THE LODGE & SHIPLEY MACHINE TOOL CO

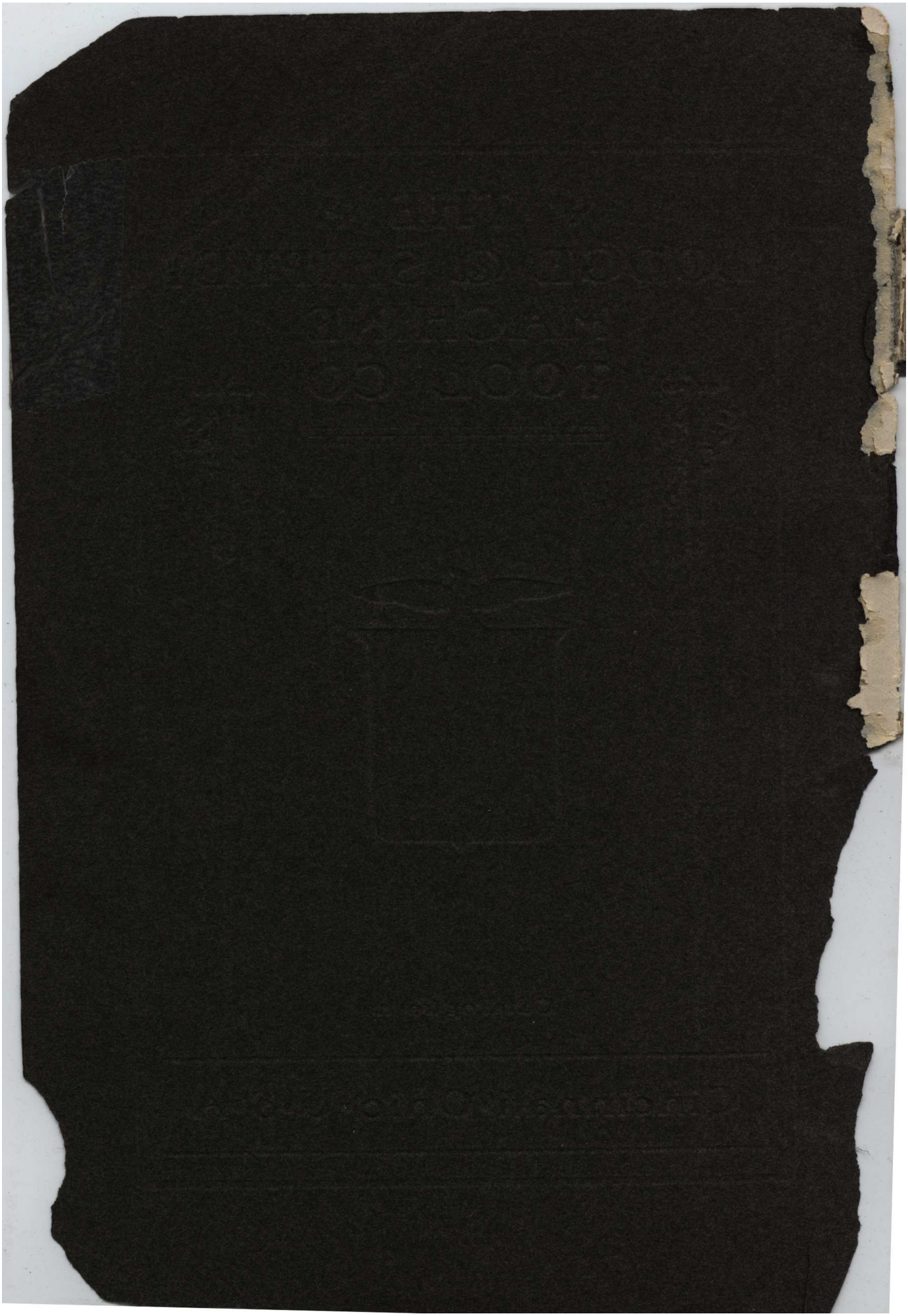
LATHES

GOOD LATHES ONLY

TRADE MARK

Catalogue H

Cincinnati · Ohio · U · S · A



Catalogue "H" — January, 1901

The Lodge & Shipley Machine Tool Co.

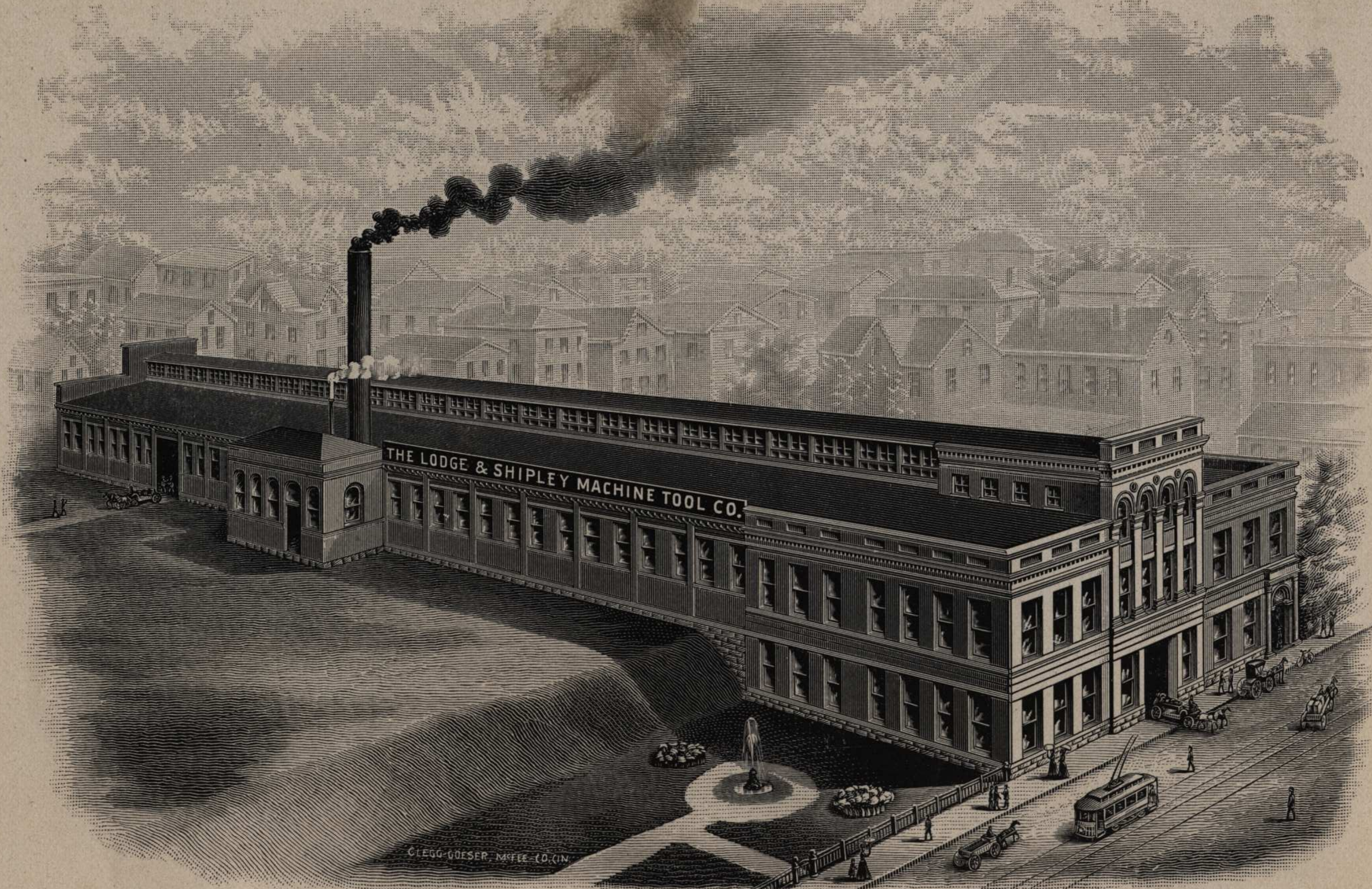
LATHES

Good Lathes Only

3055-3065 Colerain Ave.
Cincinnati, Ohio, U. S. A.

Take Colerain Avenue Car at Fountain Square
It Stops at Our Door

Cable Address: "DRILL" — Codes used: Lieber's and our own


THE LODGE & SHIPLEY MACHINE TOOL CO.
CLEGG-GOESER, McFEE-CO. CIN.

OUR new shops are located within about twenty minutes ride of the center of the city. With the shops we have three acres of ground. Shop No. 1 is 90 feet wide, 337 feet long, brick and steel construction, is fire-proof, and was built by us in 1898 especially for our use in manufacturing lathes. Shop No. 2 is 60 x 190 feet, two floors, built in 1900. In addition, we have a large warehouse. Also, a separate building containing pattern shops, draughting rooms, blue-print rooms, etc.—a total of about 60,000 square feet. The shops are fully equipped with the most up-to-date power appliances, including steam, electricity, and compressed air. Pneumatic traveling cranes materially reduce the cost of handling. The machine-tool equipment consists of one hundred and fifty machine tools of the best makers. *Each size of lathe is manufactured by a complete system of gigs and templets.* We have ample yard room for storage of castings, etc., which materially aids in prompt delivery.

We Manufacture only Lathes and their Attachments, and Concentrate our Entire Energy on them.

WE manufacture them in large quantities. We do not manufacture drills or milling machines or planers, or any other machine tool than lathes. Each piece of each size of lathe, no matter how small, has been made the subject of careful study and development, and thousands of dollars have been spent in getting ready to manufacture each size before the first one of the size is made. The concentration of our efforts on the manufacture of lathes *only* permits each of our machinists to become an expert in his special line; for instance, certain men turn cone spindles from one year's end to the other, other men turn cone pulleys, other men plane beds, other men scrape and line the lathes, and so on; each man, therefore, becomes the most expert possible, and does not jump from one character of work to another. This enables us to sell a really good lathe at a reasonable price.

General Information.

Patents.—These lathes are made under patents, either taken out by ourselves, or bought.

Delivery.—Prices are for the lathes delivered free on board cars or boat at Cincinnati.

We are not responsible for condition of goods after shipment. Delivery in good order to railroad or boat is considered as delivery to purchaser.

Terms.—Thirty days net cash where credit is satisfactory to us.

Boxing.—Machines ordered for domestic shipment will be crated free of cost.

Export Boxing—Which is much more expensive than crating, will be charged for at cost.

Agents.—We have agents all over the world, and as most of them ship in carloads they can often save you money on freight. We will gladly give you the name of the agent representing us in your territory.

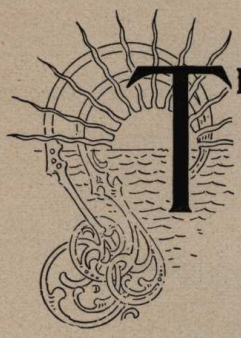
Catalogs.—Please refer to catalog by page and edition. See cover. Destroy old catalogs. We are always glad to mail our catalog upon application.

Erecting Plans.—Showing floor space and countershaft arrangement, furnished with lathe, if desired.

Allowances.—No allowance will be made by us for any expense incurred by purchaser in repairing or supplying defective or missing parts, excepting by agreement.

Visitors—Are always welcome.

Delays.—We disclaim any liability for delays resulting from strikes, acts of Providence, or other unavoidable causes.



THESE Lathes Contain Several Features

(PATENTED APRIL 7, 1891, APRIL 10, 1894, NOV. 9, 1897, AUG. 1, 1899, FEB. 13, 1900, FEB. 13, 1900, FEB. 13, 1900,)

Which Render them Capable of More Work and Quicker Work than the Ordinary So-Called Up-to-Date Engine Lathe. We Call Attention to These Features in Detail.

The Head The head is neat and massive. The cone pulley has *five steps*, excepting in the 14-inch lathe, which has four steps. The face of the cone pulley is extra wide. The ratio of back gearing is very high. The spindle is of crucible steel, with a large hole through its entire length. The bearings for the spindle are of the best quality of bronze, and are massive, both front and back. The spindle is ground in order to insure its being absolutely round and straight. The thrust collars are of steel, hardened and ground. The change gears receive their motion from the gear shown on the outer end of spindle.

The Tailstock Is shaped so that the compound rest may be set at an angle of 90 degrees, and permits the tool to operate on the smallest diameters. Suitable screws are provided for setting over sideways, and a 2-inch index graduated to 16ths of an inch is cut on its base. The tail-spindle is of extra diameter with a long movement. The nut is cut in the solid spindle, is of extra length and will wear a lifetime.

The Carriage Is extremely heavy and substantial; is provided with liberal Tee slots, and is gibbed to the bed its entire length. The bearing on the bed is not recessed,

but has a full bearing from end to end, and the entire depth of V on the bed. The carriage is provided with a screw and clamp for locking it while using the cross-feed.

Cross-Feed Screws and Compound Rest —Their Advantages

The compound rest is in keeping with the balance of the lathe for substantiability. Both the upper and lower slides are fitted with taper gibs, which, besides being tapering, are tongued and grooved into the sides, so that no amount of strain will disturb them. The taper gibs are provided with two screws only, one front and one back, which take up the wear the entire length, and which will not require resetting, perhaps, more than once a year. The top slide is of ample width, so that heavy cutting may be done without projecting the tool out away from the rest. The top slide has a long movement for angles, and is fitted with a screw of suitable pitch. This screw is provided with an indexed micrometer, which reads in thousandths of an inch. When starting the cut an exact diameter may be obtained without the use of calipers by using the tailstock spindle as a gauge. For example, in the 18-inch lathe secure the tool firmly in place, move it forward until the point touches the spindle; the tool is then set to turn a diameter of two inches. If smaller diameters are wanted, move forward by the micrometer the required amount, as explained. If larger diameters are wanted, move backward in the same manner, except that in moving backward a half turn more than required should be made, and then brought back to the proper place, in order that lost motion may not cause confusion.

Compound rests are furnished regularly on 22-inch and larger lathes, but are charged for extra on smaller sizes.

The Apron (See page 53) Is fastened to the carriage by hexagonal-head cap screws, besides being tongued and grooved into the carriage; is of ample length, width, and thickness, and is provided with three heavy braces its entire depth. The studs are steel and are hardened and ground. The pinions for crank, friction, cross-feed, and rack are all steel. The reverse for the feeds is extremely simple, and is always at the hand of the operator. The half nuts are planed to fit directly into substantial bearings in the apron and take prompt hold on the carriage, and are in no danger of being twisted out of alignment under heavy pressure. They are operated by a cam, having its grooves carefully milled. The half nuts are cut from the solid metal. This forms a substantial combination that will outwear the other parts of the machine and will never cause trouble, and, in addition, are fitted with our device (patented February 13, 1900; see illustration, page 53), which connects a cam with the reverse lever, which cam is thrown in the path of the half nuts when open and feed is engaged, so that the half nuts can not be closed until feed is thrown out. The friction cross feed is so designed and constructed that if the cross-feed is allowed to run beyond its limit either way no harm will be done.

We desire to call Special Attention here to the Indexed Crank-Shaft for Internal Work.

Suppose a hole should be counterbored to a given depth and diameter, the depth may be read by the index on the crank-shaft instead of measuring off by a rule, and a diameter for counterbore may be made by reading the cross-feed screw index. In chasing internally this not only prevents the breaking of tools, but makes an exact diameter. All parts are easily accessible to oil.

The Bed The bed is designed with ample depth and proper width and bracing. The surfaces to which the lead screw bearings are fastened are planed to receive them, are tongued and grooved and are in perfect alignment. The tops of the Vees are rounded to avoid bruising. The racks are of steel in one piece (excepting on long beds), accurately cut. An improvement of substantial merit (patented February 13, 1900) is the bracket cast on the front of the bed. (See page 38.) This bracket is planed on top, so that the inner end of the stud carrying the rack pinion travels upon it. No matter how great the strain upon the rack pinion, and consequent tendency to force itself out of the rack, it is impossible for such an accident to occur, owing to the support afforded by the bracket.

Screw Cutting The screw-cutting feature of our lathe has many points of excellence. All gearing is cut from the solid. The change gears are mounted on a short shaft (the bearings of which are ground), running in substantial bearings in the bed and directly under the headstock. The knob shown in front of the head carries a gear that continually runs either right or left. This gear may be dropped into any one of the change gears instantly, and thus gives four times as many changes as there are change gears, because on the outer end of the change-gear shaft are four gears, into any one of which the gear shown on the lead screw may engage. *Not a single gear is ever removed to obtain the different threads or feeds.* A substantial and simple plate is used to change from right to left-hand screws. *The index plate* (see page 51) has the words "threads," "knob" on the upper line. Under the word "threads" are the number of threads the lathe will cut — for the 18-inch lathe, from 2 to 32; under the word "knob" are the figures 1 to 10; thus, should the operator desire to cut any certain thread, he finds the thread on the index plate, engages his gear opposite to it, places the knob in the hole indicated on the plate, and starts his tool to work. This is so simple that the greenest boy understands it at once.

Feeds The range of feeds is very great. On the 14-inch lathe, from 16 to 512; on the 42-inch, from 3 to 84.

Hole in Spindle This is very large. See dimensions opposite illustrations.

Turrets See pages 32 to 43.

Taper Attachment See pages 46 and 47.

The Follow-Rest The follow-rest is quickly attached to the carriage and straddles it, so that the tool works exactly opposite to the points of support, making it absolutely firm under the heaviest cut. It is provided with two adjustable jaws, any number of sets of which may be used, or if made in V shape, may be used for different diameters in jobbing work.

The adjusting screws are fitted, the upper one to push its jaw down, the lower one to *draw* its jaw up. Both screws are accessible from the top with the tool post wrench.

Countershaft (See page 48.) The countershaft is provided with a cone pulley of larger diameters than the one on the spindle, in order to give ample belt power. This cone pulley is flanged at the small step. The friction pulleys have a large chamber to receive a full pint of oil. These are mounted onto thimbles, upon which the pulleys revolve freely, said thimbles also revolving freely on the shaft, thus doubling the life of these wearing parts, for if one part should stick it will revolve on the other. The fingers that ride on the cone thimble are steel, are very carefully fitted, and are adjustable only at one point. A wrench is provided with each countershaft to make this adjustment. The frictions themselves are taper cones, of nearly as large diameters as the pulley, which, when released, leave the point of contact a full eighth of an inch, absolutely avoiding the troublesome back and forward motion so prevalent in friction pulleys when machine is stopped.

Will furnish tight and loose pulleys in lieu of friction pulleys at same price when preferred.

Detached Parts Every lathe is fitted with follow and steady rests, plain or friction countershaft, large and small face plates, and necessary wrenches.

Chucks (See page 49) Are not included in the price of a lathe. We will furnish and fit at a reasonable additional cost.

Material and Workmanship We employ a high class of labor and material, and aim to obtain the greatest *durability*, as well as accuracy. Plane surfaces requiring fitting are scraped to surface plates, and spindles, important studs and all revolving fits are fitted by grinding. Every lathe is run and carefully tested by special gauges for that purpose in the hands of an expert.

