

ELECTRIC DRILLS AND DRILL KITS

FOR SKILLED CRAFTSMEN OR HOBBYISTS . . . 1/4 AND 3/8-INCH CHUCK CAPACITY

A MALL ELECTRIC DRILL KIT. For heavy-duty use by skilled craftsmen, garages, shops, etc. Used for sanding and polishing autos, furniture, etc. Complete polishing and sanding kit with handy carrying case. Includes 3/8-in. capacity Mall Drill (D)—see complete description at right.

Metal case 16 by 7 by 7 in. with accessories tray 1/2-inch deep. Kit includes 7-inch felt backing pad, polishing bonnet, can of polish, 6 assorted abrasive discs, clamping nut, wrench and instructions.

84 KGP 2637 M—Complete Kit with 3/8-in. drill. See Price List
84 KGP 2638—Sanding and Polishing Kit only. For use with (A) above or drill 84 KGP 2614 K listed at right. See Price List

B 1/4-IN. ECLIPSE ELECTRIC DRILL KIT. For light-duty use by home craftsmen and hobbyists. Drill has 1/4-in. capacity Jacobs Hand-tite chuck. Chrome plated steel tube housing. Bronze bearings. Pistol grip handle. Trigger switch. For 110-120-volt, 60-cycle or less A.C. or D.C. No load speed 1700 R.P.M. Length 11 1/2 in. 6-ft. rubber covered cord and plug. Kit contains: 1/4-in. drill 10 high-speed ground drill bits in sizes from 1/16 to 1/4 in., strong 22-gauge steel box with gray wrinkle finish. Actual wt. of drill 3 1/2 lbs.

84 KG 2605—Complete Drill Kit. Ship. wt. 7 lbs. See Price List
84 KG 2603—Portable Electric Drill only. Ship. wt. 4 lbs. See Price List

E ELECTRIC DRILL HACK SAW ATTACHMENT. For fast cutting in all metals, etc. Reciprocating action. Takes hacksaw type blades. For electric drills having 1/4-in. or larger chuck capacity. Blade included.
84 KG 2645 K—State chuck size See Price List
Med.-Duty (For 1/4 in. chuck). Wt. 2 lbs. 5 oz.
Heavy-Duty (For 3/8 in. or larger chuck). Wt. 3 lbs.

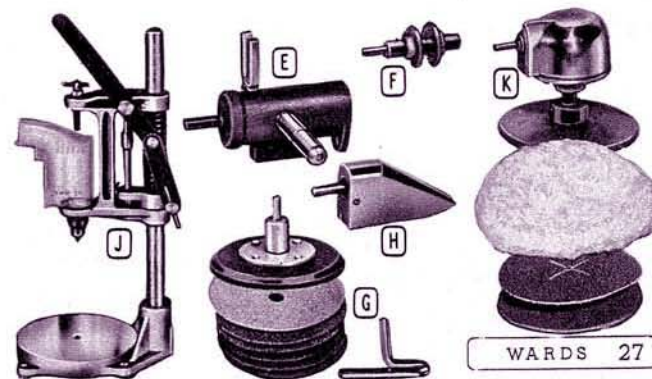
F ARBOR FOR ELECTRIC DRILLS. Precision made of carbon steel. Used to hold wire wheels, buffing wheels, grinding wheels, etc. 1/4-in. shank. Arbor is 1/2 by 20 thread. 35/16-in. long. 1 1/4-in. flanges and nuts in one piece. Shipping weight 6 oz.
84 KG 3496 See Price List

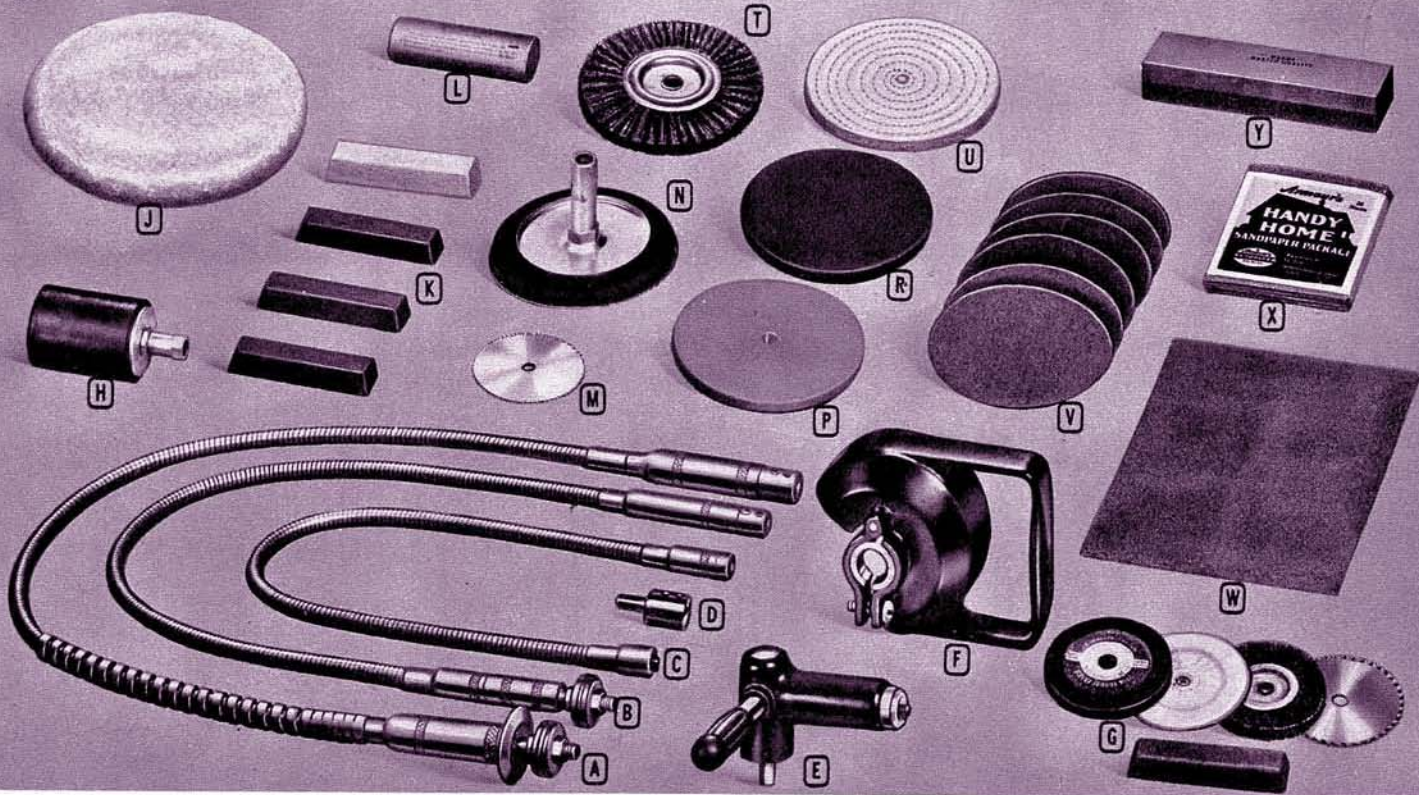
G MALL 4-IN. DIAM. FLEXIBLE SANDING PAD. Fits 1/4-in. or larger chucks. 6 assorted discs.
84 KGP 2617—With wrench See Price List
84 KG 2618—Extra Sanding Discs. Assortment of 10. Ship. wt. 10 oz. See Price List
84 KG 3499—5-in. Rubber Sanding Pad. 2 sanding discs, buffer. Ship. wt. 1 lb. See Price List

H ELECTRIC DRILL SHEAR ATTACHMENT. Fits drills with 1/4-in. or larger chuck. Cuts .040-in. thick sheet iron. Cutter blades are replaceable.
84 KG 2625 K—Shipping weight 1 lb. 6 oz. See Price List

J MALL ELECTRIC DRILL STANDS. Convert (D) above or (D) on opposite page into drill press. Drills to center of 8 1/2-in. circle. Spindle travels 2 1/2 in. 8-in. diam. table. Ht. 22 in. State drill No. to be used.
84 KGP 2615 K See Price List
84 KGP 2616 K—Larger than above. Fits (C) on opposite page. Spindle travels, 4 in. Drills to center of 10-in. circle. 9 1/4-in. diam. table. Height 36 1/4 in. State drill number to be used with stand See Price List

K BULL BUFFER OUTFIT. Fits 1/4-in. or larger chuck. For sanding, polishing. Includes two 5-in. sanding discs (fine, coarse), bonnet.
84 KGP 2639—Complete Outfit. See Price List
84 KG 2641—Extra Sheepswool Polishing Bonnets. Ship. wt. 2 oz. See Price List
84 KG 2640—Extra Sanding Discs. Fine, Medium or Coarse Grit. State Grit wanted. Ship. wt. ea., 1 oz. See Price List





FLEXIBLE SHAFTS AND ACCESSORIES

MEDIUM AND LIGHT-DUTY FLEXIBLE SHAFTS

A to C Most versatile tool in your shop . . . has hundreds of uses . . . gets in where other tools can't reach. Highly portable; can be used with wide range of accessories for grinding, drilling, sanding, polishing, paint removing, etc. Attach to any 1/2-in. diameter motor or line shaft 1/4 or 1/2-H.P. running in counter-clockwise direction at 1725 R.P.M. Ball bearing hand-piece. Flanges for holding grinding wheels, wire brushes, etc. 1/2-in. diameter, 24-thread spindle. 2 high-carbon steel wires wound in combination with soft, dead filler wire makes up casing assembly. Ball bearing motor coupling with positive connection. Fits 1/2-in. diam. shaft (use adapter (D) to fit 5/8-in. diam. shaft). Core assembly of transversely wound layers of high-carbon steel. Has steel end fittings.

A MEDIUM-DUTY FLEXIBLE SHAFT. For garages, carpenter, paint shops, etc. 60-in. shaft with 3/8-in. core. Oversize handle with hand guard. Cadmium plated to resist rust.
84 KG 2657 M—Ship. wt. 9 lbs. See Price List

B LIGHT-DUTY FLEXIBLE SHAFT. For light grinding, polishing, etc. 50-in. shaft with 5/16-in. core. Cadmium plated. Has torque release clutch to release load equal to 1/2-H.P. motor. Prevents cable damage if overloaded.
84 KG 2695 M—Ship. wt. 6 lbs. See Price List

C FLEXIBLE SHAFT EXTENSION. For (B) only. Length 36 in., 5/16-in. core. Extends length of 84 KG 2695 M (and former 2655) shaft to 86 in.
84 KG 2696 M—Ship. wt. 3 lbs. 8 oz. See Price List

D FLEXIBLE SHAFT ADAPTER. Adapts flexible shafts (A) and (B) above fitting 1/2-in. diam. shaft to 5/8-inch diameter motor or line shaft.
84 KG 2661—Ship. wt. 4 oz. See Price List

E FLEXIBLE SHAFT ANGLE HEAD. Cast aluminum head. Ball bearing. 1/2-in. 24-thread spindle.
84 KG 2660—Ship. wt. 3 lbs. See Price List

F FLEXIBLE SHAFT WHEEL GUARD. Fits shafts at left. Clamps on hand-piece. Takes 4-in. diameter wheels. Made of cast aluminum.
84 KG 2659—Ship. wt. 1 lb. 8 oz. See Price List

G 5-PIECE UTILITY KIT. Includes saw blade, grinding wheel, buffing wheel and wire scratch wheel (4-in. diameter with 1/2-in. arbor hole), and 4-oz. cake of Tripoli polishing compound.
84 KG 2766—Ship. wt. 2 lbs. See Price List

H SANDING DRUM. Rubber cushioned sanding drum . . . expansion type. Fits shafts at left. 2 5/16-in. diam. Extra sanding sleeves on Page 19.
84 KG 2665 K—Ship. wt. 2 lbs. See Price List

J SHEEPSWOL BUFFER. Use on any 6 to 8-in. sanding disc or face plate. Fastens with draw-string. 8-in. diam. Ship. wt. 3 oz.
84 KG 2674 See Price List

K POLISHING COMPOUND ASSORTMENT. Four-piece set consists of 1 each: red, white rouge; emery and tripoli compound. Ship. wt. 2 lbs.
84 KG 2785 See Price List

POLISHING COMPOUND. 1-lb. cakes. Wt. 1 lb. 4 oz.
84 KG 2786—Tripoli See Price List
84 KG 2787—Red Rouge See Price List
84 KG 2788—White Rouge See Price List
84 KG 2789—Emery See Price List

L SANDING DISC ADHESIVE. Fastens sanding sheets to sanding discs. 5-in. stick.
84 KG 2673—Ship. wt. 6 oz. See Price List

FLEXIBLE SHAFT ANGLE HEAD, GUARD AND ACCESSORIES

M LIGHT-DUTY SAW BLADE. 1/2-inch arbor hole.
84 KG 2675—4-in. diam. Wt. 2 oz. See Price List

N RUBBER SANDING DISC. No gluing necessary. Fits any 1/2-in., 24-thread shaft or polishing head. Pliable pad held to metal back plate by threaded center piece.
84 KG 2669 K—Ship. wt. 1 lb See Price List

P SANDING DISC. Rigid type. 6-in. diam. fits 1/2-in. 24-thread spindle. Die-cast metal.
84 KG 2668—Ship. wt. 1 lb. See Price List
84 KG 2670 K—Sanding Sheets for above Sanding Disc. Med. grit. 6-in. diam. Wt. 4 oz. See List.

R RUBBER CUSHIONING PAD. 6-inch diameter.
84 KG 2680—Ship. wt. 4 oz. See Price List

T WIRE SCRATCH BRUSHES. Hardened steel wires firmly set in steel core.

Diam. In.	Arbor Hole	Ship. Wt.	Fine Wire 84 KG 2778	Coarse Wire 84 KG 2779
4	1/2 in.	8 oz.	See List	See List
6	1/2 in.	12 oz.	See List	See List
8	3/8 in.	1 1/4 lb.	Not Avail.	See List

U CLOTH BUFFING WHEELS. Machine sewed. 1/2-in face, arbor hole. State Size. See Price List.
84 KG 2784—4-inch diameter. Ship. wt. 4 oz.
6-inch diameter. Ship. wt. 7 oz.
8-inch diameter. Ship. wt. 12 oz.

V SANDING DISCS. Ass't. grits. 6-in. diam.
84 KG 2672—Ship. wt. 6 oz. See Price List

W EMERY CLOTH. Six 4 1/2 x 5 1/2-in. sheets. Ass't. grits. Ship. wt. per package, 4 oz.
84 KG 4119 See Price List

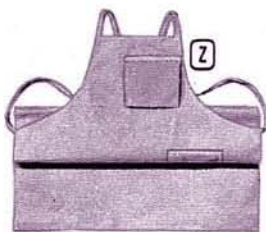
X SANDPAPER. Assorted grits. Twenty 4 1/2 x 5-in. sheets. Ship. wt. per package, 4 oz.
84 KG 4113 See Price List

Y BENCH STONE. Master quality. Vitrified silicon carbide. Contains a combination of both fine and coarse grits.

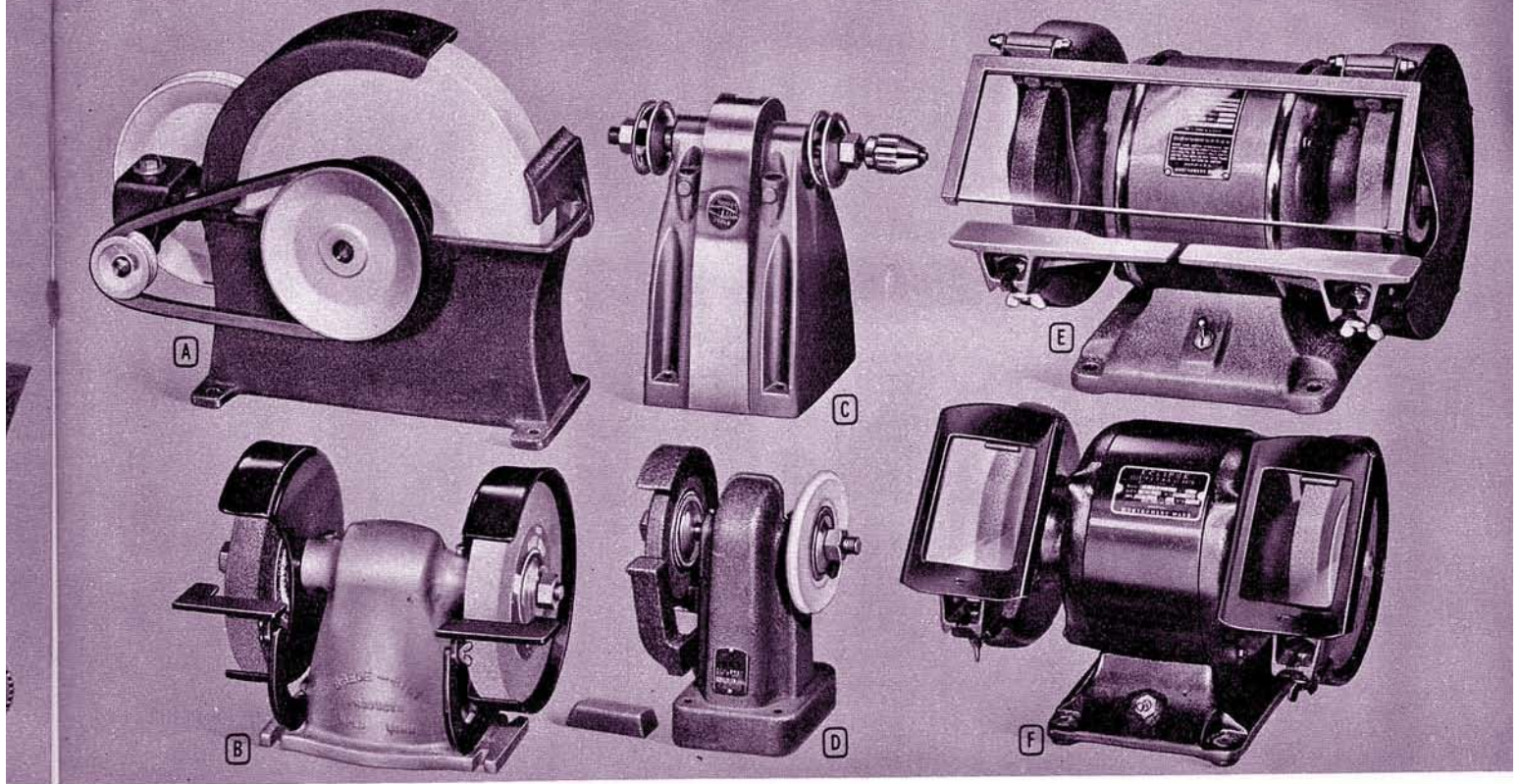
Cat. No.	Size in in.	Ship. wt.	Price
84 KG 4127	5 x 2 x 3/4	12 oz.	See Price List
84 KG 4128	6 x 2 x 1	1 lb.	See Price List
84 KG 4129	7 x 2 x 1	1 lb. 4 oz.	See Price List

LONG-WEARING, FULL LENGTH WORKSHOP APRON

Z BIB STYLE WORKSHOP APRON. Full length to protect your clothes from dirt and wear. Two pockets—reinforced at strain points—one on bib swings free; roomy lower pocket for carrying pencils, nails, tapes, chalk, etc. right along with you. High bib protects your shirt front; full length to protect your trousers. Made of excellent quality, long-wearing, unbleached 8-oz. duck—withstands unlimited washings. Strong neck loop and tie strings. Size overall 28 by 40 inches.
84 KG 4176—Shipping weight 8 ounces. See Price List



WHEN YOU BUY SHOP EQUIPMENT FROM WARDS you don't have to spend ready cash . . . use Wards Monthly Payment Plan or "Add-on" Plan if you have an account already. See Page 25 of this Catalog for details.



