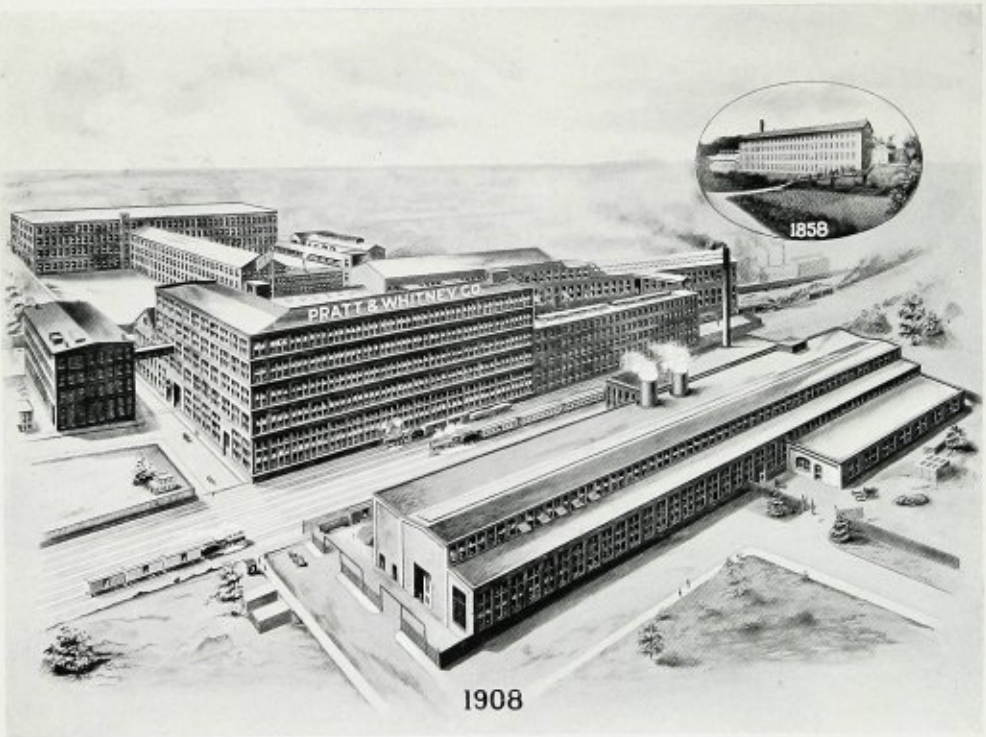
MILLING MACHINES
DIE SINKERS
PROFILERS

PRATT & WHITNEY
COMPANY
HARTFORD, CONN.



Works of the Pratt & Whitney Company
Hartford, Connecticut

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Milling Machines
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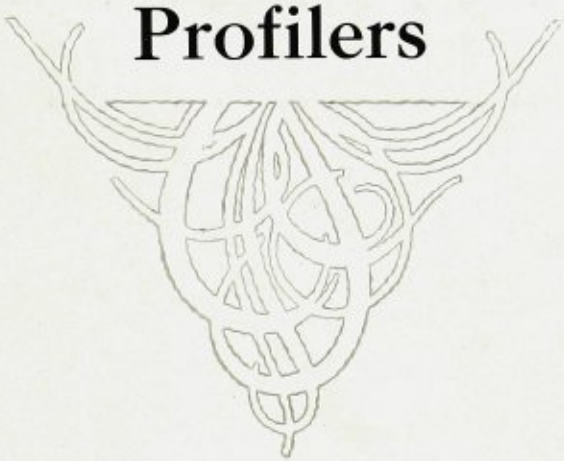


Pratt & Whitney Company
Hartford, Conn.

Introduction

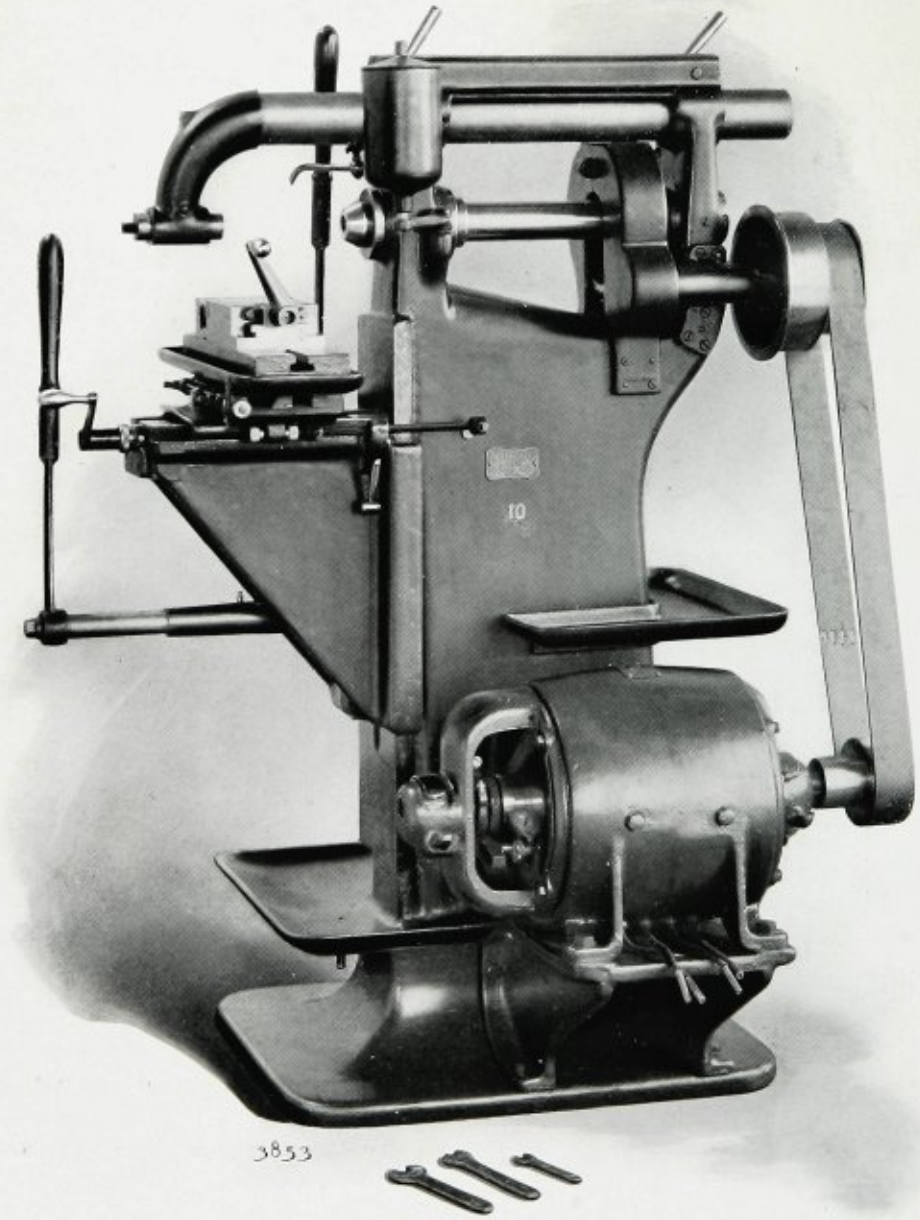
HE machines described and illustrated on the following pages are precision tools and are especially adapted for the high-grade milling that is required in producing accurate work.

These tools have the very latest improvements, are convenient to handle, and are giving excellent satisfaction. All of them, with the exception of the No. 2 Vertical and No. 3½ Power Milling Machines, are either kept in stock, or are in process of construction, so that any type or size can be furnished promptly.

Complete groups of machines, with cutters, fixtures, gauges, etc., will be quoted upon for the manufacture of products, such as guns, sewing machines, typewriters, etc., requiring interchangeability of parts.

We also manufacture a great variety of other kinds of machine tools, machinists' small tools, gauges, etc., catalogues of which will be sent on request.

Correspondence is respectfully solicited.



No. 10 Hand Milling Machine, Motor Drive

Hand Milling Machines

THESE machines are adapted to milling the small parts of guns, sewing machines, typewriters and like work. They embody many new conveniences and are modern tools in every respect.

HEAD is cast integral with the column, and the cone is reversed, thus permitting of bracing the front upright of the head, against which the end thrust is taken.

SPINDLES are ground and lapped, and are of generous dimensions to give rigidity to the drive. Spindle bearings are of bronze, of the split taper type, thus allowing means of taking up wear.

KNEES have long bearing surfaces on the columns, with provision for taking up wear, and are counterbalanced by a weight within the column.

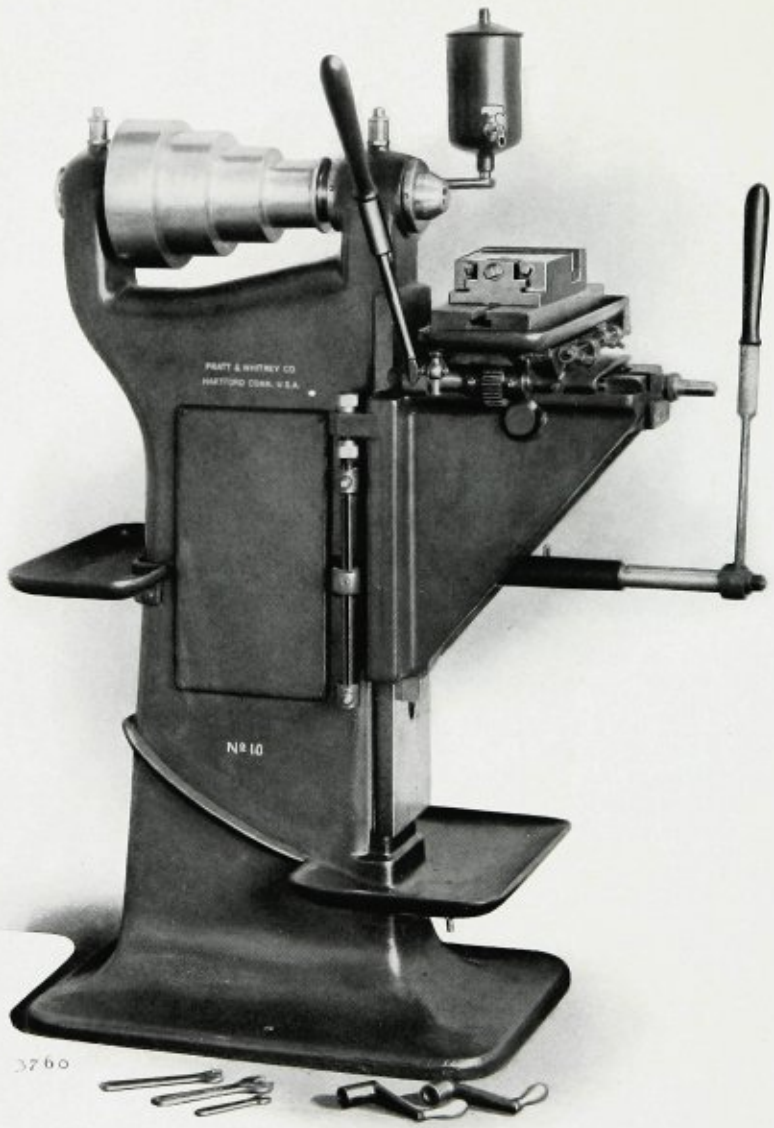
TABLES have cross adjustment by screw, and the vertical and longitudinal movement to knee and table is by means of rack and pinion in combination with hand levers, which latter may be adjusted and then clamped at any required angle to suit the operator. Means are provided for adjusting each pinion so as to closely mesh with its rack, thus avoiding backlash.

TABLE on the No. 10 machine is regularly equipped as above described, with screw cross adjustment, but a combination screw and rack feed can be substituted, if so ordered. The change from screw to rack feed is readily accomplished by removing the screw bearing on the outer end of knee, together with the screw, and then clamping the hand lever, for operating the rack feed, at any desired position.

ADJUSTABLE STOPS in both directions for the three-slide movements are provided. These stops may first be approximately set by means of the clamping bushings, while for the final adjustment the micrometer dial is used.