Improvements We are constantly making improvements in design and capacity in our lathes, in order that they may anticipate the increasing demands of machine shop practice.

Please see the following pages for dimensions of the different size lathes.

14-Inch Improved Engine Lathe.

Illustrated on pages 12 and 13.

For description of details of Design, see pages 5 to 10.

Ratio of back-gearing, ... 9 to 1

Cone diameters, ... 8 to 3⅛ inches

Width of step on cone, ... 2⅛ inches

Hole through spindle, ... 1¼ inches

Front bearing of spindle, . . . 2⅜ inches diam. by 3¾ inches long

Back bearing of spindle, . . 1 15-16 inches diam. by 2⅜ inches long

Diameter of tail-spindle, ... 1 7-16 inches

Lathe cuts the following threads per inch: 2, 2¼, 2⅜, 2½, 2¾, 3, 3¼, 3½, 3¾, 4, 4½, 4¾, 5, 5½, 5¾, 6, 6½, 7, 7½, 8, 9, 9½, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 19, 20, 22, 23, 24, 26, 28, 30, 32, 36, 38, 40, 44, 46, 48, 52, 56, 60, 64.

Feeds per inch, ... 16 to 512

Weight of six-foot lathe, ... 1,025 pounds

Speed of countershaft, ... 125

Size of pulleys on countershaft, ... 9 x 3½ inches

Six-foot lathe takes between centers, ... 3 feet 8 inches

Beds made in lengths of, ... 5 to 12 feet

Swings over carriage, ... 9 inches

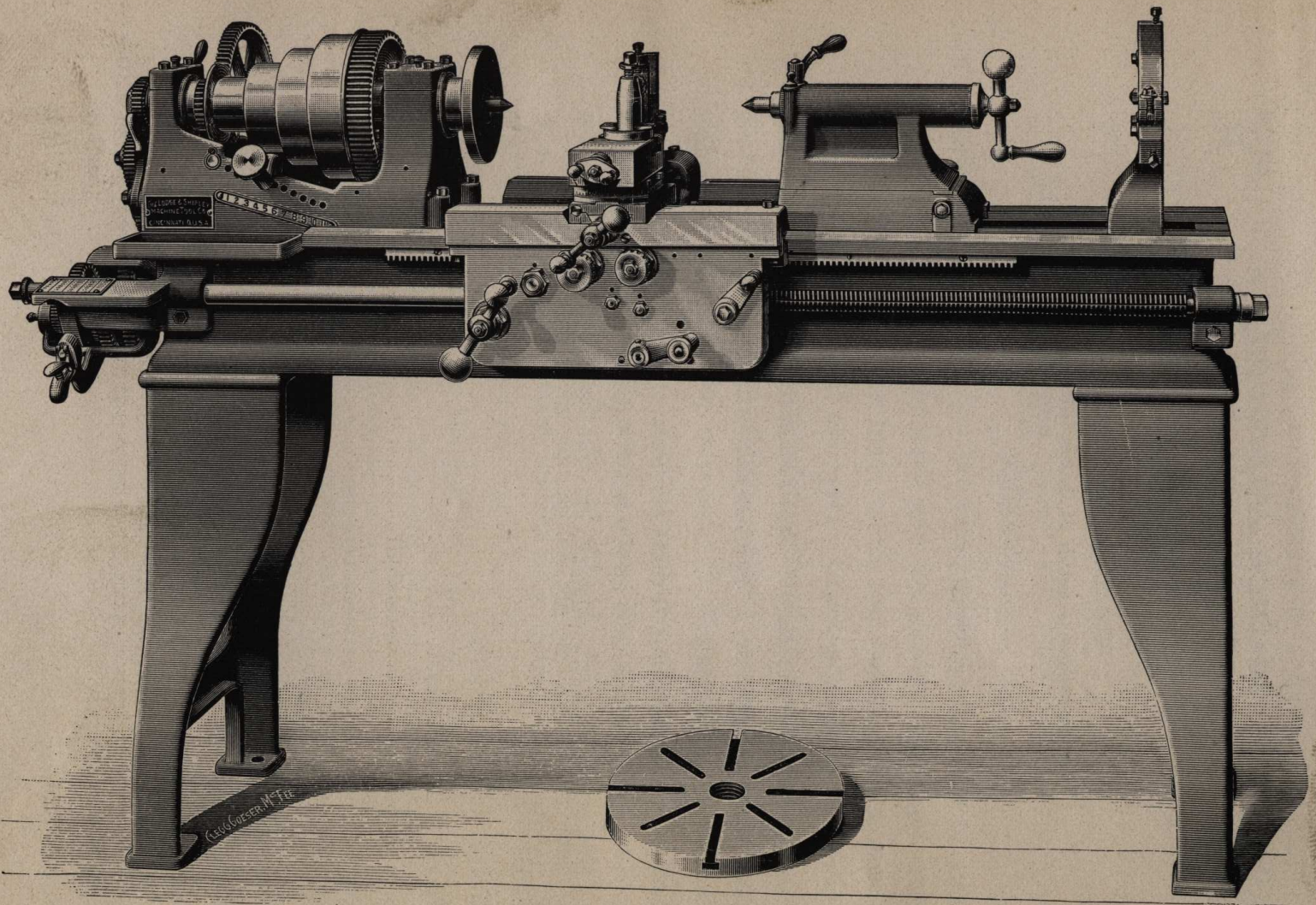
Swings over carriage with short lower slide, c. p. r., . . 9¾ inches

Feeds of turret on bed, per inch, ... 32 to 512

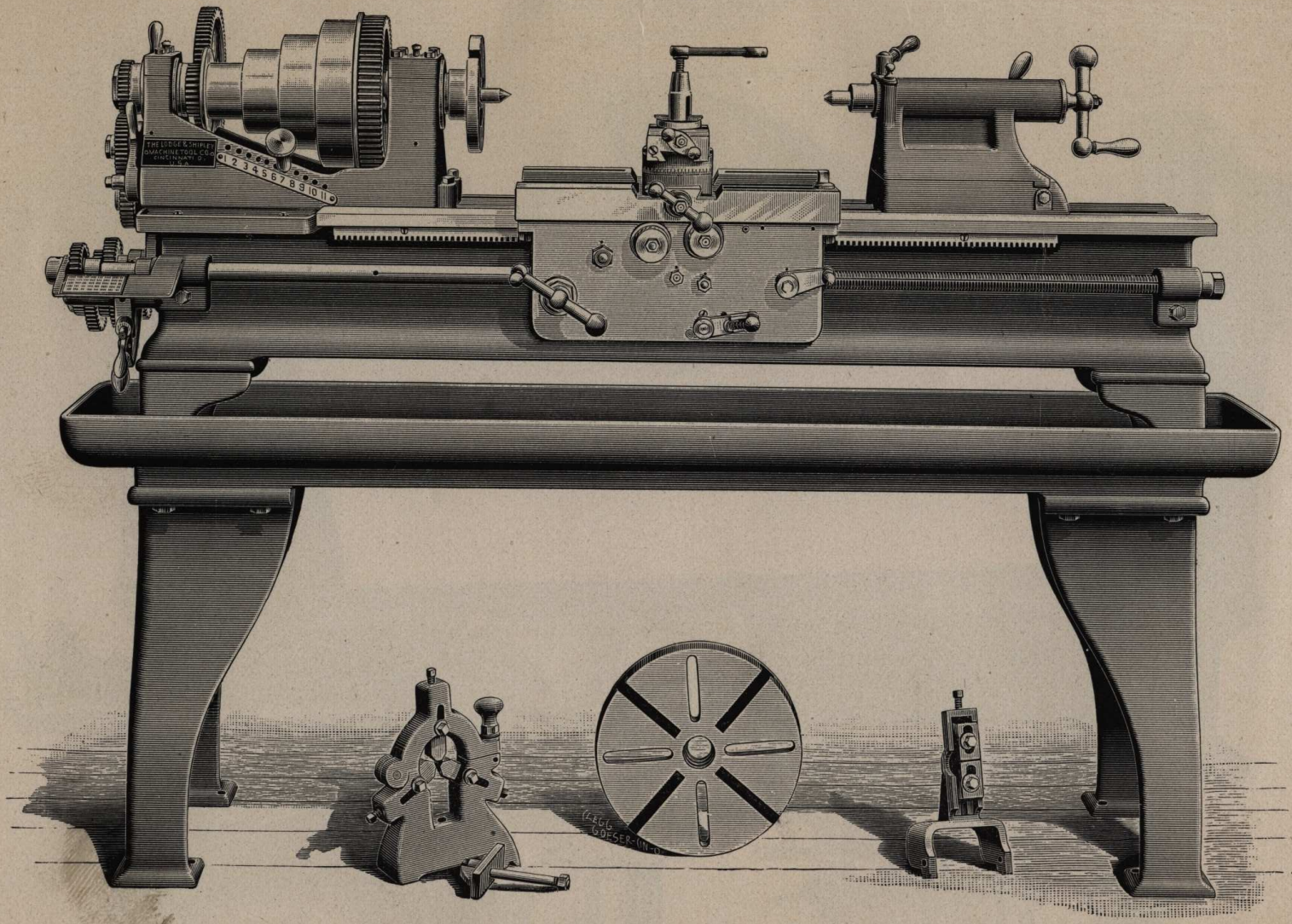
Turret measures in diameter, ... 7½ inches

Steady rest takes in . . . . . 3 inches

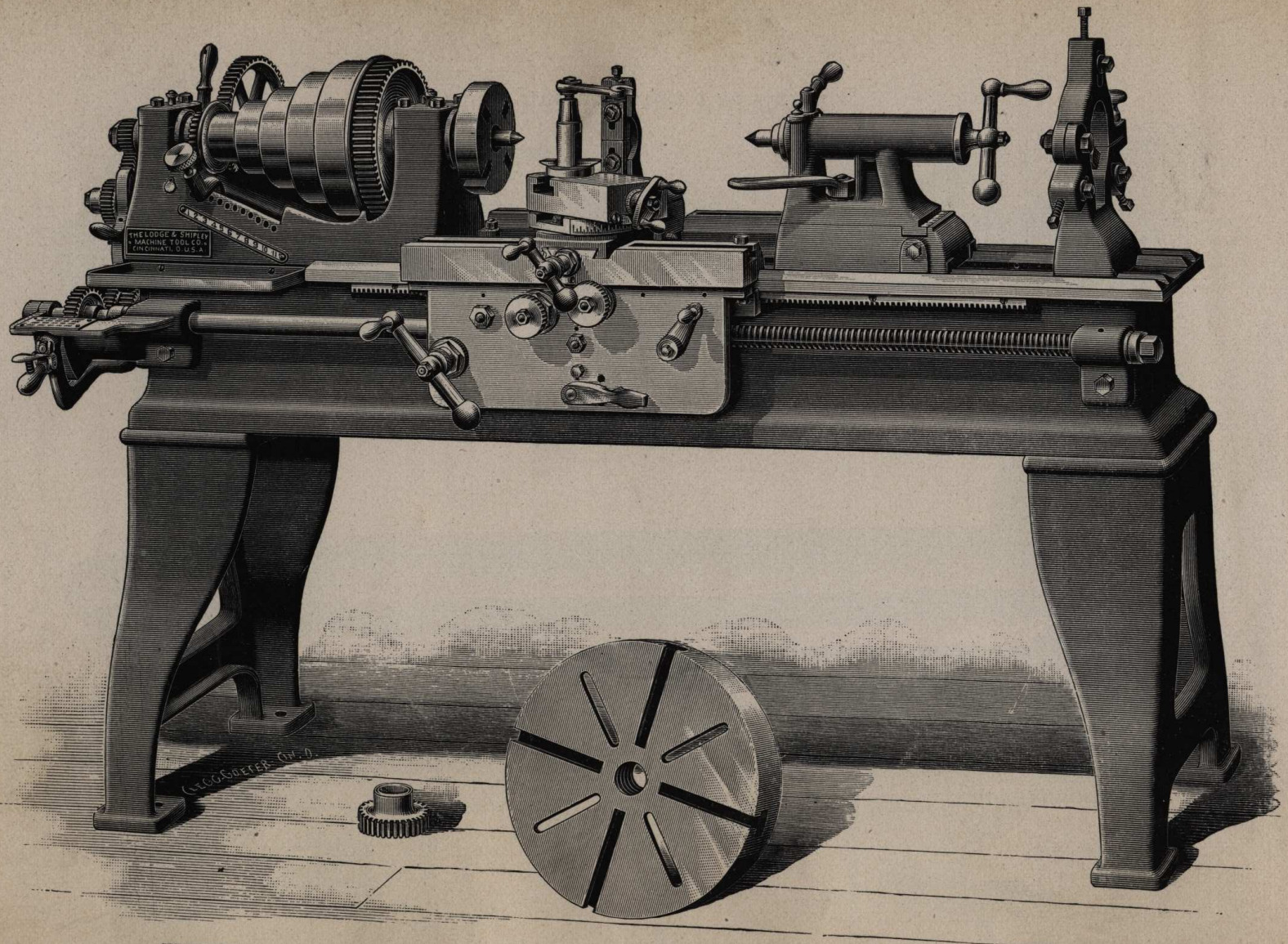
Size of tool, ... ½ x 1 inch



14-Inch Engine Lathe, Compound Rest.



14-Inch Engine Lathe, Pan Extra.



16-Inch Engine Lathe.

16-Inch Improved Engine Lathe.

For description of details of Design, see pages 5 to 10.

Ratio of back-gearing, ... 10 to 1

Cone diameters, ... 10 to 3¼ inches

Width of step on cone, ... 2⅜ inches

Hole through spindle, ... 1 5-16 inches

Front bearing of spindle, . . . 2⅝ inches diam. by 4⅜ inches long

Back bearing of spindle, . . 2 1-16 inches diam. by 3 inches long

Diameter of tail-spindle, ... 1⅞ inches

Lathe cuts the following threads per inch: 2, 2¼, 2⅜, 2½, 2¾, 3, 3¼, 3½, 3¾, 4, 4½, 4¾, 5, 5½, 6, 6½, 7, 7½, 8, 9, 9½, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 19, 20, 22, 23, 24, 26, 28, 30, 32, 36, 38, 40, 44, 46, 48, 52, 56, 60, 64.

Feeds per inch, ... 4 to 128

Weight of 6-foot lathe, ... 1,700 pounds

Speed of countershaft, ... 125

Size of pulleys on countershaft, ... 9 x 3½ inches

Six-foot lathe takes between centers, ... 3 feet 4 inches

Beds made in lengths of, ... 6, 8, 10, 12 feet

Swings over carriage, ... 10¼ inches

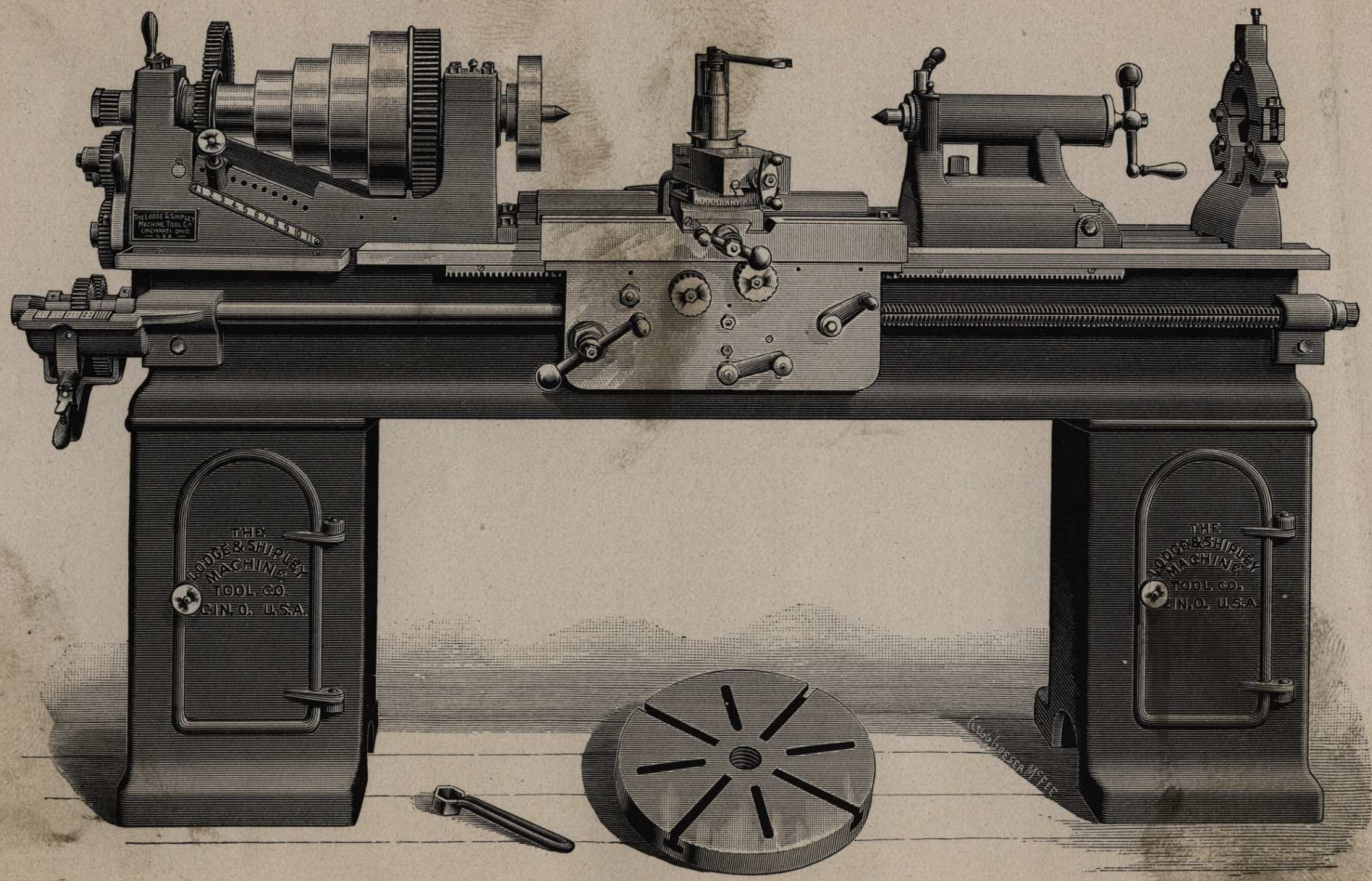
Swings over carriage with short lower slide, c. p. r., . . 11⅛ inches

Feeds of turret on bed, per inch, ... 32 to 512

Turret measures in diameter, ... 9½ inches

Steady rest takes in . . . . . 4⅜ inches

Size of tool, ... ½ x 1⅛ inches



16-Inch Tool-Room Lathe.

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20-Inch Improved Engine Lathe.

For description of details of Design, see pages 5 to 10.