BELT DRIVEN AND ELECTRIC GRINDERS

BELT DRIVEN BENCH GRINDERS

A POWER DRIVEN WET GRINDSTONE. The correct grinder to sharpen tempered tools. Operates at low speed and in water to prevent drawing the temper from your tools. This rugged motor driven grindstone especially constructed to withstand heavy industrial use. Natural Ohio sandstone wheel with 10-inch diameter and 1½-inch face. Made of heavy cast-iron construction with a large base; reduces vibration. 5/8-inch diameter shaft runs on self-lubricating bronze bearings. Jack shaft reduces speed to 150 R.P.M. Has adjustable tool rest. Height 11½ inches; length 16½ inches. Three pulleys and "V" belt included. Use ½-inch motor pulley on 1/3-H.P. 1750 R.P.M. motor. Has splash guard which can be raised to allow grinding on top of grindstone. Has gray wrinkle finish. Motor not included.

84 KG 5285 M—Ship. wt. 31 lbs. . . . See Price List

B CAST ALUMINUM BENCH GRINDER. Runs smoothly on oilite bronze bearings. Has oil reservoir and spring cap oilers. Comes equipped with two 6-inch diameter by 1-inch thick vitrified grinding wheels. Has 2-inch diameter pulley which takes "V" round or flat belts up to 1½ inches wide. Shaft is 10 inches long and ½ inch in diameter. 24-thread shaft, 8 inches high. Base is 7½ by 3¼ inches.

84 KG 5181 M—Ship. wt. 13 lbs. . . . See Price List

84 KG 5180 M—Same as the Grinder listed directly above but without the grinding wheels. Shipping weight 8 lbs. . . . See Price List

POWR-KRAFT POLISHING HEADS

C POLISHING HEAD WITH JACOBS CHUCK. 5-purpose tool . . . for polishing, grinding, wire brushing, buffing and drilling in wood, metal or plastics. With Jacob's Hand Tite chuck. Takes straight shank drills up to ¼-in. diameter. Made of sturdy cast aluminum. Shaft 8¼ in. long, ½-in. diameter, 24-thread. Two sets of 2½-in. diam. flanged washers to support wheels, etc. Bronze bearings. With 1½-in. diam. "V" pulley. Pulley can be driven from behind or below. Base size 4 x 4½ in. Height to center of spindle 6 in. For polishing accessories see opposite page.

84 KG 2761—Ship. wt. 4 lbs. 8 oz. . . . See Price List

D HEAVY-DUTY POLISHING OUTFIT. Strong die-cast metal base with belt and pulley guarded by frame. Driven from below or behind. ½-inch diameter, 24-thread shaft runs smoothly in two self-lubricating bronze bearings. The shaft is 7½ inches long. Pulley 2¼-inch diameter for "V" belt drive. Height overall 7¾ inches. Outfit includes: 4-inch diameter grinding wheel, 4-inch diameter cloth buffer, wheel guard, tool rest and 4-oz. cake of Tripoli polishing compound. For additional polishing accessories see opposite page.

84 KG 2752—Ship. wt. 9 lbs. 8 oz. . . . See Price List

POLISHING HEAD ONLY (not shown). Same as Polishing Head (D) in Heavy-Duty Polishing Outfit described above but without grinding wheel, cloth buffer, wheel guard, tool rest and compound.

84 KG 2751—Ship. wt. 7 lbs. 8 oz. . . . See Price List

ELECTRIC BENCH GRINDERS

E LAKESIDE QUALITY GRINDER. High-speed electric bench grinder with full length shatter-proof eyeshield to protect the operator from flying sparks and particles. Extra long adjustable tool rests are removable. Runs smoothly on New Departure ball bearings, sealed in grease to keep out abrasive dust. Split phase motor with Thermotron protection against overload. No load speed 3600 R.P.M.; full load 3450 R.P.M. 2 Master Quality grinding wheels; 1 fine. Shaft diam. 5/8 in. Gray wrinkle finish with convenient built-in on-off toggle switch in front of grinder. 7½-ft. rubber cord, plug. Meets American Abrasive Safety Code requirements. For 115-volt, 60-cycle Alternating Current only.

84 KG 5111 M—¼-H.P. 7x¾-in. wheel. Shaft lgth. 13⅞ in. Ship. wt. 50 lbs. . . . See Price List

84 KG 5112 M—½-H.P. 7x¾-in. wheel. Shaft lgth. 13⅞ in. Ship. wt. 55 lbs. . . . See Price List

84 KG 5113 M—½-H.P. 7x1-in. wheel. Shaft length 13⅞ in. Ship. wt. 60 lbs. . . . See Price List

F ECLIPSE QUALITY GRINDER. High-speed electric grinder equipped with individual glass shields over each wheel to protect the operator from flying sparks and particles. Smooth running New Departure ball bearings sealed in grease to keep out abrasive dust. Removable tool rest and wheel guards. Convenient built-in on-off toggle switch. No load speed 3600 R.P.M.; full load 3450 R.P.M. ½-in. shaft diameter. 2 Master Quality 6-in. diam. by ¾-in. thick grinding wheels . . . 1 fine, 1 medium grit. 6-ft. rubber cord with plug. Has black enamel finish. For 115-volt, 60-cycle A.C. only.

84 KG 5108 M—¼-H.P. Shaft length 11⅞ in. Ship. wt. 35 lbs. . . . See Price List

84 KG 5109 M—½-H.P. Shaft length 12⅞ in. Ship. wt. 38 lbs. . . . See Price List

GRINDING, SAW GUMMING AND CUT-OFF WHEELS

G COARSE, MEDIUM, FINE AND EXTRA-FINE GRIT GRINDING WHEELS. Precision made. Fully vitrified. Uniformly hard and correctly balanced. Select the correct grit for your purpose. Use Coarse 24 Grit for grinding rough iron and steel castings, surfacing plow shares, scrapers, etc. Use Medium 60 Grit for grinding welds, forgings, castings of malleable iron, cast iron, brass and aluminum. Use Fine 100 grit for axes, bits, dies, chisels, planes, etc. Use Extra-Fine 200 Grit for sharpening scissors, knives, shears, etc. Wheels are dressed on both sides and face. Have lead centers with steel bushings to meet the sizes you specify. State Catalog Number, Thickness, Diameter and Hole Size.

84 KG 5202 L—Coarse 24 Grit. . . . See Price List

84 KG 5201 L—Medium 60 Grit. . . . See Price List

84 KG 5200 L—Fine 100 Grit. . . . See Price List

84 KG 5203 L—Extra-Fine 200 Grit. . . . See Price List

H SAW GUMMING WHEELS. 60 Grit Master Quality. Two types. . . Vitrified for gumming and grinding; Bakelite for gumming and cut off use, better than vitrified for high-speed use. State Catalog Number, Diameter, Thickness and Hole Size.

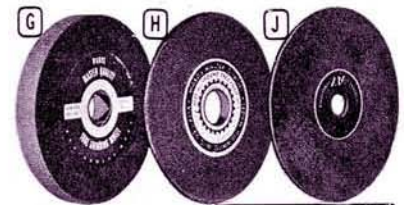
84 KG 5209 L—Vitrified. . . . See Price List

84 KG 5211 K—Bakelite. . . . See Price List

J "MX" CUT-OFF WHEELS. For fast cutting of steel, aluminum, brass, copper, Masonite, Celotex, Bakelite. Use for finish grinding on edge or side. Merging cotton fabric with abrasive compound provides for greater safety, will not shatter. All have 1-inch hole . . . metal bushing furnished for smaller holes. State Catalog Number, diameter, thickness, hole size.

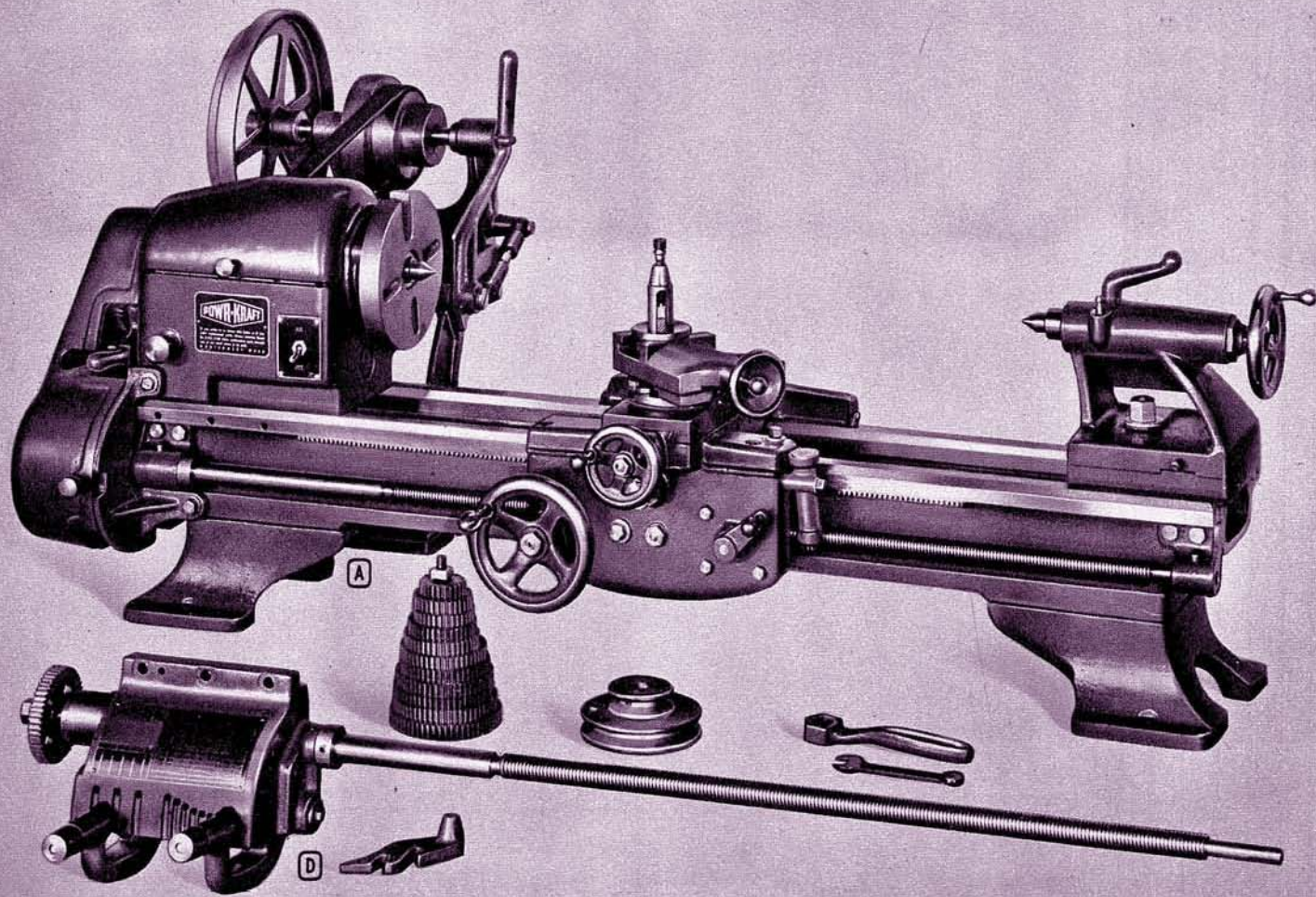
84 KG 5241—Fine 80 Grit. . . . See Price List

84 KG 5242—Coarse 24 Grit. . . . See Price List



BUY ON TERMS

+ WARDS 29



POWR-KRAFT 10-INCH METAL LATHE

BACK-GEARED, SCREW-CUTTING LATHES... CHOICE OF 24 OR 31 IN. BETWEEN CENTERS

A A fine production tool developed for the machine shop requiring a high-speed lathe of sustained accuracy. It will greatly increase the amount of work you can produce in your shop. Built to perform within .001-inch, all lathe operations within its capacity. Widely used by master mechanics, garages, trade schools, etc. Headstock has pre-loaded New Departure ball bearings which permit high-speed operation with minimum spindle deflection and greater sustained accuracy. They are grease sealed and require no further lubrication or adjustment for their entire life. Self-lubricating bronze bearings at 18 other points of wear reduce maintenance—result in high-speed low-cost production.

CAPACITY: 10-inch swing over bed; 6 $\frac{1}{8}$ -inch swing over saddle cross slide. Bed made of seasoned alloy castings—internal stresses removed. Width of bed across ways is 6 $\frac{1}{16}$ in. Two flat and two prismatic "V" ways precision ground to within .0005-inch of parallelism over entire operating area, assure dependable accuracy.

GEARS are machine cut semi-steel. Precision made—far superior to the usual die-cast type. Extra wide face; bull gear and back gears are $\frac{5}{8}$ -inch wide, change gears are $\frac{7}{16}$ -inch wide. Gears are included for 46 thread selections—4 to 216 right-hand or left-hand threads.

BACK GEARS ENCLOSED IN LATHE HEADSTOCK. Advanced back gear design permits placing the patented back gear shifter rack where it belongs—at the operator's finger tips; he doesn't have to reach over the headstock. Assembly is kept free from dirt and chips. A more convenient design.

HEADSTOCK: Tempered, precision-ground steel spindle rides on two sets of New Departure ball bearings. Spindle nose diameter is $1\frac{1}{2}$ inches—8 right-hand threads per inch. No. 3 Morse Taper spindle with adapter to No. 2 Morse Taper. Hole through spindle is $\frac{25}{32}$ inch. Maximum collet capacity is $\frac{1}{2}$ inch.

TAILSTOCK, CARRIAGE AND COMPOUND REST: Tailstock spindle travels $2\frac{3}{8}$ inches, is graduated in 16ths—takes No. 2 Morse taper accessories. $1\frac{1}{16}$ -inch offset for taper turning. Self-ejecting center. Carriage fully equipped with power cross feed and power longitudinal feed. Cross slide graduated in thousandths—travels $6\frac{1}{4}$ inches.

Cross feed screw mounted in self-lubricating bronze bearings. Compound rest top slide graduated in thousandths—travels $2\frac{1}{4}$ inches; swivels 90 degrees in both directions, locks at any angle.

Carriage has 9-inch bearing surface on "V" and flat ways. Tool post opening for tool holder: shank $\frac{3}{8}$ by $\frac{3}{4}$ inch. Use up to $\frac{1}{4}$ -inch cutter bits.

DRIVE: Three-step cone pulley with flat belt drive to lathe. Two-step "V" belt drive from "V" type motor pulley to flat counter-shaft pulley. Counter-shaft and motor bracket included, giving 12 spindle speeds—30 to 1450 R.P.M.

LATHE INCLUDES: 17 change gears (6 are installed on lathe); 6-inch face plate; two 60 degree centers; tool post holder; thread cutting dial; flat belt; motor pulley—(state bore desired, $\frac{1}{2}$, $\frac{5}{8}$, or $\frac{3}{4}$ inch); wrenches, parts list and instructions. Gray enamel finish.

Available in two sizes: 24 in. between centers and 31 in. between centers. Sold without motor. See Page 43 for $\frac{1}{2}$ -H.P. 1725 R.P.M. ball bearing capacitor type motor to fit these lathes. Use with 41-in. "V" belt shown on Page 39.

WIDE ASSORTMENT OF ACCESSORIES AVAILABLE for above lathes. See Pages 36, 37 and 38 for additional accessories to obtain the maximum utility and value from your metal turning lathe.

84 KG 2130R—24 inches between centers; 43 $\frac{1}{8}$ -inch bed length. Metal Lathe only. Shipping weight 320 lbs. See Price List

84 KG 2136R—31 inches between centers; 50-inch bed length. Metal Lathe only. Shipping weight 357 lbs. See Price List

ACCESSORIES FOR POWR-KRAFT 10-INCH LATHES ABOVE

B STEEL CHIP PAN. For Powr-Kraft lathes only. Heavy-gauge steel. Fits legs (C) below and Back Geared Screw Cutting Lathes (A) above. Rounded corners for extra strength. Rolled rim. Two sizes. State Cat. No. Ship. wts. 22 and 27 lbs.
84 KG 2141 M—For 24-in. lathe. See Price List
84 KG 2137 M—For 31-in. lathe. See Price List

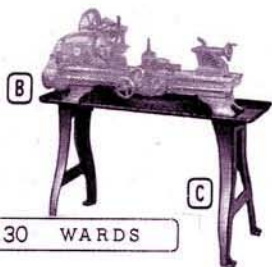
C CAST-IRON LEGS. Gray finish. Fit Powr-Kraft lathes only. Set of two. For Back Geared Screw Cutting lathes above. Give steady support—feet have bolt holes so legs can be fastened firmly to floor. Bolts not included. Ship. wt. per pair, 81 lbs.
84 KG 2140 R. See Price List

QUICK CHANGE GEAR BOXES

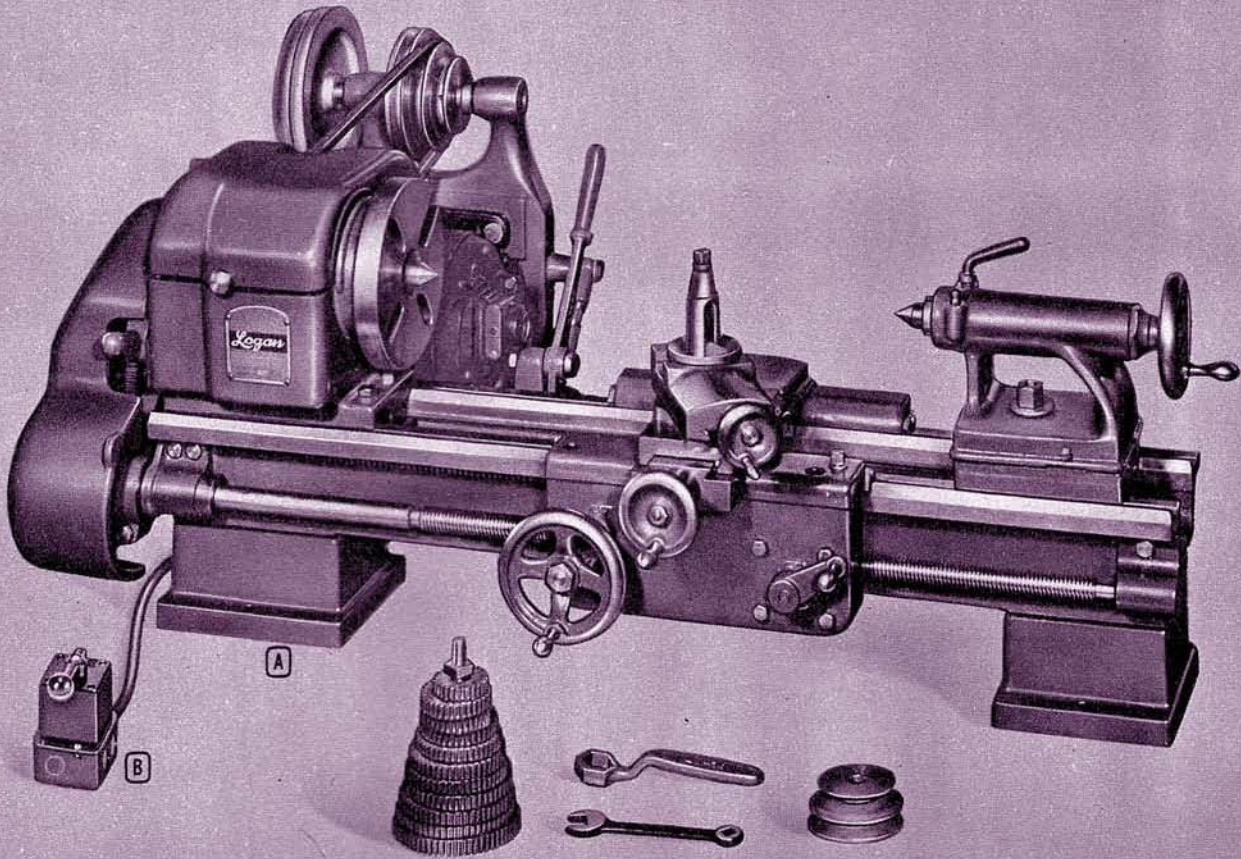
D Convert Powr-Kraft metal lathes to quick change gear lathes. Corrected lead screw included. Box provides 48 threads and feeds in either direction to carriage of lathe. By adjusting two levers, screw threads from 8 to 224 per in. are available. Changing 24-tooth stud gear for 48-tooth stud gear furnished with lathe, adds threads from 4 to 7 per in. Longitudinal power feeds .0015 to .1000 in. per revolution of spindle. Power cross feed .25 times longitudinal feed. Semi-steel gears and bronze self-lubricating bearings. Instructions included.