OVERHANGING ARM. Machines may be equipped with or without overhanging supporting arm. With the overhanging arm machine, a vertical milling attachment may be provided, this attachment being rigidly clamped to the cylindrical portion of the arm, which is for this purpose reversed end for end in the machine. The spindle of this attachment is driven by gearing from the cutter spindle of the machine and can be set to run at any angle in a vertical plane parallel to the main spindle, thus permitting angular cuts to be accomplished with cylindrical milling cutters.

TAPERED HOLES in both spindles are the same, thus providing for the interchangeability of cutters.



No. 10 Hand Milling Machine

A two-spindle milling attachment may be provided for the No. 2 machine having overhanging arm. The distance between cutters is adjustable from 2½ in. to 3½ in. center to center. This attachment is rigid and capable of taking heavy cuts. It permits the use of two milling cutters taking parallel cuts simultaneously, and in addition to the support afforded by the overhanging arm, is braced by a bracket clamped directly to the column.

The No. 2 machine may be fitted, if ordered, with a special knee having a light supplementary slide. This slide has vertical movement by lever, independent of the movement of the knee, and the machine thus equipped will be found particularly efficient on light work. The vertical adjustment to the knee of this combination is by means of a screw.

Standard vises with flat jaws, hardened and ground, for both machines are carried in stock. Countershaft, wrenches, swinging oil pot with spout, and tool pan are regularly furnished. The oil pan is cast solid with column, thus insuring cleanliness in operation.

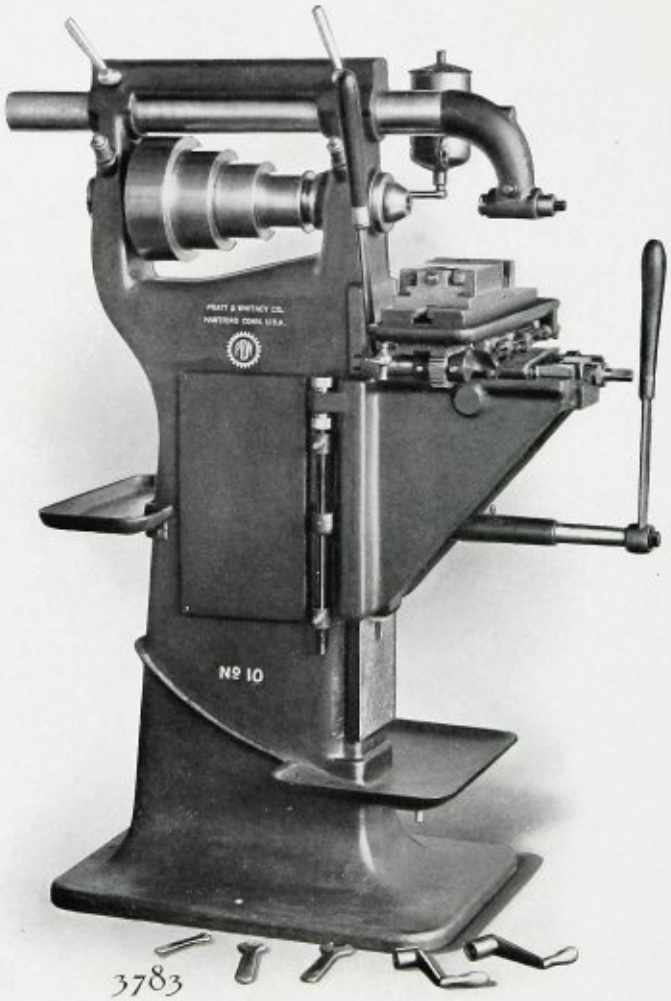
Specifications

	No. 10	No. 2	No. 2, with Vertical Vise Slide
Adjustment of table outward from column	5 in.	5 in.	5 in.
Longitudinal movement of table by lever	4 in.	5 in.	6 in.
Vertical adjustment of table by lever	8 in.	9 in.	.....
Vertical adjustment of table by elevating screw	.....	.....	12 in.
Movement of vertical slide with lever	.....	.....	2 in.
Greatest distance from top of table to center of spindle	9 in.	10 in.	11 in.
Least distance from top of table to center of spindle	1 in.	1 in.	3 in.
Least distance from end of spindle to center of table	1⅜ in.	2 in.	3¼ in.
Dimensions of table	4¾ x 16 in.	5⅜ x 17⅛ in.	4¾ x 6 in.
Thickness of vise	2⅛ in.	2½ in.	2⅛ in.
Number of grades on cone	4	4	4
Diameter of largest grade	8 in.	10 in.	10 in.
Width of belt	2½ in.	3 in.	3 in.
Dimensions of front bearing of head spindle	1⅜ x 4⅞ in.	2 x 4 in.	2 x 4 in.
Floor space	27 x 36 in.	36 x 40 in.	36 x 40 in.
Dimensions of countershaft pulleys	10 x 3 in.	12 x 3¼ in.	12 x 3¼ in.
Revolutions of countershaft per minute	175	125	125
Weight with countershaft and vise	985 lbs.	1,160 lbs.	1,160 lbs.
Weight, crated for domestic shipment	1,100 "	1,300 "	1,300 "
Weight, boxed for export	1,220 "	1,440 "	1,440 "
Cubic feet of boxes	31	40	40

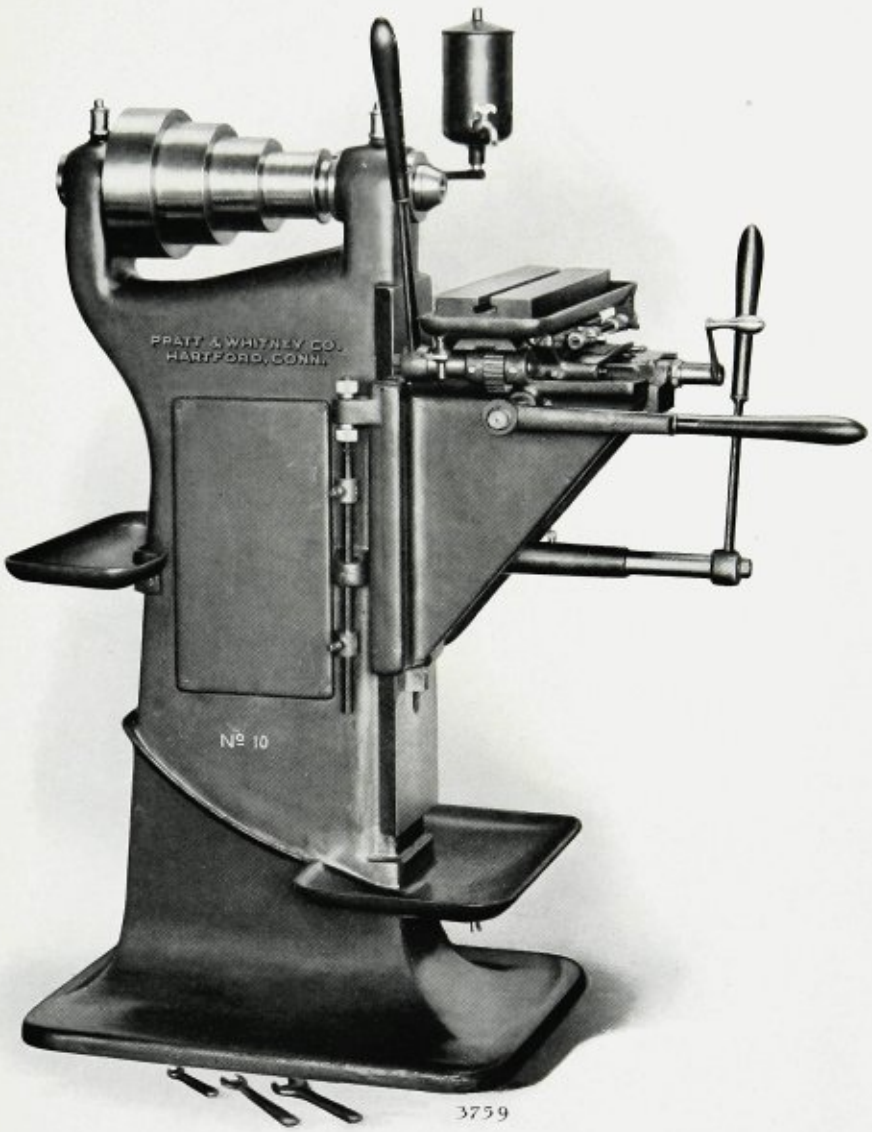
Code Words

No. of Machine	Without Vise		With Vise	
	Without Overhanging Arm	With Overhanging Arm	Without Overhanging Arm	With Overhanging Arm
10	Gressible	Gressini	Gressio	Gressionis
2	Gressorial	Gressum	Gressuram	Gressurol
*2			Gretadas	