Ratio of back-gearing, ... 12:35 to 1

Cone diameters . . . . . 12 to 4 inches

Width of step on cone, ... 3⅛ inches

Hole through spindle, ... 1¾ inches

Front bearing of spindle, . . . 3¼ inches diam. by 5¼ inches long

Back bearing of spindle, . . . 2½ inches diam. by 3¾ inches long

Diameter of tail-spindle, ... 2¼ inches

Lathe cuts the following threads per inch: 2, 2¼, 2½, 2¾, 2⅞, 3, 3¼, 3½, 3¾, 4, 4½, 4¾, 5, 5½, 5¾, 6, 6½, 7, 7½, 8, 9, 9½, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 19, 20, 22, 23, 24, 26, 28, 30, 32.

Feeds per inch, ... 5 to 80

Weight of 8-foot lathe, ... 2,900 pounds

Speed of countershaft, ... 125

Size of pulleys on countershaft, ... 12 by 4 inches

Eight-foot lathe takes between centers, ... 4 feet 8 inches

Beds made in even lengths from, ... 6 to 26 feet

Swings over carriage, ... 12⅝ inches

Swings over carriage with short lower slide, c. p. r., . . . 14 inches

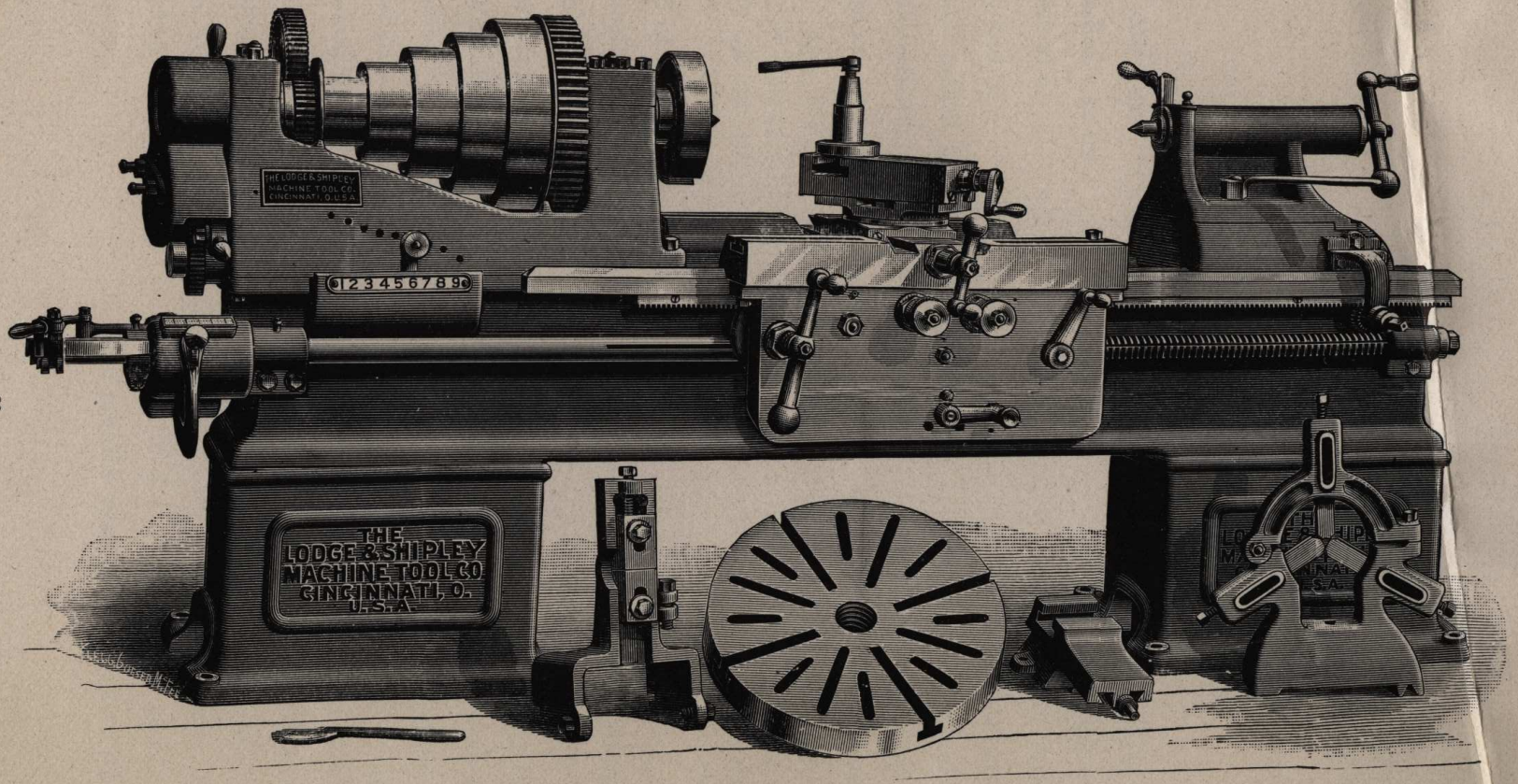
Feeds of turret on bed per inch, ... 24 to 192

Turret measures in diameter, ... 9½ inches

Steady rest takes in . . . . . 6¼ inches

Size of tool . . . . . ⅝ by 1⅛ inches

All 20-inch lathes have cabinet legs.



22-Inch Engine Lathe.

22-Inch Improved Engine Lathe.

For description of details of Design, see pages 5 to 10.

Ratio of back-gearing, ... 12 to 1

Cone diameters, ... 14⅝ to 5⅛ inches

Width of step on cone, ... 3¼ inches

Hole through spindle, ... 2 1/16 inches

Front bearing of spindle, ... 4 inches diam. by 6½ inches long

Back bearing of spindle, ... 3 inches diam. by 5¼ inches long

Diameter of tail-spindle, ... 2 7/16 inches

Lathe cuts the following threads per inch: 1, 1⅛, 1¼, 1⅜, 1½, 1⅝, 1¾, 2, 2¼, 2½, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 16.

Feeds per inch, ... 5 to 80

Weight of 10-foot lathe, ... 4,800 pounds

Speed of countershaft, ... 125

Size of pulleys on countershaft, ... 16 x 4½ inches

Ten-foot lathe takes between centers, ... 5 feet 5½ inches

Beds made in even lengths of, ... 8 feet and above

Swings over carriage, ... 15 inches

Swings over carriage with short lower slide, c. p. r., . . 16½ inches

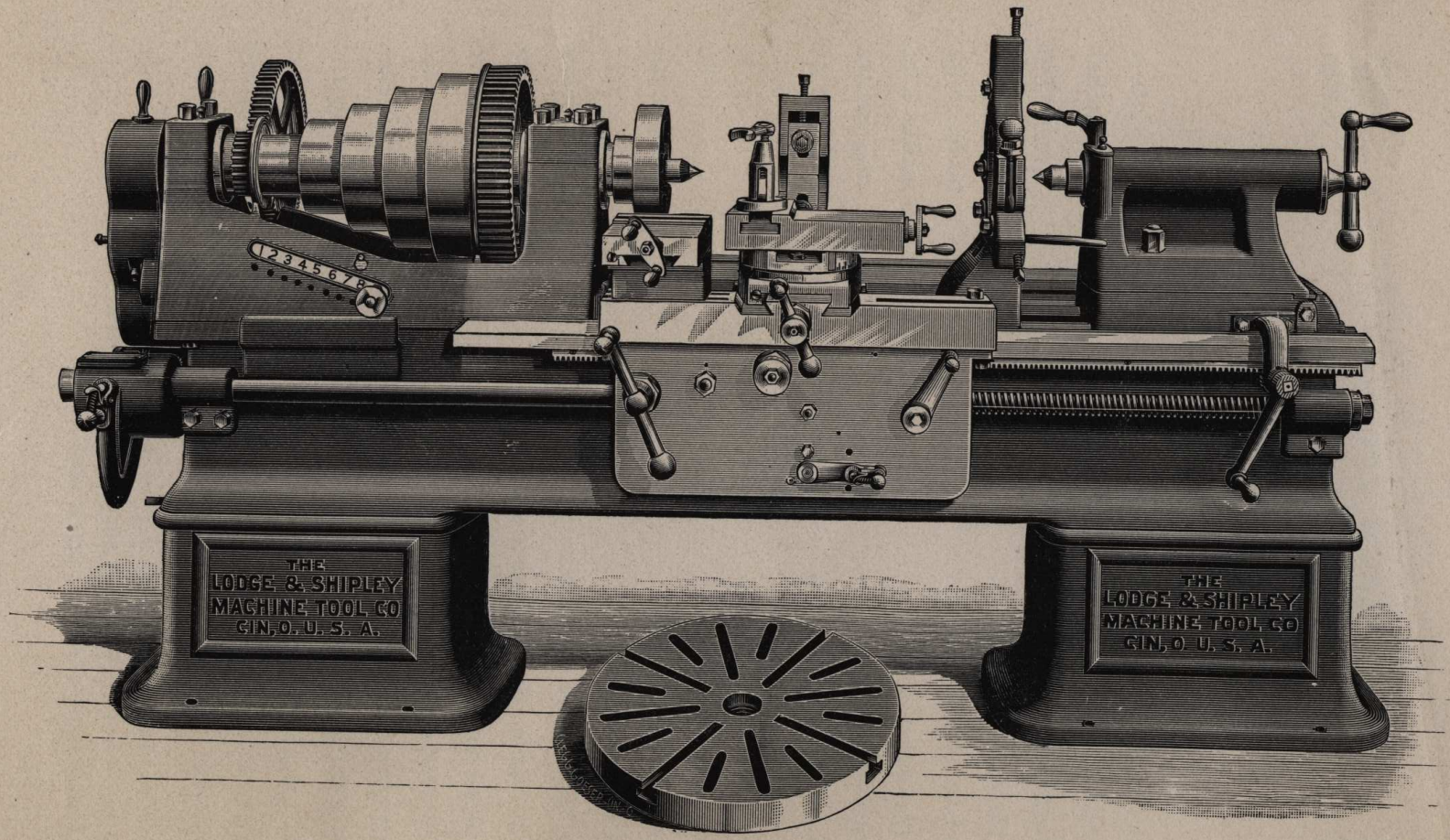
Feeds of turret on bed per inch, ... 24 to 192

Turret measures in diameter, ... 13 inches

Steady rest takes in . . . . . 6¾ inches

Size of tool, ... ¾ x 1¼ inches

All 22-inch lathes and larger are furnished with cabinet legs, compound rests, full swing rests, and *two* pitch lead screws, except the 42-inch which has *one* pitch lead screw.



24-Inch Engine Lathe.

24-Inch Improved Engine Lathe.

For description of details of Design, see pages 5 to 10.

Ratio of back-gearing, ... 13½ to 1

Cone diameters, ... 15½ to 5 inches

Width of step on cone, ... 3 11/16 inches

Hole through spindle, ... 2⅛ inches

Front bearing of spindle, . . 4⅜ inches diam. by 7⅜ inches long

Back bearing of spindle, . . 3 7/16 inches diam. by 5¾ inches long

Diameter of tail-spindle, ... 2⅞ inches

Lathe cuts the following threads per inch: 1, 1⅛, 1¼, 1⅜, 1½, 1⅝, 1¾, 2, 2¼, 2½, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 16.

Feeds per inch, ... 5 to 80

Weight of 10-foot lathe, ... 5,600 pounds

Speed of countershaft, ... 125

Size of pulleys on countershaft, ... 16 by 4½ inches

10-foot lathe takes between centers, ... 5 feet 4 inches

Beds made in even lengths of, ... 8 feet and above

Swings over carriage, ... 15 inches

Swings over carriage with short lower slide, c. p. r., . . 16¼ inches

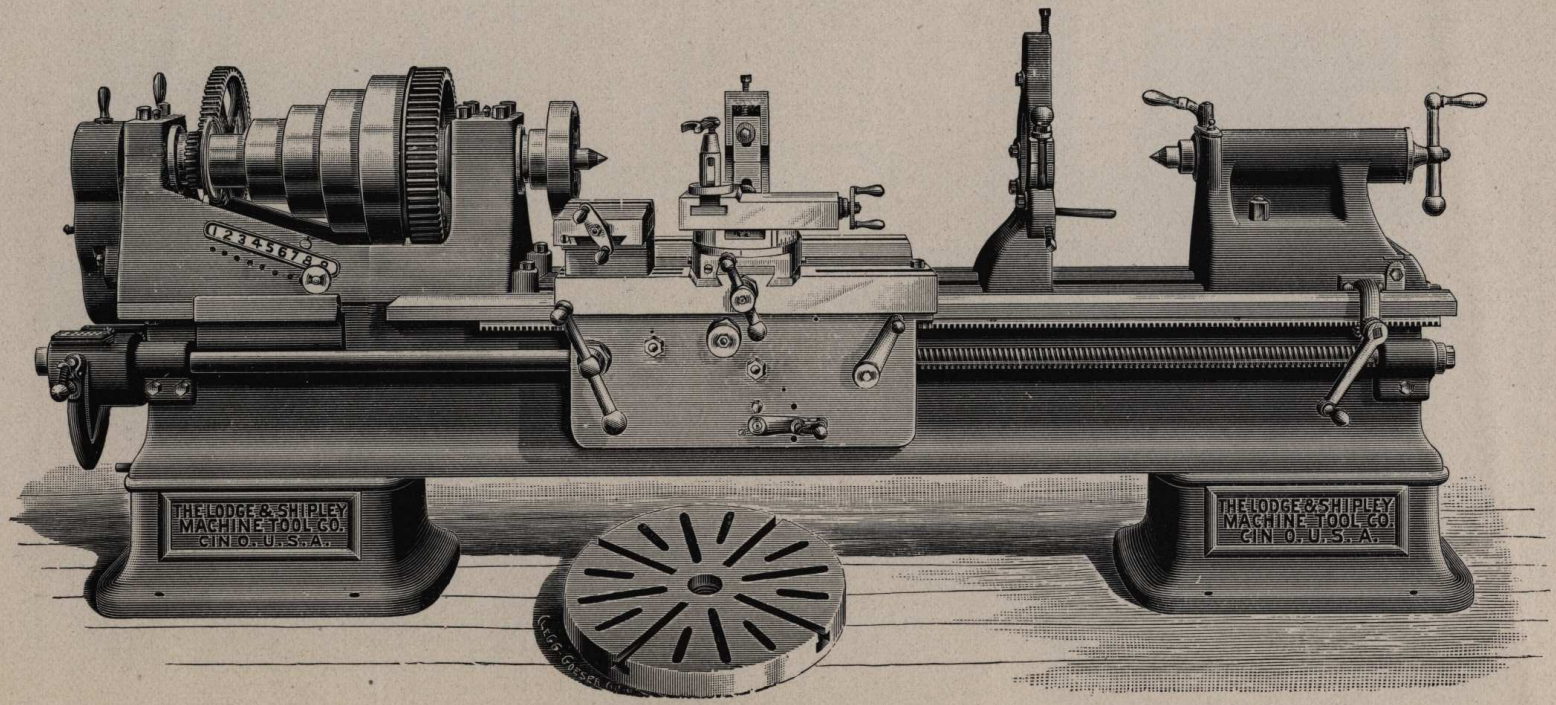
Feeds of turret on bed per inch, ... 24 to 192

Turret measures in diameter, ... 13 inches

Steady rest takes in . . . . . 8 inches

Size of tool, ... ¾ by 1¼ inches

This lathe has been especially designed for adaptation to oil-well work. *The lead screw has two threads per inch.* The taper attachment is massive and arranged for changing from straight to taper, or vice versa, by releasing or tightening one screw. See pages 46 and 47 for illustration and description of taper attachment.



27-Inch Engine Lathe.

27-Inch Improved Engine Lathe.

For description of details of Design, see pages 5 to 10.

Ratio of back-gearing, ... 13¼ to 1

Cone diameters, ... 17 to 6 inches

Width of step on cone, ... 3¾ inches

Hole through spindle, ... 2⅜ inches

Front bearing of spindle, . . . 4⅞ inches diam. by 7½ inches long

Back bearing of spindle, . . . 3⅞ inches diam. by 5⅝ inches long

Diameter of tail-spindle, ... 2⅞ inches

Lathe cuts the following threads per inch: 1, 1⅛, 1¼, 1⅜, 1½, 1⅝, 1¾, 2, 2¼, 2½, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 16.

Feeds per inch, ... 5 to 80

Weight of 12-foot lathe, about, ... 7,000 pounds

Speed of countershaft, ... 125

Size of pulleys on countershaft, ... 16 by 4½ inches

12-foot lathe takes between centers, ... 7 feet 2 inches

Beds made in even lengths, ... 10 feet and above

Swings over carriage, ... 18 inches

Swings over carriage with short lower slide, c. p. r., . . 19½ inches

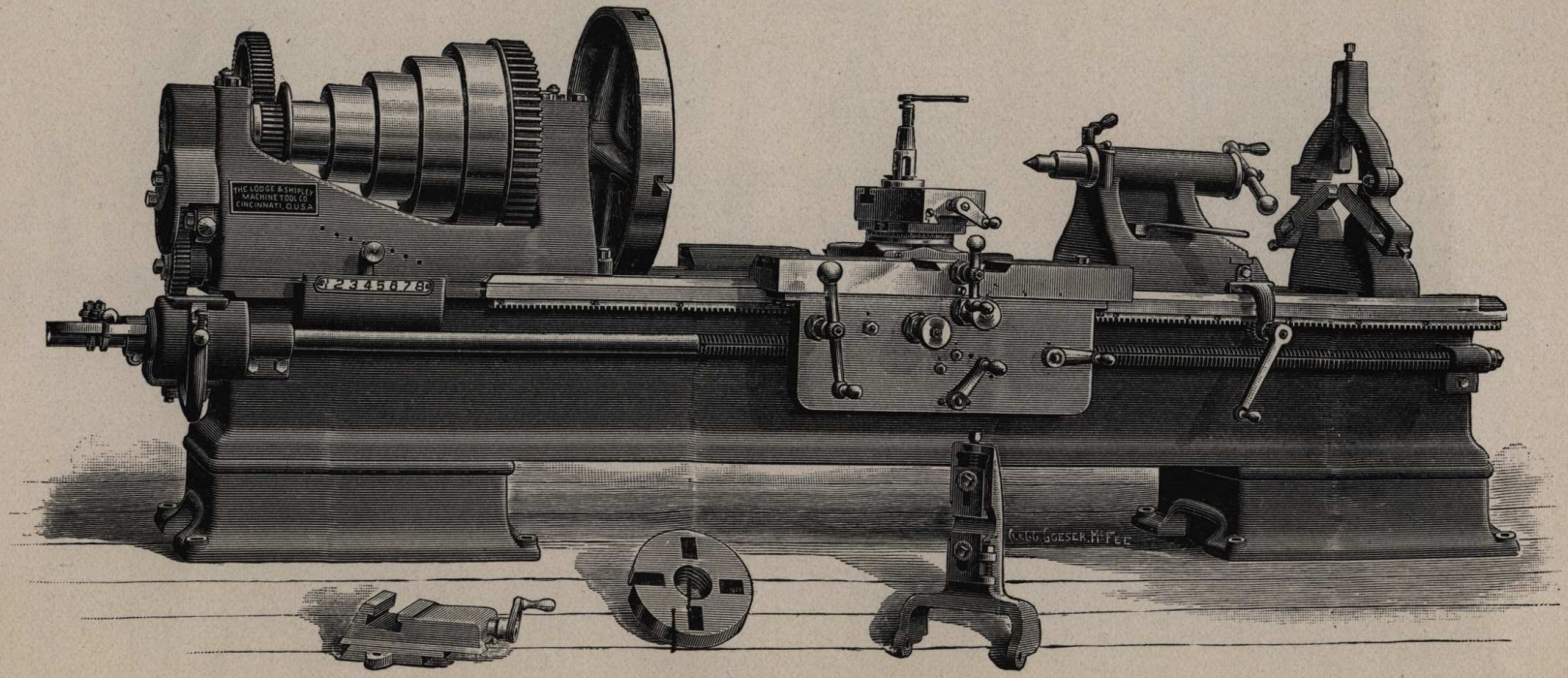
Feeds of turret on bed per inch, ... 24 to 192

Turret measures in diameter, ... 15 inches

Steady Rest takes in . . . . . 9 inches

Size of tool . . . . . ¾ by 1½ inches

Lead screw has two threads per inch.