84 KG 2138 Y—Fits 84 KG 2130R listed above and old lathe No. 700. Ship. wt. 16 lbs. See Price List

84 KG 2139 Y—Fits 84 KG 2136R lathe listed above. Ship. wt. 25 lbs. See Price List



30 WARDS



LOGAN 9-INCH METAL LATHE

BACK GEARED, SCREW-CUTTING LATHE . . . 18 INCHES BETWEEN CENTERS

A Has same basic features as Powr-Kraft lathes on opposite page but smaller capacity. Suitable for production work within its capacity. Headstock has pre-loaded, grease-sealed New Departure ball bearings—adapted to high-speed work. Bronze bearings at other wear points.

CAPACITY: Distance between centers 18 in. Swing over bed and saddle wings 9 in.; swing over cross slide 5 in. Length of bed 33¼ in. Width of bed across ways 6½ in. Two flat and two "V" ways of iron bed precision-ground to within .0005 inch of parallelism. Total spindle runout 12 in. from bearings is less than .001 in. Reversible power longitudinal feed. 46-thread selections 4 to 216 right or left-hand threads.

HEADSTOCK: Tempered, precision-ground steel spindle rides on grease-sealed New Departure ball bearings. Spindle nose diam. 1½ in.—8 right-hand threads per in. No. 3 Morse Taper with adapter to No. 2 Morse Taper. Hole through spindle 2½ in. Back gear shaft has bronze bearings.

TAILSTOCK, CARRIAGE AND COMPOUND REST: Tailstock spindle travels 2¾ in. is graduated in 1/16ths—takes No. 2 Morse Taper accessories. ½ in. offset for taper turning. Cross slide graduated in thousandths—travels 5½ in. Cross feed screw mounted on self-lubricating bronze bearings. Compound rest swivel graduated 90° in both directions. Tool post opening for tool holder shank ¾ by ¾ inch. For use with cutter bits up to ¼-inch size.

DRIVE: Countershaft assembly equipped with self-lubricating bronze bearings. Three-step "V" belt cone pulley on countershaft—motor mounts on countershaft bracket. With 30 by ½-inch "V" belt from motor pulley to countershaft and 44 by ½-inch "V" belt from countershaft to headstock. 12 spindle speeds—30 to 1450 R.P.M.

LATHE INCLUDES: 17 change gears (6 installed on lathe); 6-in. face plate; two 60° centers; tool post holder; two-step motor pulley (state bore desired ½ or ¾ in.); wrench; parts list and instructions.

Recommended for use with ½-H.P. 1725 R.P.M. single shaft motor listed on Page 43. Accessories listed below fit Logan 9-in. lathe only. Collets, under-cutter blades, carriage stops, face plates, lathe dogs, tailstock turret, drill and countersink bits, tool holders, boring bars on Pages 36, 37 and 38 also fit 9-inch Logan lathe. Shipping weight 240 lbs.

84 KG 2129 F—Lathe only. See Price List

B DRUM REVERSING SWITCH. For Logan Lathe 84 KG 2129 F—listed above. Switch reverses spindle direction by reversing motor. Capacity up to 1-H.P. 550-volts, A.C. With switch box and three-foot rubber covered cord. Shipping weight 3 lbs. 8 oz.

84 KG 2216 K. See Price List

SPECIAL ACCESSORIES FOR 9-INCH LOGAN LATHE

C FOLLOWER REST. Adjustable jaws. Wt. 3 lbs. 84 KG 2211 K—Cast-iron frame. See Price List

D CENTER REST, Adjustable jaws. Wt. 9 lbs. 84 KG 2210 K—Cast-iron frame. See Price List

E MICA UNDERCUTTER. For armature servicing. Mounts on back of cross slide. With 2 saws—.015 and .020 inches thick. 84 KG 2212 K—Ship. wt. 8 lbs. See Price List

F THREADING DIAL. Indicates proper point at which to engage half-nut lever when cutting threads so that tool will enter same groove for each cut—eliminates reversing the drive at the end of cut. Ship. wt. 1 lb. 8 oz.

84 KG 2215 K. See Price List

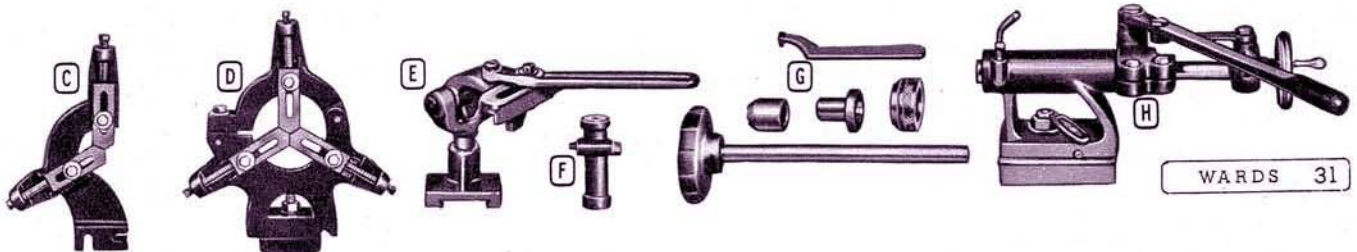
G DRAW-IN COLLET CHUCK ATTACHMENT. Chucks round work 1/16 to ½ inch. Hollow draw-in bar extends through head-stock. Threaded at spindle

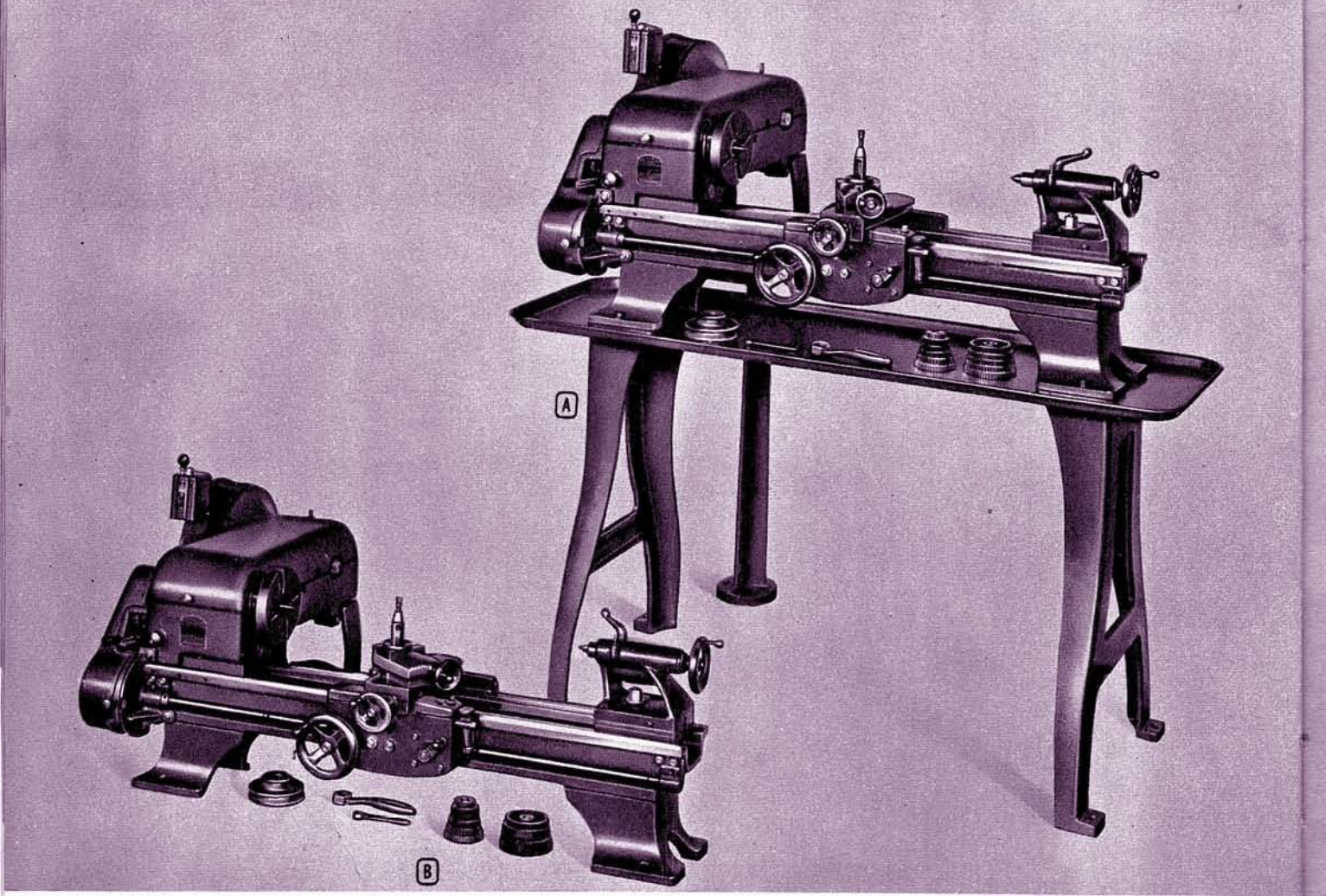
end. Consists of hollow draw bar, tapered closing sleeve, spindle nose cap and spindle cap wrench. Use with 84 KG 2162 Collets on Page 37.

84 KG 2214 K—Ship. wt. 5 lbs. See Price List

H LEVER TAILSTOCK. Can be set to operate as standard tailstock. Lever stroke 2¾ in. Hand wheel spindle travels 2¾ in. Fitted for No. 2 Morse Taper. With wrench.

84 KG 2213 K—Ship. wt. 29 lbs. See Price List





NATIONALLY KNOWN LOGAN METAL LATHES.

LOGAN BACK GEARED SCREW CUTTING LATHES—FLOOR AND BENCH MODELS

(A) (B) Fine quality production lathes built to rigid and exacting specifications. Designed for shops requiring a high speed lathe of sustained accuracy. Performs all lathe operations within .001 inch. Widely used by master mechanics, garages, trade schools, etc. Headstock has sealed, pre-loaded New Departure ball bearings of highest precision type. Self-lubricating bronze bearings at 24 other points. Patented countershaft assembly with three-point suspension and rubber mountings.

CAPACITY: Swing over bed 10½ in.; swing over saddle cross slide 6⅞ in. Bed made of seasoned alloy castings—internal stresses removed. Width of bed across ways 61⅝ in. Two flat and two precision-ground prismatic "V" ways. Machine cut semi-steel gears—not die cast. Extra wide face—bull gear and back gears ⅝-in. wide, change gears 7/16 in. Gears included for 46 thread selections—4 to 216 right or left-hand threads.

HEADSTOCK: Tempered, precision-ground steel spindle rides on two sets of New Departure ball bearings . . . gives greater accuracy, less friction, less wear and requires no adjustment or lubrication. Spindle nose diameter 1½ inches—8 right-hand threads per inch. No. 3 Morse taper spindle with adapter to No. 2 Morse taper. Hole through spindle 2⅝ in. Max. collet capacity ½ in. with draw-in collets and ⅝ in. with push type collets.

TAILSTOCK, CARRIAGE AND COMPOUND REST: Tailstock spindle travels 2⅜ in., is graduated in 16ths—takes No. 2 Morse taper accessories. 1⅛-in. offset for taper turning. Carriage is fully equipped with power cross feed and power longitudinal feed. Cross slide graduated in 1000ths, travels 6¼ in. Cross feed screw mounted in self-lubricating bronze bearings. Compound rest top slide graduated in 1000ths, travels 2¼ in.—swivels 90° in both directions. Tool post opening for tool holder shank ⅜x¾ in. Use up to ¼-in. square cutter bits.

COUNTERSHAFT ASSEMBLY: Patented assembly used in this machine is carried on a three-point suspension . . . is insulated by rubber at all points of contact to prevent vibration being transmitted to lathe.

DRIVE: 40x½-in. "V" belt included—used on flat of 2-step countershaft pulley. 3-step flat belt cone pulley mounted on countershaft. With 2-step "V" motor pulley (state ½, ⅝ or ¾-in. bore). Countershaft and motor bracket included, giving 12 spindle speeds—30 to 1450 R.P.M.

ACCESSORIES INCLUDED: 17 change gears; 6-in. face plate; two 60° centers; one threading dial; one threading chart; one No. 3 to No. 2 Morse taper adapter; one tool post holder and wrench; one tailstock wrench; parts list; instruction book.

(A) FLOOR MODELS. With chip pan and legs. Chip pan is made of heavy-gauge steel with welded corners and a rolled rim. Legs are made of close-grained gray iron. (Motor not included.) Order ½-H.P. ball bearing motor on Page 43. See specifications below.

84 KG 2234 F—24 in. between centers. Bed length 43⅞ in. Size overall—length 54 in., width 30 in., height 48½ in. Ship. wt. 500 lbs. See Price List

84 KG 2235 F—31 in. between centers. Bed length 50 in. Size overall—length 61 in., width 30 in., height 48½ in. Ship. wt. 535 lbs. See Price List

(B) BENCH MODELS. Without chip pan or legs. See specifications below. (Motor not included.) Order ½-H.P. ball bearing motor on Page 43.

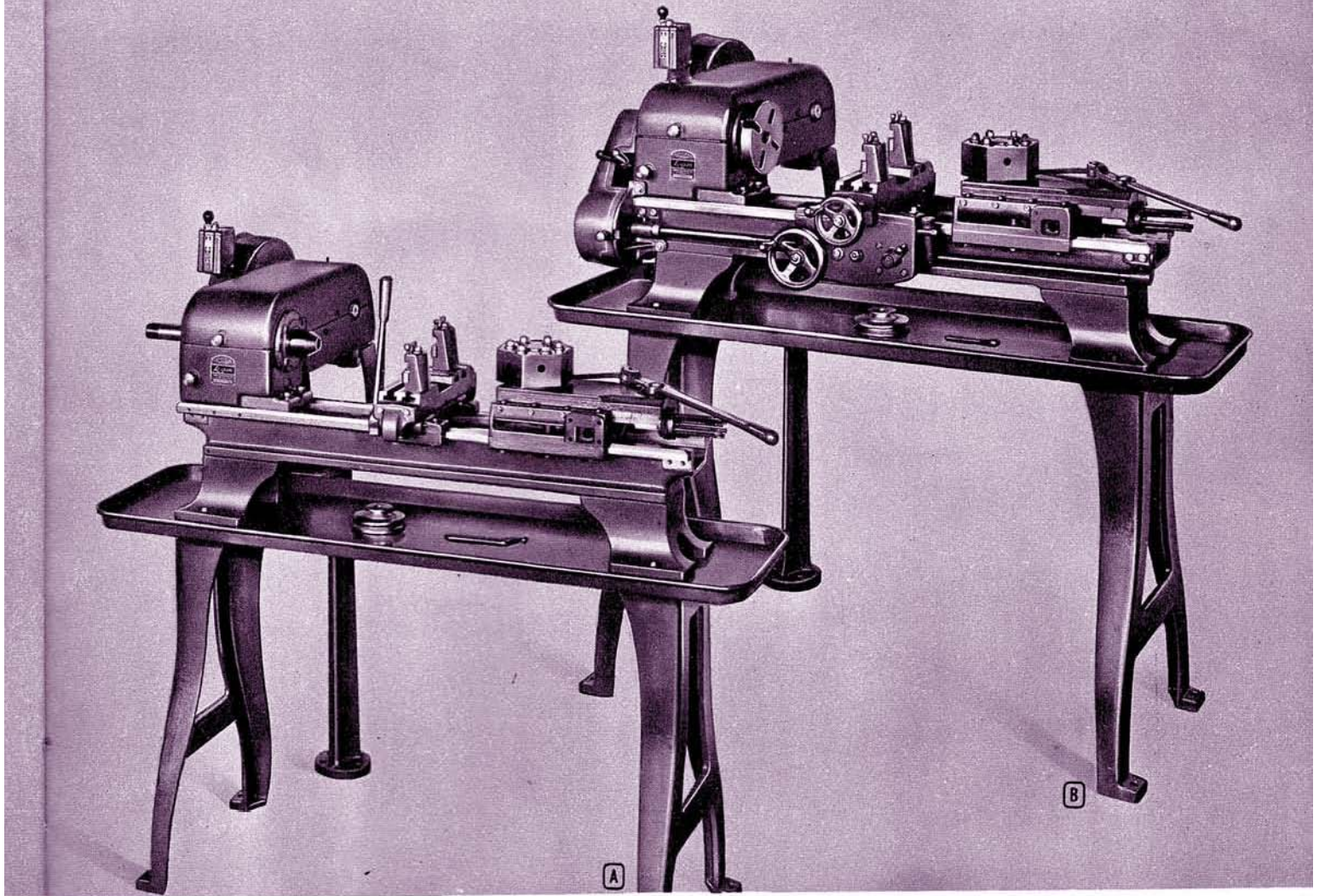
84 KG 2232 F—24 in. between centers. Bed length 43⅞ in. Size overall—length 54 in., width 30 in., height 21 in. Ship. wt. 400 lbs. See Price List

84 KG 2233 F—31 in. between centers. Bed length 50 in. Size overall—length 61 in., width 30 in., height 21 in. Ship. wt. 435 lbs. See Price List

SPECIFICATIONS FOR LATHES (A) AND (B) ABOVE

	(A)	(A)	(B)	(B)
	84 KG 2234 F	84 KG 2235 F	84 KG 2232 F	84 KG 2233 F
Distance between centers	24 in.	31 in.	24 in.	31 in.
Swing over bed	10½ in.	10½ in.	10½ in.	10½ in.
Swing over cross slide	6⅞ in.	6⅞ in.	6⅞ in.	6⅞ in.
Bed width across ways	61⅝ in.	61⅝ in.	61⅝ in.	61⅝ in.
Bed length	43⅞ in.	50 in.	43⅞ in.	50 in.
Collet capacity—push type	⅝ in.	⅝ in.	⅝ in.	⅝ in.
Collet cap.—draw-in type	½ in.	½ in.	½ in.	½ in.
No. of bronze bearings	24	24	24	24
Tailstock spindle	Morse taper No. 2	Morse taper No. 2	Morse taper No. 2	Morse taper No. 2
Cross slide travel	6¼ in.	6¼ in.	6¼ in.	6¼ in.
Compound rest travel	2¼ in.	2¼ in.	2¼ in.	2¼ in.
Size of cutter bits req.	¼-in. sq.	¼-in. sq.	¼-in. sq.	¼-in. sq.
Recommended motor	½-H.P. B.B.	½-H.P. B.B.	½-H.P. B.B.	½-H.P. B.B.

See Pages 36 to 38 for accessories to fit these lathes.



HAND SCREW MACHINE AND TURRET LATHE

LOGAN HAND SCREW MACHINE—BALL BEARING PRODUCTION MODEL

(A) $\frac{3}{8}$ -inch capacity. Swing over bed $10\frac{1}{2}$ inches. Designed for the continuous production of small parts. Built throughout to rigid and exacting specifications to give accurate results and trouble-free service. Turret holes are bored from the headstock. Lever-operated hexagonal head turret permits the mounting of tools on block face as well as in standard tool hole. Precision-ground bed and pre-loaded ball bearing spindle mounting permit high-speed operations, greater accuracy. Precision ground ways—2 prismatic "V" ways and 2 flat ways. Self-lubricating bronze bearings at 13 separate points in lathe. See specifications listed in table below.

HEADSTOCK: Spindle mounted on New Departure ball bearings. Spindle nose diameter $1\frac{1}{2}$ in.—8 threads per inch. Hole through spindle $\frac{25}{32}$ in. Maximum collet capacity $\frac{3}{8}$ in. 12 spindle speeds. Back gear shaft has self-lubricating bronze bearings. Bull and back gears $\frac{3}{8}$ in. wide.

TURRET: Diameter of head 5 in. Six positions with adjustable stops. $\frac{5}{8}$ -in. diameter turret holes. Maximum stroke of turret $4\frac{1}{4}$ inches.

DRIVE: 3-step flat belt cone pulley mounted on countershaft. 2-step "V" motor pulley. (State $\frac{1}{2}$, $\frac{5}{8}$ or $\frac{3}{4}$ -in. bore). 2-step countershaft flat pulley. Countershaft assembly independently supported on 3-point suspension—rubber insulated.

SIZE OVERALL: Length 54 inches; width 30 inches; height 50 inches.