*With vertical vise-slide

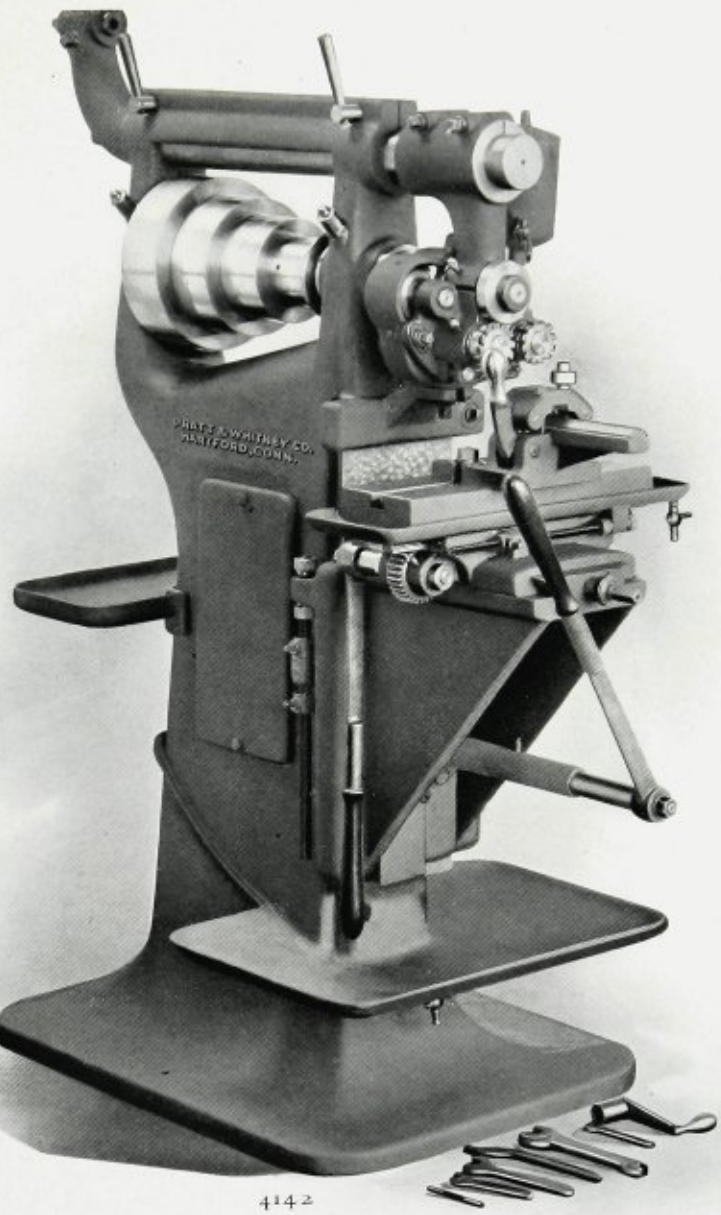


No. 10 Hand Milling Machine with Overhanging Arm



No. 10 Hand Milling Machine with Lever Movement to Kneeslide

Vertical Milling Fixture on No. 10 Hand Milling Machine



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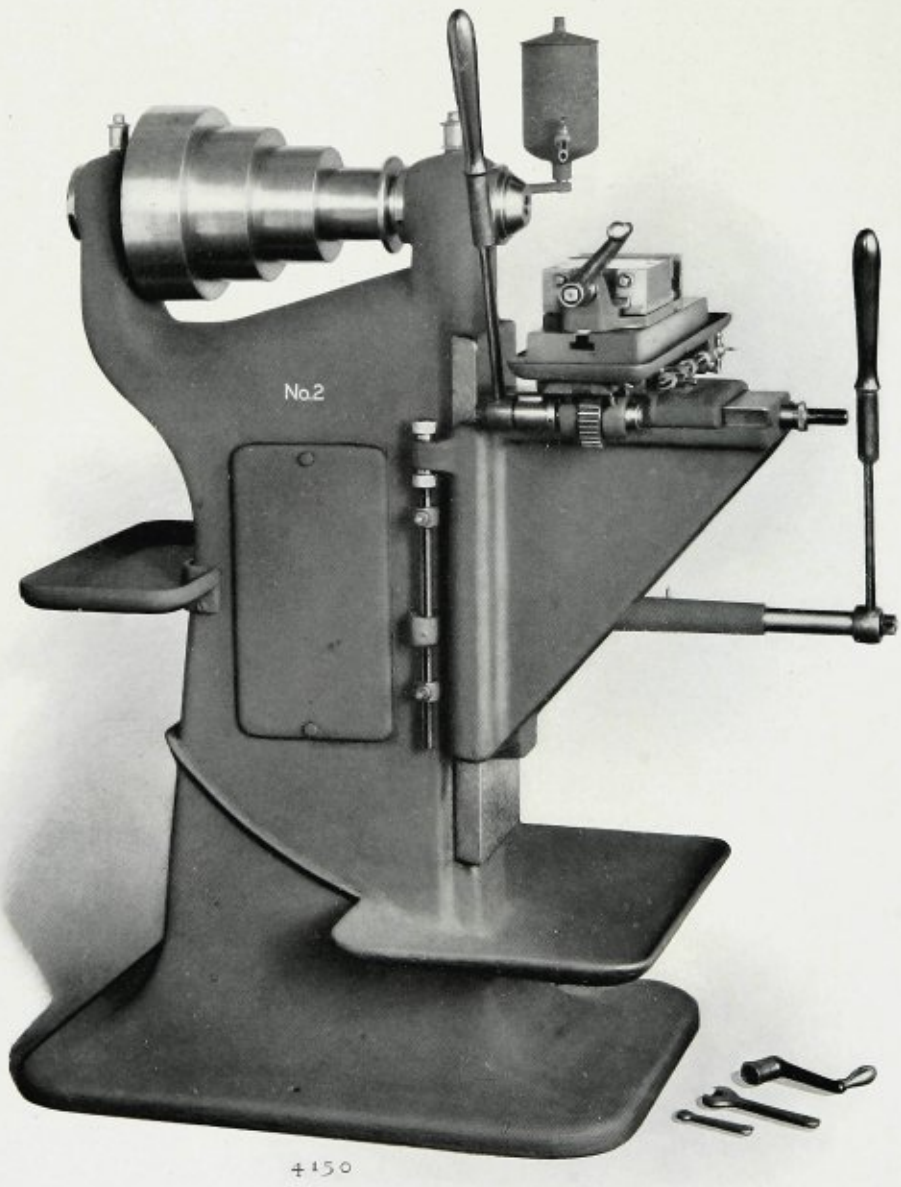
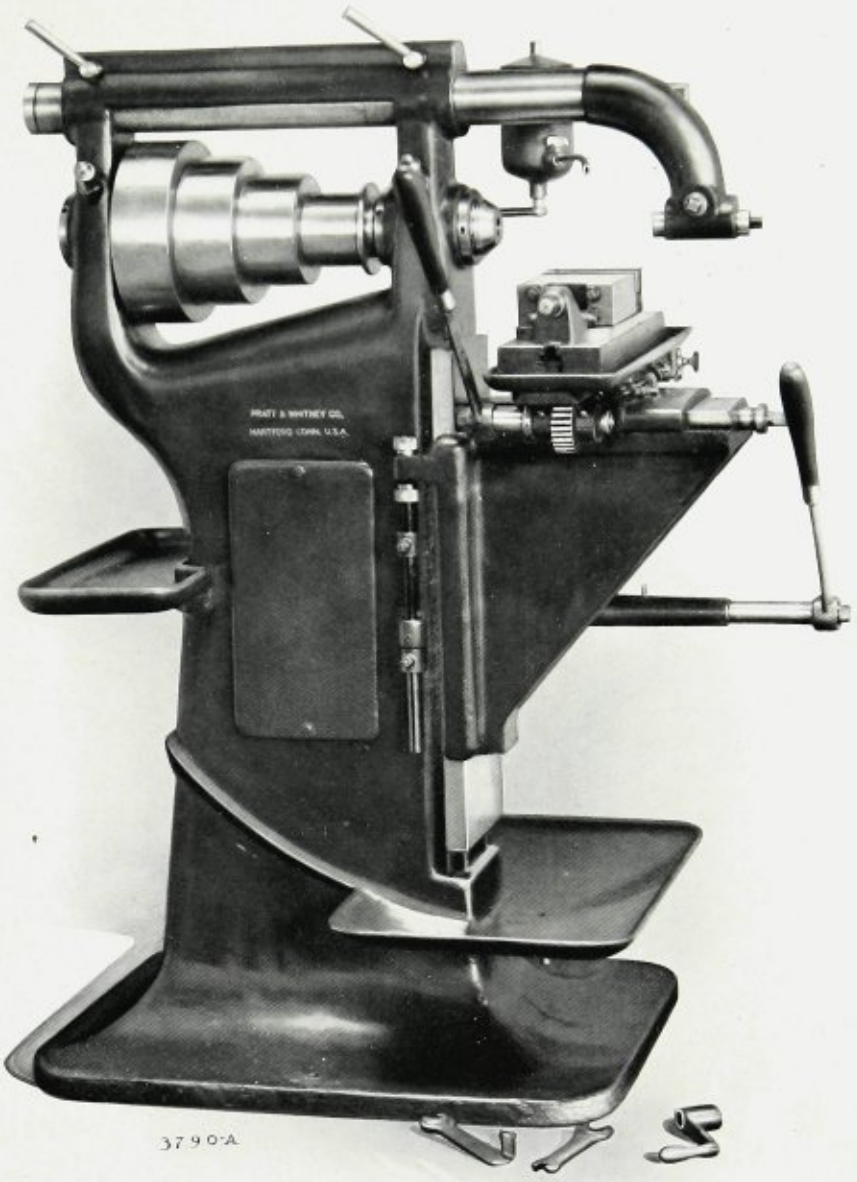
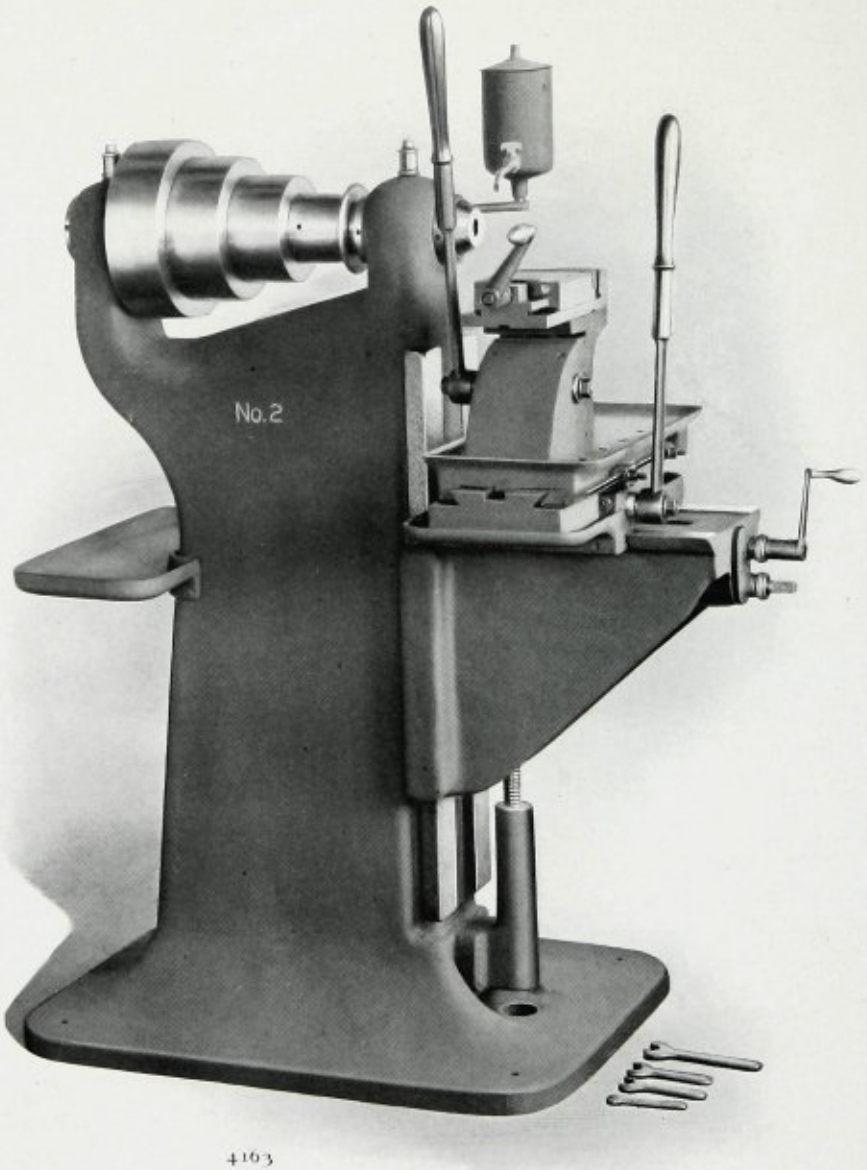
No. 2 Hand Milling Machine with Double Spindles



No. 12 Hand Milling Machine



No. 2 Hand Milling Machine with Overhanging Arm



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No. 2 Hand Milling Machine with Vertical Vise Slide

Nos. 12 and 13 Lincoln Milling Machines

IN these machines the general characteristics of the well-known Lincoln type of milling machines have been retained, but improvements in construction have been made.

BED is deep and is cast solid with a large oil pan, making an exceedingly rigid machine.

CARRIAGE is adjusted along the bed by means of a screw and crank conveniently located at front of the head, and may be securely clamped at any desired point.

HEAD is provided with a large dowel-pin near one end and two large plugs with adjusting screws at the other end, so that it can be easily aligned, and then bolted securely in place on the bed of the machine.

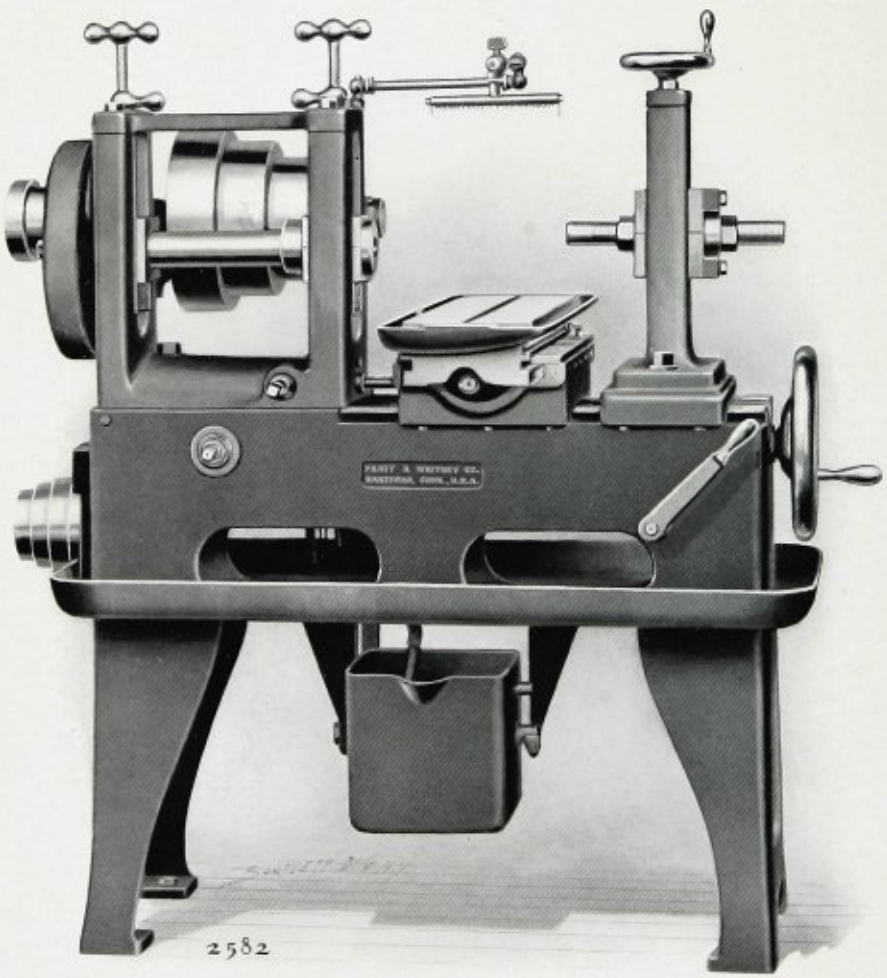
SPINDLE is adjusted vertically by means of two screws and gears operated by a crank at the front of the head, so that the operator can see his work while making the spindle adjustments. In adjusting the head spindle, it is generally positioned with its axis parallel with the top face of the table, but it is possible to incline the spindle slightly so as to compensate for slight inaccuracies in the milling fixtures used. Arbors are held in the spindle by a taper hole and draw-in rod. The nose of the spindle may be provided with a slot across its face, which furnishes the best means of driving arbors for heavy work.