30-Inch Engine Lathe.

30-Inch Improved Engine Lathe.

ALSO BUILT TO SWING 42 INCHES.

For description of details of Design, see pages 5 to 10.

Ratio of back-gearing, ... 15¼ to 1

Cone diameters, ... 19½ to 6½ inches

Width of step on cone, ... 4¼ inches

Hole through spindle, ... 2 $\frac{9}{16}$ inches

Front bearing of spindle, . . 5 $\frac{3}{16}$ inches diam. by 8⅛ inches long

Back bearing of spindle, . . 3 $\frac{7}{16}$ inches diam. by 5⅝ inches long

Diameter of tail-spindle, ... 3 $\frac{3}{16}$ inches

Lathe cuts the following threads per inch: 1, 1⅛, 1¼, 1⅜, 1 $\frac{7}{16}$, 1½, 1⅝, 1¾, 2, 2¼, 2½, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14.

Feeds per inch, ... 5 to 70

Weight of 12-foot lathe, about, ... 8,600 pounds

Speed of countershaft, ... 125

Size of pulleys on countershaft, ... 18 by 5½ inches

12-foot lathe takes between centers, ... 6 feet 5 inches

Beds made in even lengths, ... 12 feet and above

Swings over carriage, ... 20 inches

Swings over carriage, short lower slide, c. p. r., ... 21¾ inches

Feeds of turret on bed per inch, ... 24 to 168

Turret measures in diameter, ... 15 inches

Steady rest takes in . . . . . 10½ inches

Size of tool, ... ⅞ by 1½ inches

Lead screw has two threads per inch.

OUR NEW

36-Inch Standard Engine Lathe

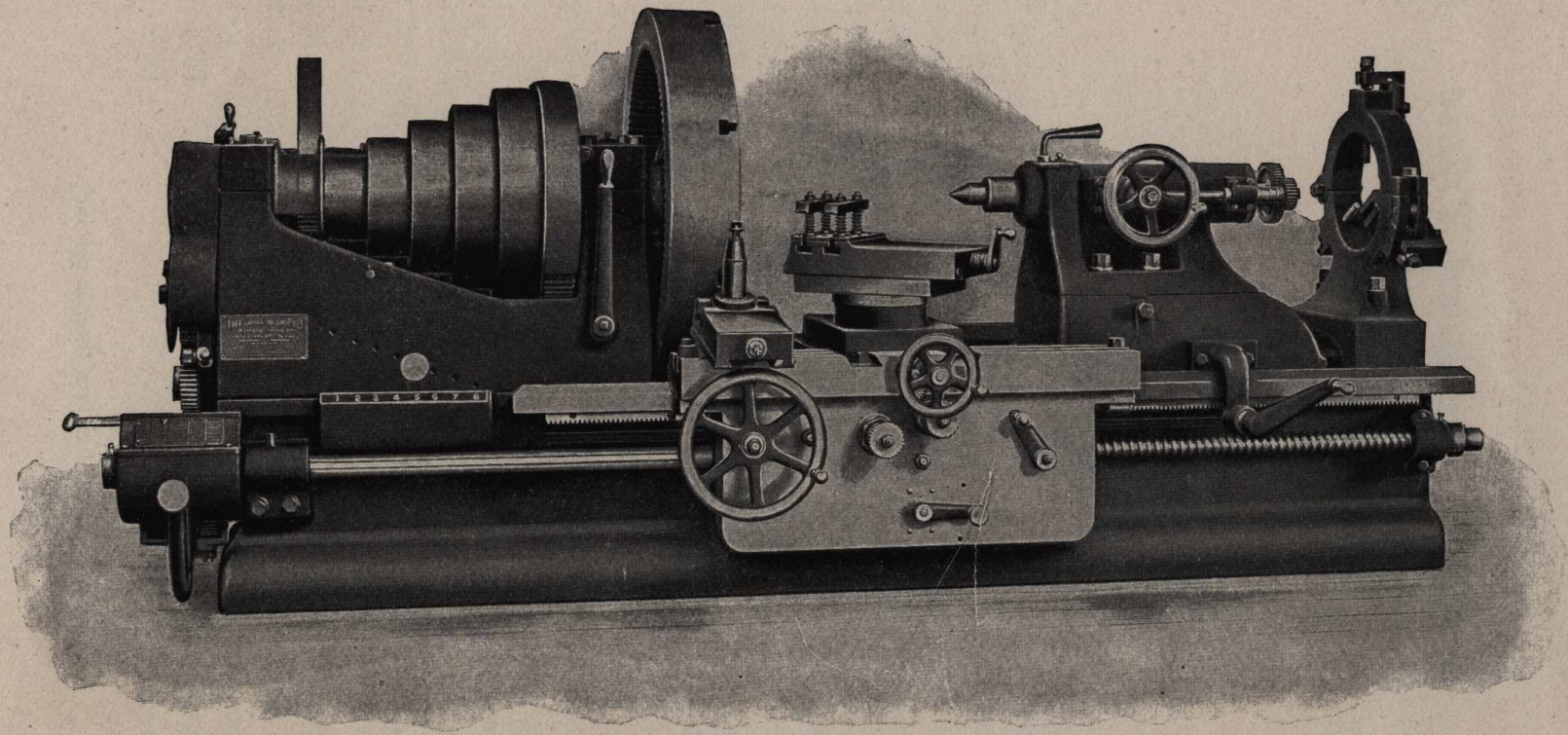
Will be ready for delivery in October of 1900

36-Inch Improved Triple Geared Standard Engine Lathe.

For description of details of Design, see pages 5 to 10.

Ratio of triple-gearing, ... 57 to 1
Ratio of back-gearing, ... 15¼ to 1
Cone diameters, ... 19½ to 6½ inches
Width of step on cone, ... 4⅞ inches
Hole through spindle, ... 2 $\frac{13}{16}$ inches
Front bearing of spindle, . . . 6 inches diam. by 10 inches long
Back bearing of spindle, . . . 3¾ inches diam. by 5⅝ inches long
Diameter of tail-spindle, ... 3½ inches
Lathe cuts the following threads per inch: 1, 1⅛, 1¼, 1⅜, 1 $\frac{7}{16}$, 1½, 1⅝, 1¾, 2, 2¼, 2½, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14.
Feeds per inch, ... 5 to 70
Weight of 12-foot lathe, about, ... 10,600 pounds
Speed of countershaft, ... 125
Size of pulleys on countershaft, ... 18 by 5½ inches
12-foot lathe takes between centers, ... 5 feet 2 inches
Beds made in even lengths, ... 12 feet and above
Swings over carriage, ... 23 inches
Swings over carriage, short lower slide, c. p. r., ... 24¾ inches
Feeds of turret on bed per inch, ... 24 to 168
Turret measures in diameter, ... 20 inches
Steady Rest takes in . . . . . 15½ inches
Size of tool, ... 1 by 2 inches

Lead screw has two threads per inch.



42-Inch Improved Triple-Geared Engine Lathe.

42-Inch Improved Triple Geared Engine Lathe.

ALSO BUILT TO SWING 48 INCHES.

For description of details of Design, see pages 5 to 10.

Ratio of triple-gearing, ... 65.45
Ratio of back-gearing for triple-geared lathe, ... 8.34
Spindle cone diameters, ... 9½ inches to 24 inches
Countershaft cone diameters, ... 27⅝ inches to 13⅛ inches
Width of step on cone, ... 4¾ inches
Hole through spindle, ... 3⅜ inches
Steady rest takes in, ... 14 inches
Size of tool, ... 1 x 2 inches
Front bearing of spindle, . . 6¼ inches diam. by 10½ inches long
Back bearing of spindle, . . . 5¼ inches diam. by 8¾ inches long
Diameter of tail-spindle, ... 4¼ inches
Lathe cuts the following threads per inch:

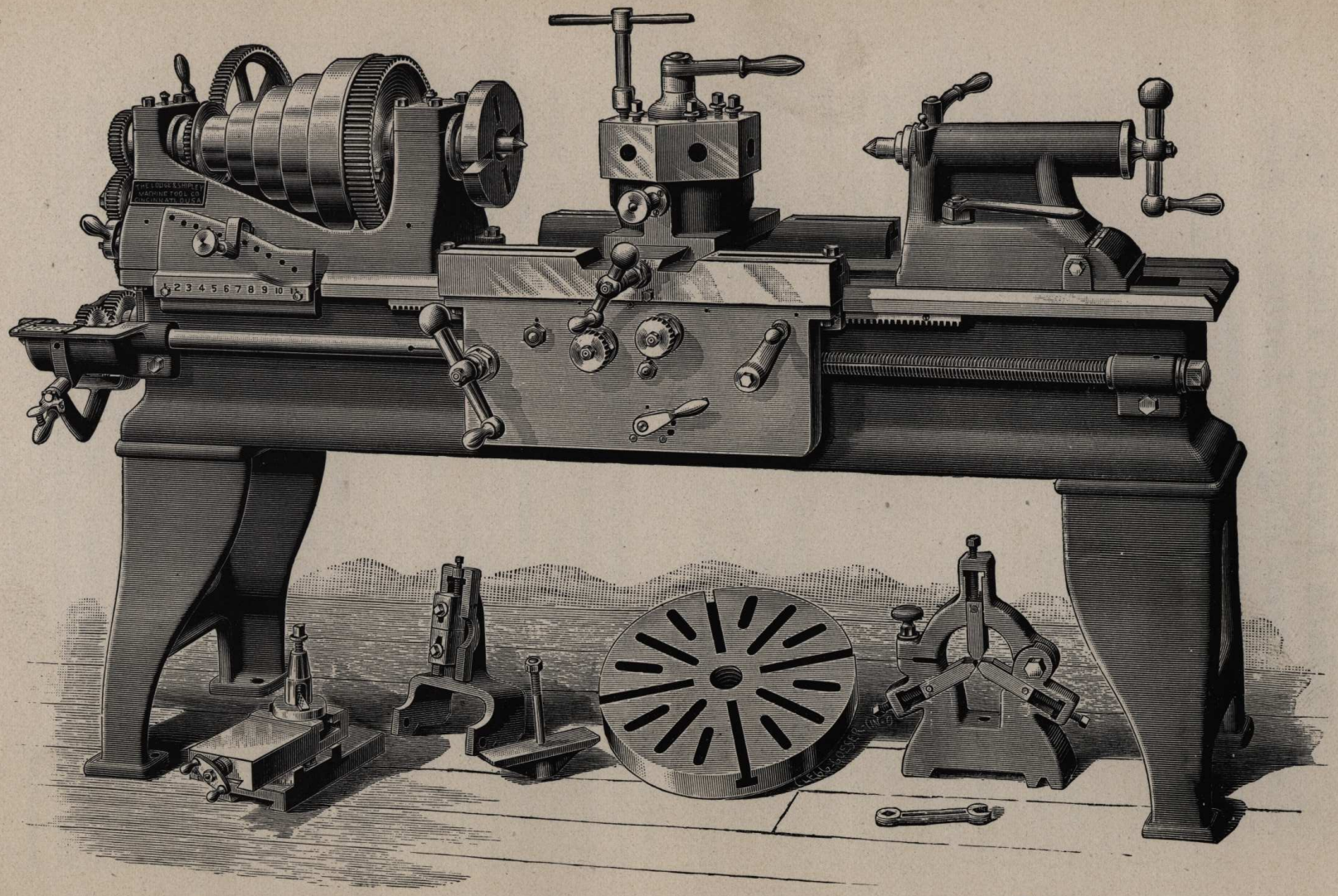
1, 1⅛, 1¼, 1⅜, 1$\frac{7}{16}$, 1½, 1⅝, 1¾, 2, 2¼, 2½, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 5¾, 6, 6½, 7, 8, 9, 10, 11, 11½, 12, 13, 14.

Lathe cuts the following threads per two inches:

1, 1⅛, 1¼, 1⅜, 1$\frac{7}{16}$, 1½, 1⅝, 1¾.

Feeds per inch, ... 3 to 84
Weight of 42-inch by 12-foot lathe, about, . . . 17,500 pounds
Speed of countershaft for triple geared, ... 110
Size of pulleys on countershaft, ... 24 by 6½ inches
12-foot lathe takes between centers, ... 4 feet 2 inches
Beds made in even lengths, ... 12 feet and above
Swings over carriage (42 inch), ... 25 inches
Swings over carriage, short lower slide, c. p. r. (42 inch), 26 inches
Feeds of turret on bed per inch, ... 9 to 250
Turret measures in diameter, ... 24 inches
Taper or angular travel, at one setting, ... 15 inches

The lead screw is cut one thread per inch, which enables the half nuts to be withdrawn and dropped into place on all the integral threads the lathe cuts. We have incorporated improved mechanism for engaging and disengaging the lead screw with the driving gear so as to double the speed of the lead screw *five* times. Power feed of 15 inches is applied to the swivel slide of the compound rest, so that taper angular boring may be done with this rest. Triple-gearing easily engaged and disengaged from the front. These lathes are extremely massive and capable of extraordinarily heavy duty.

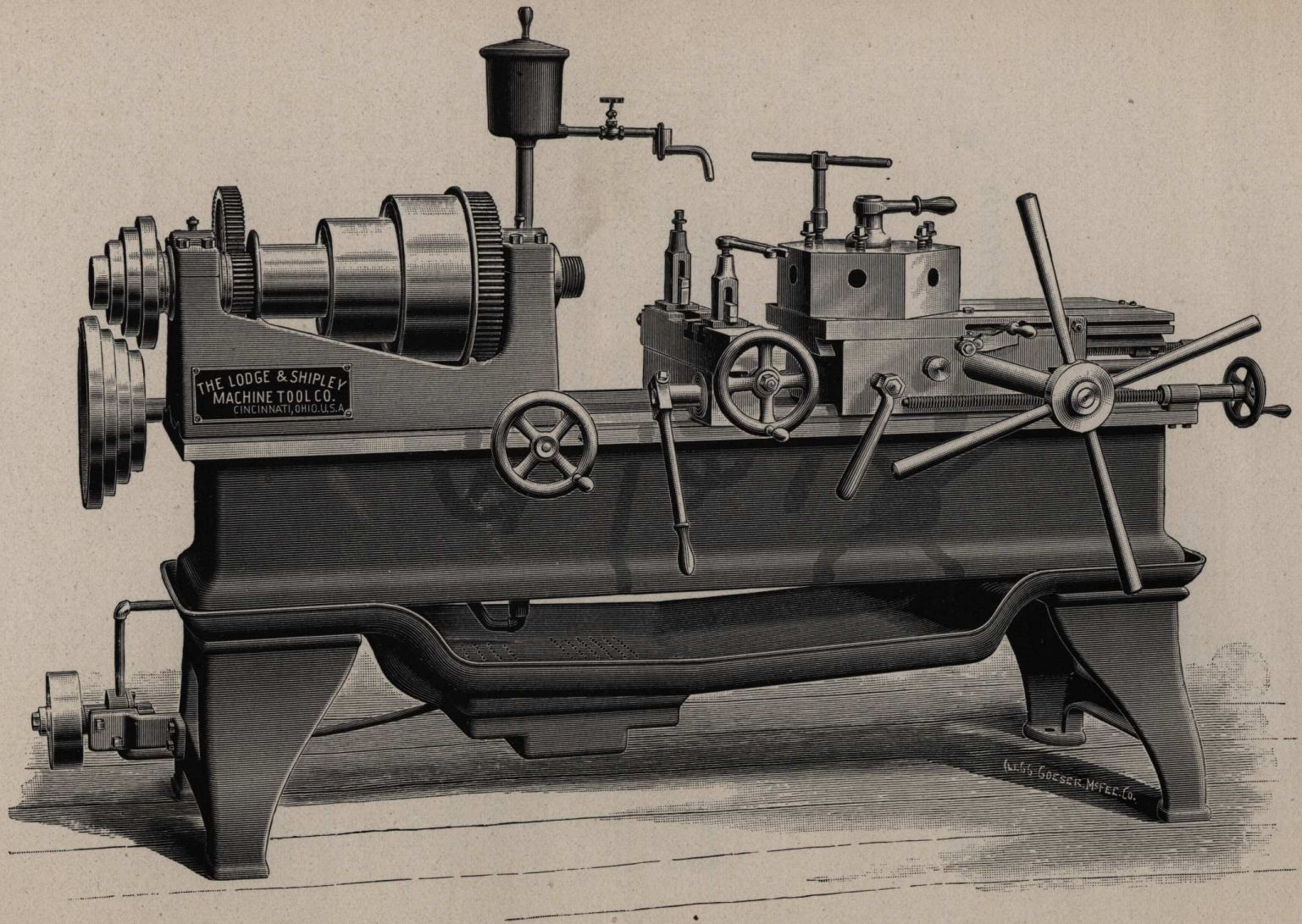


18-inch Engine Lathe, Turret Interchangeable with Compound Rest.

Turret on Carriage of 18-Inch Improved Engine Lathe.

A similar Turret may be had with any of our Lathes.

THIS Lathe is similar to that illustrated and described on pages 18 and 19, but shows an hexagonal turret mounted on the carriage, and which is interchangeable with the compound rest, shown on the floor. The advantages of this turret are that it has power, length and cross feeds, and is screw cutting; that it has *all* the changes of feed that the lathe has. It may be used in connection with the half-nuts, and therefore chase a thread. It permits running in such taps as conform with the threads cut by the lathe at their proper pitch and bringing them out without danger of stripping any of the threads. It may be "set over" either way from the center. It is provided with center stops, and it is quickly put on or taken off, and is much less expensive than the turret on bed.



22-inch Turret Chucking Lathe, Pan and Pump Extra.

22-Inch Turret Chucking Lathe.