84 KG 2131F—Hand Screw Machine. Ship. wt. 540 lbs. See Price List

LOGAN TURRET LATHE—BALL BEARING PRODUCTION MODEL

(B) An accurate, durable tool developed for continuous production of small parts. Lever-operated hexagonal block turret permits the mounting of tools on block face as well as in standard tool hole. Precision ground bed and pre-loaded ball bearing spindle mounting permit high speed operations, greater accuracy. Reversible power cross feed and longitudinal feed. 46 threads—4 to 216 per inch. See specifications below.

HEADSTOCK: Spindle mounted on New Departure ball bearings for greater accuracy, less friction. Spindle nose diam. $1\frac{1}{2}$ in.—8 threads per inch. Hole through spindle $\frac{25}{32}$ inch. When the cone pulley guard is raised, belt tension is automatically released for quick belt change.

CARRIAGE AND CROSS SLIDE: Cross slide graduated in 1000ths—travels 6 in. Adjustable double tool posts. Tool post slots $\frac{7}{16}$ in. by $1\frac{1}{16}$ in.

TURRET: Diameter of head 5 in. Six positions with adjustable stops. Diameter of turret holes $\frac{5}{8}$ in. Maximum stroke of turret $4\frac{1}{4}$ in.

DRIVE: 3-step flat belt cone pulley mounted on countershaft. 2-step "V" motor pulley. (State $\frac{1}{2}$, $\frac{5}{8}$ or $\frac{3}{4}$ -in. bore). 2-step countershaft flat pulley. Countershaft assembly independently supported on 3-point suspension—rubber insulated at all points of contact to prevent vibration.

SIZE OVERALL: Length 54 inches; width 30 inches; height 50 inches. *343.50*

84 KG 2132 F—Turret Lathe. Ship. wt. 560 lbs. See Price List

SPECIFICATIONS FOR (A) AND (B) ABOVE

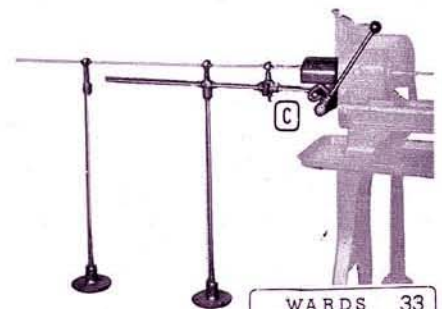
	(A) 84 KG 2131F	(B) 84 KG 2132F
Swing over bed	$10\frac{1}{2}$ in.	$10\frac{1}{2}$ in.
Swing over cross slide	$4\frac{1}{2}$ in.	$4\frac{1}{2}$ in.
Bed width across ways	$6\frac{15}{16}$ in.	$6\frac{15}{16}$ in.
Bed length	$43\frac{1}{8}$ in.	$43\frac{1}{8}$ in.
Collet capacity	$\frac{3}{8}$ in.	$\frac{3}{8}$ in.
Number of self-lubricating bronze bearings	13	24
Size motor recommended (Not included)	$\frac{1}{2}$ -H.P. Cap. 83 KG 4551M	$\frac{1}{2}$ -H.P. Cap. 83 KG 4551M
Size "V" belt furnished	$\frac{1}{2} \times 51$ in.	$\frac{1}{2} \times 51$ in.

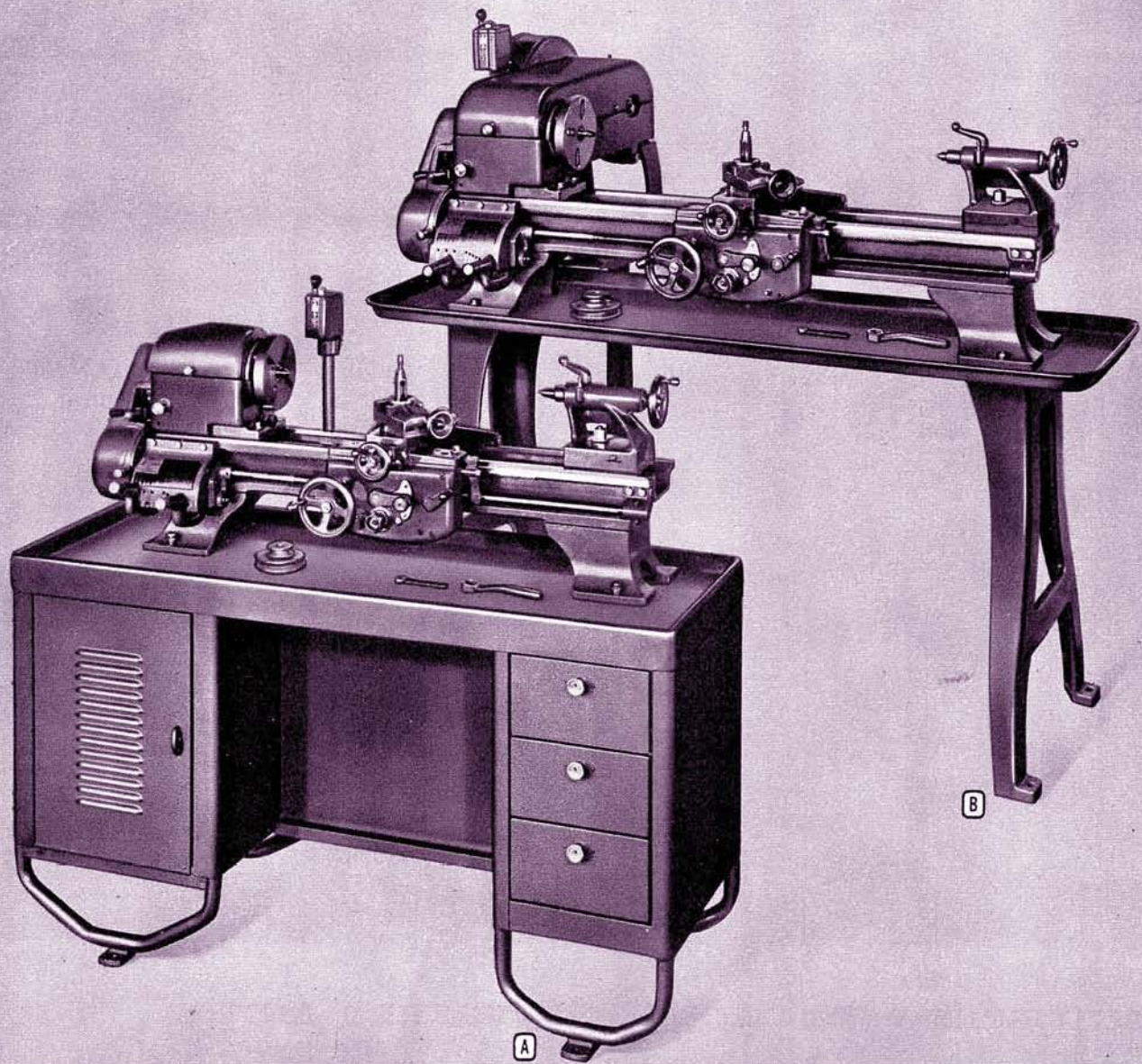
Motors for these lathes listed on Page 43.

LOGAN BAR FEED

(C) For use with Hand Screw Machine 84 KG 2131F shown above. All parts are precision machined for accurate operation, longer life. Has maximum capacity of $\frac{5}{8}$ -in. round stock. Maximum feed per stroke 2 in. Patented cam action, which locks collet and operates bar feed, is so designed that there is no feed while bar is being locked and no locking action while bar is being fed. Feed and locking mechanism are protected by shield. Easily attached or detached. Order push type collets 84 KG 2163F on Page 37 in sizes required. Ship. wt. 45 lbs.

84 KG 2184 F. See Price List





LOGAN CABINET, FLOOR, BENCH LATHES

LOGAN QUICK CHANGE GEAR CABINET, FLOOR AND BENCH MODEL LATHES WITH AUTOMATIC APRON . . . ONLY 10% DOWN ON TERMS

A B Durable, dependable lathes adaptable to tool room work, training or production. Friction feed apron travels over bed that is ground to within .0005 in. of absolute accuracy. Total run out of headstock spindle 12 inches from bearings is less than .001 in. Lead screw held to within .002 in. in 12 inches. Headstock spindle runs on double row of pre-loaded New Departure ball bearings.

CAPACITY: Distance between centers 24 or 31 inches—10½-inch swing over bed and saddle wings. Swing over saddle cross slide 6½ inches. Collet capacity with draw-in collets ⅝-inch (none included).

THREADS AND FEEDS: Quick change gear box and automatic apron. Worm drive from lead screw spline for power feeds. Friction clutch on power feeds. Longitudinal feed .0015 to .0010 in. per spindle revolution. Cross feed .25 times longitudinal feed. Half nut drive from lead screw thread for thread cutting. Threads 48 selections, right or left hand, 4 to 224 threads per in.

BED: Length 43⅞ or 50 inches. Precision ground ways—two prismatic "V" ways, 2 flat ways. Bed width 6½ inches across ways.

HEADSTOCK AND SPINDLE: Tempered and precision-ground steel spindle rides on two sets of pre-loaded, grease-sealed New Departure ball bearings. Spindle nose diameter 1½ inches—8 right-hand threads per in. Number of spindle speeds 12. Hole through spindle 2⅝ in. Spindle taper, No. 3 Morse with adapter to No. 2 Morse taper. Back gear shaft bearings—self-lubricating bronze. Width of face of bull gear and back gears ⅝ inch.

CROSS SLIDE AND COMPOUND REST: Cross feed screw mounted on bronze bearings. Graduated in thousandths—travels 6¼ in., compound rest top slide travels 2¼ in. Compound rest swivels 90° in either direction. Tool post holder for tool holder shank, ⅝x¾ in. Takes ¼-in. sq. cutter bits.

TAILSTOCK SPINDLE: Spindle travels 2⅝ in.—graduated in 16ths. No. 2 Morse taper center, 1¼-inch offset for taper turning.

COUNTERSHAFT ASSEMBLY: Mounted on self-lubricating bronze bearings. Three-step cone pulley with flat belt drive to lathe. Two-step "V" belt drive from "V" type motor pulley to flat countershaft pulley. Adjustable motor mounting bracket.

LATHE INCLUDES: 6-inch face plate; two 60° centers; threading dial; tool post holder and wrench; tailstock wrench; drum reversing switch; "V" Belt, 2 step "V" motor pulley (state ½, ⅝ or ¾-inch bore), (chip pan and legs on floor model only), (cabinet with cabinet model only); parts list and instructions. Lathes have gray enamel finish.

RECOMMENDED (not included), ½-H.P. 1725-R.P.M. Ball Bearing Capacitor motor sold on Page 43.

A CABINET MODEL LATHE. Has all features listed above with 24 inches between centers and 43⅞-inch bed length. Has 39 self-lubricating bronze bearings. Steel constructed cabinet—drawers provided for tool storage. Countershaft assembly mounted in cabinet for underneath drive. Has oil drain in center rear of pan. Size overall 55½ by 20½ by 52 inches high.

84 KG 2134F—Shipping weight 785 lbs. See Price List

B FLOOR MODEL LATHE. Has all features listed above with 31 inches between centers and 50-inch bed length. Size overall, 61 by 30 by 48½ in. high.

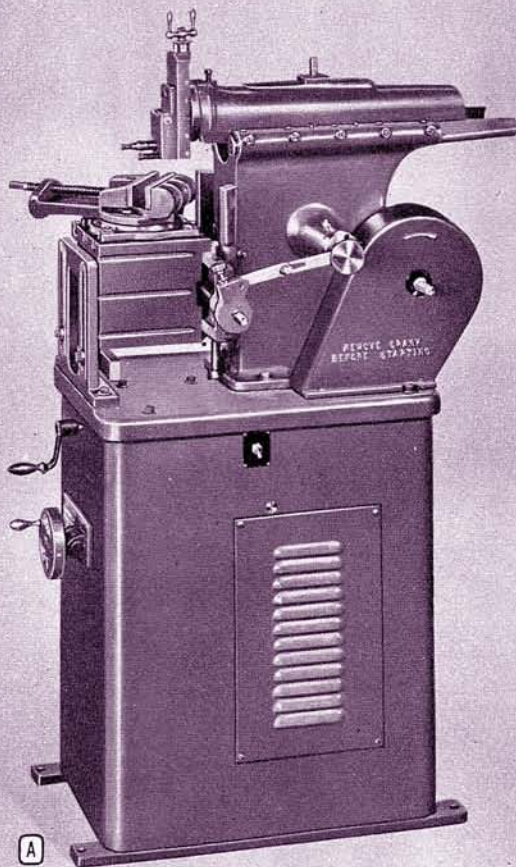
84 KG 2217F—Shipping weight 575 lbs. See Price List

84 KG 2135F—Floor Model Lathe same as (B) above but with 24 inches between centers and 43⅞-inch bed length. Size overall, 54 by 30 by 48½ in. high. Shipping weight 540 lbs. See Price List

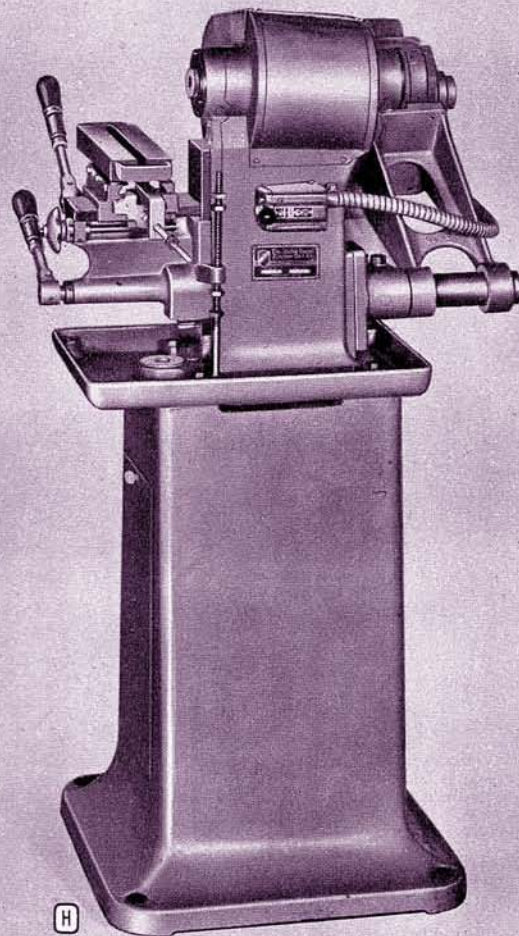
84 KG 2219F—Bench Model Lathe same as 84 KG 2217F above but without legs, pan, and countershaft pedestal. Size overall, 61 by 30 by 21 inches high. Shipping weight 475 lbs. See Price List

84 KG 2218F—Bench Model Lathe same as 84 KG 2135F above but without legs, pan, and countershaft pedestal. Size overall, 54 by 30 by 21 inches high. Shipping weight 440 lbs. See Price List

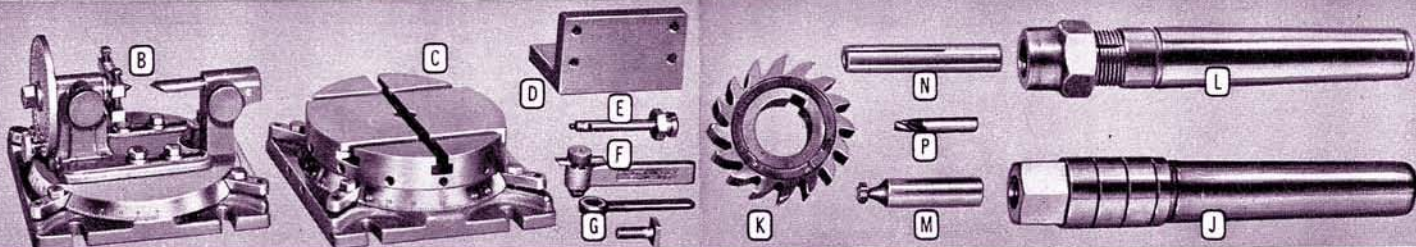
BUY NOW ON WARDS MONTHLY PAYMENT PLAN. You can buy any of the equipment in this book now on Wards Monthly Payment Plan. All you need pay is 10% down on orders of \$20 or more, the balance in convenient monthly payments. See Page 25 for details. The added profits and savings from faster, more accurate production will help pay for the equipment as you use it.



A



H



LOGAN SHAPER, BURKE MILLING MACHINE

LOGAN HEAVY-DUTY 8-INCH METAL SHAPER

A Logan shaper is thoroughly proved in actual work — a dependable machine for tool room, maintenance shop, factory, repair shop or school. Made of steel and cast-iron parts. Has six automatic feeds in either direction, from .002 to .012, with a half turn of feed handle in either direction reversing the feed. Feed dials graduated to read .001 in.

Has maximum ram stroke of 8½ inches — permits full machining of work 8 inches long. Ram reciprocations range from 35 to 180 strokes per minute. Speeds can be changed instantly without stopping motor or shifting belt by turning hand wheel control. Ram is 5½ inches wide with extra large bearing surface—51 square inches.

Tool head swivels 360°, travels vertically 2¾ in. Slide block on crank is SAE phosphor bronze, crank pin hardened steel. Table, 8 by 8 in., has vertical travel of 5½ in., and 10½-in. traverse. Shaper vise 5 by 5 by 1½ in. is heavily ribbed. Floor model base, ½-H.P. 1 phase 1725-RPM 115-230-Volt, 60-Cycle A.C. motor, and V-belt included. Width 15 in., depth 35 in., ht. 51 in.
84 KG 3353F—Shipping weight 700 lbs. See Price List

B SHAPER INDEX CENTERS. Capacity of 5 inches between centers and a 3-inch swing. Provided with index plate with divisions between 22-30.
84 KG 3360K—Dog included to hold work. Ship. wt. 16 lbs. See Price List

C 4-INCH ROTARY TABLE. Has work surface 7-in. diam. with 3 "T" slots on face.
84 KG 3361K—Shipping weight 23 lbs. See Price List

D ANGLE PLATE. For handling irregularly shaped work. Clamps to top or side.
84 KG 3362K—Shipping weight 7 lbs. See Price List

E KEYWAY TOOL HOLDERS. Used in place of tool post in shaper. Wt. 1 lb.
84 KG 3366K—7/16-in. size 84 KG 3367K—5/8-in. size. See Price List

F SHAPER TOOL HOLDER. High grade steel, with high-speed cutter.
84 KG 3368K—Shipping weight 1 lb. See Price List

G "T" HEADED BOLTS. Three sizes: 1, 2¼, and 3¼ in. Ship. wt. each, 1 lb.
84 KG 3363K—1-in. 84 KG 3364K—2¼-in. 84 KG 3365K—3¼-in. See List

BURKE NO. 1 MILLING MACHINE AND ACCESSORIES

H An accurate, versatile, well constructed machine tool. Used by thousands of exacting manufacturers, tool makers, hobbyists, and schools. Made of steel and prime gray iron castings. All bearing surfaces hand scraped. Precision ground steel spindle equipped with Timken roller bearings. Furnished with No. 9 Brown and Sharpe taper hole.

Table has working surface 3½ by 12 in. Longitudinal feed 8 in.; traverse feed 3¾ in.; and vertical feed 4½ in. Equipped with ½-inch T-slot. Table operated by hand lever or crank. Stops may be locked in any position. Knee raised and lowered by handle . . . locks in any position. Adjustable hand-scraped gibs are provided for knee, saddle, and table.

Spindles are equipped with pre-loaded Timken roller bearings. Drive is from 6-step motor pulley by V-belt to 6-step spindle pulley giving speeds from 375 to 2500 RPM. With ½-H.P. 1 phase 115-volt, 60-cycle A.C. motor. Gray fin.

