RIVETT

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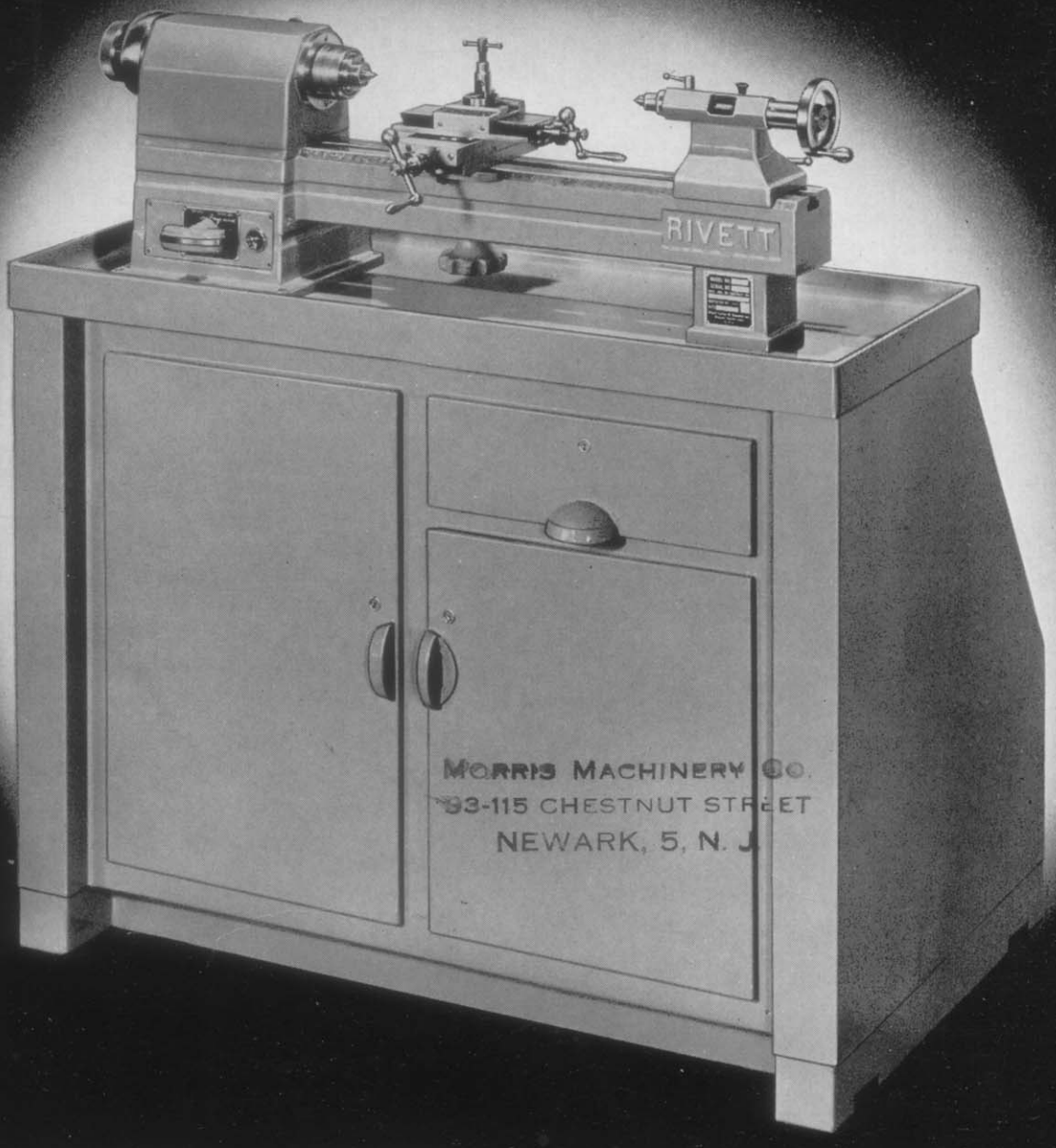

RIVETT LATHE & GRINDER Inc.

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BULLETIN 715

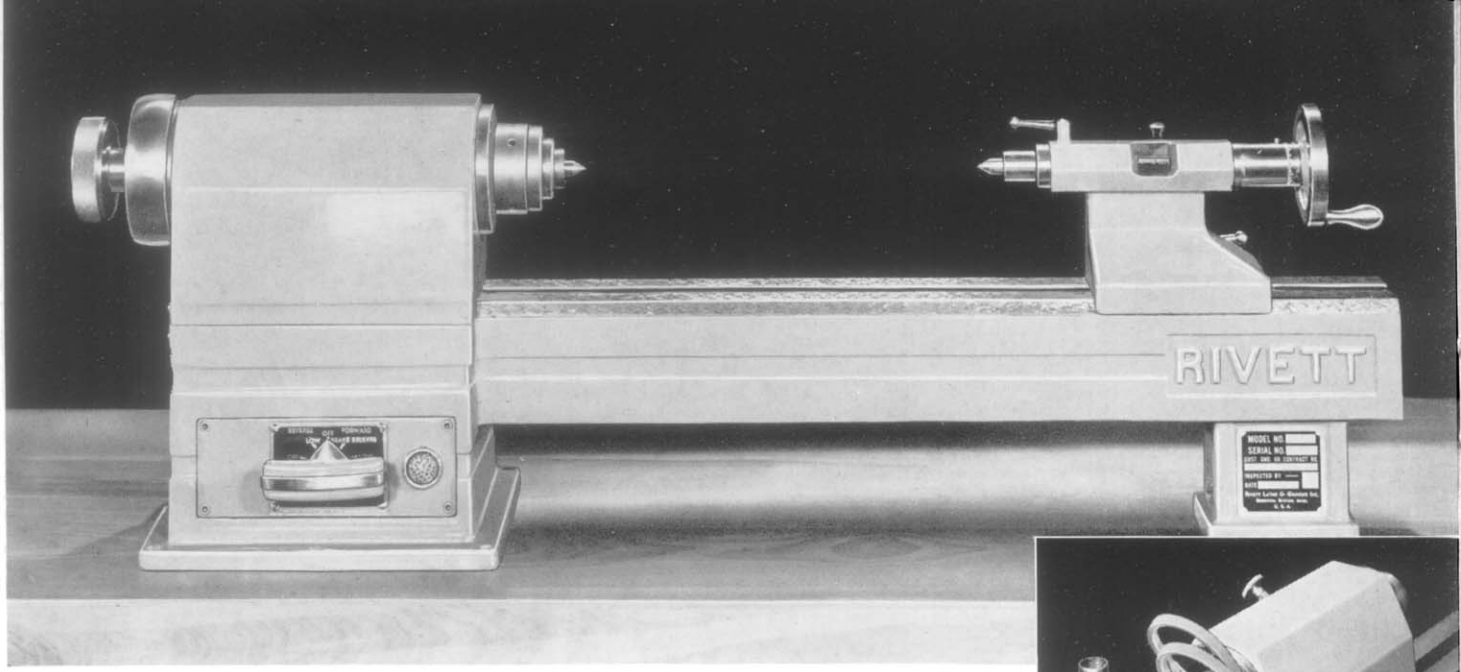


Fig. 1

THE Rivett 715 bench lathe (7" swing with 15" center distance) reflects the 53 years experience of its builder and proper consideration of purpose, operating convenience and precision life. More power and greater speed range are combined with precision in this lathe to produce more earning capacity than in any other machine of its size.

The 715 fulfills two distinct functions: the production of small duplicate parts requiring extreme accuracy, and the finishing and fitting of fine elements in assembly, maintenance, tool room and laboratory. The illustration above shows its strong, self-contained design, its single control handle and pilot light set in removable panel and its facility for instantly changing vee belts without disturbing even the spindle. In production the rotary closer, Fig. 5, is essential to quick and uniform chucking of stock or blanks in collet or step chuck. Convenient stops and graduated dials are provided on the tailstock and slide rest to govern sizes. Various attachments extend its usefulness and each employs the inherent truth of the preloaded ball bearing spindle. In this manner a multi-purpose unit is afforded. The attachments include, beside the compound slide rest, Fig. 8, and tailstocks, Figs. 10, 11 and 12, the universal grinding attachment, Fig. 15, and the milling attachment, Fig. 17.