THE advantages of this tool are known to all live manufacturers. We have incorporated in its design all of the valuable features of those already on the market, and, being fully aware of the importance of time, have added power, weight, and stiffness sufficient to make it only a question of what the tools will stand. Four-inch pipe taps are being constantly used on these tools, making a nice, clean thread at one cut. The lathe swings 22 inches, has seven-foot bed, and is back-geared. It is driven by a three-step cone for a 5¼-inch belt; the spindle is bored 2½ inches clear through; the front bearing is 4 by 5½ inches; the back bearing is 3½ by 4 inches; the bearings are the best phosphor-bronze, and are protected by dust-proof oil cups. All turrets are hexagonal, 13 inches in diameter across faces, and are provided with *tool-steel division plates, hardened, with hardened locking key;* the turrets revolve automatically, and a lever is provided to withdraw the locking key by hand, so that the turret may be revolved at any point of its stroke; this avoids having to move the slide back to a given point, and permits of using one or more tools and moving them backward and forward, as the nature of the work requires.

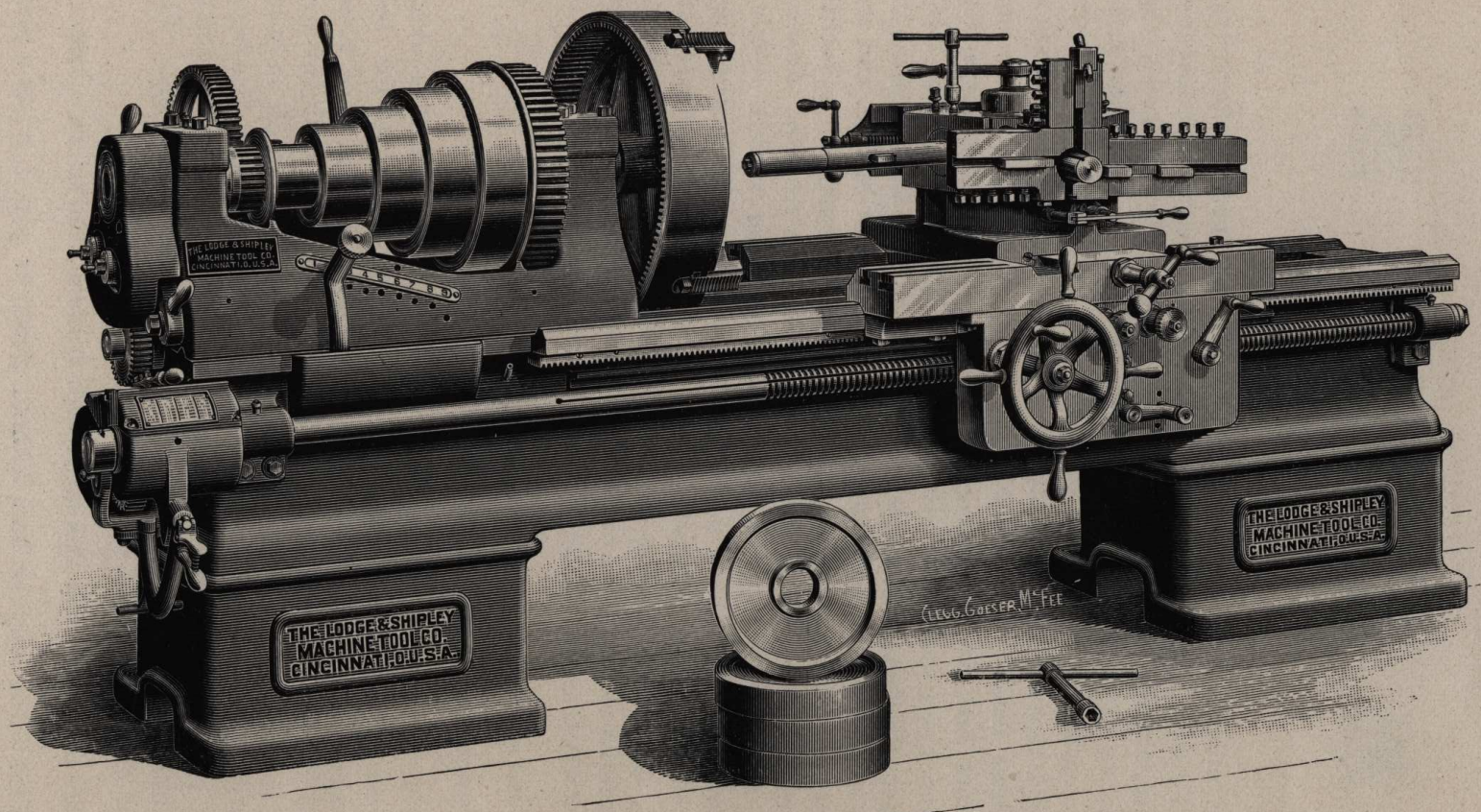
Cone diameters from 13⅛ to 5⅝ inches.

Power feed of 4 feet, at one setting.

The turret base has a screw movement of 20 inches along the bed. The lathe is provided with four changes for belt feed, which is particularly powerful and substantial. A pilot wheel is used for hand movement. The double cut-off rest, with two tool posts, is so constructed that the back rest may be taken off in order to use the full swing of the lathe; this rest has screw and steel bevel gears, so that it may be moved longitudinally 18 inches from nose of spindle. The lathe also has a guide rest for boring, etc. The weight of the lathe is 3,500 pounds.

We do *not* furnish this lathe with friction head or wire feed.

This lathe may be had without pump or pan, *i. e.*, as a plain chucking lathe.

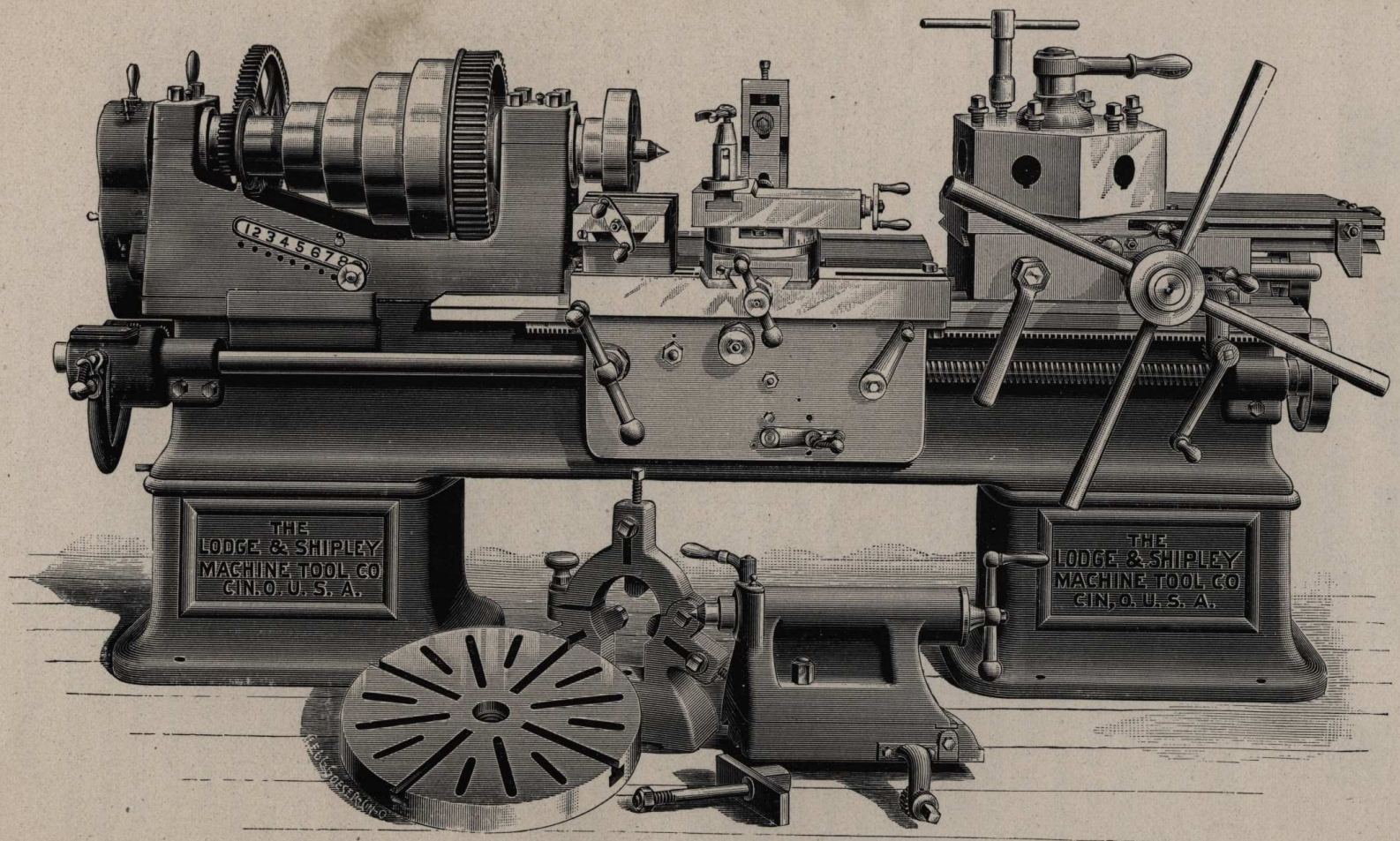


24-inch "Oregon" Turret Lathe.

24-inch "Oregon" Turret Lathe.

RECOGNIZING the necessity for a heavy, massive, powerful machine, intended to machine heavy castings for their diameters, faces, bores, etc., at a very rapid rate, we have placed the machine which we illustrate on the opposite page before our customers to cover the ground more thoroughly in this line than has heretofore been done, even by the special machines which sell at so high a price. This machine is both powerfully back-geared and triple-geared; countershaft has four speeds. Any number of diameters, internally and externally, may be cut at one time, and any depth for which suitable tools can be provided. Each machine is furnished with an extra heavy universal chuck, geared so as to give five to ten times the usual gripping power. After the roughing operation it becomes necessary to so chuck the piece on the finished part as to run absolutely true sideways and diametrically; for this purpose an extra set of soft jaws are furnished, so that from time to time they may be trued up at the point where the finished piece is gripped. Where threading operations are of odd sizes and the user is not fitted with taps, the chasing apparatus may be thrown in and the work chased to size. The stem of the turret is sufficiently large that a hole may be bored through the turret from one side to the other, if desirable. The division plate is of large diameter and made of tool steel, hardened and drawn to temper, and the locking key is also tool steel, fitting into open notches straight on one side and bevel on the other, with suitable allowance for taking up possible wear. The bed is fitted with our patent re-enforcement slide, which is made to receive the inner end of rack pinion stud, holding this pinion in absolute contact with the rack and preventing any deflection under the heaviest pressure when being fed forward. Each lathe, in addition to being furnished with a chuck, is furnished with one knee-tool, as shown in the cut, carrying one turning-tool for diameters, also one boring bar, as shown, 2 inches in diameter and furnished with one blank cutter to bore up to 4½ inches, left soft so that customer may size to suit; the purchaser to furnish such additional tools as may be necessary for his work. The feeding mechanism is the same as employed in our regular lathe. The machine is made in various sizes.

For full description, see special circular.



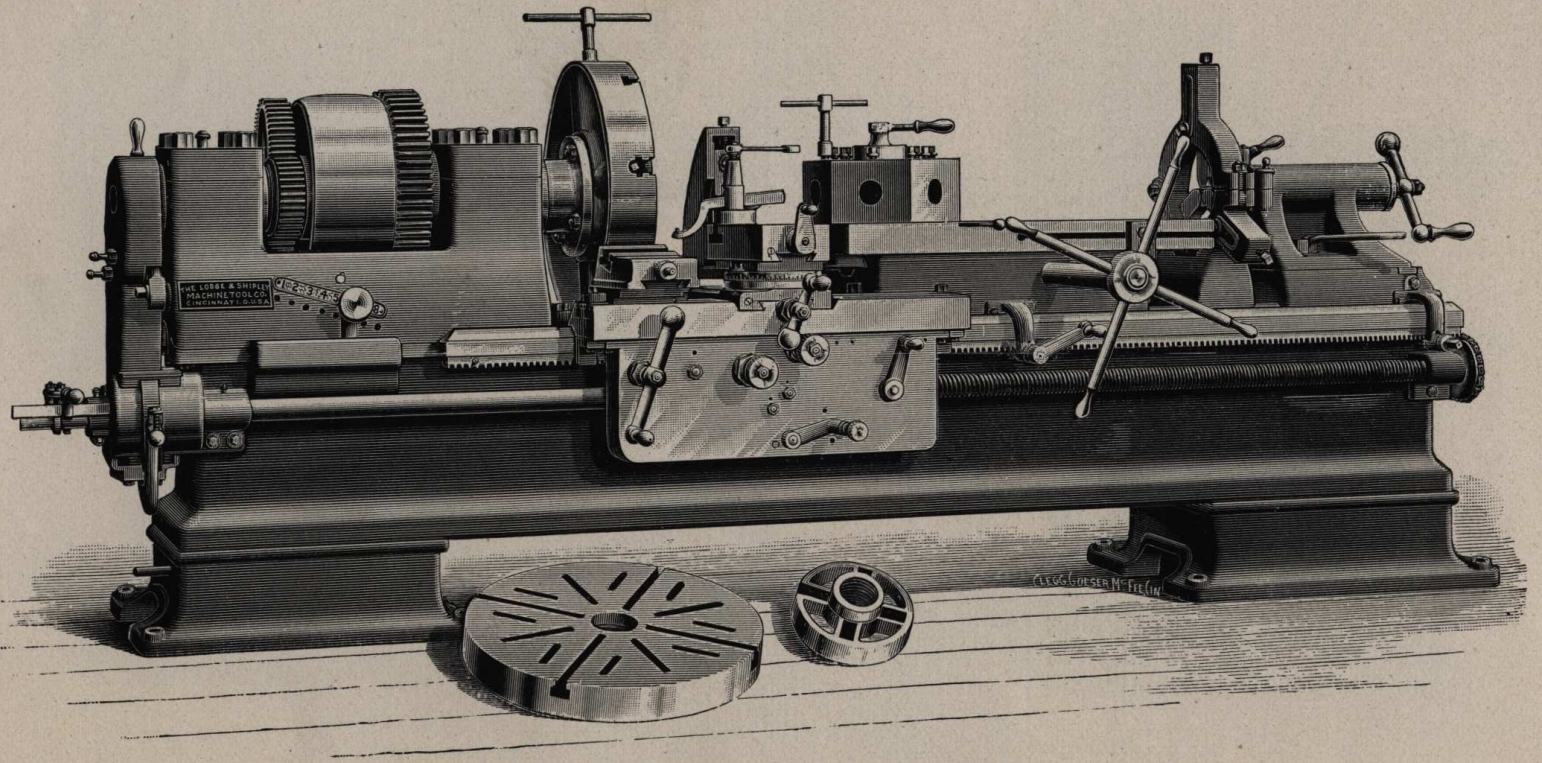
24-inch Engine Lathe, Turret on Bed.

24-inch Improved Engine Lathe with Turret on the Bed.

A similar Turret may be had with any of our Lathes.

THIS is our 24-inch improved engine lathe, with a massive turret on the bed. This turret has power-feed taken from the lead-screw, and consequently has as many changes of feeds as the carriage has.

The turret is of massive proportions, and has under it a tool-steel index and locking key, both of which are hardened in order to secure the greatest accuracy and length of life. Turret has a power feed of 4 feet at one setting and a range of 24 to 192 to one inch.



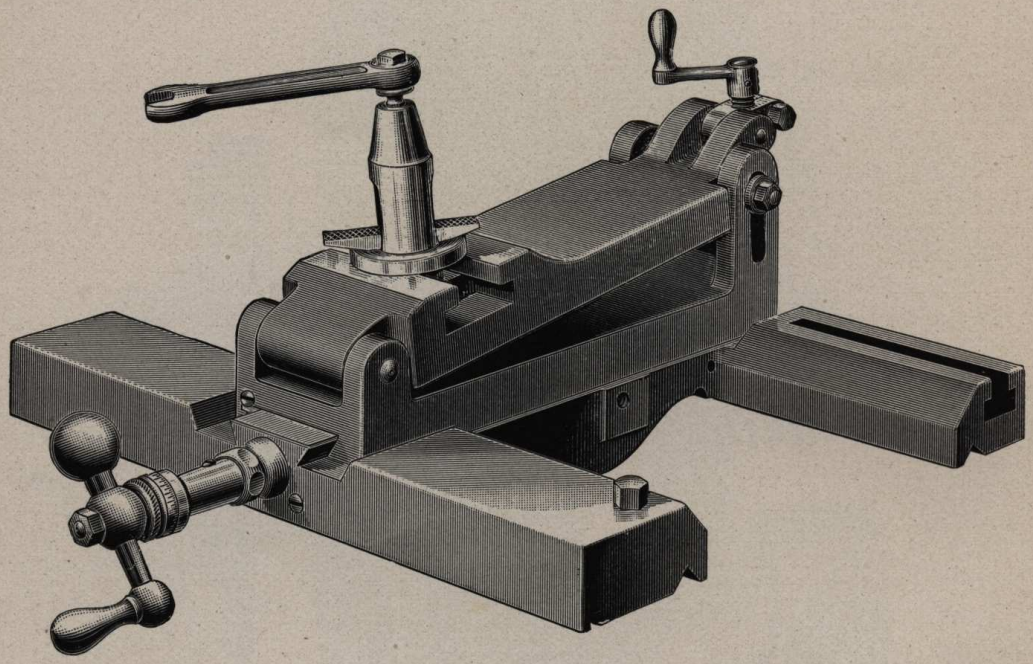
30-inch Engine Lathe, Turret on Bed

Arranged to be Driven by a Variable-Speed Countershaft.

30-Inch Improved Engine Lathe with Turret on the Bed.

Variable-Speed Countershaft.

THE cut on the opposite page illustrates our 30-inch engine lathe with turret on bed, with a single-speed pulley in place of the five-step cone pulley. This is intended to be driven from a variable-speed conntershaft, which is fully illustrated and described on page 45. This lathe is also furnished with a five-step cone, otherwise as illustrated on opposite page.



Raise-and-Fall Rest.

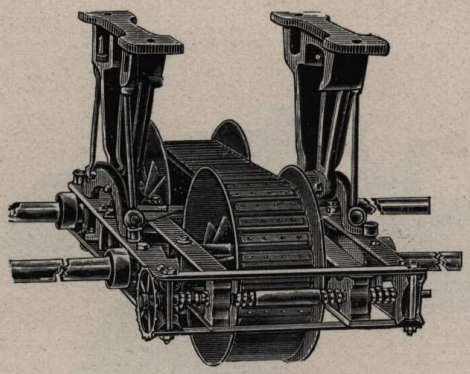
Patented August 1, 1899.

Patented February 13, 1900.

THE advantages of this rest are apparent in the illustration above.

The rest is interchangeable with either a plain or compound rest, is much more substantial than the standard type raise-and-fall rest, because it rests solidly on the bridge instead of having the spring incident to the standard type hinged carriage, and also because it may be locked solidly in position when adjusted for the cut.