84 KG 3405F—Milling Machine with motor, but without cast-iron base. Ship. wt. 340 lbs. See Price List
84 KG 3406F—Cast-iron Base. 28 inches high. Ship. wt. 210 lbs. See Price List

J ARBOR. 1-in. hole, No. 9 Brown & Sharpe taper shank. Use cutters below.
84 KG 3407K—Shipping weight 3 lbs. See Price List

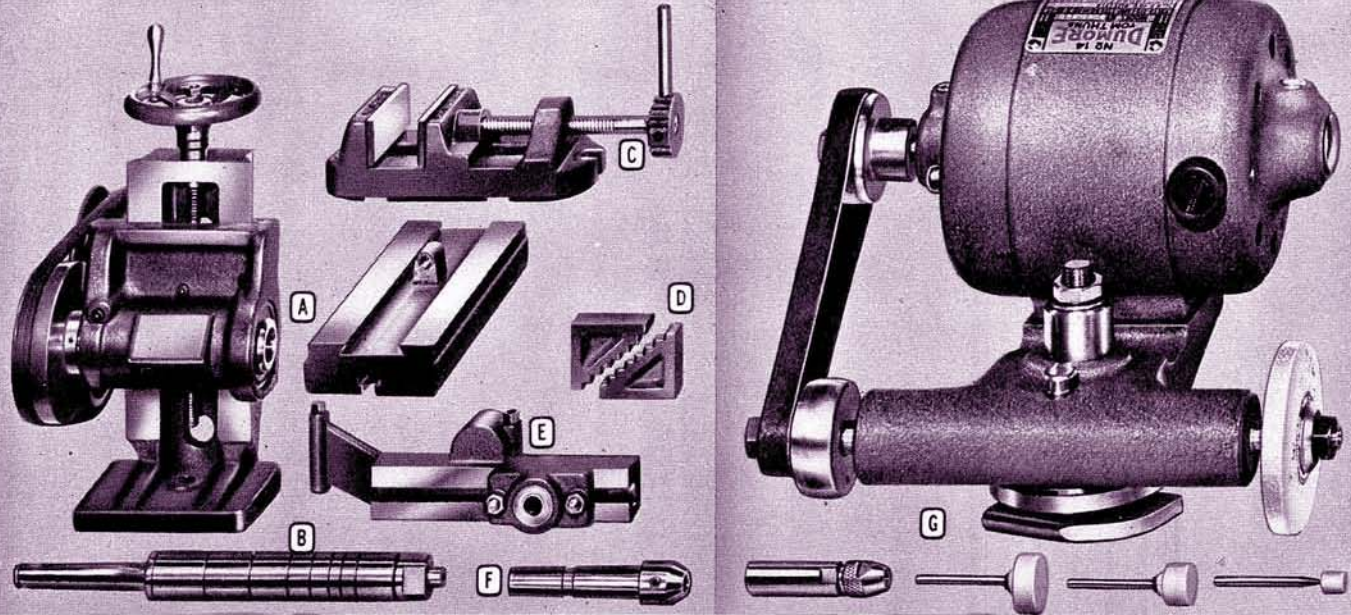
K MILLING CUTTERS. 2½-in. diam. 1-in. hole. 3/16, 1/2, 1-in. face widths.
84 KG 3412K—State face width. Ship. wt. each, 8 oz. See Price List

L SPRING COLLET. With ½-in. straight shank, No. 9 Brown & Sharpe taper.
84 KG 3408K—For holding woodruff cutters. Wt. 2 lbs. See Price List

M WOODRUFF KEY SEAT CUTTERS. Right-hand cut. ½-in. diam. shanks 2 in. long. Sizes 3/8x1/8; 1/2x1/8; 5/8x3/16; 3/4x1/4; and 1x3/8. State size wanted.
84 KG 3410K—Shipping weight each, 6 oz. See Price List

N SPRING COLLET ADAPTER. Use with corresponding size end mills below.
84 KG 3409K—Sizes 1/4, 5/16, 3/8 in. State size. Wt. ea., 6 oz. See List

P TWO-LIPPED END MILLS. Straight shank. Sizes 1/4x3/8; 5/16x15/32; 3/8x9/16 in.
84 KG 3411K—State size wanted. Ship. wt. each, 4 oz. See Price List



ATTACHMENTS AND ACCESSORIES FOR

GLOBE MILLING HEAD . . . QUICKLY AND EASILY CHANGES LATHE TO MILLING MACHINE

A Globe Milling unit quickly attaches to Powr-Kraft and Logan 10-inch lathes. Performs most milling operations. Unit consists of: column, spindle assembly complete with drive pulleys, "V" belts and clamp and milling table with nut and gib.

EASY TO OPERATE. Spindle moved into position to engage work, rather than work lifted to engage spindle. Controls are simple and accurate.

EASY TO INSTALL. Can be attached to your lathe in three minutes or less. Base of column is accurately machined to fit ways of the lathe and to insure that the face of the column is parallel with the ways of the lathe.

USES ALL LATHE SPEEDS. Speed ratio between lathe and miller spindle is 1 to 1. Faster speeds possible with larger drive-shaft pulley.

DURABLY BUILT. Large double-shielded sealed ball bearings and rugged construction employed throughout, enable it to withstand the hardest use. Wt. 86 lbs. 84 KGP 3415F. See Price List

B MILLING ARBORS. Made from alloy steel, complete with hardened and ground spacers in standard increments. Tapped for draw-in bolt, No. 9 Brown & Sharpe taper. Two sizes: 1x4 in. and 1x8 in. Arbor Support (E) should always be used with the 8-in. arbor (shown) for more accurate work. *State size.* Ship. wts. 4 lbs. and 6 lbs. 84 KGP 3417K. See Price List

C MILLING TABLE VISE. Close-grained, normalized casting . . . hardened, replaceable jaw plates. Jaws 3½ inches wide, 2⅞-inch opening, 1⅜ inches deep, ⅝-inch Acme thread screw. 84 KGP 3420K—Ship. wt. 13 lbs. See Price List

D STEP BLOCKS. Handy wherever work is clamped to the milling table or face plate—holds pieces firmly. High quality, close grained casting with finished bases. Two sizes: 2½ and 4½ in. high. Wts. 2 lbs. and 5 lbs. 84 KGP 3419K—Pair. *State size.* See Price List

E BALL BEARING ARBOR SUPPORT. Double sealed. Serves same purpose as over-arm on large millers. Should be used with 8-in. arbor 84 KG 3417K. 84 KGP 3416K—Ship. wt. 7 lbs. See Price List

F END MILL HOLDER. Alloy steel holders for double end mills are made with No. 9 Brown & Sharpe taper and tapped for draw-in bolts. ½-inch size—fits Woodruff Cutters. 84 KGP 3418K—Ship. wt. 1 lb. See Price List

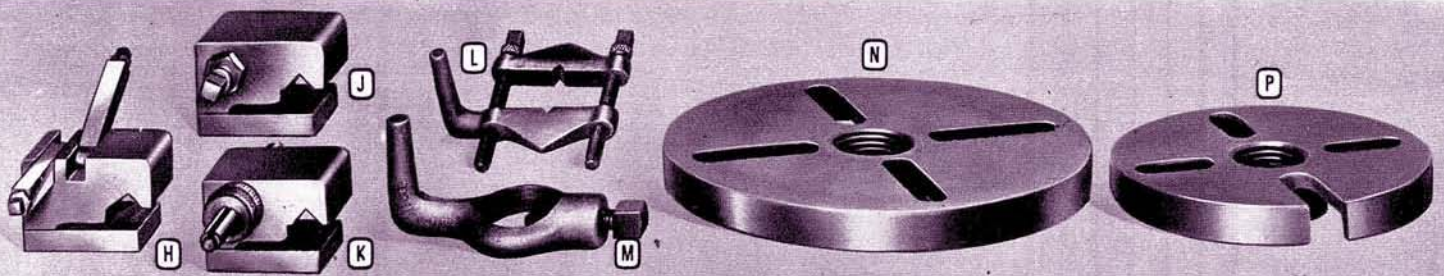
DUMORE TOOL-POST GRINDERS

G Mounts on compound rest of Powr-Kraft and Logan 10-in. lathes. Compact and sturdy—designed for portability. With dynamically balanced armatures and rotating parts, to prevent vibration and increase precision. Used for sharpening tools, cylindrical grinding, etc. Unique frame construction assures rigid mounting, essential in precision grinding. Ideal for industrial schools and shops. Free from vibration and chatter. Two spindle speeds, 10,000 and 22,500 R.P.M., obtained with ¼ H.P. Universal motor. Uses wheels ⅞ to 2-in. diam. Internal grinding capacity from ½-in. or larger diam. to 2¼-in. deep. Accurate to .0001 inch. Has pre-loaded ball bearing spindle with Dumore patented ailing system, removable tool post, and interchangeable chuck setup for internal work. Securely mounted on "T" bolt. Distance from center line of spindle to base of frame ½ in., from spindle to mounting post base ¾ in.

Equipment includes: ⅞-in. chuck assembly for internal grinding; 2 belts, 10½x3½ in.; can of oil; straight wheel 2x¼x¼ in.; 3 mounted wheels; steel carrying case. Act. wt. 6¼ lbs. Ship. wt. 14 lbs.

84 KGP 2237K—External and internal grinder with case and accessories. See Price List

84 KGP 2236K—External grinder only. Same as above less ⅞-in. chuck assembly, 1 belt, 3 mounted wheels, carrying case. Ship. wt. 8 lbs. . . . See Price List



H DOUBLE CARRIAGE STOP. Adjustable screw in end of each finger—can be accurately set for two desired positions. Either finger of stop can be quickly brought into position. Stop clamps to lathe bed for use on either side of carriage. 84 KG 2196K—Ship. wt. 3 lbs. See Price List

J CARRIAGE STOP. Provides positive position stop for lathe carriage. May be used either to right or left of carriage. Adjustment screw with locknut for accurate adjustment. Clamps, over front "V" Way. 84 KG 2197—Ship. wt. 2 lbs. See Price List

K LOGAN MICROMETER CARRIAGE STOP. Used to locate the carriage position with accuracy on the lathe bed. Graduated micrometer collar is clearly marked in thousandths—easy to read. Setting may be locked for duplicate work. 84 KG 2195K—Ship wt. 3 lbs. See Price List

L CLAMP TYPE LATHE DOG. For square, hex, rectangular, round work. Mounts without removing work. Drop-forged steel. Machined and hardened. 1¼ inch. Shipping weight 1 lb. 4 oz. 84 KG 2182. . . . See Price List

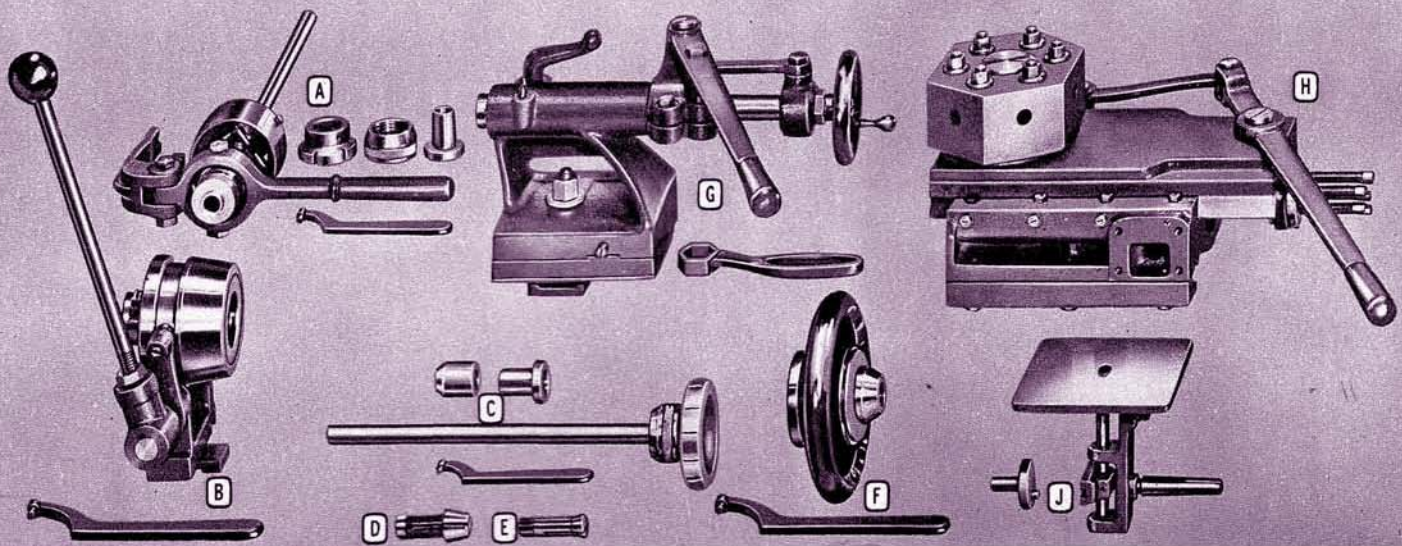
M STANDARD LATHE DOGS. Made of highest quality heavy drop-forged bar steel with square head alloy steel set screw. Wt. 10 oz. 84 KG 2183—*State Size.* ½ inch. See Price List ¾ inch. See Price List 1 inch. See Price List 1½ inch. See Price List

N P FACE PLATES. Fit Powr-Kraft, Logan or any other lathe with 1½-inch 8-thread spindle nose. Precision machined and perfectly balanced for accurate fit. Made of gray cast iron. The 6-inch size has three closed and one open slot for lathe dogs. 8-inch size has all closed slots. *State size wanted.*

(N) 84 KG 2155—8-inch diameter. Shipping weight 5 lbs. 10 oz. See Price List

(P) 84 KG 2154—6-inch diameter. Shipping weight 3 lbs. 6 oz. See Price List

WARDS MONTHLY PAYMENT PLAN. Wards offer you a means of purchasing all your needs without a large outlay of cash. Any items in this book may be purchased for only 10% Down. Balance is payable in equal monthly amounts. Opening an account is simple. No security asked—no co-signers necessary. Just fill in monthly payment application on the back of the order blank and include required down payment.



POWR-KRAFT AND LOGAN METAL LATHES

PRECISION MACHINED ATTACHMENTS . . . INCREASE THE USEFULNESS OF YOUR METAL CUTTING LATHE

A PRODUCTION COLLET ATTACHMENT. For draw-in collets up to 1/2-in. capacity. Lever-operated—opens and closes while spindle is in motion. Easily attached. Adjustable to provide any collet tension. Ship. wt. each, 12 lbs.

84 KG 2157 K—Fits lathes 84 KG 2130, 2136 on Page 30; 84 KG 2232, 2233, 2234 and 2235 listed on Page 32.See Price List

84 KG 2158 K—Fits lathes 84 KG 2217, 2218, 2219, 2132, 2134, 2135 on Pages 33-34.See Price List

B PRODUCTION COLLET ATTACHMENT. For push type collets up to 5/8-in. cap. Lever operated—opens and closes while spindle is in motion. Work can be brought against a stop and locked in position without longitudinal movement. Chuck is attached to spindle by fitted back plate. Fits Powr-Kraft and Logan 10-inch Lathes.

84 KG 2156 K—Ship. wt. 25 lbs.See Price List

C DRAW-IN COLLET CHUCK ATTACHMENT. For draw-in collets. Fits Powr-Kraft and Logan 10-inch lathes. Chucks round work 1/16 to 1/2 in. Hollow draw-in bar. Threaded at spindle end. Allows rod to pass through spindle. Includes spindle cap, closing sleeve, wrench (no collets). Ship. wt. 5 lbs.

84 KG 2160.See Price List

D PUSH TYPE COLLET. Used with (B) at left and (F) below. Also with 84 KG 2184K on Pg. 33. Made of alloy tool steel, correctly heat treated for maximum wear. Precision ground inside and out. Work must be within .005 in. of collet size. Sizes: 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8, 13/32, 7/16, 15/32, 1/2, 17/32, 9/16, 19/32, 5/8 in. Be sure to state size wanted. Shipping weight each, 6 oz.

84 KG 2163 KSee Price List

E DRAW-IN COLLETS. For round work. Sizes: 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8, 13/32, 7/16, 15/32, and 1/2-in. Ship. wt. each, 6 oz. State size.

84 KG 2162.See Price List

F HAND WHEEL COLLET CHUCK. Fits lathes with 1/2x8-in. thread spindle nose. Capacity: Round work up to 3/8-in. diameter which may be fed through lathe spindle. Its positive squeeze grip closes concentrically on work without longitudinal movement of collet. Minimum overhang assures accuracy. Only 3 moving parts. 7-in. diam. closing wheel in easy reach. Uses Push Type Collet (D) listed above. Ship. wt. 6 lbs.

84 KG 2161 K.See Price List

G LEVER TAILSTOCK. Supplies added advantages of production tailstock and can also be set to operate as standard tailstock. Lever stroke, 2 3/4 inches. Handwheel spindle travel 2 3/8 in. Fitted for No. 2 Morse Taper. Fits Powr-Kraft and Logan 10-inch lathes.

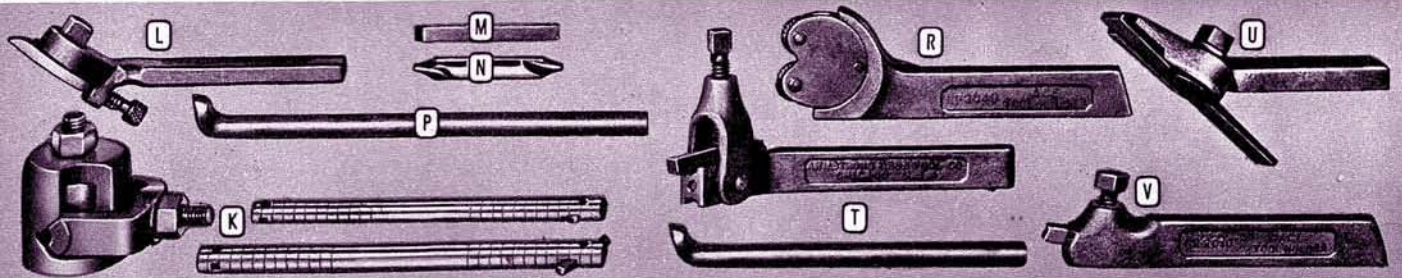
84 KG 2187 K—Ship. wt. 30 lbs.See Price List

H LEVER OPERATED TURRET ASSEMBLY. Excellent for machining small parts. Identical to turret furnished in lathes 84 KG 2131 and 2132 on Pg. 33. Can be fitted to lathes 84 KG 2130, 2136, on Page 30; 84 KG 2232, 2233, 2234, 2235 on Page 32; 84 KG 2217, 2218, 2219, 2134; 2135 on Page 34; however, careful workmanship in fitting is required. Where possible lathes 84 KG 2131 and 84 KG 2132 are recommended as a complete unit to obtain maximum utility and accuracy. Has 6 positions with adjustable stops. Self-indexing. Diameter of turret head is 5-inches, maximum stroke 4 1/4 in. Furnished rough bored to 3/16-in. diameter. Must be finished bored to 3/8-in. diameter while in position on lathe.

84 KG 2166 F—Ship. wt. 75 lbs.See Price List

J FILING ATTACHMENT. Reciprocating action. For metal or wood lathes. No. 2 Morse Taper fits in tailstock, 1/2-in. shank diam. in lathe chuck or collet. Takes 1/4-in. diameter shank files. Chuck split to take hacksaw blades. Instructions included.

84 KG 2248—Ship. wt. 5 lbs. 8 oz.See Price List



K GLOBE BORING BAR SET. Holder has 3/8-3/4-in. diam. cap. Steel boring bars machined from solid bar stock. 1/4-in. calibrations. Tool bit holes broached 90° one end, 45° other. Includes: holder; 3/8 and 1/2-in. boring bars; 2 wrenches. Wt. 4 lbs. 8 oz.

84 KGP 2238 K.See Price List

EXTRA GLOBE BORING BARS. With bit and Allen wrench. State size.

84 KGP 2239 K.See Price List

Bar size	Bit size	Ship. wt.
3/8 x 7 in.	1/8 sq. in.	4 oz.
1/2 x 8 in.	3/16 sq. in.	8 oz.
5/8 x 9 in.	3/16 sq. in.	12 oz.
3/4 x 10 in.	3/16 sq. in.	1 lb.
7/8 x 11 in.	1/4 sq. in.	1 lb. 8 oz.

TOOL BITS. Fit 2239 at left. 1/8x1 3/16, 1/8x2 1/2, 3/16x1 1/4, 3/16x1 3/16, 3/16x2 1/2, 1/4x1 1/4, 1/4x2 1/2 in.