The 715 may be run from standing or sitting position. The electrical panel at left end of bed carries single switch operating unit motor drive and affording high and low forward and reverse spindle speeds from 150 to 3500 r.p.m. The hand wheel assists in setting up and indexing work. The long taper key-drive spindle nose, Fig. 6, positively mounts chucks and face plates. All vee belts may be removed and replaced without disassembling any part of the drive or spindle mounting.

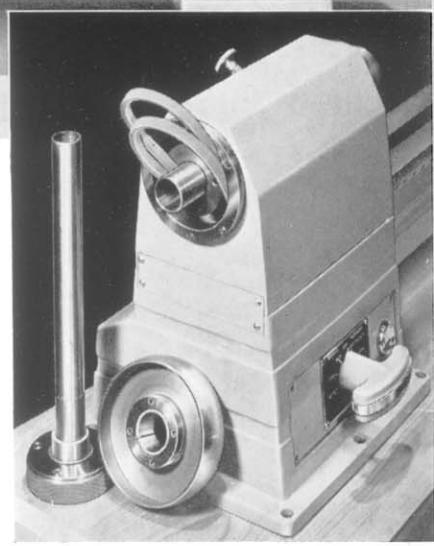


Fig. 2

The original accuracy built into the 715 is protected for years of normal use. The enclosed headstock provides rigid, vibrationless mounting for super-precision ball bearings which require no adjustment. All revolving parts are dynamically balanced. The self-centering design of the long taper key-drive spindle nose guarantees true-running chucks and face plates for a lifetime. The generous bearing area of the ribbed, box-sectioned bed assures long wear. Steel top slide and full depth Acme feed screws make for an enduring compound slide rest.

The basic assembly of the 715 lathe, as shown in Fig. 1, includes bed, enclosed ball bearing headstock, spindle hand wheel, draw-in spindle for collets and step chucks, driving plate, center and center chuck, electrical panel with switch and pilot light and offset graduated spindle tailstock with center. To this basic assembly are added the unit motor drive, the mounting and the attachments illustrated and described in this bulletin.

SPINDLE DRIVE

The 715 unit motor drive, Fig. 4, provides eight selective spindle speeds from 150 to 3500 r.p.m. The 900/1800 r.p.m. motor is controlled by a convenient switch-operating handle, Fig. 5. By this handle, spindle is started with rapid acceleration in low or high speed, forward or reverse. Two drive adjustments govern the selected speed range, namely the position of motor vee belt on two-step sheaves and the high or low speed engagement of positive clutch in drive mechanism. With clutch in neutral, all drag of drive is removed from lathe spindle.

The drive assembly attached to the underside of cabinet or bench top consists of bracket, front and rear shafts and positive clutch. Rear shaft is driven by vee belt from two-speed motor. The hinged cradle, carrying motor, is mounted on bench plank or floor of cabinet and has means for releasing tension of driving vee belt when shifting on two-step motor and rear shaft sheaves. The rear shaft, in turn, drives front shaft by two sheaves of different diameters. The matching sheaves on front shaft revolve freely and are selectively engaged by positive jaw clutch to drive the shaft. The front shaft drives lathe spindle by two matched vee belts.

The 715 drive is designed for simplicity, operating convenience and durability. All revolving parts are dynamically balanced and run in self-aligning ball bearings. All vee-belts have screw adjustment for tensioning and all may be replaced without disassembling any part of lathe or drive.

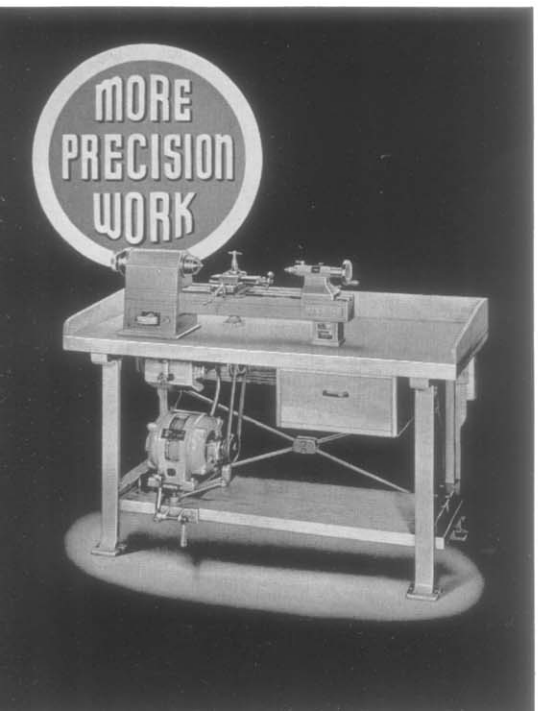


Fig. 4 (Rear Cover)

Fig. 3 (Front Cover)

CABINET MOUNTING

The cabinet, Fig. 3, is steel-welded construction properly designed to support the lathe and to prevent all mechanical and sound vibration. It is recommended for production installations and where conservation of space and non-inflammable mountings are required. The top surface has a 1½" raised edge to form a chip or oil pan. The drawer, fitted with collet board and tool tray, and the tool compartment provide ample space under lock and key for storing valuable attachments. A separate compartment at left with louvres at rear for motor ventilation encloses the drive. Recessed front affords comfortable knee and toe room for operator. The floor space is 45" x 24". The finish is machine tool gray.

BENCH MOUNTING

The bench, Fig. 4, is primarily for laboratory, toolroom and such installations as require table space. The assembly consists of a 5-ply laminated hardwood top 60" x 26" x 2¼" with back and end boards mounted on heavy cast iron legs rigidly braced with steel tie rods. Wood drawer with lock is fitted with sliding collet board. Motor plank is supported by cross members of cast iron legs. The woodwork has natural finish while the legs are painted machine tool gray.