The swing over carriage is as great with this design as with the standard type. It may be used with Taper Attachment, which we have not been able to do heretofore.



Variable-Speed Countershaft.

Fully Protected by
Patents in the United States and Abroad.

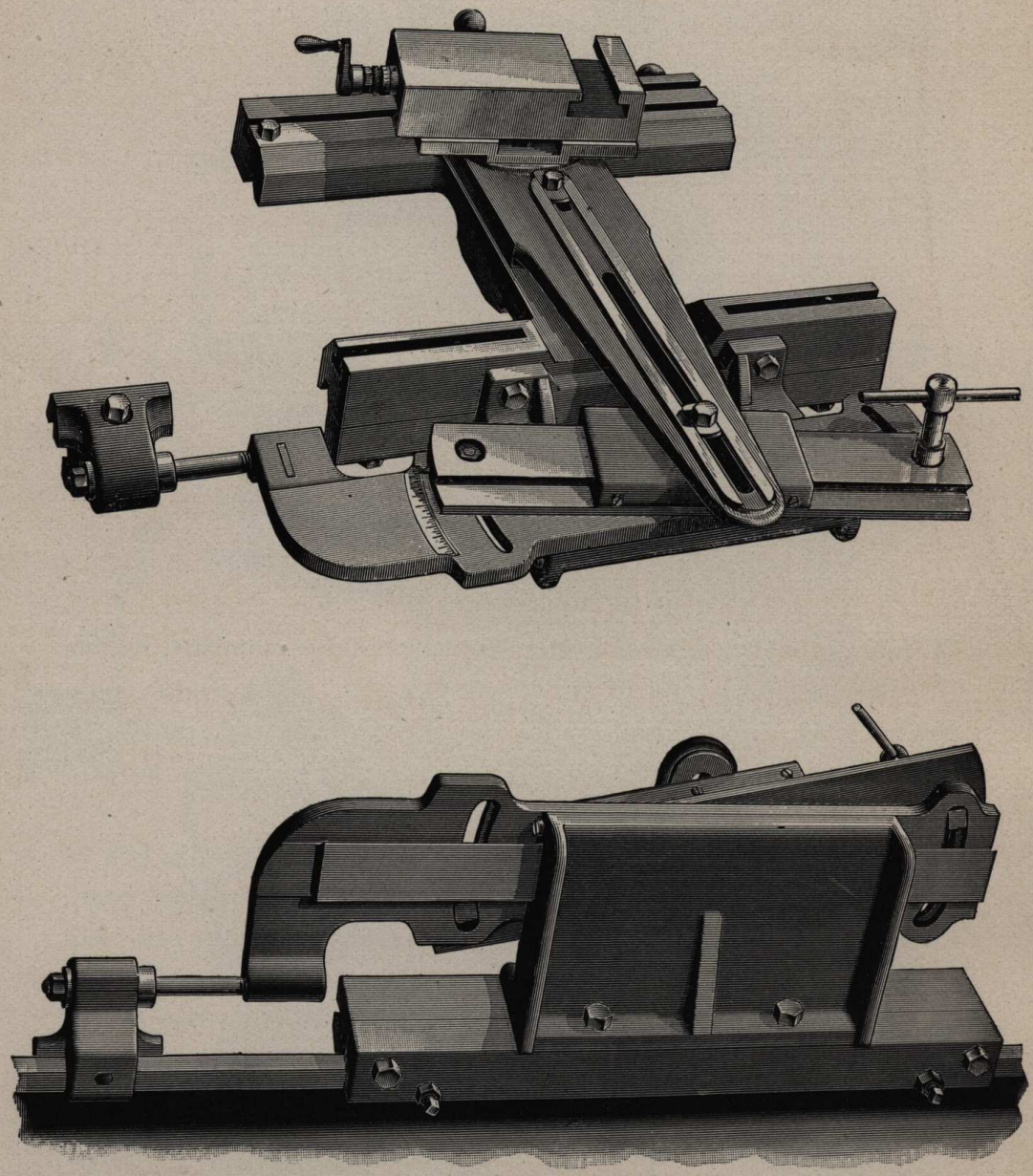
THE cut above illustrates a variable-speed countershaft, having all the advantages of the ordinary double friction-clutch countershaft, and, in addition, by its use the operator has an infinite variation of speeds within its limits without stopping his lathe or shifting of belts.

It has the great advantage that there can be used a belt of almost double the width that can be used on the five-step cone; further, that this belt is always on the *greatest diameter cone*, and need never be shifted from one year's end to the other.

We cannot give space to fully explain its operation, but by the simple turning of a small operating crank this result is obtained. This crank will be attached to the headstock of the lathe.

This countershaft can be as easily put up, taken care of and operated as the ordinary countershaft. Anyone acquainted with ordinary lathe work will readily understand its superiority for such work over the old-fashioned step-cones.

Illustrated catalogue of this mechanism sent free on application.



Improved Taper Attachment.

Improved Taper Attachment.

Patented April 7, 1891.

Patented November 9, 1897.

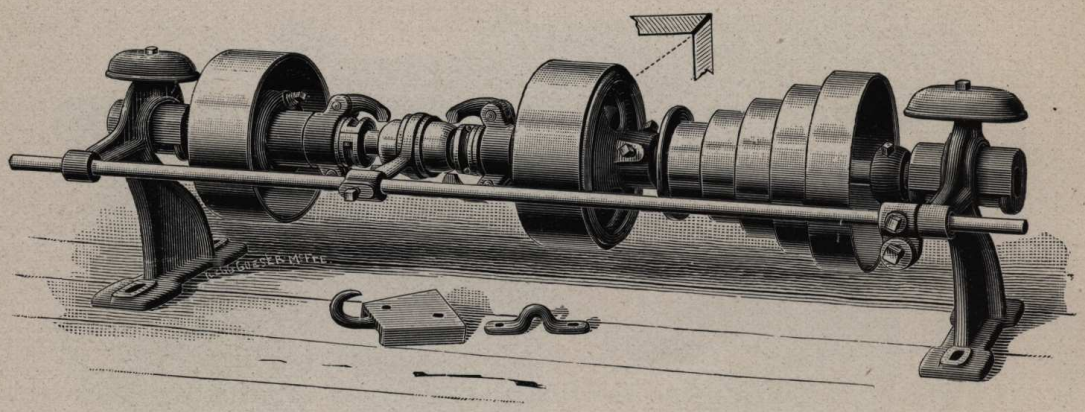
THE TAPER ATTACHMENT.—The taper attachment is extremely simple, and composed of less parts than any in the market. In operation it is changed from straight to taper by tightening or releasing one screw on the dog. When attached for taper work the sliding shoe connects directly with the tool rest and not with the screw, making its operation instantaneous. The nut is made to release and slide in a groove. The stud for the sliding shoe also engages into a groove, and to attach or detach requires nothing more or less than the releasing of one screw and tightening another, or vice versa.

The cross-feed nut can not fall over as in the ordinary taper attachment when in use, because it is never disconnected. The bolt simply slides in a slot (patented) in the compound rest slide.

The bracket carrying the taper attachment is bolted to and travels with the carriage, so that at whatever part of the bed the carriage may be, the taper attachment can be instantly engaged.

No planed strip on the back of the bed is necessary.

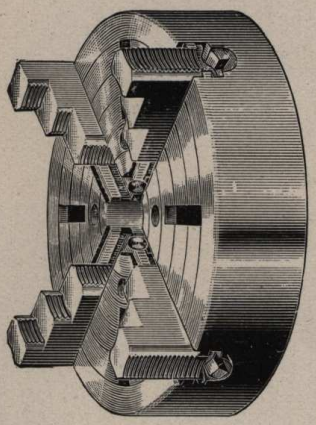
For the convenience of customers all carriages will hereafter be drilled so that *taper attachment may be readily added* at such time as customer desires.



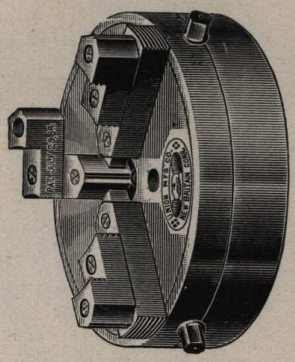
Countershaft.

COUNTERSHAFT.—The countershaft is provided with a cone pulley of larger diameters than the one on the spindle, in order to give ample belt power. This cone pulley is flanged at the small step. The friction pulleys have a large chamber to receive a full pint of oil. These are mounted onto thimbles upon which the pulleys revolve freely, said thimbles also revolving freely on the shaft, thus doubling the life of these wearing parts, for if one should stick it will revolve on the other. The fingers that ride on the cone thimble are steel, are very carefully fitted, and are adjustable only at one point. A wrench is provided with each countershaft to make this adjustment. The frictions themselves are taper cones, of nearly as large diameters as the pulley, which, when released, leave the point of contact a full eighth of an inch, absolutely avoiding the troublesome back-and-forward motion so prevalent in friction pulleys when machine is stopped.

Will furnish tight and loose pulleys in lieu of friction pulleys at same price, when preferred.



Independent Chuck.



Combination Chuck.

Chucks.— *Independent* chucks with three jaws, or *Combination* chucks with four jaws, are not furnished, excepting on special order and at an extra price. We will furnish chuck-plates fitted on lathes as follows: net prices; 14-inch and 16-inch, $2.00; 18-inch and 20-inch, $2.50; 22-inch and 27-inch, $3.00; 30-inch and up, $4.00.

Prices.

Independent Reversible Jaws.

DIAM.	CODE.	PRICE.	DIAM.	CODE.	PRICE.
4 inches,	Talker,	$14.00	15 inches,	Theater,	$35.00
6 inches,	Tallow,	18.00	16 inches,	Thesis,	38.00
8 inches,	Talmud,	22.00	18 inches,	Thrift,	44.00
10 inches,	Tempt,	26.00	20 inches,	Thrill,	50.00
12 inches,	Tenant,	30.00	22 inches,	Thriving,	57.00
14 inches.	Tender,	34.00	24 inches,	Throne,	65.00

Combination Reversible Jaws.

DIAM.	CODE.	PRICE.	DIAM.	CODE.	PRICE.
6 inches,	Swimmer,	$26.00	18 inches,	Sycophant,	$62.00
9 inches,	Swineherd,	34.00	21 inches,	Syncope,	80.00
12 inches,	Swivel,	44.00	24 inches,	Syndicate,	100.00
15 inches,	Sword,	52.00	30 inches,	Synod,	170.00

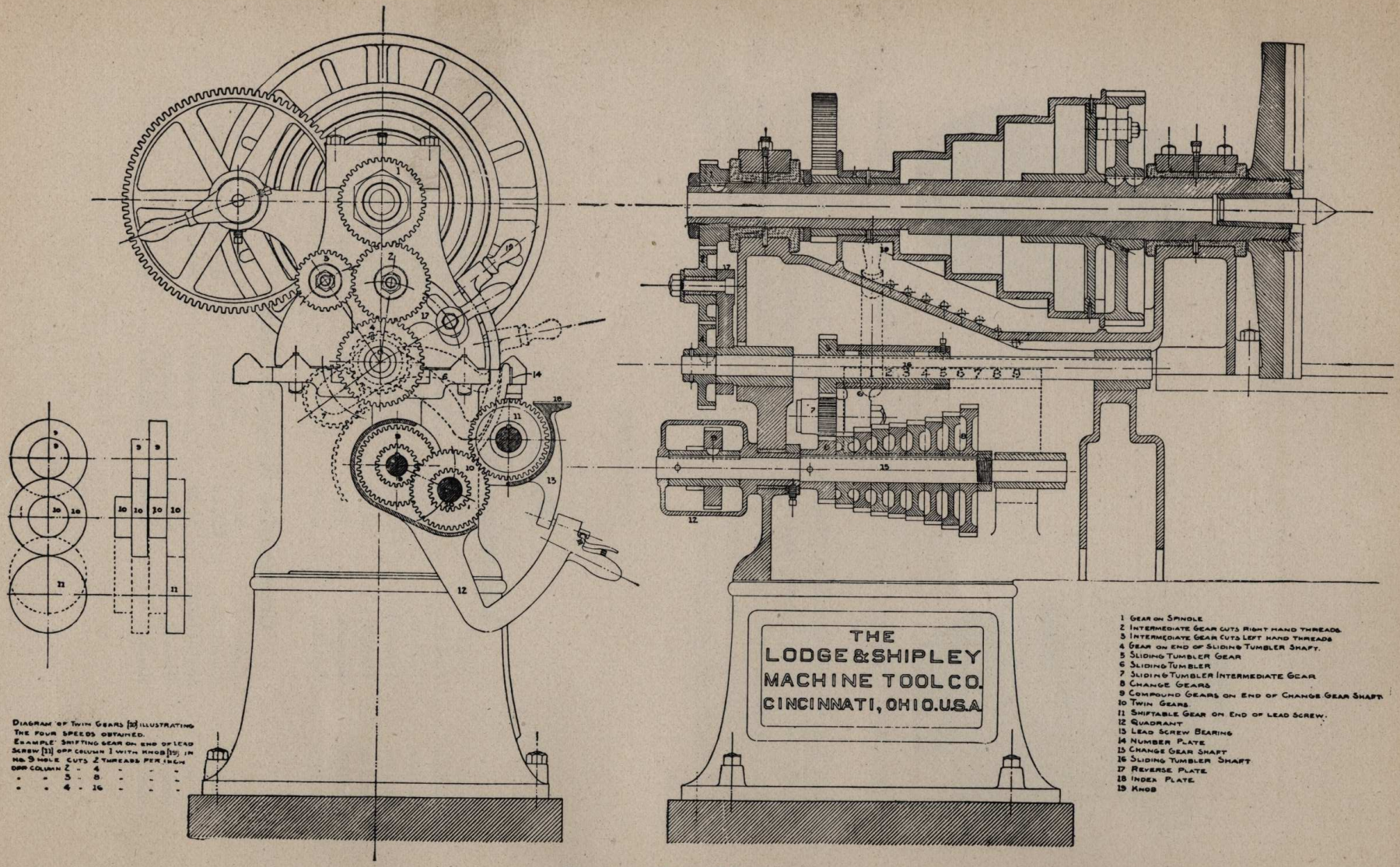


Diagram of Twin Gears [10] illustrating the four speeds obtained.
Example: Shifting gear on end of lead screw [11] opp column 1 with knob [19] in No. 3 hole cuts 2 threads per inch
opp column 2 - 4 - - -
" " 3 - 8 - - -
" " 4 - 16 - - -

1 Gear on Spindle
2 Intermediate Gear cuts right hand threads
3 Intermediate Gear cuts left hand threads
4 Gear on end of Sliding Tumbler Shaft.
5 Sliding Tumbler Gear
6 Sliding Tumbler
7 Sliding Tumbler Intermediate Gear
8 Change Gears.
9 Compound Gears on End of Change Gear Shaft
10 Twin Gears.
11 Shiftable Gear on End of lead screw.
12 Quadrant
13 Lead Screw Bearing
14 Number Plate
15 Change Gear Shaft
16 Sliding Tumbler Shaft
17 Reverse Plate
18 Index Plate
19 Knob

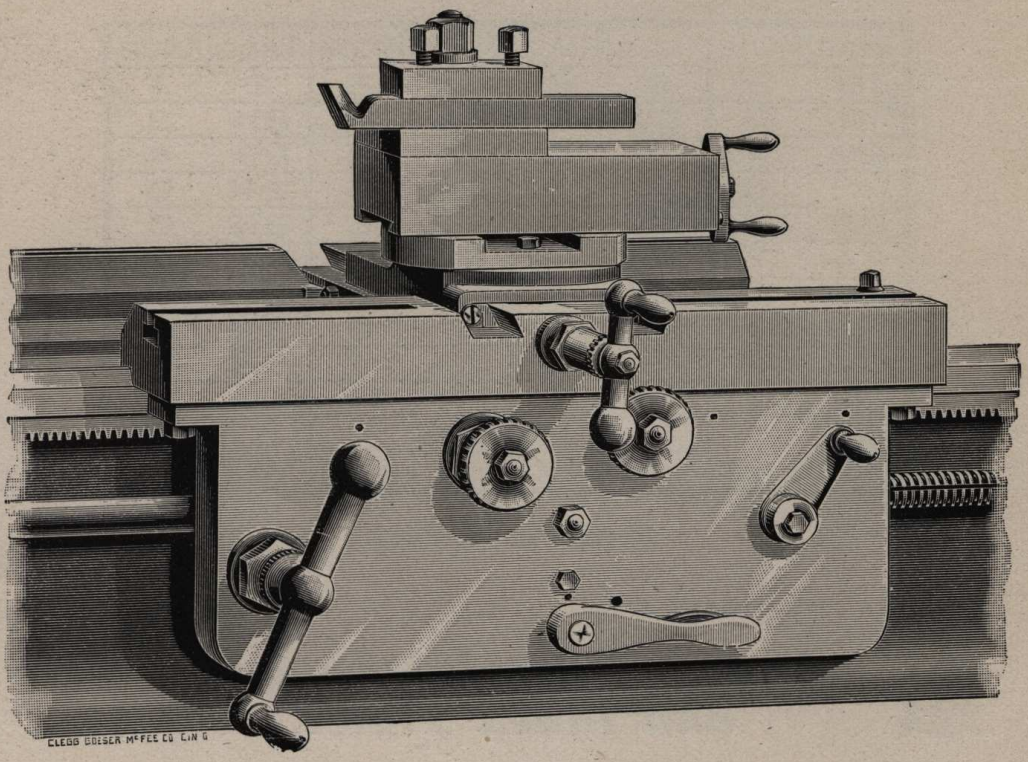
Change Gear Mechanism.

Thds	Knob	Thds	Knob	Thds	Knob	Thds	Knob
18	2	9	2	4½	2	2	1
19	3	9½	3	4¾	3	2¼	2
20	4	10	4	5	4	2½	4
22	5	11	5	5½	5	2¾	5
23	6	11½	6	5¾	6	2⅞	6
24	7	12	7	6	7	3	7
26	8	13	8	6½	8	3¼	8
28	9	14	9	7	9	3½	9
30	10	15	10	7½	10	3¾	10
32	11	16	11	8	11	4	11
		FEEDS					
80 To 40		40 To 20		20 To 10		10 To 5	

18-Inch Index Plate.