GEARING under the carriage has a new arrangement whereby the hand-wheel is carried nearer the front of the bed, thus reducing the reach of the operator in running the table back after the cut is finished.

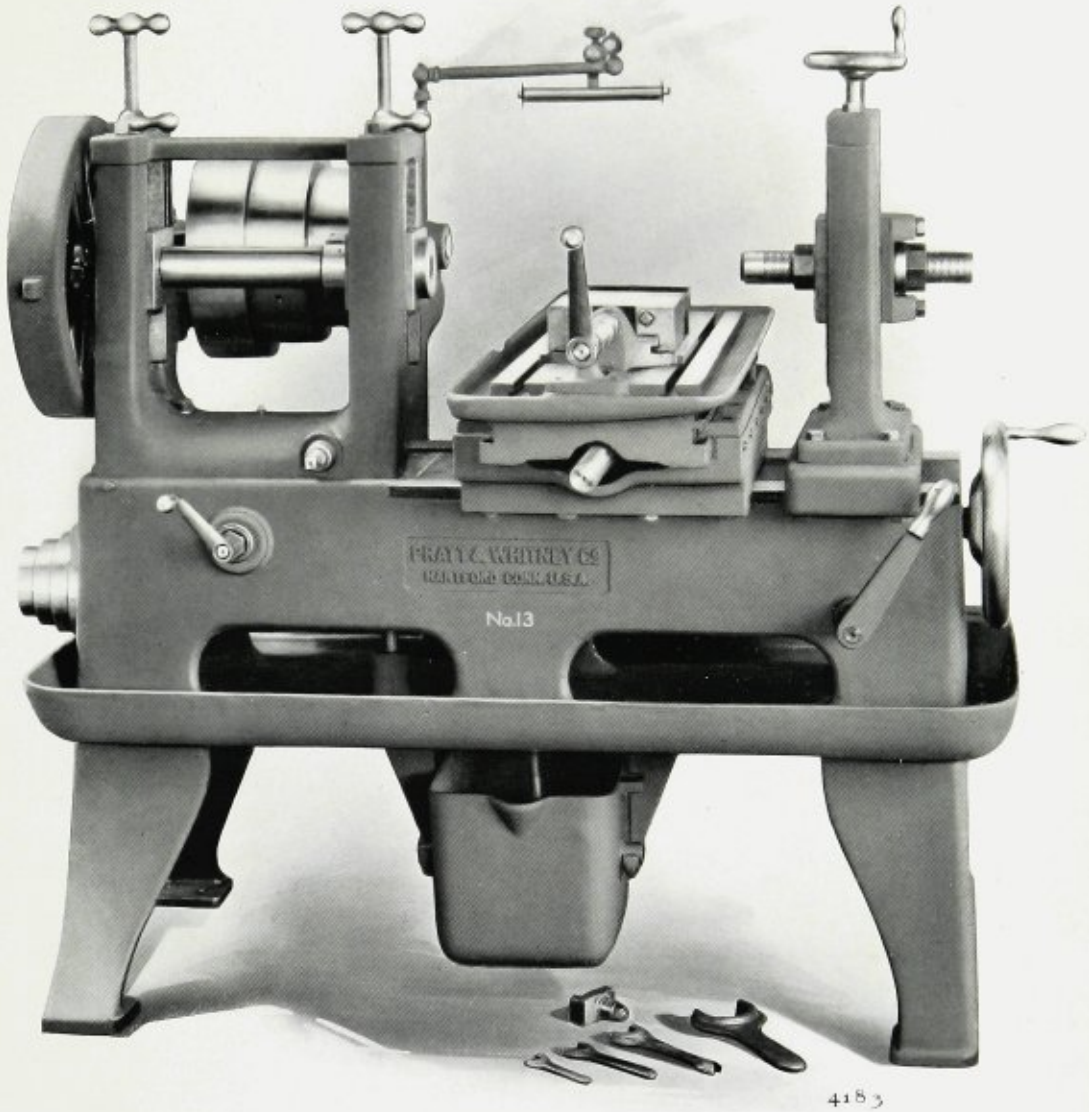
Specifications

	No. 12	No. 13		No. 12	No. 13
Dimensions of table	32 x 7½ in.	36 x 11 in.	Least	7¼ in.	7¼ in.
Travel of table	15 in.	20 in.	Distance from top of bed to top of table	6¼ in.	7
Lateral adjustment of table	6½ in.	6½ in.	Number of grades on cone	3	3
Number of feed changes	4	4	Diameter of largest grade	12 in.	14 in.
Dimensions of spindle, front bearing	2⅜ x 3¼ in.	2⅜ x 4⅜ in.	Width of belt	3 in.	3½ in.
Vertical adjustment of spindle	7 in.	8 in.	Ratio of gearing	4½ to 1	5 1/16 to 1
Greatest distance from center of spindle to vise	5¼ in.	5¾ in.	Floor space, without vise	54 x 57 in.	66 x 64 in.
Greatest distance from center of spindle to table	8½ in.	9 in.	Dimensions of countershaft pulleys	12 x 3⅜ in.	14 x 5¼ in.
Least distance from end of spindle to center of table	4½ in.	7 in.	Revolutions of countershaft per minute	150	150
Greatest distance from spindle to foot-block spindle	15½ in.	20½ in.	Weight with countershaft and vise	1,720 lbs.	2,600 lbs.
Greatest distance from top of bed to center of spindle	14¾ in.	15¾ in.	Weight, crated for domestic shipment	1,975 "	2,900 "
			Weight, boxed for export	2,250 "	3,230 "
			Cubic feet of boxes	62	110

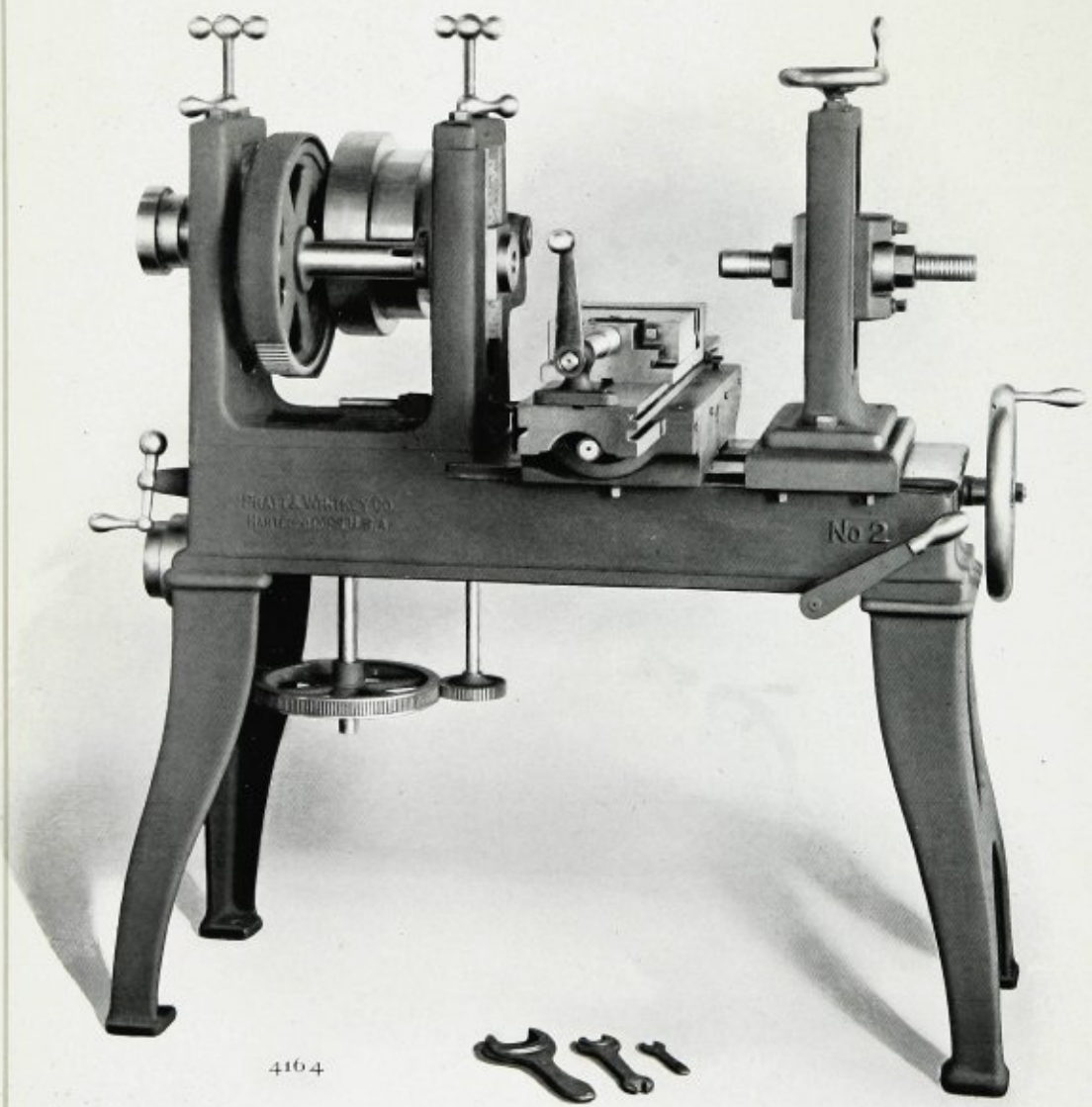
Code Words		
	No. 12, without vise, Griblette	With vise, Gribolas
	No. 13, without vise, Gridamento	With vise, Gridando



No. 12 New Model Lincoln Milling Machine



No. 13 Lincoln Milling Machine



No. 2 Lincoln Milling Machine

No. 2 Lincoln Milling Machine

THESE machines have had an exceedingly large sale and are used extensively in the manufacture of small arms, the United States and foreign governments having a great number in use in their arsenals. They are also used in large groups in factories building sewing machines, automobiles, typewriters, and for duplicate milling work of every description.

HEAD SPINDLE is of ample dimensions to give rigidity to the drive, and is driven by a three-grade cone through gearing. The vertical adjustment to the spindle is by means of two screws and gears. In adjusting the head spindle, it is generally placed with its axis parallel with the top face of the table, but it is possible to incline the spindle slightly so as to compensate for slight inaccuracies in the milling fixtures used.

TABLE has variable power—and also hand longitudinal feed, and is provided with adjustable automatic stop motion.

CARRIAGE is adjusted on the bed by means of a screw and operating handle conveniently located on the left end of the bed, and may be securely clamped at any desired point.

FOOT-BLOCK for steadying the ends of long cutter arbors is adjustable along the bed. The vertical adjustment of the foot-block spindle is effected by hand wheel and screw.

