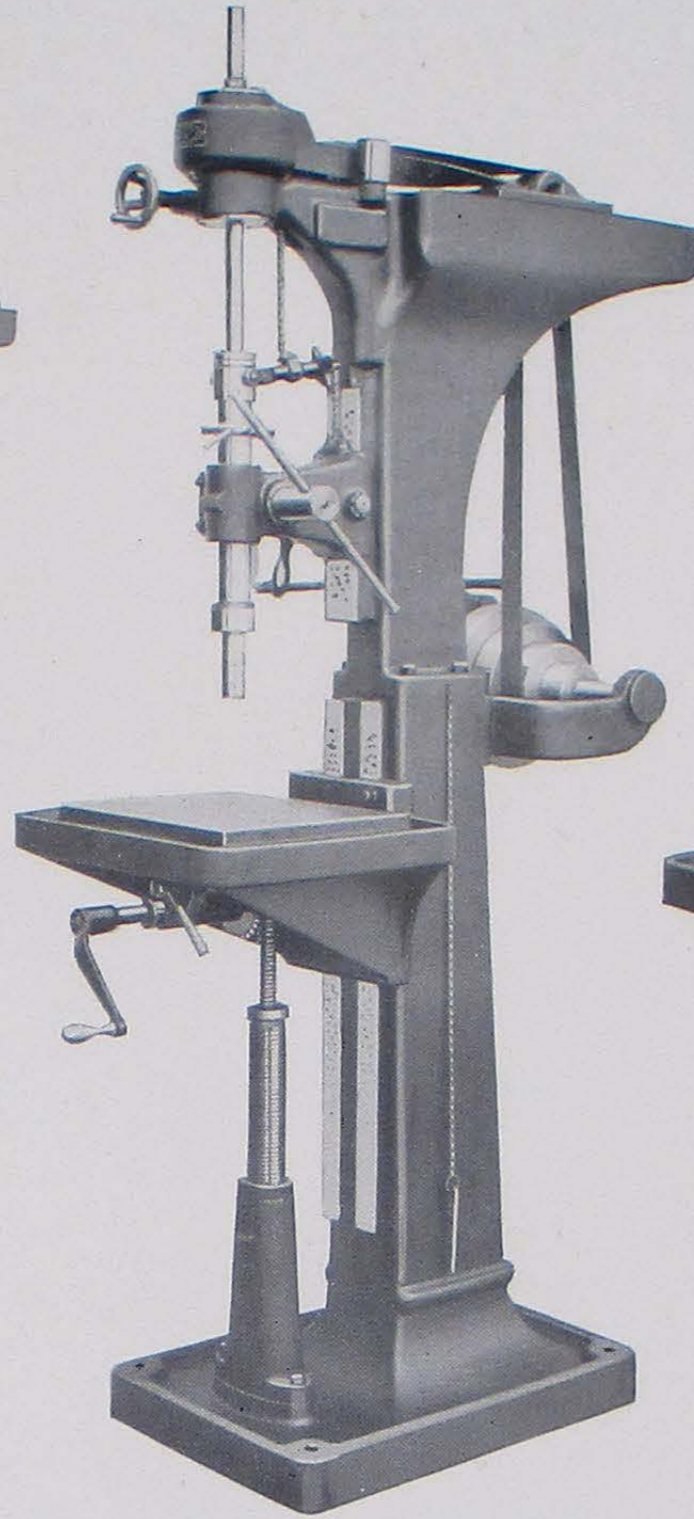
These photographs are taken to convey to prospective users exact comparative proportions of different sizes of machines.