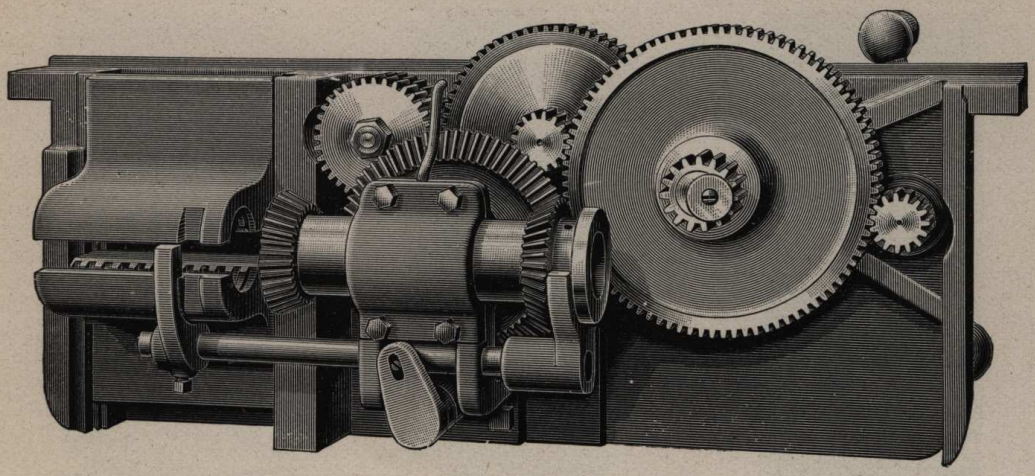
Change-Gear Mechanism and Index Plates.

THE screw-cutting feature of our lathe has many points of excellence. The change gears are mounted on a short shaft running in substantial bearings in the bed and directly under the headstock. The knob shown in front of the head carries a gear that continually runs either right or left. This gear may be dropped into any one of the change-gears instantly, and thus gives four times as many changes as there are change gears, because on the outer end of the change-gear shaft are four gears, into any one of which the gear shown on the lead screw may engage. (See opposite.) *Not a single gear is ever removed to obtain the different threads or feeds.* A substantial and simple plate is used to change from right to left-hand screws. *The index plate* has the words "Threads," "Knob" (see above) on the upper line. Under the word "Threads" is the number of threads the lathe will cut—for the 18-inch lathe, from 2 to 32. Under the word "Knob" are the figures 1 to 10; thus, should the operator desire to cut any certain thread, he finds this thread on the index plate (figure 18 opposite), engages his sliding-gear on the lead screw opposite to it, places the knob in the hole indicated on the plate and starts his tool to work. This is so simple that the greenest boy understands it at once.



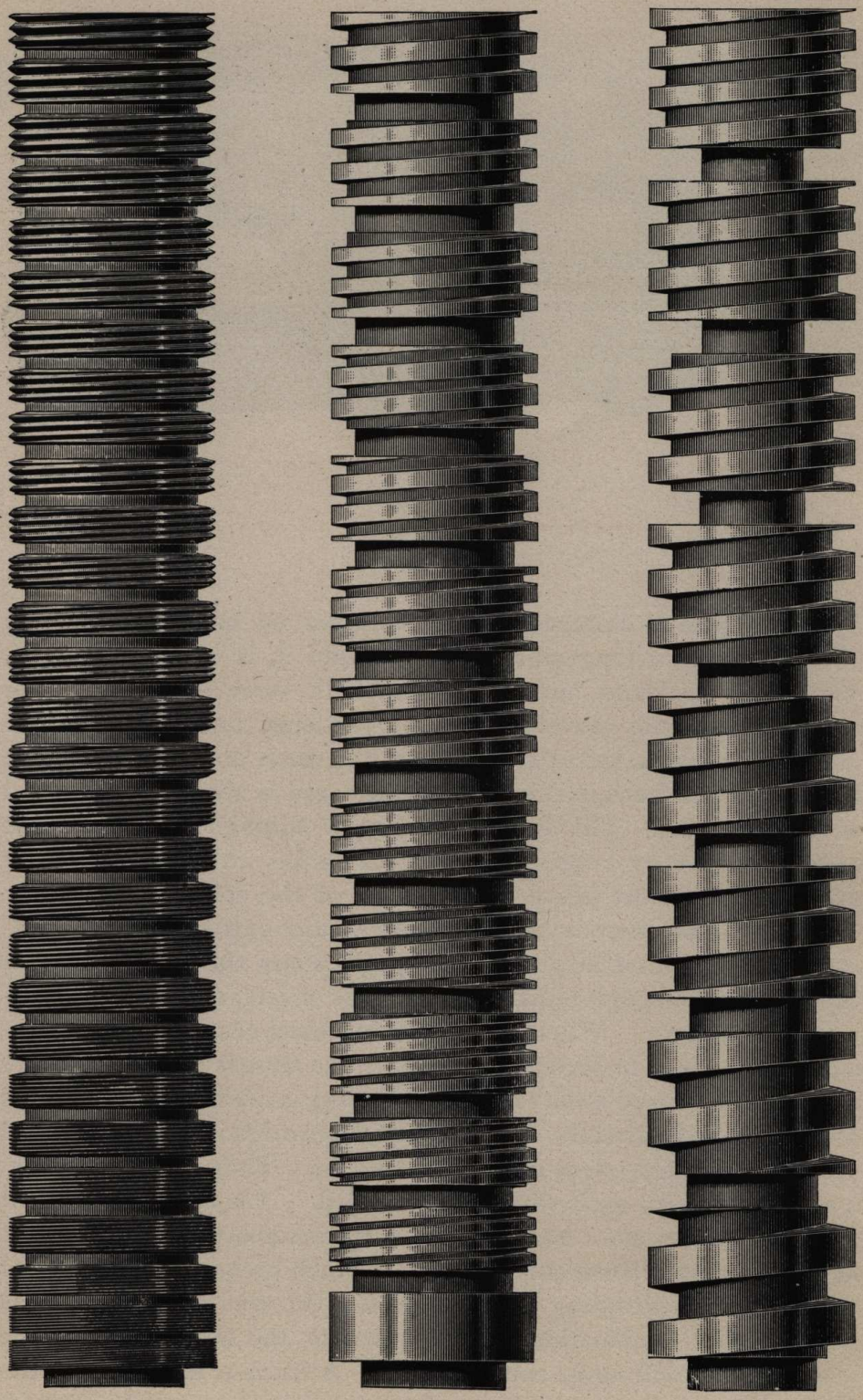
European Compound Rest.

THE European Compound Rest, as shown above, was designed to meet the requirements of the European market, and consists of a lower slide fitted with taper gib to our carriage and swivel slide that is indexed to read by degrees, and marked so that it will swivel from zero to 90 degrees, or a square. The tool rests on a hardened steel plate, having its top cut in diamonds, while the part having the set-screws is made to swivel on top of this slide, so that the cutting point of the tool may be presented to the work, either on the right hand, the left hand, or exactly at right angles with the length of top slide, without swiveling at the lower base. The hexagon nut shown on top is of suitable size to receive the tail-stock wrench, while the tool-steel set-screws are made of suitable size that the same wrench used for swiveling can be used for tightening or releasing the tool. No extra charge is made for furnishing rests like this *in place of* the American style of tool post, if ordered before lathes are completed with the American style. The balance of this carriage, and, in fact, the entire machine, is in accordance with our regular catalog.



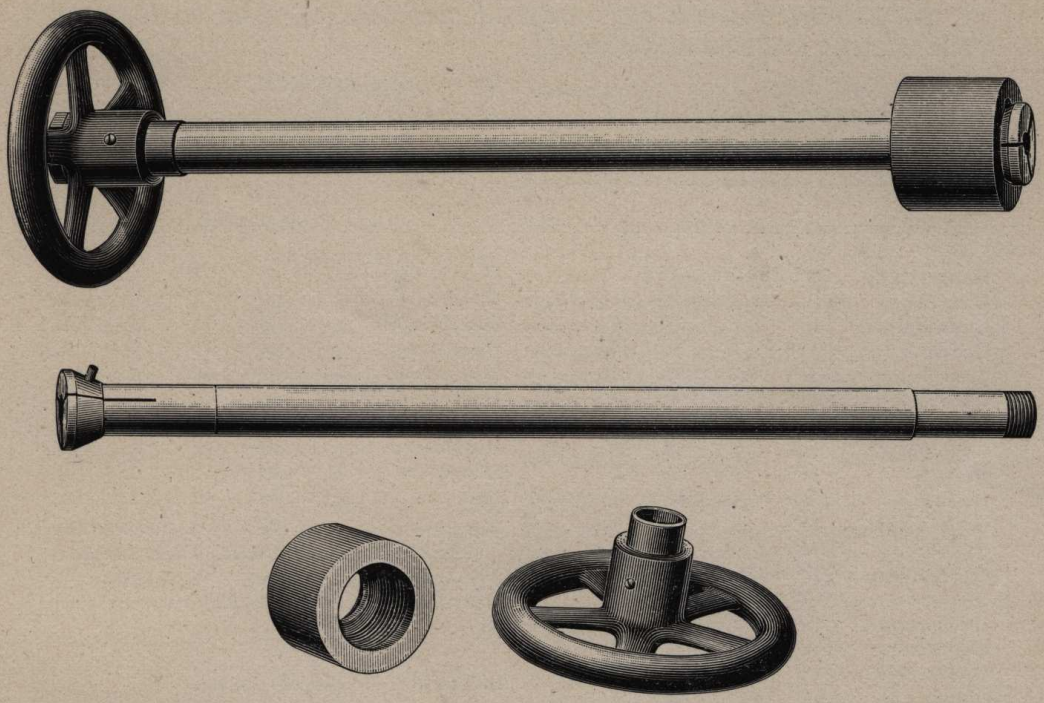
Apron.

THE Apron is fastened to the carriage by hexagon-head cap screws and is tongued and grooved into it, is of ample length, width, and thickness, and is provided with three braces its entire depth. The studs are steel and are hardened and ground. The pinions for crank, friction, cross-feed and rack are all steel. The reverse for the feeds is extremely simple, and is always at the hand of the operator. The lead screw passes through the sleeve and engages with it by a spline and key. This key extends almost the entire length of the sleeve. The edges of the spline are carefully dressed, so that there is no possibility of any cutting. The movement of the reverse handle on the apron causes the bevel gears on the sleeve to engage either on the right or left, and feeds the carriage accordingly. When the handle is locked centrally it is impossible for the feed to become engaged. *The threads of the screw are never in use, except when the lathe is cutting screws.* The half nuts are planed to fit directly into substantial bearings in the apron, and are entirely independent of any cap screws. They are operated by a cam, having its grooves carefully milled. *The half nuts are cut from the solid metal.* Note in the illustration above the interference device (patented November 13, 1899), which prevents the closing of the half nuts, excepting when the feed is thrown out. This forms a substantial combination that will outwear the other parts of the machine, and will never cause trouble. A friction length and cross feed is provided, so that if the feed is allowed to run beyond its limit either way no harm will be done.



Threads Cut on 16-Inch Lathe.

See Page 8.



Draw Chuck for 14-Inch Tool-Room Lathe.

(Charged for extra on any but 14-Inch Tool-Room Lathe.)

Draw Chuck.— The illustration above represents in detail our draw chuck, which may be applied to any lathe we manufacture and will receive through its center ¼ inch less in diameter than the bore of the spindle, according to the size lathe it is used on. The tool-steel split chuck is furnished blank, unless special orders are given when machine is ordered. Only one is furnished with a lathe at the price named, and additional ones are furnished at prices varying according to the size of the lathe.

Code.

To order machine with any attachment, use Code Word for machine and Code Word for attachment (see below).

P — Plain Legs.
C — Cabinet Legs.
Under "Pan" — Only those with letter Y furnished with Pan.

A — Compound Rest.
B — Plain or Block Rest.
R — Raise and Fall Rest.

Gaandeweg....14" Engine Lathe.

Code Word	Swing	Length	Legs	Rest	Pan
Gaardenier	14"	5'	P.	B.	
Gaarkok	14"	5'	P.	B.	Y.
Gaasdoek	14"	5'	P.	A.	
Gabachos	14"	5'	P.	A.	Y.
Gabael	14"	5'	P.	R.	
Gabalicum	14"	5'	P.	R.	Y.
Gabalos	14"	5'	C.	B.	
Gabaonita	14"	5'	C.	A.	
Gabarrones	14"	5'	C.	R.	
Gabate	14"	6'	P.	B.	
Gabbammo	14"	6'	P.	B.	Y.
Gabbarae	14"	6'	P.	A.	
Gabbarono	14"	6'	P.	A.	Y.
Gabbatrice	14"	6'	P.	R.	
Gabberebbe	14"	6'	P.	R.	Y.
Gabbia	14"	6'	C.	B.	
Gabbiani	14"	6'	C.	A.	
Gabbionata	14"	6'	C.	R.	
Gabbolla	14"	7'	P.	B.	
Gabelage	14"	7'	P.	A.	
Gabelfloh	14"	7'	P.	R.	
Gabelgemse	14"	7'	C.	B.	
Gabbellarla	14"	7'	C.	A.	
Gabellolla	14"	7'	C.	R.	
Gabelnadel	14"	8'	P.	B.	
Gabelwagen	14"	8'	P.	A.	
Gaberdines	14"	8'	P.	R.	
Gabienus	14"	8'	C.	B.	
Gabinetes	14"	8'	C.	A.	
Gabiourne	14"	8'	C.	R.	
Gabkar	14"	5'	Tool-Room Lathe Compound Rest, Taper Attachment, Short Legs, and Pan, Draw in Chuck and one Collet.		
Gabonais	Collet for Draw in Chuck.				
Gabrito	Taper Attachment				

Haakachtig....16" Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Haakjuffer	16"	6'	P.	B.
Haakpen	16"	6'	P.	A.
Haaksters	16"	6'	C.	B.
Haakworm	16"	6'	C.	A.
Haalboter	16"	8'	P.	B.
Haaralaun	16"	8'	P.	A.
Haarbanden	16"	8'	C.	B.
Haarbosjes	16"	8'	C.	A.
Haarbundel	16"	10'	P.	B.
Haardkolk	16"	10'	P.	A.
Haardstede	16"	10'	C.	B.
Haaren	16"	10'	C.	A.
Haarhamers	16"	12'	P.	B.
Haarkies	16"	12'	P.	A.
Haarkluft	16"	12'	C.	B.
Haarlauf	16"	12'	C.	A.
Haarlos	16"	6'	Tool-Room Lathe, Compound Rest, Taper Attachment, Cabinet Legs.	
Haarpinsel	Taper Attachment			

Iacchus....18" Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Iadertinos	18"	6'	P.	B.
Ialysos	18"	6'	P.	A.
Iambelegos	18"	6'	C.	B.
Iambia	18"	6'	C.	A.
Iambicorum	18"	8'	P.	B.
Iambique	18"	8'	P.	A.
Iamblichus	18"	8'	C.	B.
Iambodibus	18"	8'	C.	A.
Iambuses	18"	10'	P.	B.
Ianthidis	18"	10'	P.	A.
Ianthinum	18"	10'	C.	B.
Iapetus	18"	10'	C.	A.
Iapygie	18"	12'	P.	B.
Iapyx	18"	12'	P.	A.
Iarchas	18"	12'	C.	B.
Iardanis	18"	12'	C.	A.
Iasidos	18"	14'	P.	B.
Iasoniorum	18"	14'	P.	A.
Iaspide	18"	14'	C.	B.
Iaspiorum	18"	14'	C.	A.
Iasponyx	18"	16'	P.	B.
Iatralipte	18"	16'	P.	A.
Iatrine	18"	16'	C.	B.
Iatromea	18"	16'	C.	A.
Iatronices	18"	18'	P.	B.
Ibanto	18"	18'	P.	A.
Iberian	18"	18'	C.	B.
Ibexes	18"	18'	C.	A.
Ibicara	Taper Attachment			

(See page 56 for abbreviations.)

Kaaiboeven....20″ Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Kaailooper	20″	6′	C.	A.
Kaakklier	20″	8′	C.	A.
Kaakslag	20″	10′	C.	A.
Kaakvormig	20″	12′	C.	A.
Kaaling	20″	14′	C.	A.
Kaalkoppen	20″	16′	C.	A.
Kaalpoot	20″	18′	C.	A.
Kaapsch	Taper Attachment			

Laadboom.....22″ Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Laadgat	22″	8′	C.	A.
Laadlepels	22″	10′	C.	A.
Laadpriem	22″	12′	C.	A.
Laafdrank	22″	14′	C.	A.
Laagheid	22″	16′	C.	A.
Laakbaar	22″	18′	C.	A.
Laakziek	22″	20′	C.	A.
Laantjes	22″	22′	C.	A.
Laarzebeen	22″	24′	C.	A.
Laatbekken	22″	26′	C.	A.
Laatmejes	22″	28′	C.	A.
Labadisme	22″	30′	C.	A.
Labarorum	Taper Attachment			

Maagader....24″ Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Maagboden	24″	8′	C.	A.
Maagden	24″	10′	C.	A.
Maagklier	24″	12′	C.	A.
Maagkuil	24″	14′	C.	A.
Maagpil	24″	16′	C.	A.
Maagpomp	24″	18′	C.	A.
Maagstreek	24″	20′	C.	A.
Maagvlies	24″	22′	C.	A.
Maagworm	24″	24′	C.	A.
Maagzoen	24″	26′	C.	A.
Maailanden	24″	28′	C.	A.
Maaksel	24″	30′	C.	A.
Maalslot	Taper Attachment			

Naafboor....27″ Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Naafgaten	27″	10′	C.	A.
Naakter	27″	12′	C.	A.
Naaldbrief	27″	14′	C.	A.
Naaldgras	27″	16′	C.	A.
Naaldvisch	27″	18′	C.	A.
Naamborden	27″	20′	C.	A.
Naamgenoot	27″	22′	C.	A.
Naamrol	27″	24′	C.	A.
Naamroover	27″	26′	C.	A.
Naamwoord	27″	28′	C.	A.
Naardien	27″	30′	C.	A.
Naarstig	Taper Attachment			

Oaken....30″ Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Oakum	30″	12′	C.	A.
Oarion	30″	14′	C.	A.
Oasien	30″	16′	C.	A.
Oatcake	30″	18′	C.	A.
Oaxida	30″	20′	C.	A.
Obadias	30″	22′	C.	A.
Obaemulor	30″	24′	C.	A.
Obagitabat	30″	26′	C.	A.
Obagitavit	30″	28′	C.	A.
Obambulate	30″	30′	C.	A.
Obarabitis	Taper Attachment			

Paaltje....36″ Engine Lathe.

Code Word	Swing	Length	Legs	Rest
Paalwoning	36″	12′	C.	A.
Paardekam	36″	14′	C.	A.
Paardenoog	36″	16′	C.	A.
Paardetand	36″	18′	C.	A.
Paarweise	36″	20′	C.	A.
Paaschdag	36″	22′	C.	A.
Paaschmaan	36″	24′	C.	A.
Pabellom	36″	26′	C.	A.
Pabillos	36″	28′	C.	A.
Pabilones	36″	30′	C.	A.
Pabonibus	Taper Attachment			

Quabbe.....36″—42″ Engine Lathe.

This is our 36″ raised in the Sand to swing 42″

Code Word	Swing	Length	Legs	Rest
Quabbeln	42″	12′	C.	A.
Quackery	42″	14′	C.	A.
Quackler	42″	16′	C.	A.
Quaderbau	42″	18′	C.	A.
Quaderputz	42″	20′	C.	A.
Quadrabile	42″	22′	C.	A.
Quadrammo	42″	24′	C.	A.
Quadrarono	42″	26′	C.	A.
Quadratico	42″	28′	C.	A.
Quadratriz	42″	30′	C.	A.
Quadrelle	Taper Attachment			

Attachments.