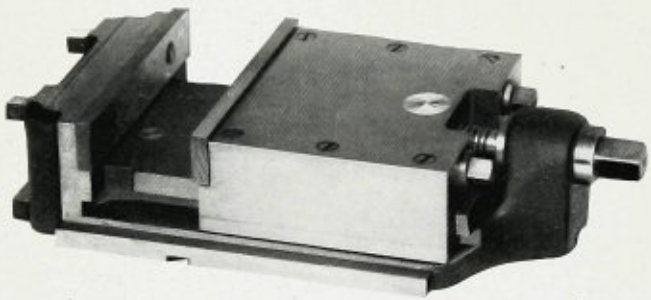
GUARDS for all exposed gears are provided. Each machine is furnished complete with countershaft and wrenches, and may also be equipped, when so ordered, with a vise having hardened and ground flat jaws.

Specifications

	No. 2		No. 2
Dimensions of table	32 x 6 in.	Number of grades on cone	3 in.
Travel of table	12 in.	Diameter of largest grade	12 in.
Lateral adjustment of table	6 in.	Width of belt	2½ in.
Number of feed changes	4	Ratio of gearing	$4\frac{1}{2}$ to 1
Dimensions of spindle, front bearing	2¼ x 3¾ in.	Floor space	4ft. x 4ft. 10in.
Vertical adjustment of spindle	7 in.	Dimensions of countershaft pulleys	11 x 3½ in.
Greatest distance from center of spindle to vise	6¼ in.	Revolutions of countershaft per minute	125
Greatest distance from center of spindle to table	9¾ in.	Weight with countershaft and vise	1,425 lbs.
Least distance from end of spindle to center of table	3⅜ in.	Weight crated for domestic shipment	1,500 "
Greatest distance from spindle to foot-block spindle	16 in.	Weight boxed for export	1,800 "
		Cubic feet of boxes	52

Code Words

Without Vise	With Vise
Gribabais	Gribabamos



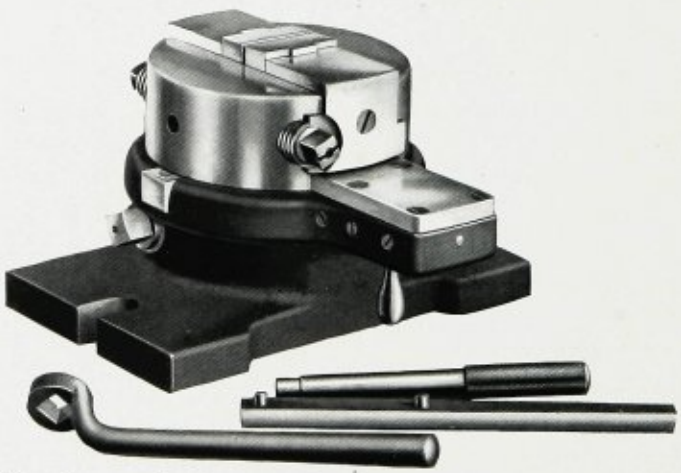
Milling Machine Vises

THESE vises are made in several sizes. Each one is furnished with hardened and ground faces fitted, and crank wrench. Nos. 4 and 12 are also fitted with socket and extension.

Specifications

For Use With	No. of Vise	Width of Jaws	Depth of Jaws	Opening of Jaws. Steel faces fitted	Weight of Vise	Code Word
Hand Milling Machine { No. 10 ; No. 2, with Vertical Vise Slide }	No. 2½	4⅜ in.	⅞ in.	2⅝ in.	21 lbs.	Grossolana
Hand Milling Machine { No. 2 }	No. 11	5 in.	1 in.	3 in.	29 lbs.	Grossotto
Lincoln Milling Machine { No. 2 }	No. 4	7 in.	1¼ in.	3¼ in.	52 lbs.	Grossore
Lincoln Milling Machine { No. 12 ; No. 13 }	No. 12	7 in.	1¼ in.	3⅜ in.	62 lbs.	Grosspapa

Index Milling Fixture



MADE in one size and fitted with hardened and ground tool steel index ring, having eight taper slots in its periphery, so arranged as to enable sides of squares and hexagons to be milled. Index can be varied in making to order. This fixture is adapted for use on Hand and Power Milling Machines, and can also be placed upon the carriage of a Lathe.

It is furnished with a two-jaw chuck suitable for taking stock up to 1½ inches diameter through body. Shank of chuck fits into cast-iron base, securing a substantial bearing. Blank inserted jaws are regularly furnished.

Specifications: Diameter of hole, 1½ in. Width of chuck jaws, $1\frac{3}{16}$ in. Total height of fixture, 5½ in. Dimensions of base, 9¼ x 5⅝ in. Weight, 35 lbs.

Code Word: Grossamig.

Profiling Machines

HESE machines, of entirely new design, are made in four sizes, and are especially adapted for finishing the parts of guns, sewing machines and other accurate and interchangeable work. By means of the two spindles on the Nos. 11, 12 and 14 machines, a roughing and finishing milling cut may be taken in one setting of the piece, finishing it accurately to the dimensions desired and doing away with hand fitting.

They are very sensitive, strong and compact, occupying a minimum amount of floor space.

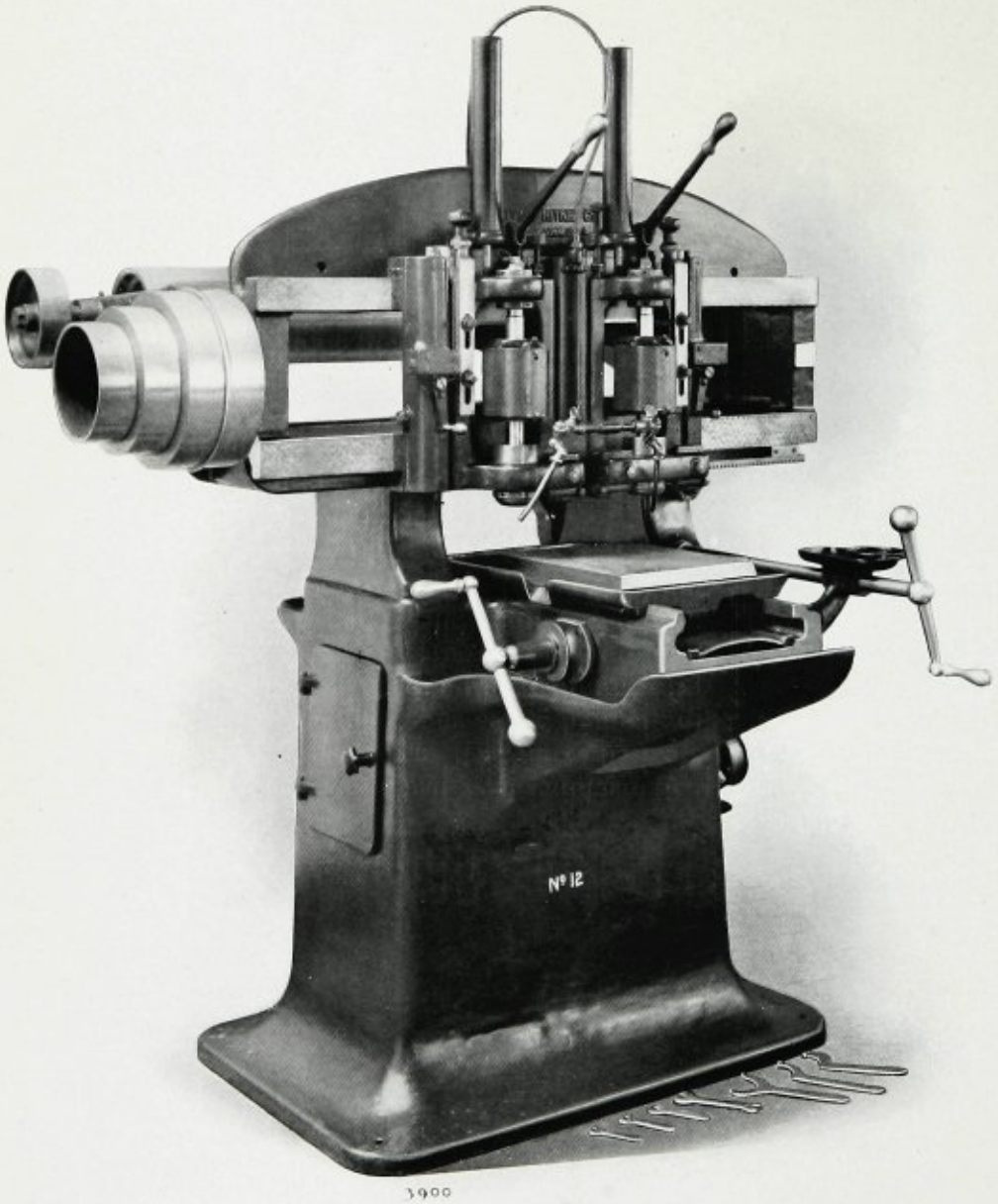
COLUMN is heavy and provides a rigid support for the working parts above. It contains two large tool cabinets and a suitable tank for oil or soda water.

TABLE is held down to the bed by two straps, is guided by a single V of ample dimensions on the left side and rests upon a flat track on the right.

EACH SPINDLE is driven by means of a line-contact spiral gear and pinion of 6 and 4 inches diameter, respectively, thus providing liberal tooth contact and ample wearing surfaces, and permitting a very high spindle speed without excessive speed to the driving shaft. The gear is driven by two long keys located in the driving shaft opposite each other. The driving cone pulley is counterbalanced and is journaled on the outside of the driving shaft bracket, leaving the shaft free from all strain due to belt pull. Ball thrust bearings are provided at each end of both gears and pinions, permitting the spindles to be rotated with equally good results in either direction and producing a very free-running and durable drive.

SPINDLES are made of steel, are ground, and run in bronze bearings. The lower and upper bearings are of cylindrical form and are provided with suitable adjustment for wear. The end thrust at the lower bearing is taken by a hardened and ground steel washer.

The guide-pins are carried in adjustable blocks, the maximum adjustment being about $\frac{3}{16}$ in. Where the distance between center of cutter and center of guide-pin must be greater than that specified as standard, special guide-pin blocks can be furnished to order. These blocks have same adjustment as regular guide-pin blocks. Order must state distance between center of cutter and center of guide-pin, when such special blocks are required. For these special guide-pin blocks an extra charge will be made.



No. 12 Profiling Machine, Belt Drive

SPECIAL HIGH RATIO DRIVING GEARS can be furnished to order at an additional price when it is desired to obtain spindle speeds of above 1,200 revolutions per minute.

FOR HIGH SPEED WORK these machines can be furnished with belt drive, instead of spiral gear drive.

GEARING for operating table and cross head is so constructed as to permit all back-lash being taken up by means of double gears and double racks, so arranged that one part may be adjusted in relation to the other part so that the teeth of the two parts do not exactly line up, but do fill the space of the matting rack or gear. When properly adjusted the two parts of the member may be firmly clamped together by conical studs.

The One-spindle New Model Profiling Machine No. 13 is in all essential features of design the same as the Two-spindle Profilers already described, and is offered to meet the requirements of manufacturers who do not need a machine for both roughing and finishing cuts at a single setting of the work.

Oil pump and piping and a nozzle for each spindle are furnished, but if not desired, a suitable allowance will be made.