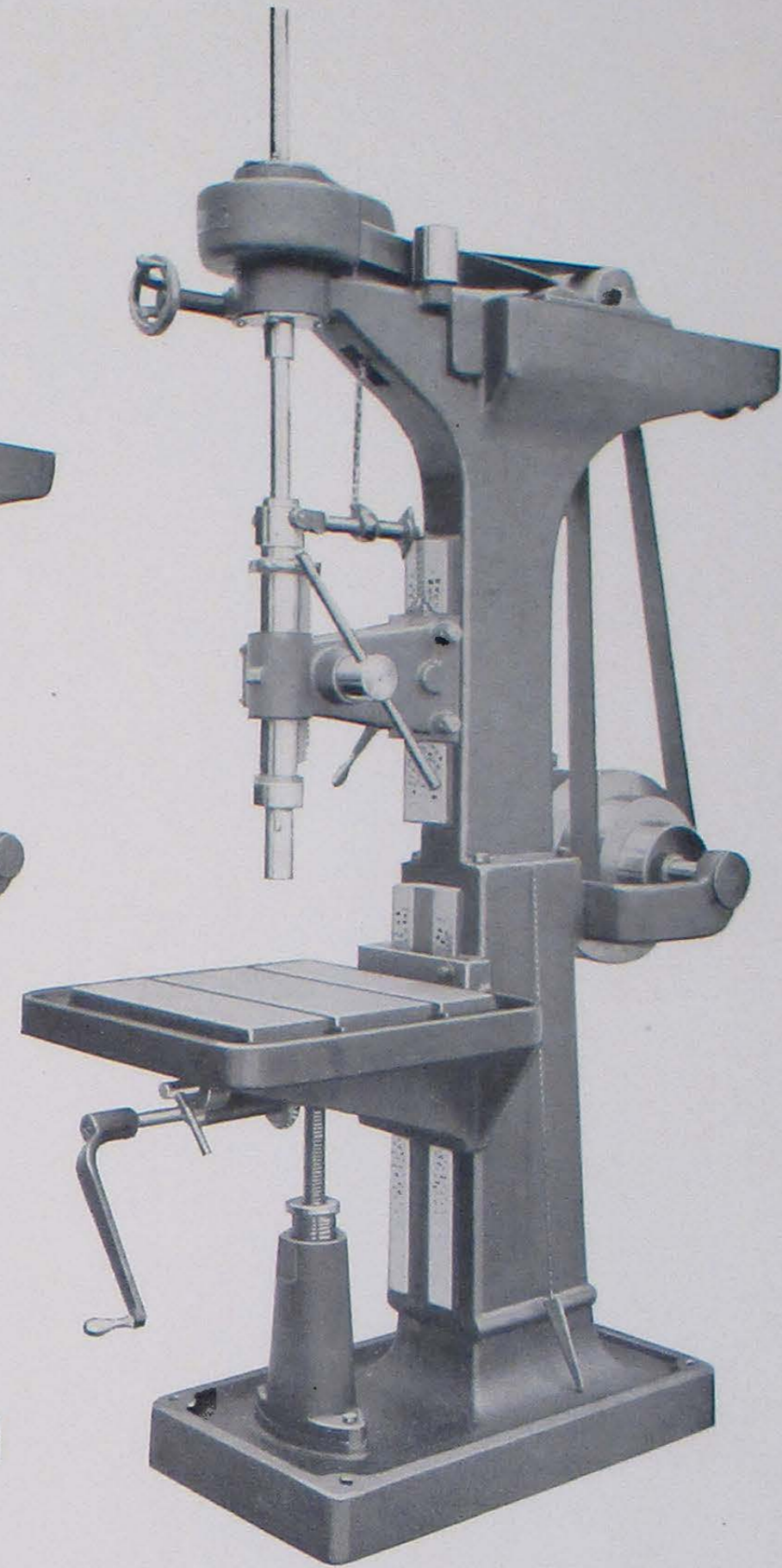
No. 1/2
 Net Weight..... 410 lbs.
 Height..... 69 in.



No. 1
 Net Weight..... 550 lbs.
 Height..... 70½ in.



No. 2
 Net Weight—7½ in. Overhang... 875 lbs.
 Height..... 77 in.



No. 3
 Net Weight..... 1500 lbs.
 Height..... 85 in.

*Height measurements are to top of spindle pulley—not to top of spindle.