84 KGP 2249 K—Wt. 8 oz. State size.See Price List

L THREADING TOOL HOLDER. Shank 3/8 by 3/4 in. Drop-forged steel.

84 KG 2171—Ship. wt. 8 oz.See Price List

M BLANK CUTTER BITS. 1/4x1/4x2 in. steel. Set of 6. 84 KG 2203—Wt. 1 lb.See Price List

HIGH-SPEED FORMED STEEL BITS (not shown). Includes round nose, rt. and left-hand turning, rt. and left-hand facing and threading bit.

84 KG 2204—Wt. 1 lb.See Price List

84 KG 2205—Same as 2204 above except Tungsten carbide tipped. Wt. 1 lb. Set of 6. See Price List

N 60 DEGREE CENTER DRILL, COUNTERSINK. In sizes 1/16, 3/32, 1/8 inches.

84 KG 2181—Ship. wt. 3 oz.See Price List

P BORING BARS. Fit (T) below. Sizes: 1/8x4, 3/16x4 1/2, 1/4x5, 5/16x6, 3/8x7 inches. Shipping weight 3 oz. State size.

84 KG 2180.See Price List

R KNURLING TOOL HOLDER. With med. knurl. Ship. wt. 10 oz.

84 KG 2175.See Price List

DIAMOND FORMED KNURLS. Wt. 2 oz. State Cat. No. See Price List

84 KG 2176—Fine; 84 KG 2177—Medium; 84 KG 2178—Coarse

T BORING TOOL HOLDER. With 1/4-in. boring bar, bit.

84 KG 2179—Ship. wt. 1 lb. 4 oz.See Price List

U CUT-OFF TOOL HOLDER. Ship. wt. 9 oz.See Price List

84 KG 2173—Right Hand; 84 KG 2172—Straight.

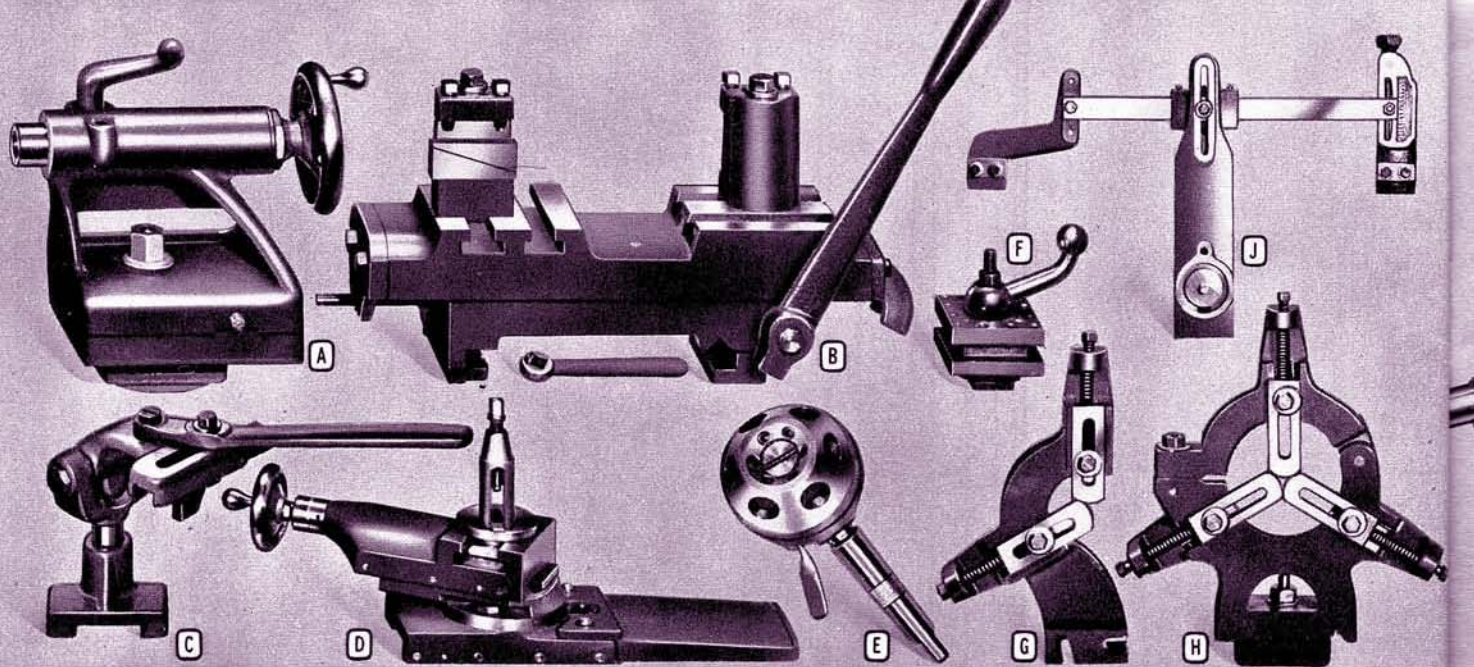
84 KG 2174—Extra Blade. Shipping weight 1 oz.See Price List

V DROP FORGED TOOL HOLDERS. For 1/4-in. sq. bits. 3/8x3/4-in. shank. State Catalog Number.

84 KG 2168—Right-Hand. Ship. wt. 8 oz.See Price List

84 KG 2169—Left-Hand. Wt. 8 oz. See List

84 KG 2170—Straight. Wt. 9 oz. See List



METAL CUTTING LATHE ACCESSORIES

ACCESSORIES FOR POWR-KRAFT AND LOGAN METAL CUTTING LATHES LISTED ON PAGES 30 TO 34

A **TAILSTOCK ASSEMBLY.** Fits in place of lever operated hexagonal block turret of Lathe 84 KG 2132F listed on Page 33. Spindle travels $2\frac{3}{8}$ in., is graduated in $\frac{1}{16}$ ths—takes No. 2 Morse taper accessories. $\frac{1}{16}$ in. offset for taper turning. Less 60° center. Wrench included. 84 KG 2186K—Ship. wt. 24 lbs. . . . See Price List

B **DOUBLE TOOL POST CROSS SLIDE.** Fits Powr-Kraft, Logan 10-in. lathes. Lever operated cross slide has adj. stops with max. travel of 3 in. Adj. wedges for tool holder slot included. 84 KG 2189K—Ship. wt. 30 lbs. . . . See Price List

C **MICA UNDERCUTTER.** For armatures up to 5-inch diameter. Mounts on back of cross slide. 2-in. stroke With one each .015 and .020 saws. Fits Powr-Kraft and Logan 10-inch lathes. 84 KG 2208—Ship. wt. 8 lbs. . . . See Price List

EXTRA SAWS FOR ABOVE MICA UNDERCUTTER. Size .015 or .020. Package of six. State size wanted. 84 KG 2209—Ship. wt. 6 oz. . . . See Price List

D **COMPOUND REST ASSEMBLY.** Top slide graduated in 1000ths—travels $2\frac{1}{4}$ in.; swivels 90° in both directions, locks at any angle. Tool post opening for tool holder shank $\frac{3}{8} \times \frac{3}{4}$ in. Use up to $\frac{1}{4}$ -in. cutter bits. Assembly is same as furnished with lathes 84 KG 2130R and 84 KG 2136R. Fits turret lathes 84 KG 2132F and 84 KG 2131F—fits saddle in place of double tool post cross slide. 84 KG 2188K—Ship. wt. 13 lbs. . . . See Price List

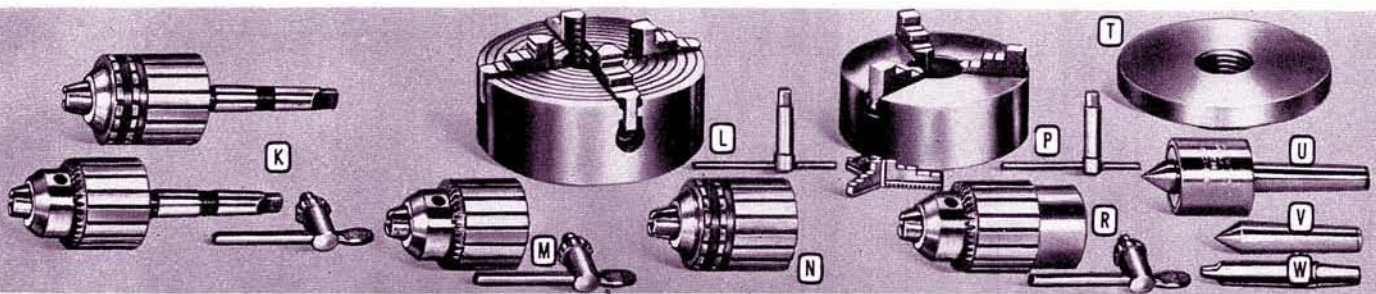
E **TAILSTOCK TURRET.** Fits all Powr-Kraft and Logan back-gear screw cutting lathes. Fingertip control. Six $\frac{5}{8}$ -in. bore holes. No. 2 Morse taper shank. 84 KG 2167—Ship. wt. 3 lbs. . . . See Price List

F **SQUARE TURRET TOOL POST.** Speeds up production . . . saves time on runs of parts by eliminating many second operation jobs. Mounts in the Tee slot of a compound rest. Twelve indexing positions. Accommodates tools up to $\frac{3}{8}$ in. Case hardened construction insures long wear. 84 KG 2191K—Ship. wt. 4 lbs. . . . See Price List

G **FOLLOWER REST.** Used for supporting thin work. Fits Powr-Kraft and Logan 10-inch lathes. Mounts on back of carriage and follows cutting tool. Sturdy cast-iron frame. Jaws are adjustable. All parts precision machined. 84 KG 2164—Ship. wt. 4 lbs. . . . See Price List

H **CENTER REST.** Clamps to inner bed ways to support long pieces. Fits Powr-Kraft and Logan 10-inch lathes. Top is hinged for easy inserting or removing of shafts. Cast-iron frame; machined cast-iron jaws are adjustable. 84 KG 2165—Ship. wt. 10 lbs. . . . See Price List

J **TAPER ATTACHMENT.** Fits Powr-Kraft and Logan 10-inch lathes. Tapers up to 4 inches per foot in either direction. All parts precision machined. Replace lathe cross slide with taper attachment cross slide—becomes permanent part of lathe. All parts except cross slide are easily detached when straight turning is performed. Microscrew adjustment of slide bar—quick, precise. 84 KG 2206—Ship. wt. 18 lbs. . . . See Price List



K **JACOBS COMMUTATOR KIT.** Jacobs chucks hold armature shaft during reconditioning. Kit includes $\frac{1}{4}$ to $\frac{3}{4}$ -in. capacity armature driving and center rest chucks. No. 2 Morse taper arbors included to fit headstock and tailstock. Packed in sturdy metal box. 84 KGP 2151—Complete Kit. . . . See Price List

L **4-JAW, 6-IN. INDEPENDENT CHUCK.** Fits metal turning lathes having $1\frac{1}{2}$ -in. 8-thread spindle. Semi-steel body—outer edge and face ground. Four reversible jaws with independent screw adjustments. For round or irregular work—outside or inside grip. 84 KG 2143—Ship. wt. 13 lbs. . . . See Price List

UNION 4-JAW, 6-IN. INDEPENDENT CHUCK (not shown). Fits metal turning lathes having $1\frac{1}{2}$ -in. 8-thread spindle. Cast semi-steel body—heat-treated reversible jaws for inside or outside grip. 84 KG 2247—Ship. wt. 10 lbs. . . . See Price List

M **JACOBS DRILL KEY CHUCKS.** Fits headstock or tailstock on all lathes. Use with arbors at right to adapt chucks to No. 2 Morse taper. 84 KGP 2146—Capacity 0 to $\frac{1}{2}$ in. See Price List 84 KGP 2147—Capacity $\frac{3}{16}$ to $\frac{3}{4}$ in. See Price List

N **JACOBS CENTER REST CHUCK.** Requires No. 2 Morse taper arbor (84 KGP 2153) to mount in tailstock to support centerless work. 84 KGP 2150— $\frac{1}{4}$ to $\frac{3}{4}$ in. . . . See Price List

P **3-JAW, 5-IN. MEDIUM-DUTY UNIVERSAL CHUCK.** Fits $1\frac{1}{2}$ -in. 8-thread spindle. Self-centering jaws. For round or hex. work. 84 KG 2142—Ship. wt. 9 lbs. . . . See Price List

3-JAW, 5-IN. HEAVY-DUTY UNIVERSAL CHUCK (not shown). Similar to above except heavy-duty. 84 KG 2207—Ship. wt. 11 lbs. . . . See Price List

UNION 3-JAW, 5-IN. UNIVERSAL CHUCK (not shown). Fits $1\frac{1}{2}$ -in. 8-thread spindle. Semi-steel body. 84 KG 2246—Ship. wt. 7 lbs. 8 oz. . . . See Price List

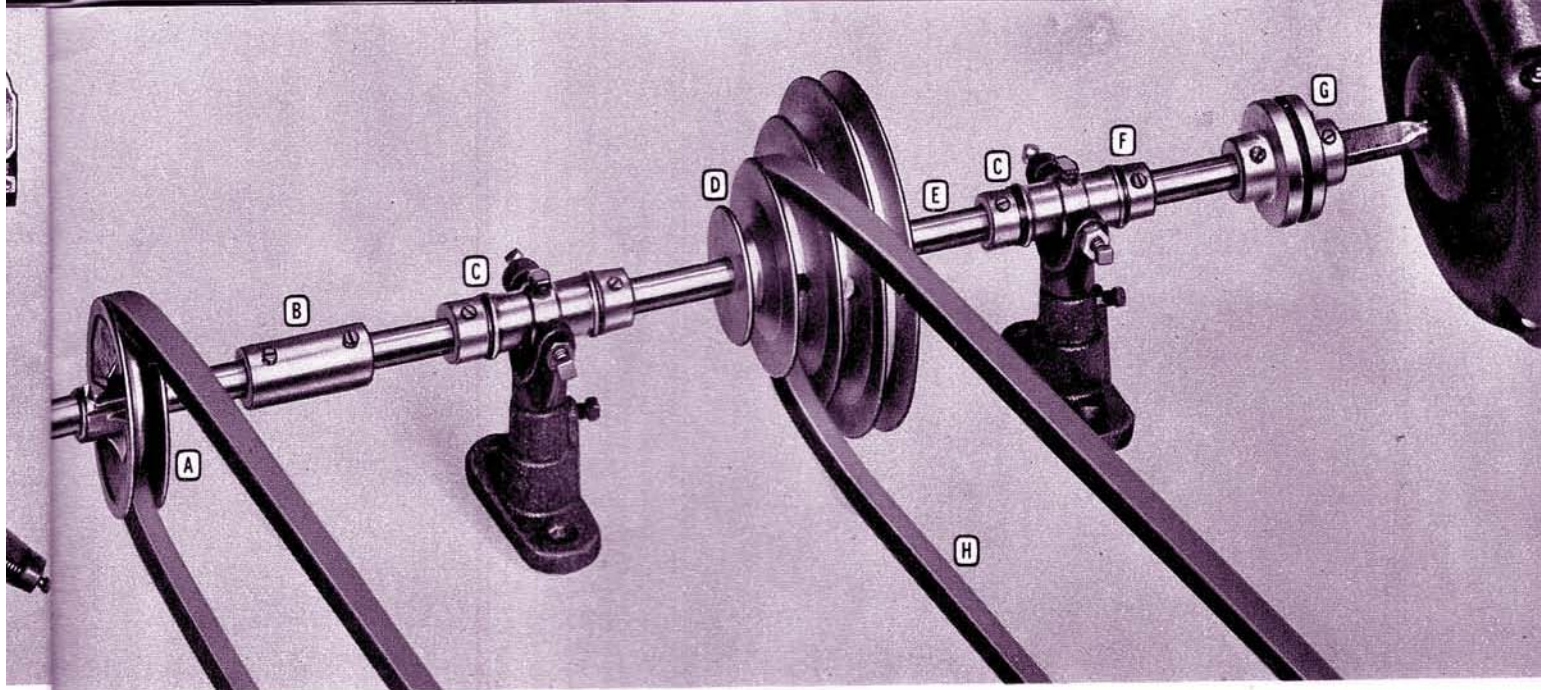
R **JACOBS HEADSTOCK CHUCKS.** Screw to $1\frac{1}{2}$ -in. 8-thread spindle. Hollow body. 84 KGP 2148— $\frac{1}{8}$ to $\frac{3}{8}$ -in. cap. . . . See Price List 84 KGP 2149— $\frac{3}{16}$ to $\frac{3}{4}$ -in. cap. . . . See Price List

T **CHUCK BACK PLATES FOR 5 AND 6-IN. CHUCKS.** Threaded for $1\frac{1}{2}$ -in. 8-thread spindles. Unfinished face. Ship. wts. 3 lbs. 8 oz.; 7 lbs. 84 KG 2144K—For 5-in. chuck . . . See Price List 84 KG 2145K—For 6-in. chuck . . . See Price List

U **ANTI-FRICTION 60° CENTER.** N. D. ball and Timken roller bearings. No. 2 Morse taper shank. 84 KG 2200K—Ship. wt. 2 lbs. . . . See Price List

V **60° CENTER.** Tool steel No. 2 Morse taper shank. 84 KG 2201K—Ship. wt. 8 oz. . . . See Price List

W **JACOBS CHUCK ARBORS.** Use to fit chucks to No. 2 Morse taper. Wt. ea., 12 oz. . . . See Price List 84 KGP 2152—Fits chuck 84 KGP 2146 listed at left. 84 KGP 2153—Fits chucks 84 KGP 2147, 84 KGP 2150.



WARDS POWER TRANSMISSION EQUIPMENT

FINE QUALITY RUBBER "V" BELTS, PULLEYS, LINE SHAFTS, COLLARS AND COUPLINGS

A SINGLE GROOVE "V" PULLEYS. Die-cast. For 1/2-in. "V" belts. State diam., bore size. 84 KG 2877—See Price List.

Outside Diam.	Bore	Ship. wt.
1 1/2-inch	1/2 or 5/8 in.	4 oz.
2-inch	1/2 or 5/8 in.	6 oz.
2 1/2-inch	1/2, 5/8 or 3/4 in.	8 oz.
3-inch	1/2, 5/8 or 3/4 in.	10 oz.
4-inch	1/2, 5/8 or 3/4 in.	12 oz.
5-inch	1/2, 5/8 or 3/4 in.	1 lb.
6-inch	1/2, 5/8 or 3/4 in.	1 lb. 12 oz.

B SOLID COUPLINGS. For connecting shafts. Machined from solid bar steel—cadmium plated to prevent rust. Flush set screws. State bore size wanted. 84 KG 2886—1/2-in. bore. Wt. 6 oz. See Price List. 3/4-in. bore. Wt. 8 oz. See Price List.

C SHAFT HANGERS. Adjustable to permit perfect shaft alignment. Equipped with oil cups and bronze bushings. State bore size wanted. 84 KG 2890—1/2-in. bore. Wt. 2 lbs. See Price List. 3/4-in. bore. Wt. 2 lbs. See Price List.

D FOUR-STEP DIE-CAST "V" PULLEYS. For 1/2-in. "V" belts. Choice of 1/2, 3/8 or 3/4 in. bore. State Catalog Number and bore size wanted. 84 KG 2881—4, 3 1/4, 2 1/2 and 1 3/4-inch diameter steps. Ship. wt. 2 lbs. See Price List. 84 KG 2882—5, 3 7/8, 2 1 5/16 and 1 3/4-inch diameter steps. Ship. wt. 2 lbs. 8 oz. See Price List.

E STEEL LINE SHAFTING. Centerless ground to .002 inch. State Cat. No. Ship. wts. 2 lbs.; 7 lbs. 84 KG 2888—1/2-in. diam., 24 in. long. See Price List. 84 KG 2889 M—3/4-in. diam., 48 in. long. See Price List.

F SHAFT COLLARS. Prevents end play in line shaft. Flush set screws. State bore size. 84 KG 2887—1/2-in. bore. Wt. 2 oz. See Price List. 3/4-in. bore. Wt. 3 oz. See Price List.