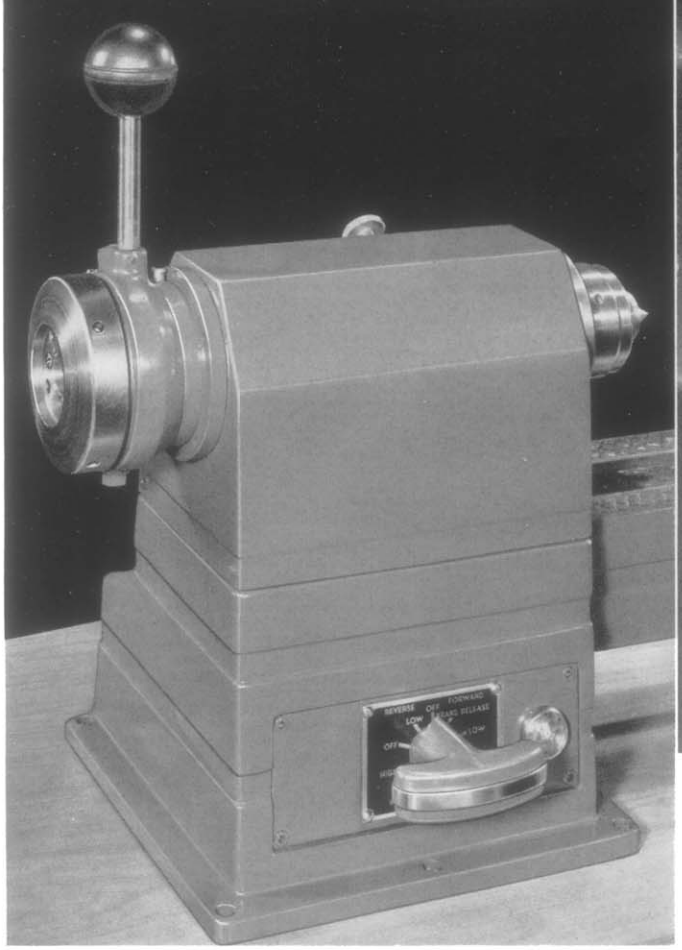


Fig. 5

HEADSTOCK

The totally enclosed headstock is securely fastened to lathe bed and mates with pedestal housing. The spindle bearing mountings are cast integral and are connected over their entire circumference in the headstock frame to withstand maximum stresses at high speeds, without distortion or vibration. The spindle is heat-treated alloy steel mounted on super-precision ball bearings. The two front bearings are matched and mounted in opposition with a predetermined initial end thrust while the rear spindle bearing is slidably mounted for spindle expansion and contraction. The long taper key-drive spindle nose, Fig. 6, provides locked-mounting for jaw chucks and face plates, Fig. 7. A free riding nut, provided with spanner wrench holes, draws key-wayed attachment onto the taper, locking same on spindle. With the spindle running in its own bearings, the mouth, chuck seat and tapered nose are ground to insure absolute truth. Draw-in spindle operates freely in

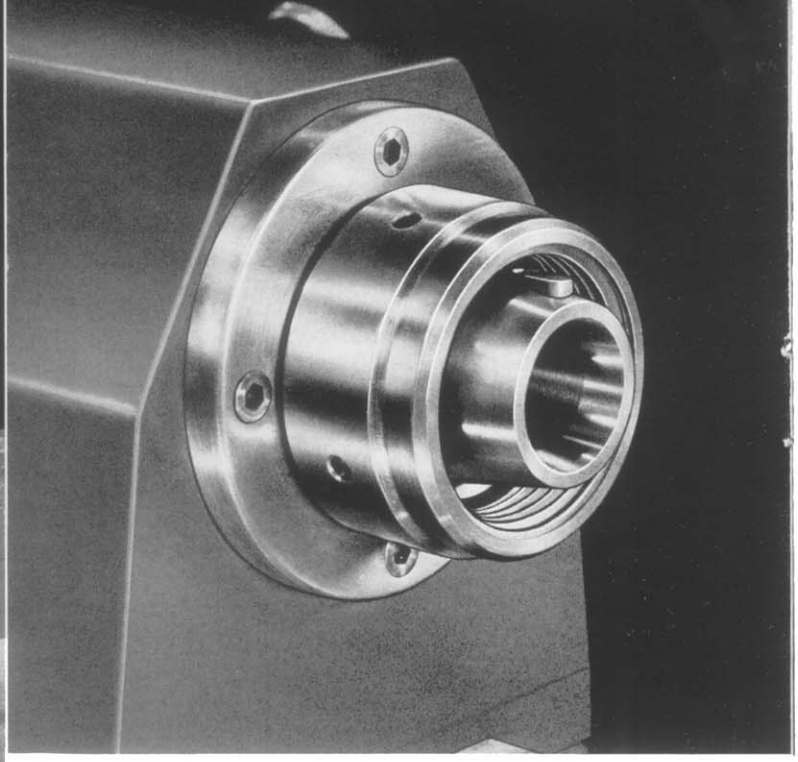


Fig. 6

tensioning collets and step chucks as all end pressure and friction is absorbed by ball thrust bearing. Convenient wheel for turning by hand when setting-up, measuring or indexing work, mounts on the left end of spindle. Locking pin on rear of headstock engages a wheel with equally spaced notches mounted on the spindle within headstock enclosure. The entire spindle assembly is dynamically balanced. The spindle bearings are grease-packed with easy means provided for infrequent renewal of lubricant.

Although the headstock is totally enclosed, provision is made for replacing the matched pair of driving V-belts without disturbing the lathe, the spindle, spindle bearings or any part of the drive, see Fig. 2. A circular opening is exposed around left end of lathe spindle in headstock frame by removing hand wheel, held to spindle by tapered sleeve and locking nut. As both driving sheave and spindle sheave are outboard of their bearings, the driving V-belts can be removed and replaced through this circular opening.

BED

The box-sectioned bed with substantial cross ribbing insures alignment of headstock, slide rest and tailstock. The left end is cast with integral enclosure mating with headstock within which run endless, replaceable driving V-belts.

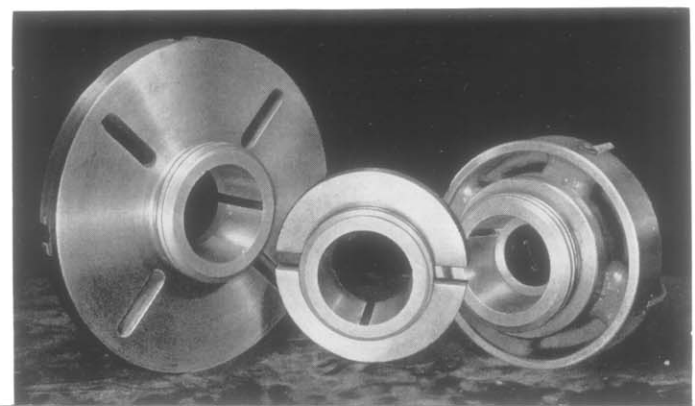


Fig. 7

ELECTRIC CONTROL PANEL

The electric control panel, Fig. 5, is removably mounted in headstock end of bed to facilitate wiring and inspection. It carries both a pilot light, to be

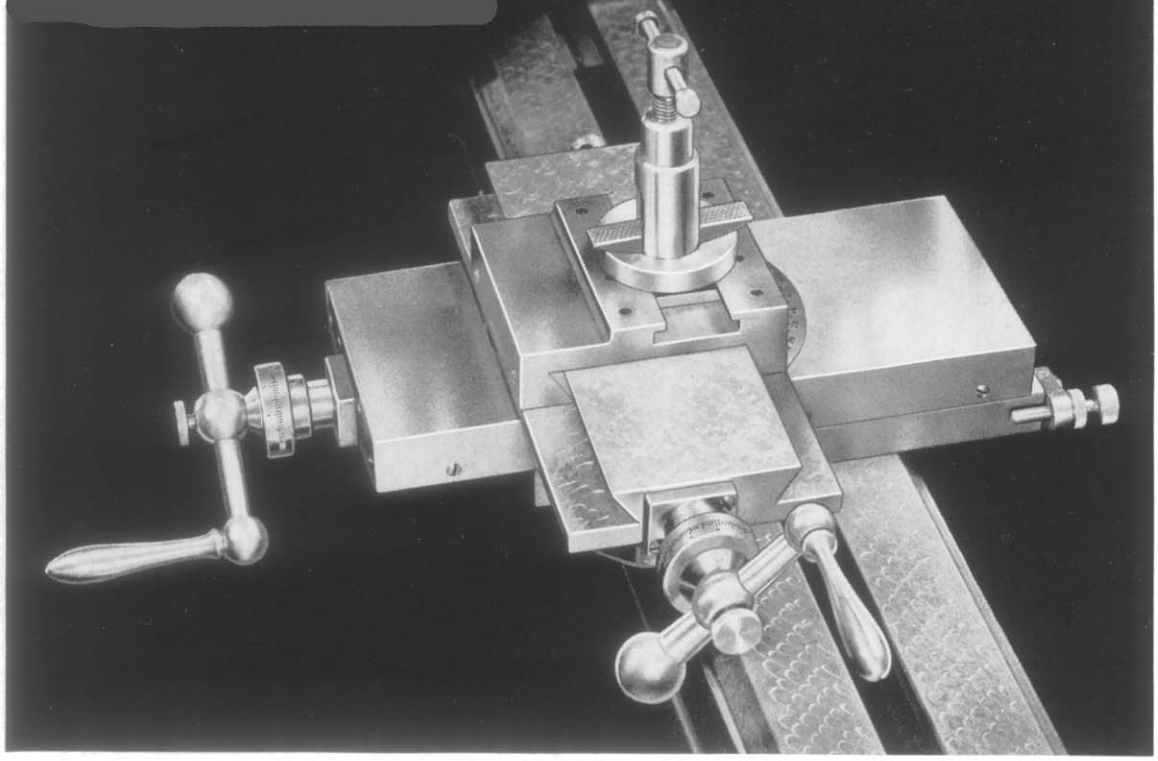


Fig. 8

wired to a disconnect line switch, and a control handle for operating the motor. The single drum switch with detented stations provides high and low motor speeds, forward and reverse, and intermediate stops.