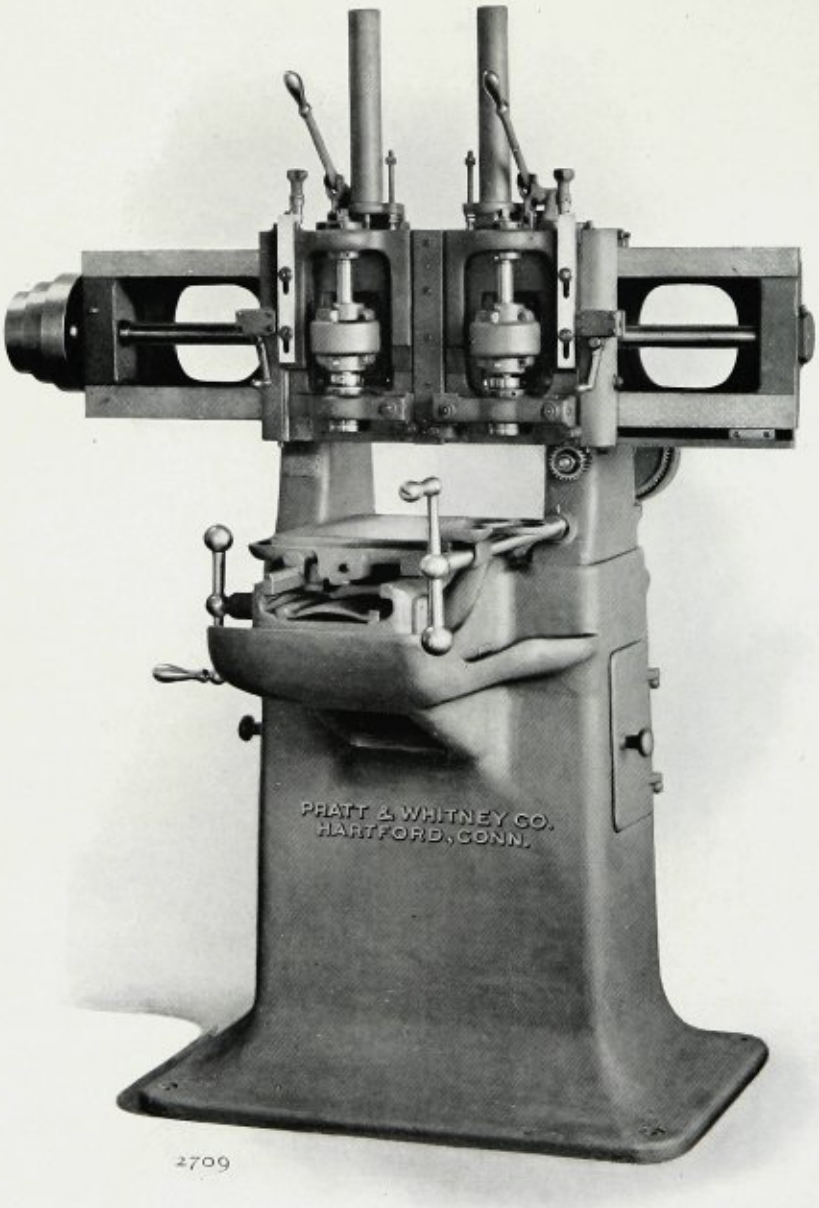
Specifications

	No. 11	No. 12	No. 13	No. 14
Working surface of table	8 x 10½ in.	12 x 15 in.	12 x 15 in.	12 x 15 in.
Movement of table	17¼ in.	23½ in.	19 in.	19 in.
Movement of cross-slide	19½ in.	26¾ in.	18 in.	26 in.
Distance from top of table to bottom of cross-slide	4 in.	5¼ in.	5⅝ in.	5¼ in.
Distance between uprights	14 in.	19 in.	15½ in.	15½ in.
Standard Distance from center of spindle to center of guide pin	3 in.	4⅝ in.	4⅝ in.	4⅛ in.
Maximum adjustment of guide-pin block	$\frac{3}{16}$ in.	$\frac{3}{16}$ in.	$\frac{3}{16}$ in.	$\frac{3}{16}$ in.
Vertical movement of head	3 in.	3⅛ in.	3 in.	3 in.
Taper hole in spindle	No. 5 Jarno	No. 7 Jarno	No. 5 Jarno	No. 5 Jarno
Countershaft tight and loose pulleys*	9 x 2¼ in.	14 x 3 in.	9 x 2¼ in.	9 x 2¼ in.
Countershaft revolutions per minute	450	350	450	450
Floor Space	55 x 49 in.	72 x 53 in.	55 x 49 in.	71 x 49 in.
Net Weight with countershaft	2,050 lbs.	2,750 lbs.	1,800 lbs.	2,100 lbs.
Weight, crated for domestic shipment	2,400 "	3,100 "	2,050 "	2,350 "
Weight, boxed for export	2,650 "	3,450 "	2,300 "	2,500 "
Cubic feet of boxes	105	144	90	110

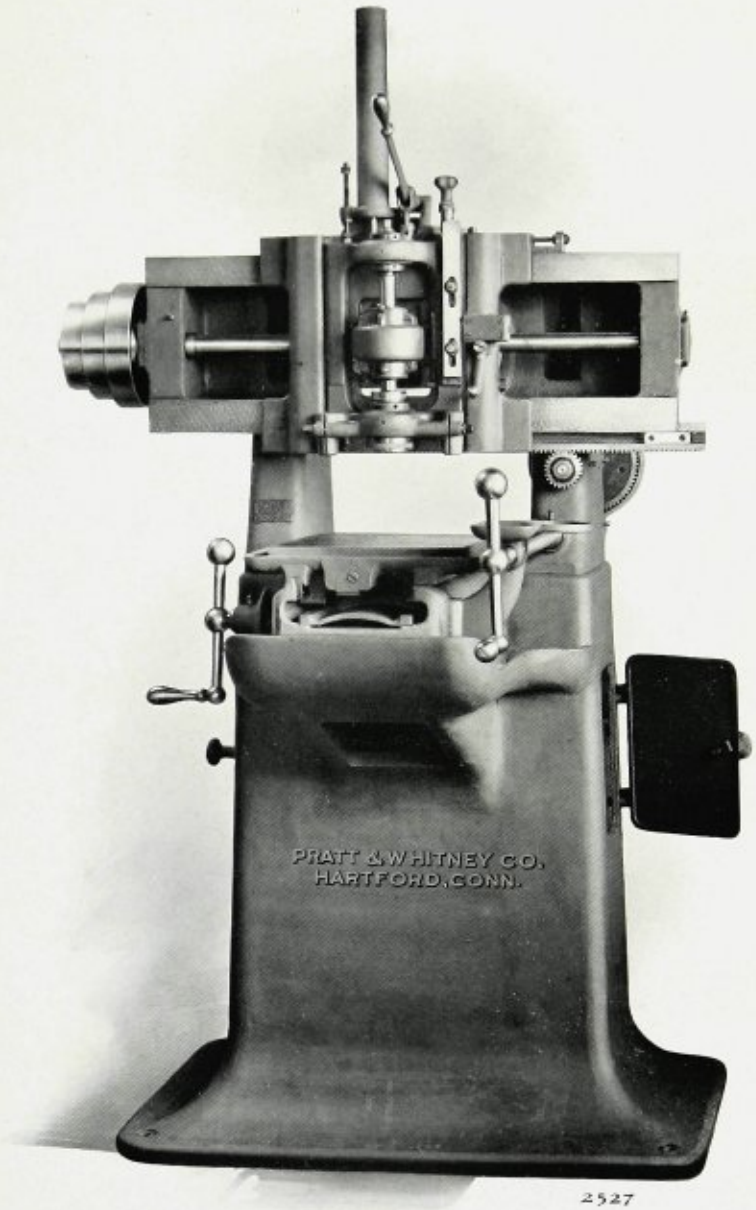
*Note—Countershaft with friction clutch pulleys can be furnished to order

Code Words

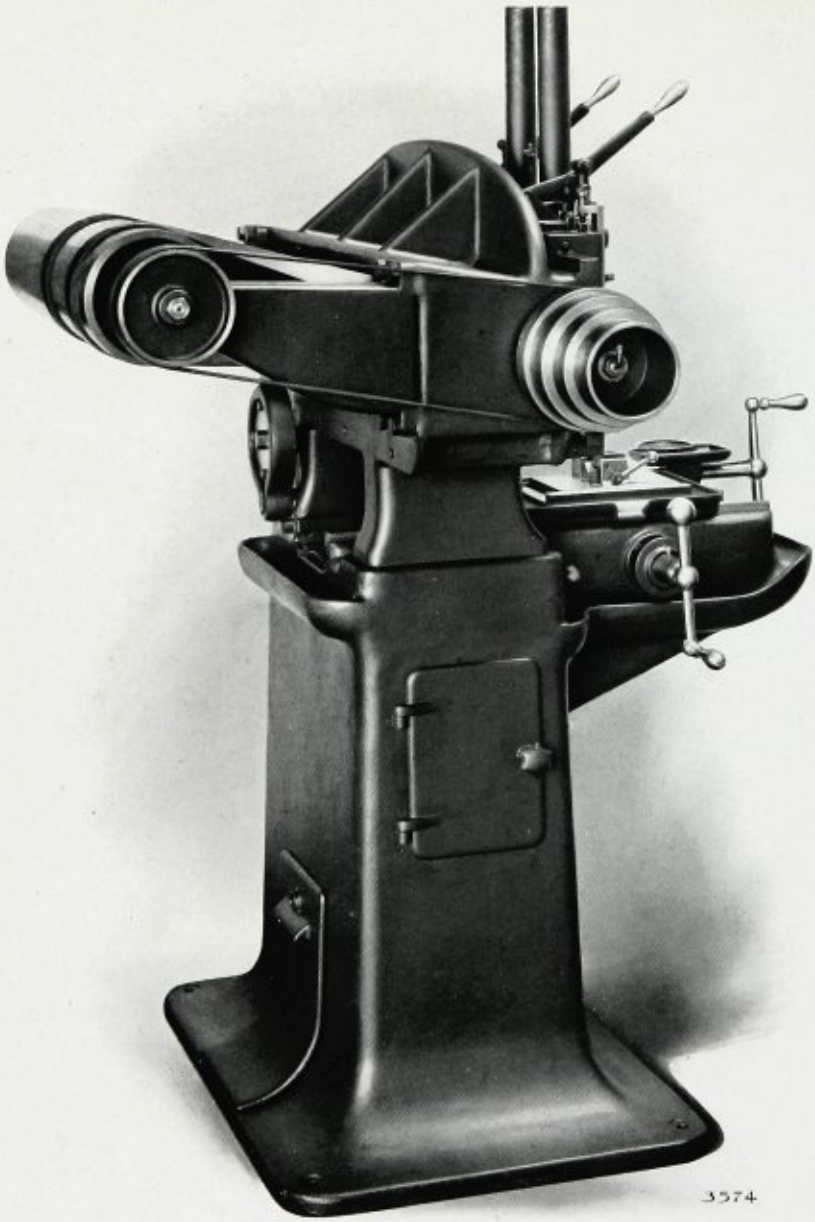
No. 11, Two-Spindle	Code Word	No. 13, One-Spindle	Code Word
Without oil-pump and piping ...	Hediamos	Without oil-pump and piping ...	Hedyote
With oil-pump and piping	Hedonismus	With oil-pump and piping	Heelball
No. 12, Two-Spindle	**Code Word**	**No. 14, Two-Spindle**	**Code Word**
Without oil-pump and piping ...	Hedradas	Without oil-pump and piping ...	Heelheid
With oil-pump and piping	Hedrasen	With oil-pump and piping	Heelhoop