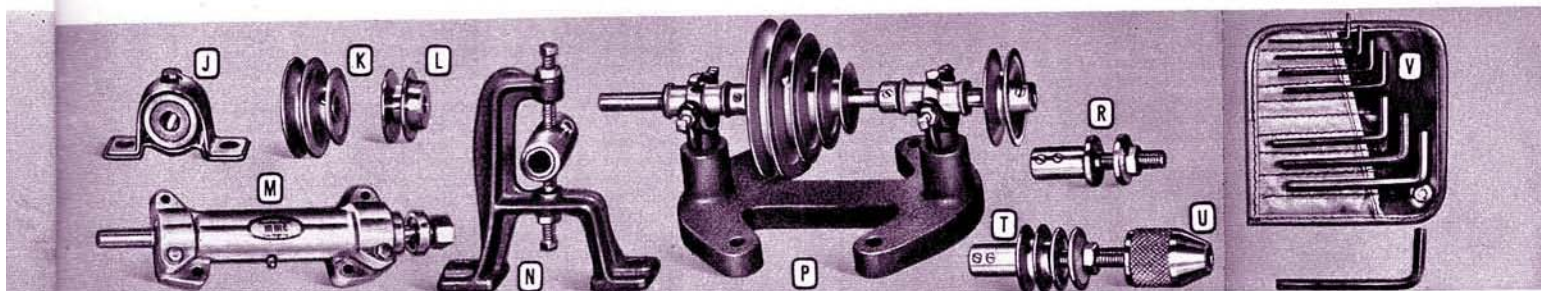
G FLEXIBLE COUPLINGS. Connect motor shaft to line shaft. Self-adjusting for minor disalignment. Rubber cushioned; die cast. State bore size. 84 KG 2885—1/2-in. bore. Wt. 7 oz. See Price List. 3/4-in. bore. Wt. 10 oz. See Price List.

H RUBBER "V" BELTS. "A" section type. Approximately 3/32 in. thick, 1/2 in. wide. Two rubber-impregnated fabric wrappers surround body of belt. Use with pulleys listed at left and below.

How to Order: Measure around outside of first pulley (not in groove) along lines around outside edges of opposite pulley and back.

84 KG 2876—State size wanted. See Price List.

Size	Ship. Wt.	Size	Ship. Wt.	Size	Ship. Wt.
20 in.	3 oz.	37 in.	5 oz.	56 in.	7 oz.
22 in.	3 oz.	38 in.	5 oz.	58 in.	7 oz.
24 in.	4 oz.	39 in.	5 oz.	60 in.	8 oz.
25 in.	4 oz.	40 in.	5 oz.	62 in.	8 oz.
26 in.	4 oz.	41 in.	5 oz.	64 in.	8 oz.
28 in.	4 oz.	42 in.	5 oz.	66 in.	8 oz.
29 in.	4 oz.	43 in.	6 oz.	70 in.	8 oz.
30 in.	4 oz.	44 in.	6 oz.	72 in.	8 oz.
31 in.	4 oz.	45 in.	6 oz.	74 in.	8 oz.
32 in.	4 oz.	46 in.	6 oz.	77 in.	9 oz.
33 in.	5 oz.	48 in.	7 oz.	82 in.	10 oz.
34 in.	5 oz.	50 in.	7 oz.	87 in.	10 oz.
35 in.	5 oz.	52 in.	7 oz.	92 in.	10 oz.
36 in.	5 oz.	54 in.	7 oz.



J PILLOW BLOCKS. Bronze bushing. Self-aligning. State Cat. No. See Price List. 84 KG 2920—1/2-in. bore. Ship. wt. 8 oz. 84 KG 2921—3/4-in. bore. Ship. wt. 12 oz.

K TWO-STEP DIE-CAST "V" PULLEYS. Diamond bored. Steps 2 1/2 and 2-in. diam. For 1/2-in. "V" belts. 1/2 or 3/8 in. bore. State bore size. 84 KG 2879—Ship. wt. 10 oz. See Price List.

L SINGLE GROOVE STEEL "V" PULLEYS. For 1/2-in. "V" belts. State diam., bore size. Turned down from solid steel bar stock. 84 KG 2910. See Price List.

Outside Diam.	Bore Size	Ship. Wt.
2 inches	1/2 or 5/8 in.	10 ounces
2 1/2 inches	1/2 or 5/8 in.	14 ounces
3 inches	1/2 or 5/8 in.	1 lb. 4 oz.
3 1/2 inches	1/2 or 5/8 in.	1 lb. 12 oz.

M HIGH-SPEED SAW MANDREL. Precision made with SKF bearings. Adjustable aluminum housing. Zerk fittings. State diameter wanted. 84 KG 7002 M—1/2-in. diam. Wt. 3 lbs. See Price List. 3/8-in. diam. Wt. 4 lbs. See Price List.

N SHAFT HANGER. Open side. Height adj. 4-5 in. Two bronze bushings—with oil well. 3/4-in. bore. 84 KG 2891 K—Ship. wt. 5 lbs. 8 oz. See Price List.

P JACK SHAFT. Bronze bushing. Single pulley 2 1/2-in. diam. Four-step pulley with 4, 3 1/4, 2 1/2 and 1 3/4 in. steps. Shaft diam. 1/2 in. Height adjusts from 3/4 to 4 1/2 in. Length 12 in. 84 KG 2884—Ship. wt. 12 lbs. See Price List.

R MOTOR ARBORS. Hold grinding wheels, buffers, wire brushes, etc., up to 3/4-in. thick. 1/2-in. 24 thread spindle. Ship. wt. ea., 10 oz. 84 KG 2915—Fits 1/2-in. shaft. See Price List. 84 KG 2916—Fits 3/8-in. shaft. See Price List.

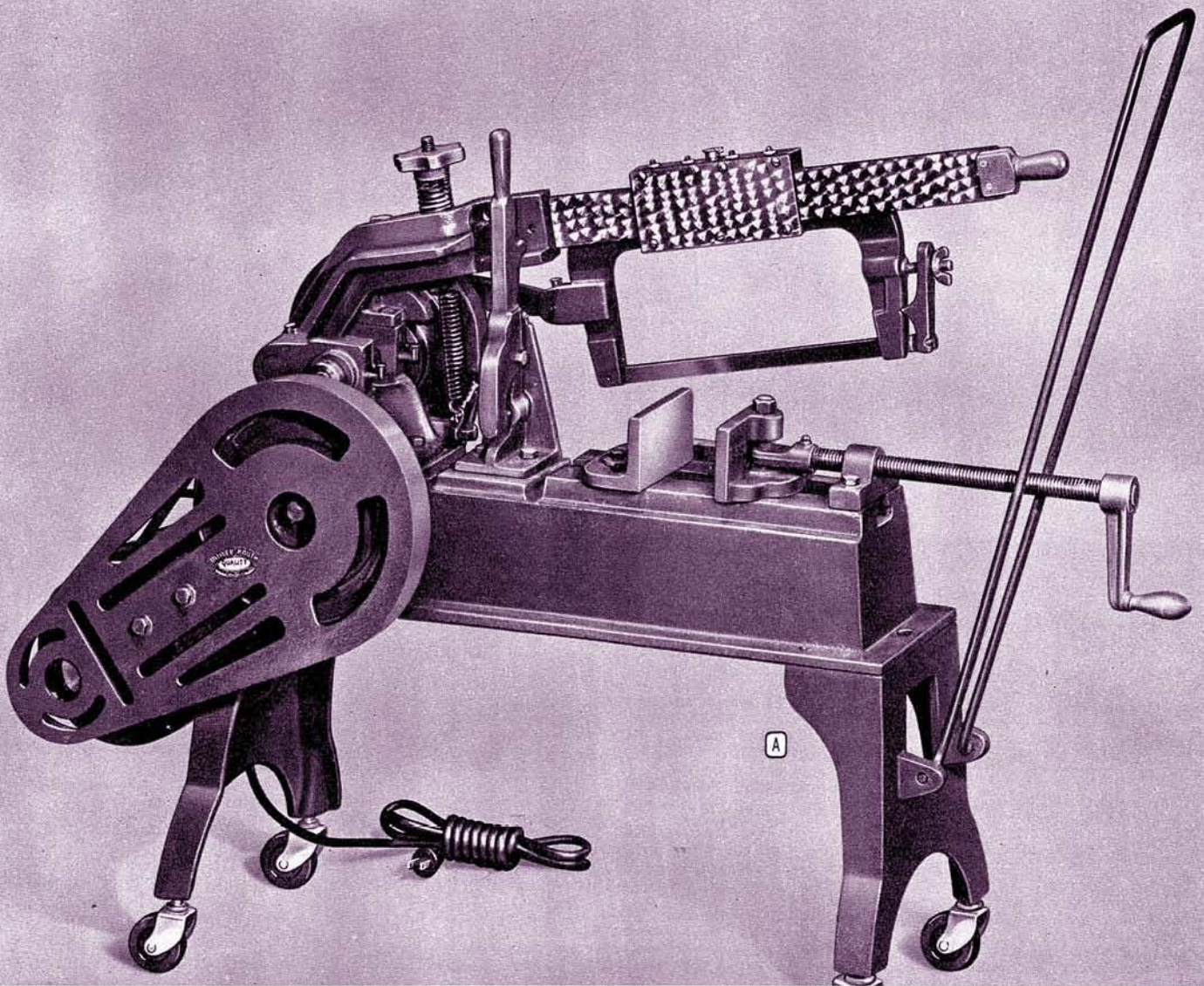
T MOTOR ARBOR WITH CHUCK. With single pulley. Fits 1/2-in. diam. shaft. Wt. each, 1 1/2 lbs. 84 KG 2892—With 1/4-in. chuck. See Price List. 84 KG 2893—With 1/2-in. chuck. See Price List.

U 3-JAW CHUCKS. Fit 1/2-in. 24-thread spindles. Ship. wts. 3 oz. 6 oz., State size wanted. 84 KG 2764—1/4-in. capacity. See Price List. 1/2-in. capacity. See Price List.

V HOLLOW HEAD SET SCREW WRENCH SET. Made of hardened tool steel. Consists of 8 wrenches to fit hollow head set screws from No. 6 to 1/2 in. Fit hollow head cap screws from No. 4 to 3/16 in. Packed in handy case which folds to fit pocket. 84 KG 2901—Ship. wt. 3 oz. See Price List.

INDIVIDUAL HOLLOW HEAD SET SCREW WRENCHES. Fit 1/4, 3/16, 3/8 in. hollow head set screws. Wt. ea., 3 oz. 84 KG 2900—State size. See Price List.

SATISFACTION
GUARANTEED



SAWMASTER JR. PORTABLE HACKSAW

STURDILY CONSTRUCTED SAWMASTER JR. PORTABLE HACK SAW WITH MOTOR

A Ruggedly built power Hack Saw. Capacity 4x4 in. Designed for ease of operation, dependable performance. Fast cutting self-contained unit. Cuts iron, steel, brass, bakelite, etc. Use for production work and for every day run of cuts now made expensively by hand or with heavy-duty power saw. Especially designed for use in smaller machine shops, garages, farms, etc.—wherever electricity is available. Reduces operating costs—speeds up production. Portable—saw is mounted on easy-rolling casters—makes it easy to move saw to stock rather than bringing heavy stock to saw. Fully automatic in action—just set the work in place, turn on the switch . . . saw makes the cut while operator does other work.

All castings are made of high-grade, close-grained gray iron. All bearings provided with removable bushings or gibs. Cam is integral with the large machine cut gear—attached by pitman directly to saw frame. Gear is driven by steel pinion on drive shaft. Controls and times the pressure on the forward cutting stroke. The positive pressure relief on the back stroke insures long blade life.

Important parts are machined and accurately fitted. Slide bearing on saw frame is large, closely fitted and provided with an oil well—made adjustable with a bronze gib. Equipped with a cast-iron vise. Accurately machined steel threaded screw works easily and smoothly—holds work firmly. Vise jaws 4 inches wide and 2 inches deep. Jaws open to 4 inches. Machined jaws slide to work on steel base. Vise swivels to permit angle cuts 0 or 45 degrees.—can be quickly set to cut square with the blade. Length of blade stroke 4½ inches—90 to 100 strokes per minute. Thumb screw blade tension adjustment. Takes any standard 12-inch power hacksaw blade—one included. Order extra blades listed (C) below.

Complete with ¼-H.P. 1725 R.P.M. 110-120-volt, 60-cycle A.C. motor, 10-foot rubber covered cord and plug, On-off switch, "V" belt and pulleys—ready to operate.

Dimensions overall 40 by 29½ by 13 inches. Use your credit to buy your power hack saw—see Page 25 for details.

84 KG 2404 F—Shipping weight 215 lbs. See Price List

POWR-KRAFT POWER HACK SAW . . . STATIONARY TYPE

B For use in small production shops or for general, everyday run of small stock cutting. Castings are made of close-grained gray iron. Cam is integral with machine cut gear . . . controls pressure on forward stroke of the blade and insures pressure relief on the back stroke . . . for smooth even cutting and longer blade life. Bronze bushed bearings.

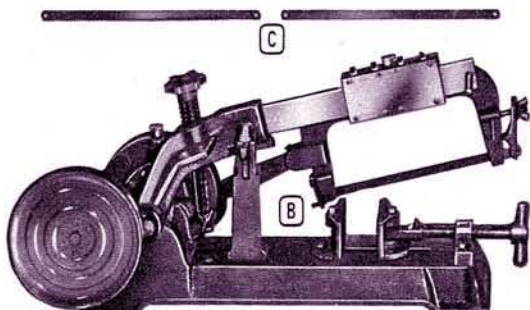
Equipped with a cast-iron vise . . . jaws 4 inches wide and 2 inches deep . . . open up to 4 inches. Swivels to permit angle cutting from 0 to 45 degrees.

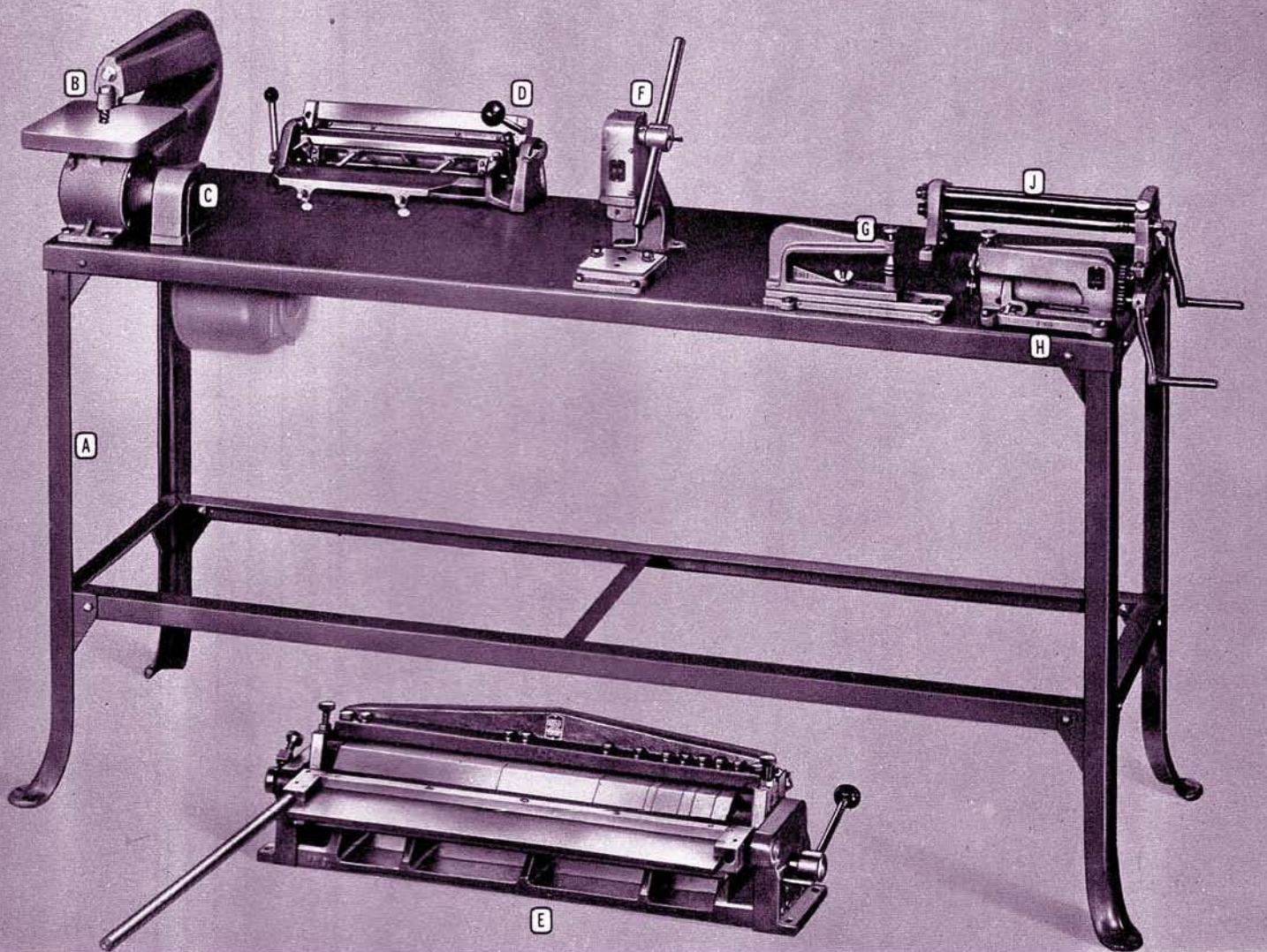
Length of stroke is 4½ inches . . . 90 to 100 strokes per minute. Size overall: 8¼ inches wide, 29 inches long and 13 inches high. Selling price includes: one 12-inch by ⅝-inch power blade (for additional power blades see (C) directly below); and 8-inch diameter machine "V" pulley. Recommended motor 1725 R.P.M., ¼-H.P. (not included), see Page 43. Also recommended: 2½-in. diam. "V" motor pulley and 44-in. "V" belt listed on Page 39. Shipping weight 80 lbs.

84 KG 2403 R—Power Hack Saw See Price List

C MASTER POWER HACK SAW BLADES. For use with Powr-Kraft Power Hack Saws (A) and (B) listed above. High-speed Molybdenum steel. 12 in. long; ⅝ in. wide. 14 teeth.