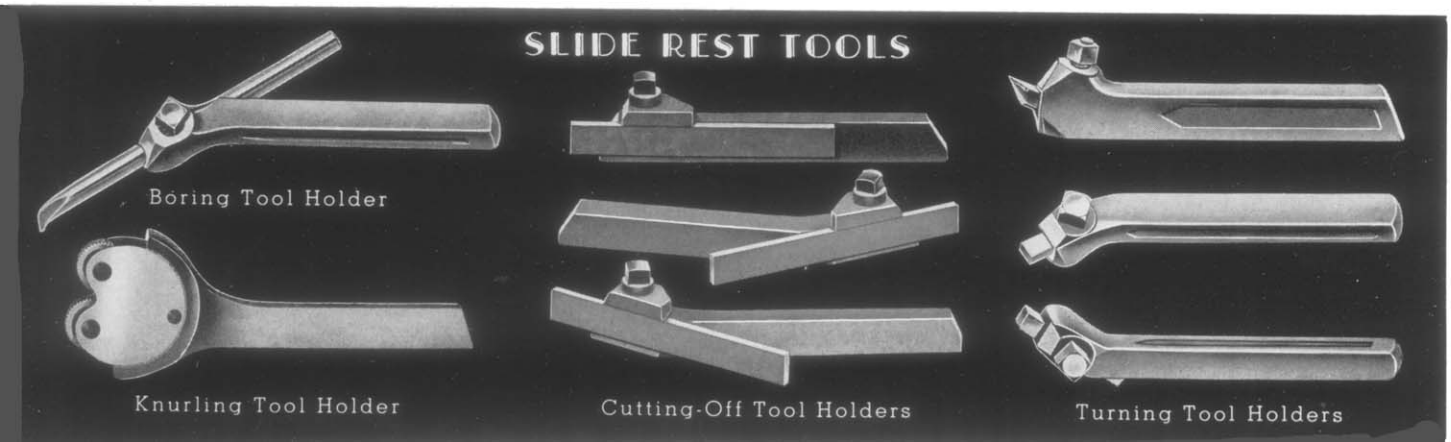
ROTARY CHUCK CLOSER

The automatic rotary chuck closer, Fig. 5, may be used in place of draw-in spindle to operate collets and step chucks. By moving operating handle in slight arc to detented positions, collets are quickly and positively opened and closed. When used on duplicate parts, the correct adjustment of spindle is locked for uniform action. All end thrust is taken on ball bearings.

COMPOUND SLIDE REST

The compound precision slide rest, Fig. 8, removably mounts on the lathe bed and consists of a base, an upper and lower slide with swivel between. An adjustable guide plate, locked to tee slot on under side of base, registers against front bevel of the bed to square the cross slide with the lathe center line. Bolt with knob clamps the slide rest in desired transverse or lateral position. The slide movements are controlled by 7/16"—10 pitch full depth Acme screws working in long bronze nuts and are registered on adjustable dials graduated to 0.001". The lower slide has a screw stop for duplication of sizes. The intermediate swivel is graduated in degrees over its full circumference. The top slide carries tool post swivably mounted in block held in tee slot. Tool holders, Fig. 9, with 5/16" x 1/2" rectangular shanks fit the tool post.

Fig. 9



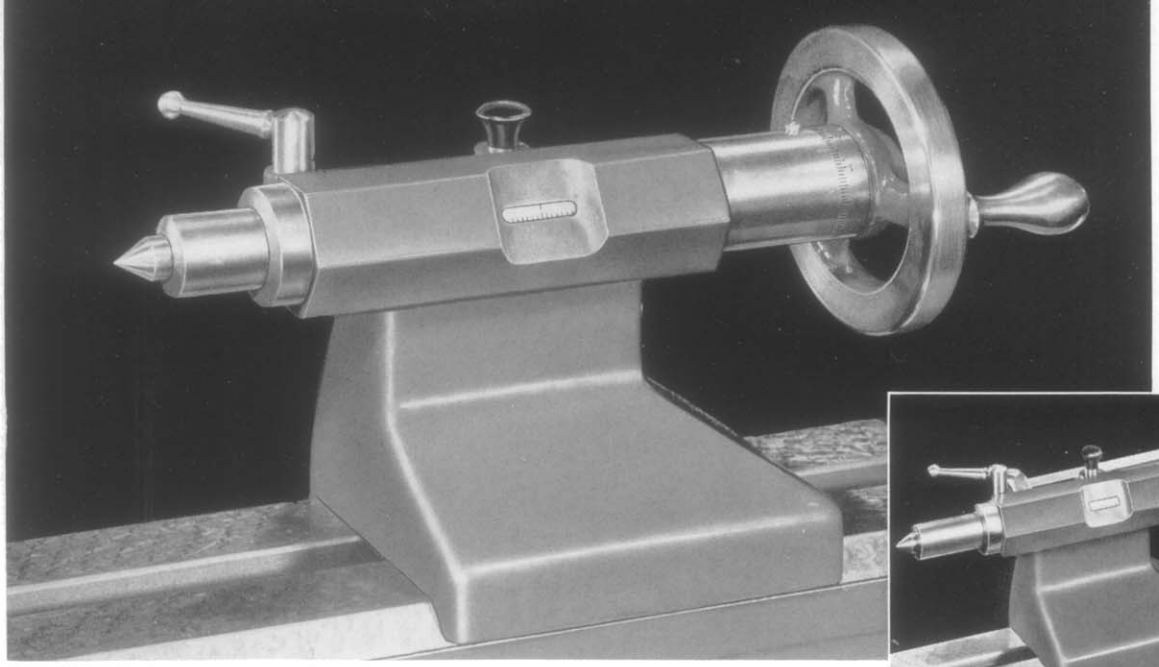


Fig. 10

Fig. 11

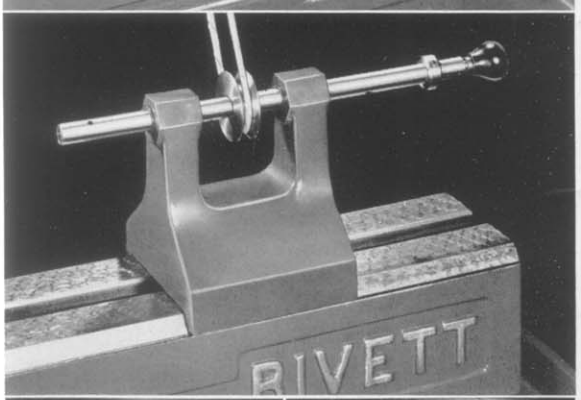


Fig. 12

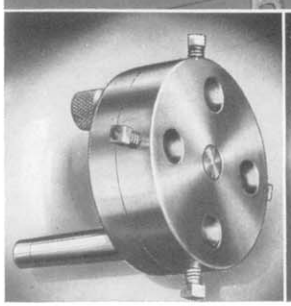


Fig. 13

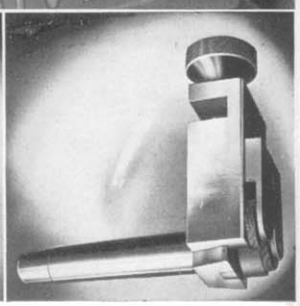


Fig. 14

STANDARD TAILSTOCK

The standard tailstock, Fig. 10, has offset frame with hardened, ground and lapped spindle 7/8" diameter with No. 1 Morse taper. The spindle, which is traversed by full depth 1/16"—10 pitch steel screw working in bronze nut, has full bearing in all positions and shows no "wink" when tightened by binder. The spindle movement operates smoothly as a ball thrust bearing absorbs end pressure and reduces friction. The 3" travel of spindle is measured on a non-corrosive scale graduated to 1/16" and by a large adjustable dial graduated to 0.001". When spindle is fully retracted, standard center or other attachment is automatically ejected. Tailstock frame is provided with a well and quill for white lead or other lubricant for dead centers. Binder handles lock spindle and clamp tailstock in any position on bed.