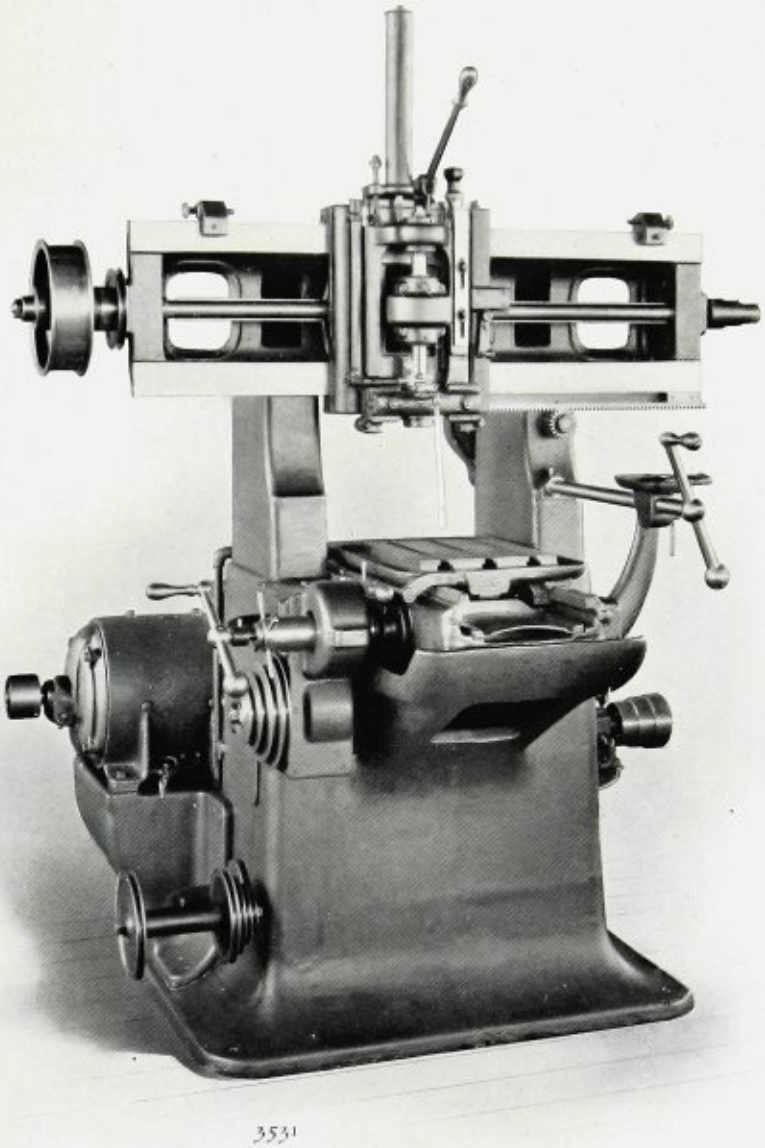
No. 12 Standard Profiling Machine



No. 13 Profiling Machine



Side View No. 12 Profiling Machine, Belt Drive



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No. 12 One-Spindle Profiling Machine with Power Feed, Motor Drive
(Built to order only)

Samples of finished work from a Profiler

Die-Sinking Machines

THESE machines are particularly adapted to the forming and finishing of recesses of circular or irregular shapes and the recessing of dies for Drop Hammer Presses. The work to be operated upon is held in a vise, which may be moved in all directions horizontally by compound slides on the table of the machine, and which is also provided with circular feed. It is raised or lowered by the vertical movement of the platen.

All the hand wheels for operating slides have micrometer dials reading to .001 inch.

CUTTER, which may be of any suitable size or form, revolves with the spindle, which is driven by a belt. The work may be guided either by a pattern or forming piece, or be controlled wholly by the operator. These machines are very strongly built, insuring smooth work, free from chatter marks.

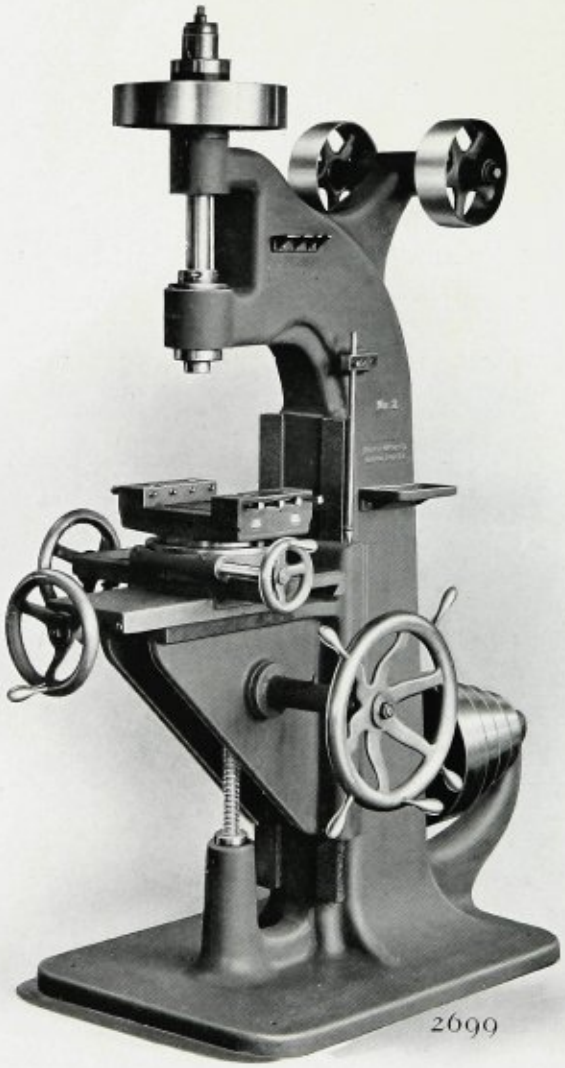
Both machines are furnished with circular vise, one spindle collet, wrenches, and with countershaft having two sets of tight and loose pulleys.

Specifications

	No. 2	No. 3
Number of collet furnished with the machine	No. 6	No. 8
Greatest distance from working surface of vise to end of spindle	18 in.	23 in.
Greatest distance between top of vise jaws and end of spindle	16½ in.	21¼ in.
Distance from center of spindle to face of column	12½ in.	14¾ in.
Vertical adjustment of knee	16 in.	15 in.
Movement of vise to and from column	9½ in.	11½ in.
Transverse movement of vise	10 in.	15½ in.
Speeds arranged for cutters in diameter from	⅜ to 3 in.	½ to 4 in.
Greatest distance between jaws of vise	7½ in.	11 in.
Width of jaws	9 in.	11 in.
Number of grades on cone	3	3
Diameter of largest grade	12 in.	14 in.
Width of belt	3 in.	4¼ in.
Floor space	6 ft. x 46 in.	7 ft. x 54 in.
Dimensions of countershaft pulleys	16 & 8 x 4¼ in.	18 & 12 x 4½ in.
Revolutions of countershaft per minute	80 and 260	65 and 160
Weight with countershaft	2,440 lbs.	3,500 lbs.
Weight crated for domestic shipment	2,760 "	4,150 "
Weight boxed for export	3,130 "	4,450 "
Cubic feet of boxes	116	160

Code Words

Code Word No. 2 Machine with rotary vise	Gangerin
Code Word No. 3 Machine with rotary vise	Gangherayi



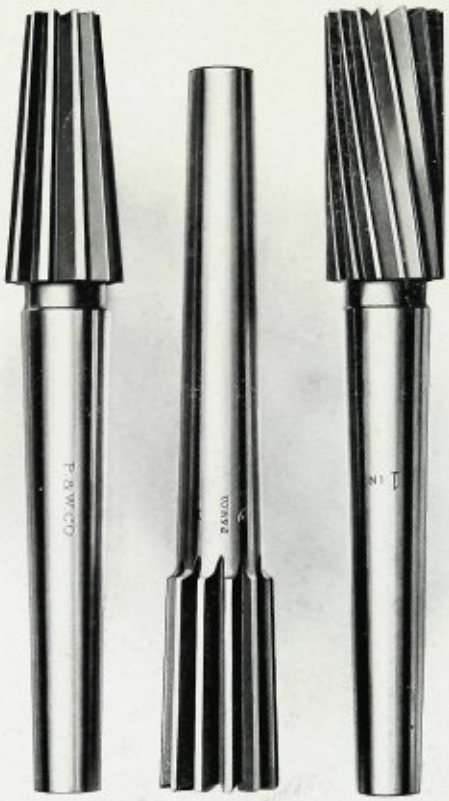
No. 2 Die-Sinking Machine

Tools and Cutters for Die-Sinking Machines

Collets and Roughing Cutter for Die-Sinking Machines

These tools and cutters can be furnished for use on our regular Die-Sinking Machines and will be found very useful for any ordinary die-sinking work.

In ordering collets, order by number. In ordering cutters, order by name and diameter.



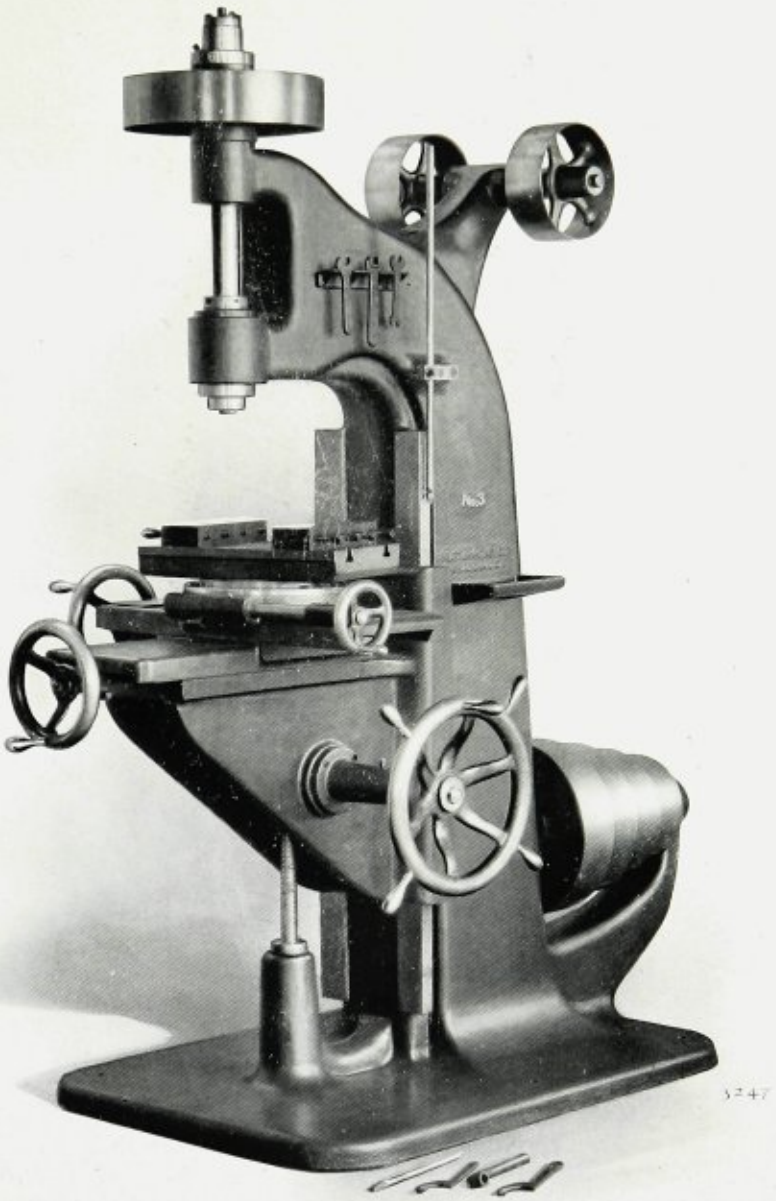
Taper, Trimming and Straight Cutters for Die-Sinking Machines

Specifications of Tools and Cutters for Die-Sinking Machines

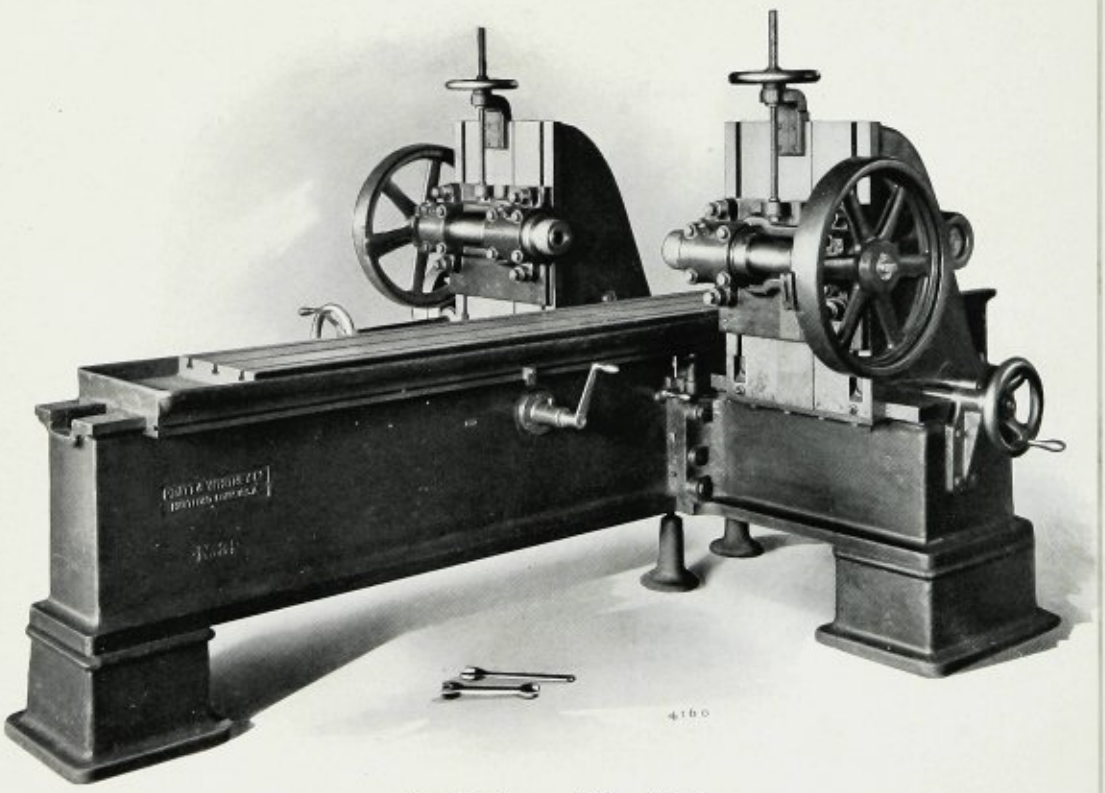
	No. 2	No. 3
Number of the collets fitting spindle of machine	5, 6	7, 8, 9
Number of the collet furnished with the machine	6	8