Raadkamer....With taper attachment.
Raadszaak.....With turret on carriage.
Raagbol.....With automatic turret on bed; no power feed.
Raagstok.....With automatic turret on bed; with power feed.
Raakpunt.....European compound rest.
Raamboom....
Raamstoel.....

Shipping, Date of Delivery, and Freight.

QUESTIONS.

Raapbord .....Can you ship immediately?
Raapjes .....Can you furnish promptly?
Raapkoeken ..Could you furnish within —— ?
Raapkuil.....How soon and at what price could you furnish —— ?
Raaploof.....How soon can you ship if ordered at once ; wire answer.
Raapsteel .....How soon will you ship if ordered at once ; wire answer.
Raaskallen....Have you shipped, if not, when will you ship?
Rabacal .....When did you ship?
Rabachage....When and by what route did you ship?
Rabachions...When will you ship our order of —— ?
Rabadoquin.. Have you shipped our order of— ?
Rabaissons....How soon can you complete our order of —— ?
Rabaneras ....Will a few days' delay in shipping make any difference?
Rabaniza .....Shall we consign to you or customer?
Rabato.....Shall we ship alone, or shall we hold for shipment together with —— ?
Rabbah .....Shall we ship?
Rabbavento ...Shall we ship what we have ready?
Rabbelliva ....Name lowest freight rate you can get, less than carload to —— ?
Rabbetting....Name lowest freight rate you can get, carload to —— ?
Rabbijnen ....Our shipment is less than carload ; have you anything else to fill up car?
Rabbinage....
Rabbinique....
Rabbino.....
Rabboccato....

Shipping, Date of Delivery, and Freight.

ANSWERS.

Rabbordano...A few days' delay in shipping will make no difference.
Rabbrevia.....Your order was shipped ——.
Rabbruzza ....Your telegram was received after goods had been shipped.
Rabbuffano ...Earliest possible delivery —— is ——.
Rabbuffare....Time of delivery named is best we can do.
Rabdomancy..We have no ——, but will ship other sizes promptly.
Rabeador.....We have not in stock, but could furnish by ——.
Rabearemos...We can ship —— from stock and balance by ——.
Racconsola....They will not be ready to ship until ——.
Raccontava....Will ship as directed.
Raccord .....Rate of freight from Cincinnati to ——, less than carload is ——.
Raccoupler....Rate of freight from Cincinnati to ——, carload, is ——.
Raccozzano ...We can not obtain through rate to ——.
Raccozzo.....We can ship.
Racemamus...We can not ship.
Racemarium..We have shipped.
Racemavit.....We have not shipped.
Racemule . ...We have ready for shipment.
Races.....We can ship immediately.
Racheaktes....Can ship within —— in following lengths.
Rachegeist....If you can ship ——.
Rachekrieg ...If ordered immediately, could ship in ——.
Rachesinn.....If ordered promptly, could ship in ——.
Rachetames...We can ship promptly.
Rachever.....We expect to ship ——.
Rachialgie ....We could ship ——.
Rachidions. . .We could probably ship in ——.
Rachiofima . .We cannot promise positively, but think we could ship ——.
Rachitiche ....We cannot promise shipment ——.
Rachitome ....We cannot ship sooner than ——.
Racimabais....We may be able to ship sooner than —— but cannot promise it.
Racimamos....We can ship ——.
Racimaron....We can ship to-day.
Racimolare....We can ship to-morrow.
Racimudos....We can ship in about three days.
Racineux.....We can ship in about five days.
Racionable....We can ship in about one week.
Racionista.....We can ship in about ten days.
Rackervolk ...We can ship in about two weeks.
Raclement ....We can ship in about seventeen days.
Racloir.....We can ship in about three weeks.
Racodion.....We can ship in about twenty-four days.
Racoler. . . . .We can ship in about thirty days.
Racomitres....We can ship in about five weeks.
Racontais .....We can ship in about six weeks.
Racontons.....We can ship in about seven weeks.
Racopilo .....We can ship in about eight weeks.
Racornira.....We can ship in about nine weeks.
Racquetava....We can ship in about ten weeks.
Radamantho..We can ship in about eleven weeks.
Radarmen.....We can ship in about twelve weeks.
Radazzando...We can ship in about three months.
Radazzava....We can ship in about three months and fifteen days.

Radbod.....We can ship in about four months
Raddensano..We can ship in about four months and fifteen days.
Raddia.....We can ship in about five months.
Raddologia....We can ship in about five months and fifteen days.
Raddossava ...We can ship in about six months.
Radeaux .....We can ship in about six months and fifteen days,
Radendorum..We will ship.
Raderloop.....We will ship in about ——.
Radevore.....We will ship to-day.
Radgarn .....We will ship to-morrow.
Radiacion.....We will ship in about three days.
Radiancy. ....We will ship in about five days.
Radiately .....We will ship in about one week.
Radiatule .....We will ship in about ten days.
Radiazione....We will ship in about two weeks.
Radicabunt....We will ship in about seventeen days.
Radicalism....We will ship in about three weeks
Radicar.....We will ship in about twenty-four days.
Radicavit .....We will ship in about thirty days.
Radichella ....We will ship in about five weeks.
Radicivore ....We will ship in about six weeks.
Radicular .....We will ship in about seven weeks.
Radierende....We will ship in about eight weeks
Radigast ... ..We will ship in about nine weeks.
Radiolaria.....We will ship in about ten weeks.
Radiometro ...We will ship in about eleven weeks.
Radique.....We will ship in about twelve weeks.
Radkranzes...We will ship in about three months.
Radloch.....We will ship in about three months and fifteen days.
Radnaaf.....We will ship in about four months
Radoter .....We will ship in about four months and fifteen days.
Radouber.....We will ship in about five months.
Radreif.. .....We will ship in about five months and fifteen days.
Radslot.....We will ship in about six months.
Radsprung....We will ship in about six months and fifteen days.
Radstock.....We can furnish.
Radulpho.....We cannot furnish.
Radunassi.....

Shipping, Date of Delivery, and Freight.

INSTRUCTIONS.

Radunavate...Ship immediately.
Radwelle.....Ship as soon as possible.
Raesaces.....Ship what you have ready, and let balance follow as soon as possible.
Raeudiger.....Ship immediately without waiting for carload.
Raeumung....Hasten shipment of ——.
Rafael.....If you cannot ship in time named, advise us by telegraph.
Rafanedone...If you can ship at once, do so.
Rafeais.....You may hold for carload shipment, if goods will be shipped by ——.
Raffaello.....Ship in carload with ——.
Raffando .....Ship as before.
Raffaux.....Ship by express.
Raffendes.....Ship by freight.
Raffermano...Ship by river.
Raffgut .....Ship by steamer.
Raffica .....Ship by sail
Raffinage .....Ship by quickest route.
Raffinassi.....Ship by cheapest route.
Raffled .....Ship by fast freight.
Raffoleras.....Shipping instructions by mail.
Raffondano ...Ship with first carload.
Rafforzava....Ship by steamer to —— via ——.
Raffossare.....Ship, getting through contract.
Raffranca .....Forward shipping directions for ——.
Raffronta .....Ship to ——, obtaining lowest through rate.
Rafiau.....Prepare to ship, but wait further instructions; letter by mail.
Rafleux .....In shipping, give preference over all others to order of ——.
Ragache ....Insure goods on order of —— at actual value.
Ragarum.....Insure goods on order of —— at —— per cent above value.
Ragazzuolo ...
Raggedness...
Raggirasse....

Quotations and Prices.

Raggiuolo.....At what price could you furnish?
Ragglutina....We quote ——,
Raggravava...What discount are the list prices subject to?
Raggruppa....These prices are subject to a discount of —— per cent.
Raghuvansa ..These prices are net cost to you.
Ragionetta....Cannot cut the price.
Ragnatela.....Regular price is best we can do.
Ragnuola .....We are unable to modify our quotation.
Ragonyche....We cannot do better.
Kagout.....We can sell at ——.
Ragrafer.....We cannot sell at ——.

Ragstone.....To enable you to secure the order, we will make you the following special price ——.
Raguettes .....Will you hold matter open?
Ragunatore....We will hold matter open.
Raguseo .. ..We cannot hold matter open.
Ragwork.....Is your offer of —— still good?
Rahezamos ....If so, enter order.
Rahezeis.....How long will you hold the quotation open?
Rahmenwerk..Have you made any quotations to ——?
Rahmholz .....We have only quoted regular prices.
Rahmkuchen ..We are figuring with —— at ——-
Rahmsack.....We are figuring with ——.
Rahmstueck...Will you allow us ——?
Rahsegel.....We will allow you ——.
Raidir.....We will deduct ——.
Raidissons .....We quote you, expecting immediate reply by wire.
Raifort.....We quote you, expecting immediate reply by letter.
Raigas .....For immediate acceptance.
Raigotoso .....For acceptance within ——.
Raillardes.....All previous quotations are hereby withdrawn.
Raillons.....We cannot accept the order without cash or security.
Raimiento.....We will accept the order, —— cash, draft for balance with documents attached, payable on arrival of goods.
Rainbeere.....Goods f. o. b. cars Cincinnati, less freight allowance of —— per one hundred pounds.
Rainbowed.....F. O. B. Cincinnati.
Raininess.....F. O. B. Vessel.
Rainunculo....F. O. B. New York.
Raisonnais.....Please specify sizes and number wanted.
Raitammo.....Please note particularly that ——.
Raitasse.....
Raitavate.....
Raiteremo .....
Raixa .....

Orders.

Rajadillo .....Enter our order for ——.
Rajagriha.....Have you entered our order for ——?
Rajas.....We have entered order for ——.
Rajeuniras.....We have not entered order for——
Rajoutames ...Shall we enter order for ——?
Rajuste .....Shall we go ahead with order for ——?
Rakelijzer.....We have order for ——.
Rakestale.....We have order for ——, prepare for immediate shipment.
Raketmaker ...We have no order for ——.
Rakkeslee.....Have not received formal order for ——.
Rakshasa .....Can positively secure order, if you can deliver in ——.
Raleando .....Will you accept order.
Raleurs ..... .We will accept order.
Ralijnen.....We cannot accept order,
Ralingato.....Order depends on prompt delivery.
Rallaban.....Our order of the ——.
Rallargano.....May we substitute ——?
Rallargo.....You may substitute.
Ralleggia .....Do not substitute.
Rallentava.....Can you substitute —— for ——?
Rallidae.....We can substitute —— for ——.
Rallonger.....We cannot substitute —— for——.
Rallumerei.....We will substitute —— for ——.
Ramagious.....If ordered by telegraph.
Ramaillons ....
Ramaleados....
Ramalhada ....
Ramalines.....

Goods in Stock.

Ramames.....Have you in stock, and could you furnish at once ——?
Ramassage.....If not, how soon could you furnish?
Ramastique....We have in stock ——.
Ramatuelle ....We have in stock and can furnish immediately ——.
Rambeh.....We have none in stock.
Ramblingly....We have no —— in stock.
Rambooze.....Nothing of approximate size in stock.
Rameggie.....We have in stock and will ship immediately.
Ramenable ....We have in stock and could ship immediately.
Ramenassen ...Have one almost finished and still unsold; could not furnish another until ——.
Ramenerais....What is the nearest size in stock?
Ramentarum ..The nearest size we have in stock is ——.
Ramentum.....Have you in stock, if not all, how many?
Ramerais .....If size wanted is not in stock, how soon could you furnish?
Ramescence....What have you in stock between the following limits of sizes for early delivery?
Rameurs.....What have you in stock between the following limits in sizes—?
Ramiferes .....We have a second-hand machine of the following size in stock ——.
Ramificava.....If the following is not wanted —.
Ramify.....Have one in stock now; could not furnish duplicate until ——.
Ramilie.....
Ramingasse....
Ramingue.....
Ramiparous....

Telegrams.

Ramistes.....Please refer to our telegram dated ——.

Ramitoso.....Why don't you telegraph?

Rammantano..Telegraph daily and keep us posted.

Rammanto.....Send full particulars by telegraph immediately.

Rammassano ..Telegraph in plain language, without cipher.

Rammbaer ....Telegram as delivered does not seem to read correctly.

Rammelkous...We do not understand your telegram.

Rammish.....Answer by telegraph immediately

Rammolli.....Send full particulars by telegraph, night rate message.

Rammpfahl....Answer by telegraph, night rate message.

Rammucchia...Repeat the telegram back to us, that we may be sure you have received it correctly.

Ramneos.....Answered your telegram of —— by mail.

Ramognando ..We have received your telegram of——.

Ramognava....Wire acknowledgment.

Ramollir.....Wire results.

Ramonelle.....

Ramonnette....

Ramoscello ....

Letters.

Ramosos .....Have just received your letter dated ——.

Rampallian....Await our letter mailed ——.

Ramparting....Please refer to our letter dated—.

Ramphastos ...We do not understand your letter.

Ramphodon....Referring to our letter of ——.

Rampicassi.....Referring to your letter of ——.

Rampichino....Referring to my letter of ——.

Rampogni.....Answer our letter of —— by telegram.

Rampollare.....Have received your letter of ——.

Ramponner....Have you received our letter of ——?

Ramshoorn ....Have written you care of ——.

Ramtil.....Have mailed letter to-day containing full advices regarding ——.

Ramulosos.....Mail will not arrive here until ——. Shall I wait for it?

Ramusculo.....

Ranboada.....

Rancajo.....

Rancar.....

Terms.

Rancebamus...Cash on receipt of invoice.

Rancheaba.....Cash with the order.

Rancheases ....Cash on arrival of goods.

Ranciaba.....Cash against documents in New York.

Ranciamos.....Spot cash, or satisfactory interest-bearing paper.

Rancidabis.....Cash thirty days.

Rancidavit.....Spot cash (sight draft with bill of lading attached).

Rancido.....Thirty days acceptance.

Rancidulum....Sixty days acceptance.

Ranconnait....Ninety days acceptance.

Rancorem.....With satisfactory guarantee that bill will be paid when due.

Rancoso.....Interest at —— per cent.

Rancuneux ....We will make you the following special terms ——.

Rancurero.....What security do you (or they) offer?

Randalies.....What reference do you (or they) offer?

Randellare.....Be sure that credit is O. K.

Randglosse.....Investigation proves credit O. K.

Randmasche...Decline (declined) on account of poor credit.

Randomly.....Decline (declined) on account of changes in machine.

Randstueck....They (or he) will accept draft due ——.

Ranfione.....

Rangeons.....

Rangfolge.....

Rangiferes.....

Sellers' Telegrams.

Rangloge .....You may sell.

Rangorde .....Sell at not under ——.

Rangstreit .....Sell at price you name.

Rangue .....Sell at price you name in yours of ——.

Ranhura . .....Do not sell.

Ranimable.....Do not sell at under ——.

Ranivores.....Do not sell unless you can get our price.

Rankenwand ..Can you sell ——?

Rankling .....At what price can you sell?

Rannestare ....If you cannot sell at our limits, telegraph best price you can get.

Rannodarla...Telegraph price you can sell at.
Ranonkels....Have you sold?
Ransacked....Take the order for ——.
Ransels.....Will make without extra charge
Ransoming....Will make with extra charge of ——.
Rantingly.....Our list price is ——.
Ranular.....Our list price for —— is ——.
Ranunculum..Can you get cash at these prices?
Rapace.....
Rapaceria.....
Rapagao.....
Rapamiento...

Answers to Sellers.

Rapariga.....Can sell.
Rapatelle.....Can sell at ——.
Rapatrions....Can sell at price you name.
Rapendos.....Cannot sell.
Rapeux.....Cannot sell at ——.
Raphaim.....Cannot sell at price you name.
Raphaninos...Cannot sell at over ——.
Raphanus.....Cannot sell for cash.
Raphilite.....Have sold for cash.
Raphiteles....Have sold at your limits.
Rapidez.....Have not sold,
Rapidulos.....The best offer is ——.
Rapillo.....Shall sell.
Rapinabas....Shall we sell?
Rapinaran....Will probably be able to sell.
Rapinhar.....We are trying to sell ——.
Rapiremo.....Think we can sell at ——.
Rapistres.....Think we can sell.
Rapivate.....Name lowest price you will sell at.
Raponchigo...Have written full particulars of sale.
Raponibus....Follow up carefully.
Rapontique...Have secured order for ——.
Rappa.....
Rapparassi....
Rapparier.....

Miscellaneous.

Rappelable....Is it satisfactory?
Rappelig.....It is not satisfactory.
Rappezzare...It is satisfactory.
Rappianare...If not satisfactory, wire at once.
Rappiccola....We will do our best.
Rappliquer....Why don't you answer?
Rapporteur...Give this information with absolute accuracy.
Rapprenant...Advise by telegraph, at our expense, standing and credit of—.
Rapsabar.....Will send particulars by mail.
Rapsaret.....Send particulars by mail.
Rapsaturos....What is the speed of countershaft on ——?
Rapsfelder....The speed of countershaft on —— is —— revolutions per minute.
Rapsitamus...The change of bed you desire will cause a delay of ——.
Rapsjahr.....What length of bed is wanted on —— your order of —— date?
Rapsodia.....They (or we) want us (or you) to take in trade ——.
Rapsodo.....We will take —— in trade at $——, f. o. b. Cincinnati.
Rapswasser...We will not take in trade——.
Raptador.....Nothing in inquiry from ——.
Raptaretis.....We have an inquiry from —— for ——; see them, important.
Raptemur.....We have an inquiry from —— for ——; see them, if it does not interfere with your other plans.
Raptorem.....You had better advise them you will call.
Rapturam.....We would suggest your going there at once.
Raptus.....We would suggest your going there as soon as convenient.
Rapulati.....Do you deem it advisable to go and see ——?
Rapuncio.....Have telegraphed them you will call.
Raputier.....As soon as convenient, call on——.
Raquetera.....For desired information, see our descriptive circular.
Raquideos.....For desired information, see our catalogue, page ——.
Raquitismo....For desired information, see our price list, page ——.
Rareeshow....Call us by telephone on receipt of this.
Rarefacto.....Please be at telephone headquarters at — o'clock, Cincinnati time, to-day, at —— City; we will call you.
Rarefy.....Please be at telephone at —— Hotel —— City at — o'clock, Cincinnati time, to-day; we will call you.
Rarekiek.....We have an inquiry from —— at ——; telephone or telegraph them and ascertain whether it is desirable for you to call; govern yourself accordingly.
Rarescence....Machine is running satisfactorily.
Rarescible....If you cannot give the desired information immediately, answer how soon you can give same.
Raresco.....Matters here are arranged satisfactorily.
Raridade.....Your customer —— here; what discount on printed prices shall we quote? Also name terms and place of delivery.
Rarifico.....Request for alteration of —— received too late to comply.
Rarifloros.....
Raripile.....
Rarissimo.....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