LEVER TAILSTOCK

The lever tailstock, Fig. 11, provides quick and sensitive traverse of spindle for drilling, lapping, reaming or using tailstock turret attachment, Fig. 13. Lever-operated spindle, 7/8" diameter, has 3" travel graduated in 1/16" and controlled by an adjustable stop.

REVOLVING SPINDLE TAILSTOCK

The revolving spindle tailstock, Fig. 12, is primarily designed for fine hole drilling and lapping requiring sensitive hand operation. It requires overhead auxiliary motor drive, Fig. 16. Spindle is driven in reverse rotation from lathe at speeds of 6000, 8000 and 10,000 r.p.m. and has maximum 1 1/2" stroke.

TURRET ATTACHMENT

The tailstock turret attachment, Fig. 13, mounts by taper shank and is valuable for production of small duplicate parts. The head is rotated by hand and locked in position by index pin.

KNURLING ATTACHMENT

The tailstock knurling attachment, Fig. 14, mounts by taper shank and is used in production for diamond knurling work held in collet. Cross slide carrying the knurls is controlled by feed screw. Capacity is 3/16" to 5/8" diameter.

UNIVERSAL GRINDING ATTACHMENT

The universal grinding attachment, Fig. 15, is driven by round belt from auxiliary motor drive, Fig. 16. This attachment is primarily designed for sensitive grinding or lapping of straight or taper holes. It may also be used for external grinding.

The base mounts on lathe bed, positioned by guide plate and clamped by bolt and knob. Cross slide has 5" travel operated by ball handle with movement measured to 0.001" by adjustable dial. Spindle bracket base may be swiveled to any angle located by dial graduated in degrees over its full circumference. The hardened, ground and lapped spindle runs in bearings carried by hinged bracket. During grinding, spindle may be swung clear for gauging work and returned without losing height or lateral adjustment. Spindle has No. 4 Pratt & Whitney taper hole for mounting wheels. Grinding stroke is 2½" by hand and may be located by adjustable screw stop.

The auxiliary motor drive, Fig. 16, rests on bench top back of lathe and employs a ¼ H.P., 1750 r.p.m. motor. Three spindle speeds, 6000, 8000 and 10,000 r.p.m. are selectively obtained by positioning motor belt on three step pulley.

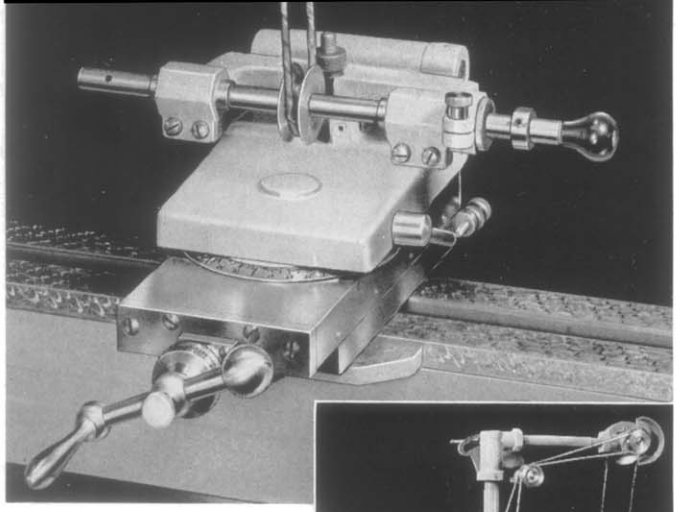


Fig. 15

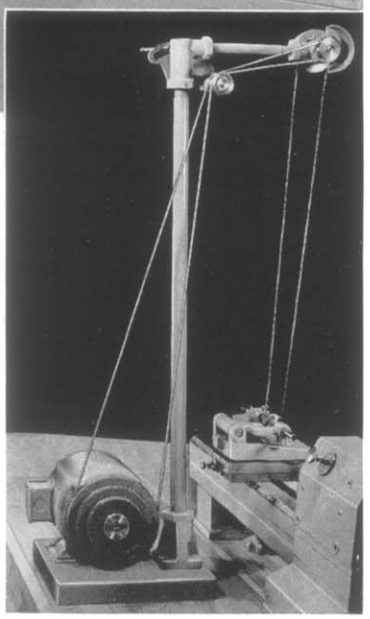


Fig. 16

SLIDE REST MILLING ATTACHMENT

The milling attachment is capable of a wide selection of light milling operations. It employs the compound slide rest, Fig. 8, and is set up as in Fig. 17. Cutters are held by collets or mounted on arbors drawn into lathe spindle. Work may be held in collet of the indexing work spindle or may be strapped directly to top slide of slide rest or mounted on angle iron strapped to slide rest. Vise, Fig. 19, and angle iron, Fig. 18, in combination or alone provide other methods for holding work.

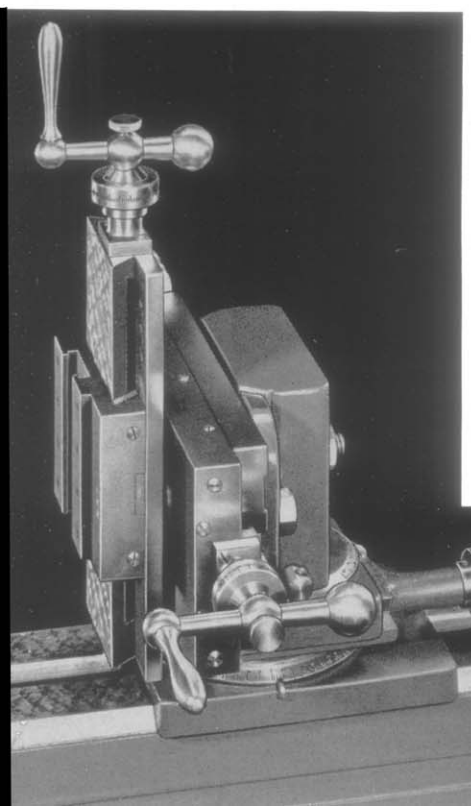
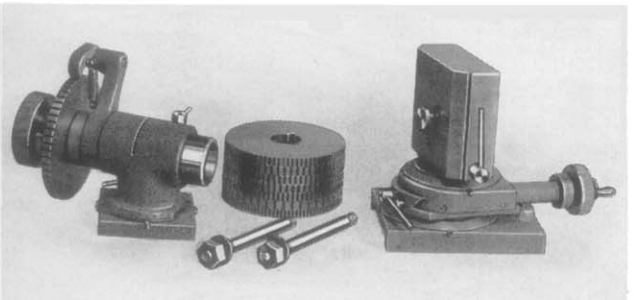


Fig. 17

The base is bolted to the lathe bed and carries a longitudinal slide. This slide may be swiveled to any angle and traversed up to 1⅛". A vertical-faced head, swiveling to any angle, is carried by the slide and in turn supports standard compound slide rest, clamped in any transverse position. The slide rest affords 5" cross feed and 4¼" vertical feed, with swivel between. A work-carrying spindle, clamped in holder and swivably-mounted on base, can be directly attached to slide rest top slide or to angle iron. This spindle takes the same collets as used in lathe and is furnished with set of eight plates with divisions of 45, 56, 60, 64, 72, 80, 84 and 100, for indexing work. All swivels are graduated in degrees and locked by eccentric binders. All slide movements are measured to 0.001" by adjustable dials.