Number of the collets	1	2	3	4	5	6	7	8	9
Largest diameter of taper hole, solid collet	—	—	—	½	½	¾	½	¾	—
Largest diameter of straight hole, split spring collet	¼	⅜	—	—	—	—	—	—	1
Largest diameter of taper shank	—	—	¾	¾	1 5/64	1 5/64	1½	1½	1½
Number of the collets the above fit into	3	3	6, 8	6, 8	—	—	—	—	—

Roughing Cutters		Straight Cutters		5 deg. Taper Cutters		Trimming Cutters	
Diameter	Will fit Collet No.	Diameter	Will fit Collet No.	Large and Small Diameter	Will fit Collet No.	Diameter	Will fit Collet No.
3/16 in.	1	3/16 in.	1	3/16, 5/64 in.	1	3/16 in.	1
¼ in.	1	¼ in.	1	¼, ⅛ in.	1	¼ in.	1
⅜ in.	2	⅜ in.	2	⅜, 7/32 in.	2	⅜ in.	2
½ in.	4, 5, 7	½ in.	4, 5, 7	½, ¼ in.	4, 5, 7	½ in.	4, 5, 7
⅝ in.	4, 5, 7	⅝ in.	4, 5, 7	⅝, 11/32 in.	4, 5, 7	⅝ in.	4, 5, 7
¾ in.	6, 8	¾ in.	6, 8	¾, 13/32 in.	6, 8	¾ in.	6, 8
⅞ in.	6, 8	⅞ in.	6, 8	⅞, ½ in.	6, 8	⅞ in.	6, 8
1	6, 8	1 in.	6, 8	1, ⅝ in.	6, 8	1 in.	6, 8



No. 3 Die-Sinking Machine



No. 3½ Power Milling Machine

No. 3½ Power Milling Machine

Made Only to Order

THIS machine has two heads, which move vertically on a very rigid upright, can be quickly and accurately adjusted by means of screw and hand wheel, and securely clamped when the machine is in operation.

The upright for the head can be adjusted to and from the table by means of screw and hand wheel and firmly clamped in position. The table is driven by large, powerful worm engaging directly with the worm rack screwed to its under side. It has power-feed and adjustable automatic knock-off in either direction; also hand-feed mechanism.

The worm shaft has an adjustable bushing for taking up back-lash of worm, and the latter is provided with ball-bearing collars at both ends for taking thrusts. The ways of the bed are automatically lubricated. Power-feed quick return is provided for the table. The table feeds are obtained through a change gear and so arranged that when the table feed is altered the feed per minute may be maintained by changing the position of the rocker gear, thus permitting the same range of feeds for different diameters of cutters.

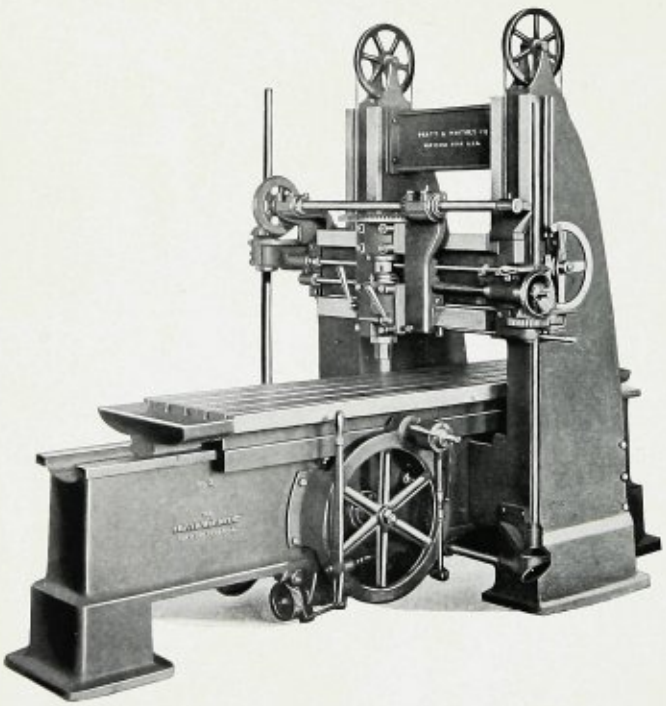
Countershafts and wrenches are included.

Specifications

	No. 3½		No. 3½
Greatest distance from center of spindle to table	16 in.	Diameter of largest grade	21 in.
Least distance from center of spindle to table	2⅞ in.	Width of belt	2½ in.
Greatest distance between the ends of spindles	27 in.	Ratio of gearing	12.3 to 1
Least distance between the ends of spindles	9½ in.	Floor space	12 ft. 3 in. x 9 ft.
Greatest distance from end of head spindle to center of table	13½ in.	Dimensions of countershaft pulleys, 2 sets	15 x 4 in.
Least distance from end of head spindle to center of table	4¾ in.	Revolutions of countershaft per minute	208 and 262
Width of table	14½ in.	Dimensions of quick-return countershaft pulleys	10 x 2¾ in.
Length of table	4 ft.	Revolutions of quick-return countershaft	200
Travel of table	4 ft.	Weight with countershaft	7,600 lbs.
Feed changes	change gears	Weight, crated for domestic shipment	8,400 "
Dimensions of spindle, front bearing	3⅜ x 7½ in.	Weight, boxed for export	9,500 "
Number of grades on cone	4	Cubic feet of boxes	315
		Weight, added for extra foot of table	400 lbs.

Code Word

	Code Word
No. 3½, with two heads	Grenetina



No. 2 Vertical Spindle Milling Machine

No. 2 Vertical Spindle Milling Machine

Made Only to Order

THIS machine is designed for surface milling and in appearance resembles a Planer, it being adapted for much of the work ordinarily done on the latter.

All operating levers are placed where the workman can reach them conveniently.

Both table and head feed in either direction, and have adjustable automatic stop motion mechanism.

The machine is made with either one or two spindles, as specified.

Specifications

	No. 2	
	One-Spindle	Two-Spindle
Greatest distance from end of spindle to table	25 in.	25 in.
Least distance from end of spindle to table	¼ in.	¾ in.
Dimensions of spindle lower bearing	2¾ x 8 in.	2¾ x 8 in.
Distance between uprights	24½ in.	24½ in.
Length of bed	9 ft.	9 ft.
Length of table	6 ft.	6 ft.
Width of table	22 in.	22 in.
Ratio of gearing	6.85 to 1	5.56 to 1
Number of grades on cone	3	3
Diameter of largest grade	19 in.	22 in.
Width of belt	3¼ in.	4 in.
Floor space	6¼ x 13½ ft.	8¼ x 13½ ft.
Dimensions of countershaft pulleys {	18 x 4 in. &	24 x 4¼ in. &
{	12 x 5 in.	14 x 7 in.
Revolutions of countershaft per minute	110 & 300	160 & 430
Weight with table specified with countershaft	8,800 lbs.	11,900 lbs.
Weight crated for domestic shipment	9,600 lbs.	12,500 lbs.
Weight boxed for export	10,600 lbs.	14,400 lbs.
Cubic feet of boxes	226	370
Weight for each extra foot of table	550 lbs.	550 lbs.

Code Words

	Code Word
No. 2, with one head	Grobkornig
No. 2, with two heads	Groblich

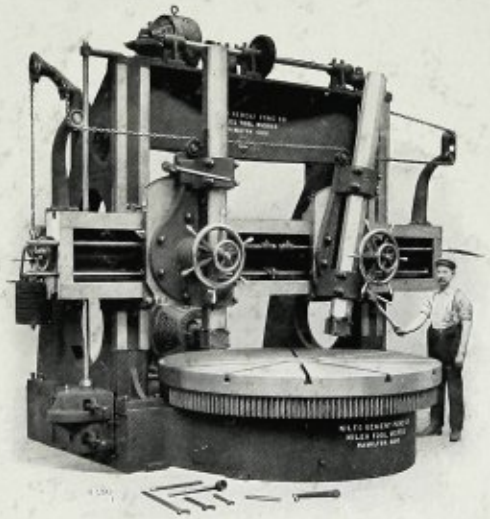
METAL-WORKING MACHINE TOOLS

ALL KINDS AND SIZES

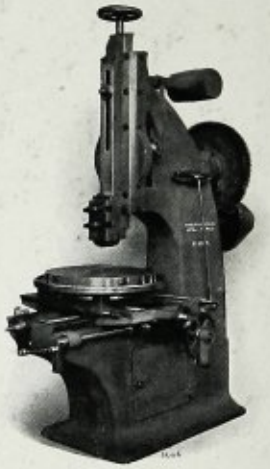
NILES ELECTRIC TRAVELING CRANES

BEMENT HAMMERS HYDRAULIC MACHINERY

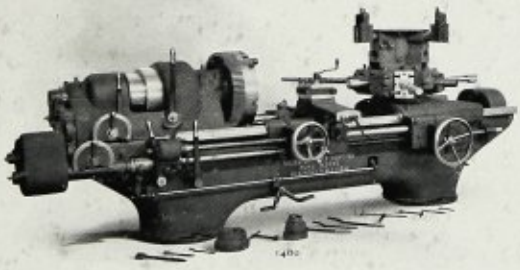
Vertical Drills up to 60 inches



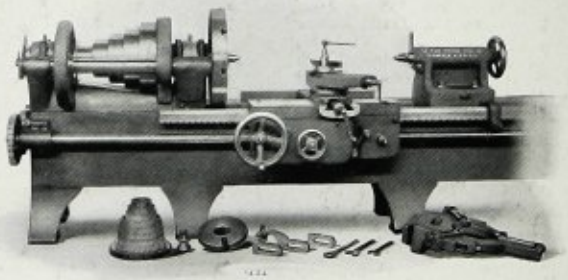
Boring Mills, 25 sizes, 30-inch to 30-foot swing



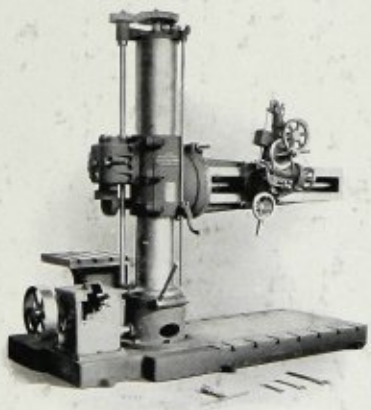
Slotters, 6 to 68-inch stroke



Pond Rigid Turret Lathes, 21 and 28 inches



Lathes, 10-inch to 125-inch swing



Radial Drills, three types
3½ to 10-foot arms

Planers from 17 in. to 14 ft. between housings

WRITE FOR CATALOGUES

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Steam Hammers, 250 to 40,000 pounds falling weight