ATTACHMENTS

INDEXING ATTACHMENT, indexes work held in lathe spindle. Bracket mounts on end of headstock and carries finger which engages division on index plate. Index plates are clamped to spindle by draw bar and are furnished with 45, 56, 60, 64, 72, 80, 84 or 100 divisions or with any special divisions.

PLAIN TEE REST, mounts on lathe bed and carries standard 3" tee. Base is also used for L rest, 6" tee, triangle rest and saw table.

PLAIN STEADY REST, mounts on lathe bed, has three adjustable brass jaws with maximum 3" diameter capacity.

ANGLE IRON, used on slotted face plate and slide rest milling attachment, has tee slots and V-grooves for round work. Length 4¼", width 3¼", height 3".

CLAMP DOG, ¾" capacity used for driving work held between centers.

SLOTTING AND MILLING FIXTURE, mounts on lathe bed. V-block, adjustable for height, carries square holder for 4-C collets. Work, held in collet, advances against saw or cutter on arbor held in lathe spindle. Depth of cut maximum 1", controlled by adjustable stop nut.

BLANK CENTER, has head 15/16" diameter x 1⅜" long which may be turned to any desired form.

SPUR CENTER, used for wood turning.

HALF MALE CENTER, has hard head, slabbed to provide clearance for turning tools when facing ends of work or external grinding small diameters.

SOLID VEE CENTER, has soft head 1" diameter and groove with 90° included angle.

MALE CENTER, has 60° included angle. Furnished hard for tailstock and soft for headstock.

REVOLVABLE VEE CENTER, has soft head which turns freely on shank.

FEMALE CENTER, has hard head with 60° included angle and center hole with 60° included internal angle.

LARGE MALE CENTER, has 1½" diameter hard head with 60° included angle.

ADJUSTABLE OFF-CENTER, has slide with maximum ¼" screw adjustment to carry ½" diameter hard male and female removable centers.

CENTER AND CENTER CHUCK, consists of soft male center with taper fit in center chuck. Center chuck fits headstock spindle and is also used to carry all other forms of centers.

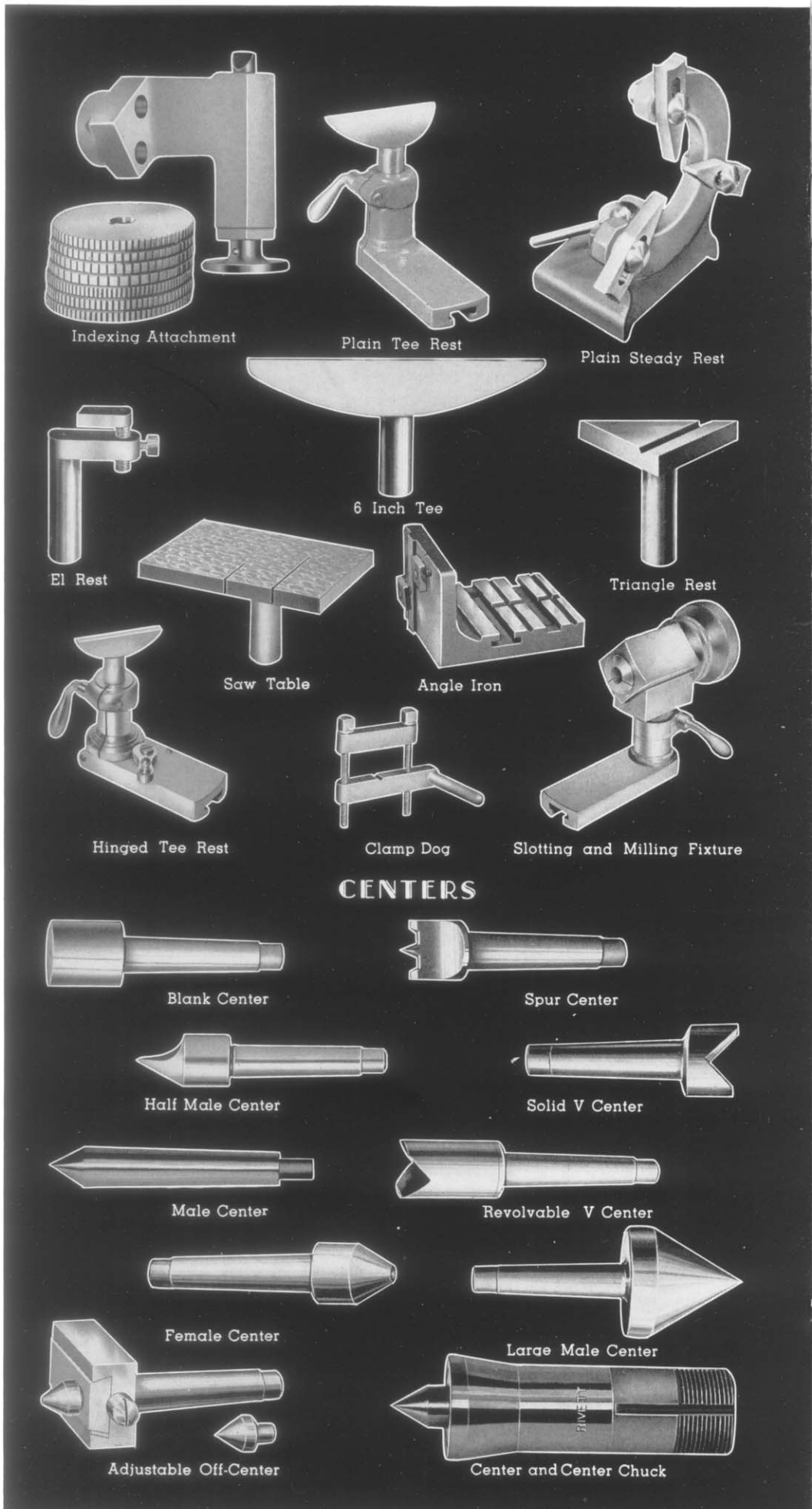
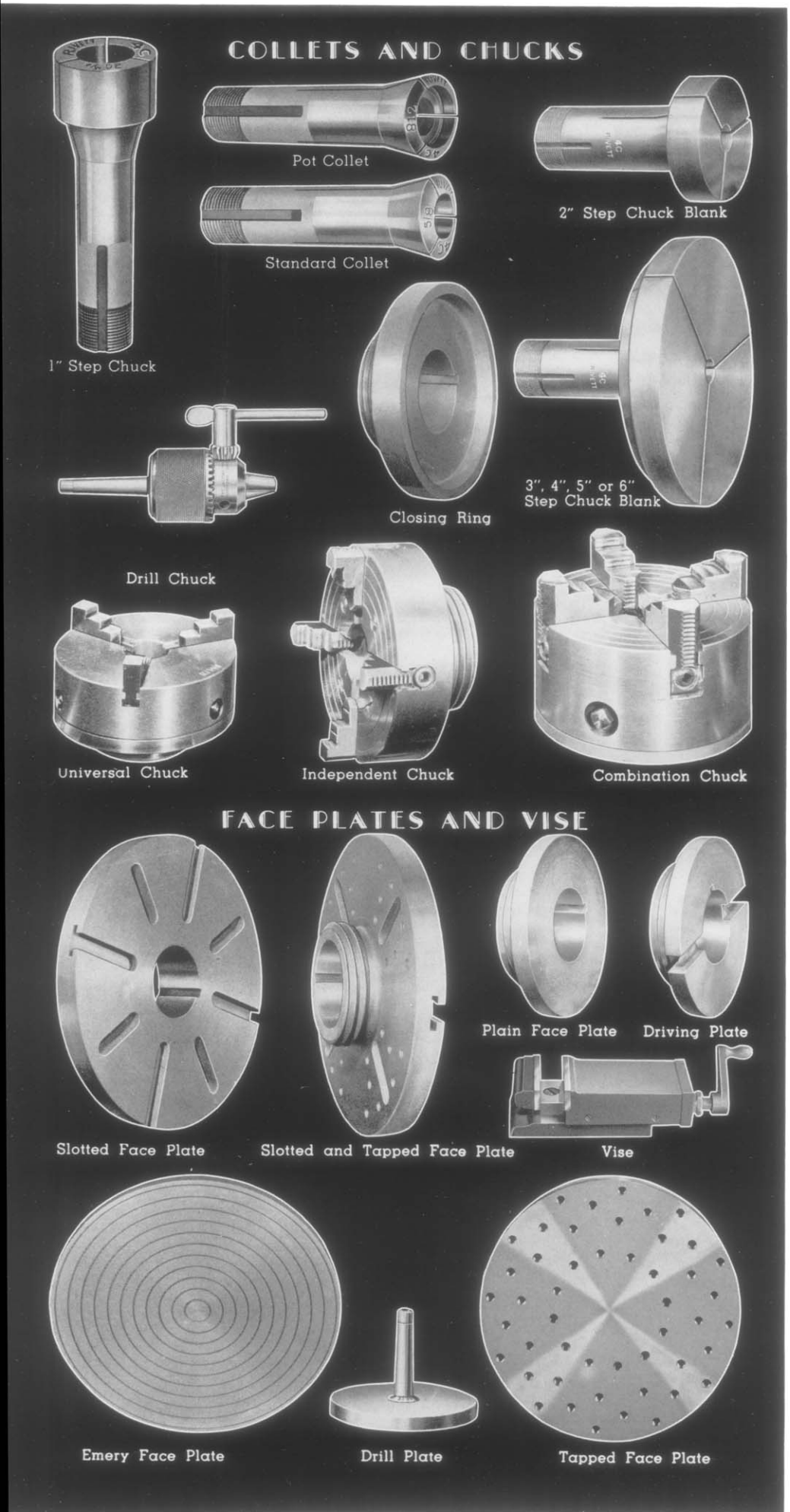


Fig. 18



1" STEP CHUCK, is split, spring-tempered and ground with maximum 1" diameter x 3/4" deep hole.

POT COLLET, is split, spring-tempered and ground. Maximum diameter and depth of hole limited by head diameter and taper.

STANDARD COLLET, is split, spring-tempered and ground. Holes are guaranteed to run dead true at mouth and are furnished in round fractional sizes 1/64" to 3/4" or in decimal and odd sizes. Square holes 1/8" to 17/32" and hexagon holes 1/8" to 21/32" and unsplit tapered hole collets are also furnished. Blanks are soft for finishing to special shapes.

2" STEP CHUCK BLANK, is soft, split with 9/16" diameter hole to be bored to desired diameter. It closes by drawing into spindle mouth.

3", 4", 5" or 6" STEP CHUCK BLANK, requires closing ring. It is soft, split, with 9/16" dia. hole to be bored to desired diameters. Aggregate depth of steps limited to 3/8".

CLOSING RING, fits long taper key-drive spindle nose held by retaining nut and is furnished in two sizes, one for 3" and 4" step chucks and one for 5" and 6" step chucks.

DRILL CHUCK, has taper shank for tailstock spindle or headstock center chuck or straight shank for collets. Furnished in 1/4", 3/8" and 1/2" diameter capacities.

UNIVERSAL CHUCK, 3-jaw, geared scroll with inside and outside jaws, mounts on long taper key-drive spindle nose. Furnished in 4" size.

INDEPENDENT CHUCK, 4 reversible jaws, mounts on long taper key-drive spindle nose. Furnished in 4" size.

COMBINATION CHUCK, 4-jaw, geared scroll reversible type, independent and universal movement, mounts on long taper key-drive spindle nose. Furnished in 4" size.

SLOTTED FACE PLATE, 7" diameter has four plain and four tee-slots.

SLOTTED AND TAPPED FACE PLATE, 7" diameter has four plain and four tee-slots and forty 5/16"-18 N.C. tapped holes.

PLAIN FACE PLATE, has 4 1/4" diameter and mounts on long taper key-drive spindle nose.

DRIVE PLATE, has 1/2" wide slot for lathe dog.

VISE, mounts on slide rest top slide, slotted face plate and angle iron. Jaws are hardened steel with 1 3/4" maximum opening.

EMERY FACE PLATE, 7" dia. has circular scoring for emery discs.

DRILL PLATE, 2", 3", 4" and 5" diameters fit tailstock spindle and headstock center chuck.

TAPPED FACE PLATE, 7" diameter has forty-nine 5/16"-18" N.C. tapped holes.

Fig. 19

SPECIFICATIONS

HEADSTOCK

Max. dia. round hole in collet ..... 3/4"
Max. dia. round stock held in jaw chuck passed through spindle ..... 55/64"
Max. dia. square hole in collet ..... 17/32"
Max. size across flats, hexagon hole in collet ..... 21/32"
Swing over bed dia. ..... 7"
Height, top of bed to center of spindle ..... 3 1/2"
Swing over top slide of slide rest, dia. ..... 1 3/8"
Swing over bottom slide of slide rest, dia. ..... 4"
Style of headstock spindle nose, ... long taper key-drive

BED

Length of bed ..... 33"
Distance between centers, tailstock flush ..... 15"
Distance between centers, tailstock overhung ..... 17 1/2"
Width ..... 3 5/8"
Depth ..... 3 1/2"

TAILSTOCK

Travel of tailstock spindle ..... 3"
Dia. of tailstock spindle ..... 7/8"
Taper of hole ..... Morse No. 1
Dia. of hole at mouth ..... 0.475"
Scale graduations ..... 3" x 1/16"
Dial graduations ..... .001"

SLIDE REST

Travel of slide rest top slide ..... 4 1/4"
Travel of slide rest cross slide ..... 5"

SPEED RANGE

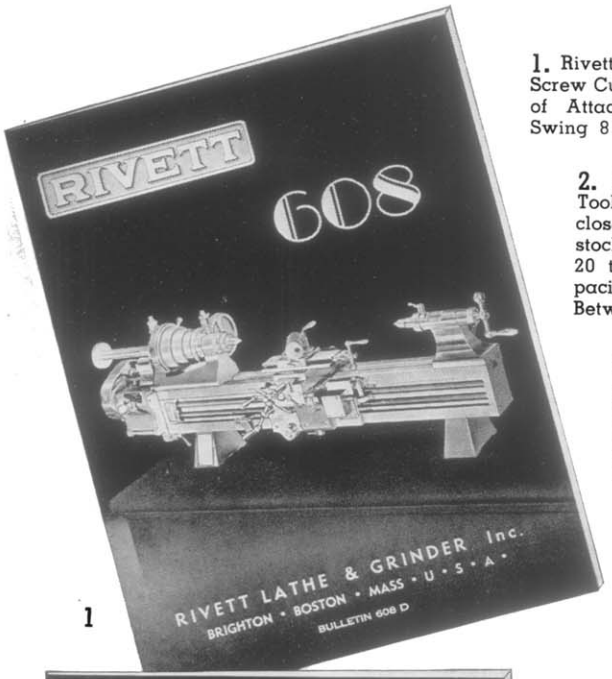
Spindle speed drive—Eight speeds forward and reverse ..... 150 to 3500 r.p.m.

WEIGHT

Lathe, standard attachments, mount and drive, net ... 650 lbs.
Shipping weight, domestic, one crate, approx. ..... 825 lbs.
Shipping weight, ocean shipment, one box, approx... 1050 lbs.
Cubic feet, boxed for ocean shipment, approx. 65

INDEX

OTHER RIVETT MACHINES



1

1. Rivett No. 608 Back Geared Precision Screw Cutting Lathe. Complete Selection of Attachments. Collet Capacity 1". Swing 8½". Bed 40".

2. Rivett No. 1020 Precision Toolroom Cabinet Lathe. Enclosed Ball Bearing Headstock. Spindle Speed Range 20 to 2300 r.p.m. Collet Capacity 1". Swing 10". Distance Between Centers 20".

3. Rivett No. 918 Ball Bearing Bench Lathe or Hand Screw Machine. Collet Capacity 1". Swing 9". Bed 39½".

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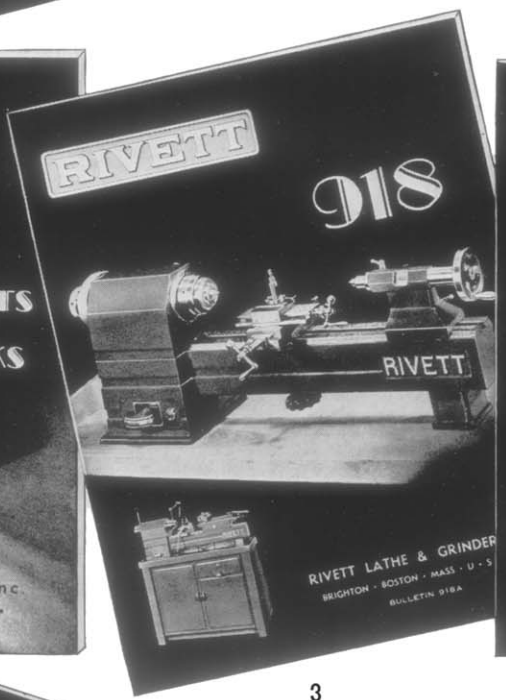


3

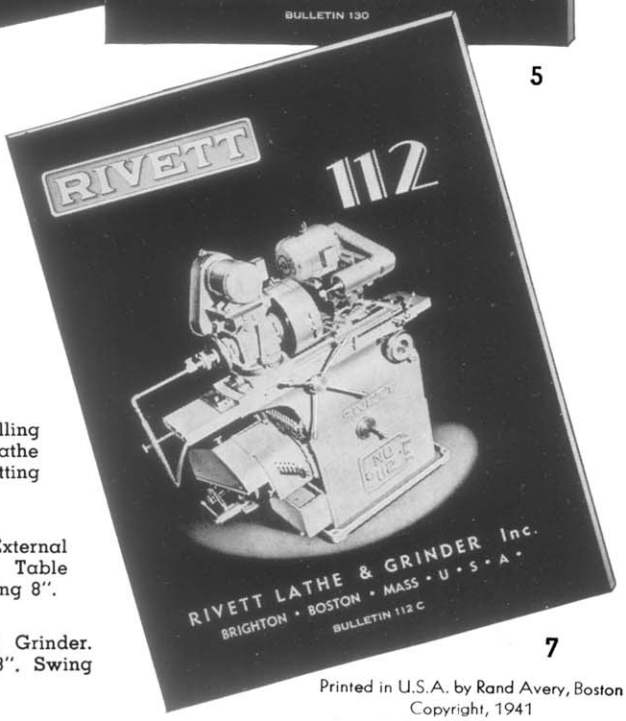
5

4. Rivett Collets and Step Chucks for All Standard Lathes, Milling Machines and Other Tools.

5. Rivett Universal Milling Attachment for Bench Lathe and Small Screw Cutting Lathes.

6

6. Rivett No. 104 Internal-External Precision Grinder. Power Table Reciprocation 2" or 4". Swing 8".



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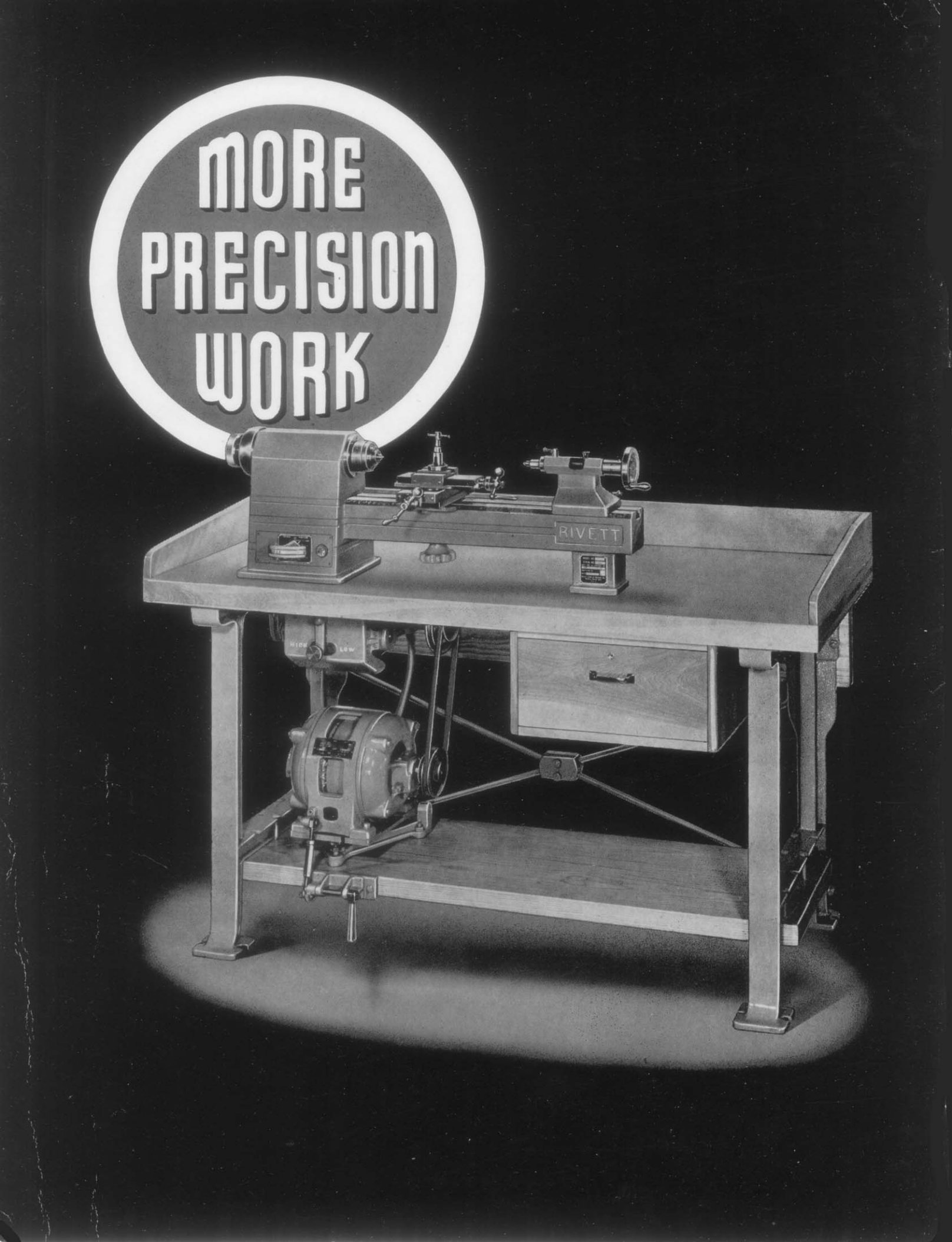
7. Rivett No. 112 Universal Grinder. Power Table Reciprocation 8". Swing 14".

Printed in U.S.A. by Rand Avery, Boston


MORE
PRECISION
WORK
RIVETT