84 KG 4486—Shipping weight per pair, 5 oz. See Price List





POWR-KRAFT SHEET METAL TOOLS

SOLD AS A TABLE TOP OUTFIT AS PICTURED—OR AS INDIVIDUAL TOOLS . . . ONLY 10% DOWN ON TERMS

POWR-KRAFT SHEET METAL OUTFIT. Sheet metal workers, hobbyists, tanners, etc., can now have all their sheet metal tools, designed for small work in 1 convenient, compact unit as shown. Will process up to 20-ga. sheet steel or heavier gauges of zinc, pewter, copper, etc. Includes all tools (A) to (J) except (E). Order accessories (1 to 3) separately. Use nibbler with 1/4 H.P. 1725 R.P.M. motor, 2 1/2-in. diam. motor pulley and 22-in. "V" belt (not included). 84 KG 3287 F—Ship. wt. 237 lbs. . . . See Price List

(A) SHEET METAL TOOL STAND. With motor bracket. Size 18x68x35 in. Ship. wt. 81 lbs. 84 KG 3286 F . . . See Price List

(B) NIBBLER. Throat cap. 12 in. for cutting odd shapes, straight or scroll work up to 20-ga. sheet metal. Gray iron frame, machined 8x8-in. cast-iron table. Scotch yoke mechanism operates in oil bath. Feed from either left or right. Steel cutter set and 2 1/2-in. machine "V" pulley incl. Size: 9 1/2 x 19 1/4 x 11 in. high. Use with 1/4-H.P. 1725 R.P.M. motor, 22-in. "V" belt and 2 1/2-in. diam. "V" motor pulley, (not included) see Pages 43, 39. Ship. wt. 44 lbs. 84 KG 3275 K . . . See Price List

(C) BELT AND PULLEY GUARD for Nibbler (B) above. Can be driven from below only. Ship. wt. 2 lbs. 84 KG 3276 K . . . See Price List

(D) 12-INCH BRAKE. Bends sheets and makes simple metal trim from sheet metal up to 20-gauge thickness, 12 in. wide. Steel blade swings in steel bearing support. Quick cam action clamps holds work. Extensions incl. for duplicating. Size: 18 x 17 x 3 3/4 in. Wt. 34 lbs. 84 KG 3289 K . . . See Price List

(E) 24-IN. BOX AND PAN BRAKE. Processes sheet metal up to 16-ga. thickness. 24 in. wide . . . greater capacity on shorter and more ductile materials. Clearance between top fingers and anvil 1 in. Maximum box or pan depth 2 1/2 in. Back gauge range 1/4 to 24-in. diam. Minimum reverse bend with leaf bar removed 3/8 in. Angular bend control range with cam actuated stop 0 to 135°. Bend or radii range 0 to 1/2 in. Left or right-hand mount for bending lever. Ship. wt. 200 lbs. 84 KG 3288 F . . . See Price List

(F) HAND PUNCH-SHEAR. For use with dies, punches and cutting blades listed below. Cast-iron body. Machined table 4x4 in. 12-in. steel lever arm delivers pressure directly over the punching and the shearing point. 1/4-inch stroke. Throat cap. 2 3/8 in. Size: 5 3/4 x 9 3/4 x 14 1/2 in. 84 KG 3278 K—Ship. wt. 20 lbs. . . See List

(G) CIRCULAR ATTACHMENT FOR SHEAR. Use with Hand Punch-Shear above. Holds work firmly on swivel while shear cuts outside circle. Cast-iron base and frame. Maximum throat cap. 6 inches. On sliding track, 12-inch diameter circle can be cut when used with a shear. Size overall: 3 in. by 11 in. by 4 3/4 in. in height. Ship. wt. 7 lbs. 84 KG 3284 K . . . See Price List

(1) BOLSTER PLATE, SHEAR PLATE HOLDER. Cast iron. Fits Hand-Punch Shear (F). Use with shear cutting blades. Less blades. 84 KG 3281 K—Wt. 2 lbs. See List

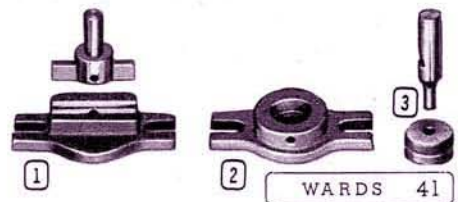
SHEAR CUTTING BLADES. For inside cuts, snips square corners, for small cut off work. Cuts 2 in. wide. Use with (1). 84 KG 3282 K—Wt. 8 oz. . . See List

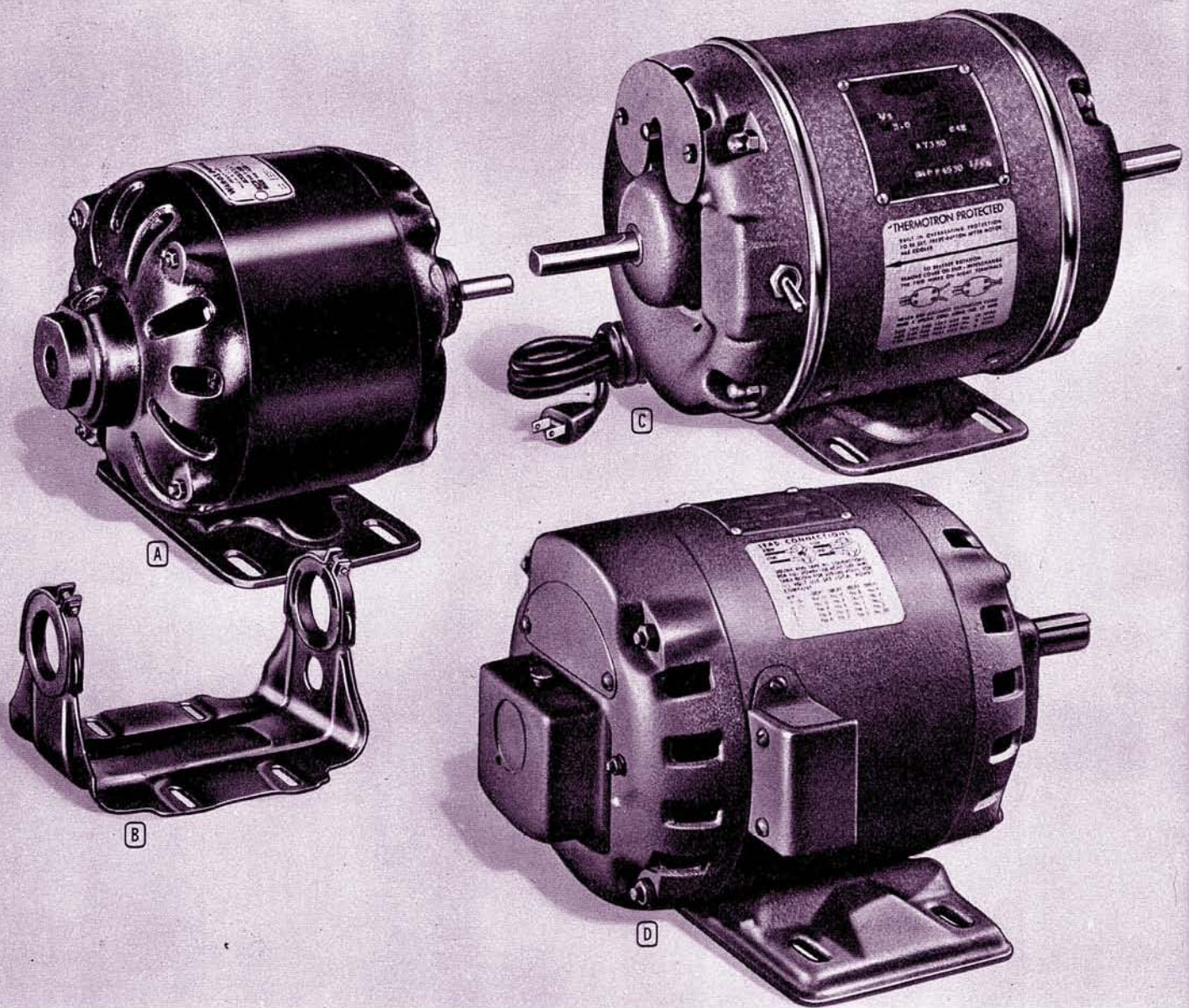
(2) BOLSTER PLATE FOR DIE SET. Use with all size round punches and dies (3) at right. Cast iron. Ship. wt. 10 oz. 84 KG 3279 K . . . See Price List

(H) SHEAR. Max. width cut 6 in. 1 1/4-in. diam. hardened and tempered replaceable steel cutters. For cutting, slitting, trimming, etc. Cutters fit on threaded shaft ends, adjustable to take up wear. Thumb nut adjusts top cutter up to 20-ga. and for inside cuts. Small sliding arm with wing nut adjustment controls width of work. Cast-iron base and arm. Machine cut steel gears. Size overall 3x15 1/4 x 5 inches. 84 KG 3283 K—Ship. wt. 11 lbs. . . See Price List

(J) 12-IN. SLIP ROLL. Forms cylinders, reverse curves, scrolls, etc. Cast-iron frame, housing. Ground and polished 1-in. diam. 12-in. long steel rollers. 2 front rollers revolve, grip sheets; adjustable rear roller deflects sheet, forms curve desired. Wing nut lets upper roller raise at 1 end to let work be removed. Machine cut gears. Ship. wt. 17 lbs. 84 KG 3285 K—5 3/4 x 20 3/4 x 4 in. . . . See List

(3) ROUND PUNCHES AND DIES. Tool steel. For hand and punch-shear (F). Set consists of punch and die. Use with (2) below. Wt. 8 oz. State Size. 84 KG 3280 K—1/8; 3/16; 1/4; 5/16; 3/8; 1/2-in. . . . See List





RUGGED POWER-KRAFT ELECTRIC MOTORS...

WHICH TYPE MOTOR SHALL I BUY?

SPLIT-PHASE TYPE. For easy starting jobs. Use for bench grinders, flex shafts, bench and jig saws and general utility work. Motors develop 2 to 3 times rated power for starting loads.

CAPACITOR TYPE. For medium to hard starting jobs. Use from $\frac{1}{3}$ to $\frac{1}{4}$ less current than split-phase motors. Use for most wood-working tools, drill presses, table saws, etc. Also for feed mixers and other farm equipment. Totally enclosed capacitor motor is designed for use with power tools which create excessive dust, grit or chips. High-speed capacitor motor is designed for shapers, swing saws and other tools requiring high operating speed.

REPULSION-INDUCTION TYPE. For hard starting jobs. Start heaviest loads—develop 4 to 5 times rated power for short emergency periods. Use for production machinery, refrigerators, pumps, compressors, heavy farm equipment.

OPERATING VOLTAGE OF MOTORS. All motors described as operating on 115-volts, A.C. will operate on a plus or minus 10% of rated voltage.

MOTOR PULLEYS. For pulleys with keyways (required for motors having keyed shaft) see Wards General Catalog.

STANDARD $\frac{1}{2}$ -H.P. SPLIT-PHASE MOTOR—SLEEVE BEARING TYPE

A An economically priced, dependable motor for jig saws, flexible shafts, sanders and other light power tools. Also for washing machines, fans and other household jobs. Wick oil system with sleeve bearings. Use with shaft in horizontal position only. Motor is easily reversed by changing lead wires. Ample ventilation keeps motor within safe operating temperature. Steel base is slotted for easy mounting. Single $\frac{1}{2}$ -inch diameter shaft extends $1\frac{5}{8}$ inches. Speed 1725 R.P.M. For 115-volt, 60-cycle A.C. only. Heavy cast-iron frame with steel base. Base is slotted for easy mounting. Rust-resistant black finish. Ship. wt. 22 lbs.

83 KG 4534 M—Mailable.....See Price List

B RESILIENT MOUNTING KIT. Fits split-phase motor (A) above only. Use for fans, washing machines, etc. Provides cushion for motor—reduces vibration and noise. Made of strong 10-ga. sheet metal with rubber mounting rings. Rust-resistant black finish. Slotted base for maintaining proper belt tension. 83 KG 4535—Wt. 2 lbs. 12 oz. . . . See Price List

DE LUXE SPLIT-PHASE MOTORS—BALL BEARING TYPE

C Rugged, top quality motors designed for easy starting jobs such as bench grinders, bench and jig saws, sanders, flexible shafts and other light-duty power tools. Develop 2 to 3 times rated power for starting loads. New Departure grease-sealed ball bearings—use motor in any position. Built-in Thermotron automatically shuts motor off if overload or short circuit occurs—prevents motor from burning out. Fan and vents keep motor cool—temperature won't rise more than 40° C. Open type drip-proof construction . . . prevents falling particles and dripping liquids from entering motors. Handy on-off switch.

$\frac{1}{2}$ -in. diam. double shaft extends $1\frac{7}{8}$ in. at each end. For use on 115-volt, 60-cycle A.C. only. Speed 1725 R.P.M. Gray finish. $7\frac{1}{2}$ -ft. rubber covered cord and plug.

83 KG 4530 M—Mailable. State horsepower wanted.

$\frac{1}{4}$ -H.P.—Ship. wt. 28 lbs. See Price List
 $\frac{1}{2}$ -H.P.—Ship. wt. 32 lbs. See Price List

HEAVY-DUTY REPULSION-INDUCTION MOTORS

D Fractional horsepower, single phase type. Use for hard starting jobs such as feed grinders, compressors, farm equipment, heavy production machinery. Develop 4 to 5 times rated power for starting loads. Single keyed shaft.

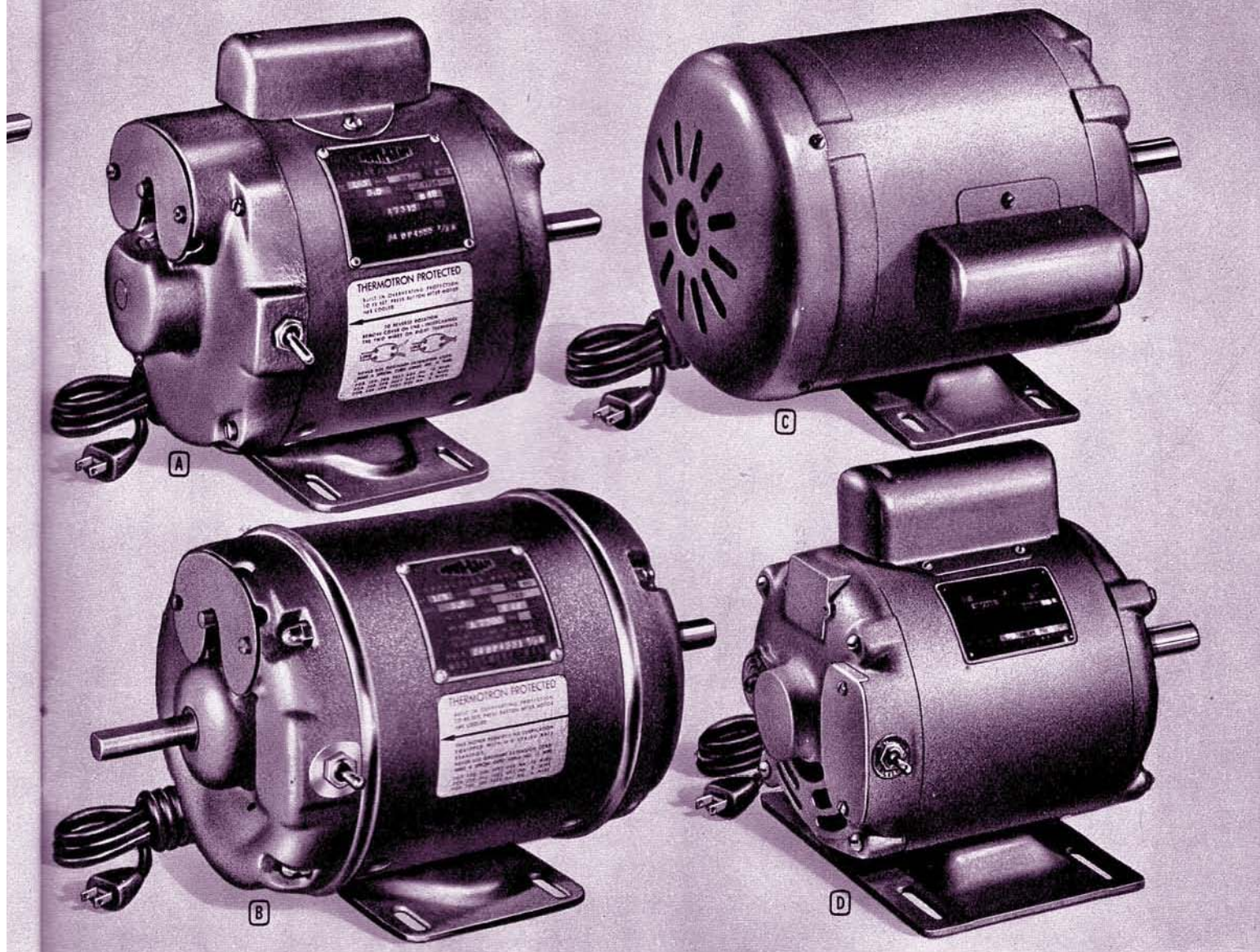
Wick oil system with sleeve bearings—use motors in horizontal position only. Fan and air vents keep motors cool—temperature won't rise more than 40° C. Speed 1725 R.P.M. For 115 or 230-volt, 60-cycle A.C. single phase only. 83 KG 4612 M—Mailable. State horsepower. See Price List

Horsepower	Shaft Diam.	Shaft Extends	Ship. wt.
$\frac{1}{4}$	$\frac{5}{8}$ in.	$1\frac{7}{8}$ in.	30 lbs.
$\frac{1}{3}$	$\frac{5}{8}$ in.	$1\frac{7}{8}$ in.	32 lbs.
$\frac{1}{2}$	$\frac{3}{4}$ in.	$2\frac{1}{4}$ in.	47 lbs.
$\frac{3}{4}$	$\frac{3}{4}$ in.	$2\frac{1}{4}$ in.	51 lbs.



42 WARDS

MOTOR RAIL (shown at left). Permits you to use one motor with several tools. Fasten extra brackets near each tool and shift motor, with rail attached, from one tool to another. Maintains desired belt tension. Includes rail, 1 set of brackets, screws, bolts. For $\frac{1}{4}$ to $\frac{1}{2}$ -horsepower motors. 83 KG 4740—Ship. wt. 1 lb. See Price List
 83 KG 4741—Two EXTRA BRACKETS. Wt. 4 oz. See Price List



FOR EFFICIENT POWER TOOL OPERATION

STANDARD CAPACITOR MOTORS—SLEEVE BEARING TYPE

A $\frac{1}{4}$ and $\frac{1}{2}$ -horsepower. For medium to hard starting jobs such as jig saws, band saws and light duty wood lathes. Also for feed mixers and other farm equipment. Wick oil system with sleeve bearings provide positive lubrication. Use motors with shaft in horizontal position only. Single $\frac{1}{2}$ -in. diam. shaft extends $1\frac{7}{8}$ in. Condenser reduces starting current. Handy on-off switch. Built-in Thermotron automatically shuts off motor when overload or short circuit occurs—prevents motor from burning out. Fan and air vents keep motor cool—temperature won't rise more than 40°C . Open type drip-proof construction . . . prevents falling particles and dripping liquids from entering motor. Rolled steel frame with cast-iron end bells, slotted base. Speed 1725 R.P.M. For 115-volt, 60-cycle A.C. only. Gray finish. $7\frac{1}{2}$ -ft. cord, plug.

83 KG 4555M—*Available. State horsepower wanted.*

$\frac{1}{4}$ -horsepower—Shipping weight 29 lbs. See Price List
 $\frac{1}{2}$ -horsepower—Shipping weight 31 lbs. See Price List

DE LUXE CAPACITOR MOTORS—BALL BEARING TYPE

B $\frac{1}{4}$ to $\frac{3}{4}$ -horsepower. Rugged, long-lasting motors for use with table saws, drill presses, metal-cutting lathes, etc. Also for feed mixers and other farm equipment. Equipped with New Departure ball bearings . . . double-sealed in grease for life. Motors may be used in any position. Condenser is mounted internally—motor takes less space. On-off switch. Double shaft. Built-in Thermotron shuts off motor when overload occurs—prevents motor from burning out. Fan and air vents keep motor cool—temperature won't rise more than 40°C . Open type drip-proof construction . . . prevents falling particles and liquids from entering motor. Rolled steel frame with cast-iron end bells. Speed 1725 R.P.M. Gray finish. $7\frac{1}{2}$ -ft. cord and plug.

83 KG 4551M—*Available. State horsepower wanted. See Price List*

H.P.	Shaft Diam.	Shaft Extends	Voltage (A.C.)	Ship. Wt.
$\frac{1}{4}$	$\frac{1}{2}$ in.	$1\frac{7}{8}$ in.	115	29 lbs.
$\frac{1}{2}$	$\frac{1}{2}$ in.	$1\frac{7}{8}$ in.	115	33 lbs.
$\frac{1}{2}$	$\frac{1}{2}$ in.	$1\frac{7}{8}$ in.	115	39 lbs.
$\frac{3}{4}$	$\frac{3}{4}$ in.	$2\frac{1}{4}$ in.	115/230	56 lbs.

$\frac{1}{2}$ -HORSEPOWER TOTALLY ENCLOSED CAPACITOR MOTOR

C Designed especially for use with tilting arbor bench saws and other power tools which create excessive dust. Totally enclosed for complete protection against dirt, dust, chips or grit. Shielded fan blows cool air around motor housing . . . reduces motor temperature. Built-in overload protector shuts motor off automatically when overload occurs. Easily reset by push button.

Permanently lubricated ball bearings are double sealed in grease for long, trouble-free operation. Motor may be used with shaft in any position. Motors of this type have about $\frac{2}{3}$ greater power for starting and emergencies, and use about $\frac{1}{3}$ less current than split-phase motors of the same rating. Single $\frac{5}{8}$ -in. diameter keyed shaft extends $1\frac{7}{8}$ in. . . . accommodates large step pulleys. Handy on-off switch. Motor is easily reversed by changing lead wires. Steel frame with cast-iron end bells; slotted base. Gray finish. 1725 R.P.M. 8-foot rubber cord and plug. For 115-volt, 60-cycle A.C. only.

83 KG 4554M—Shipping weight 35 lbs. See Price List

HIGH-SPEED CAPACITOR MOTORS

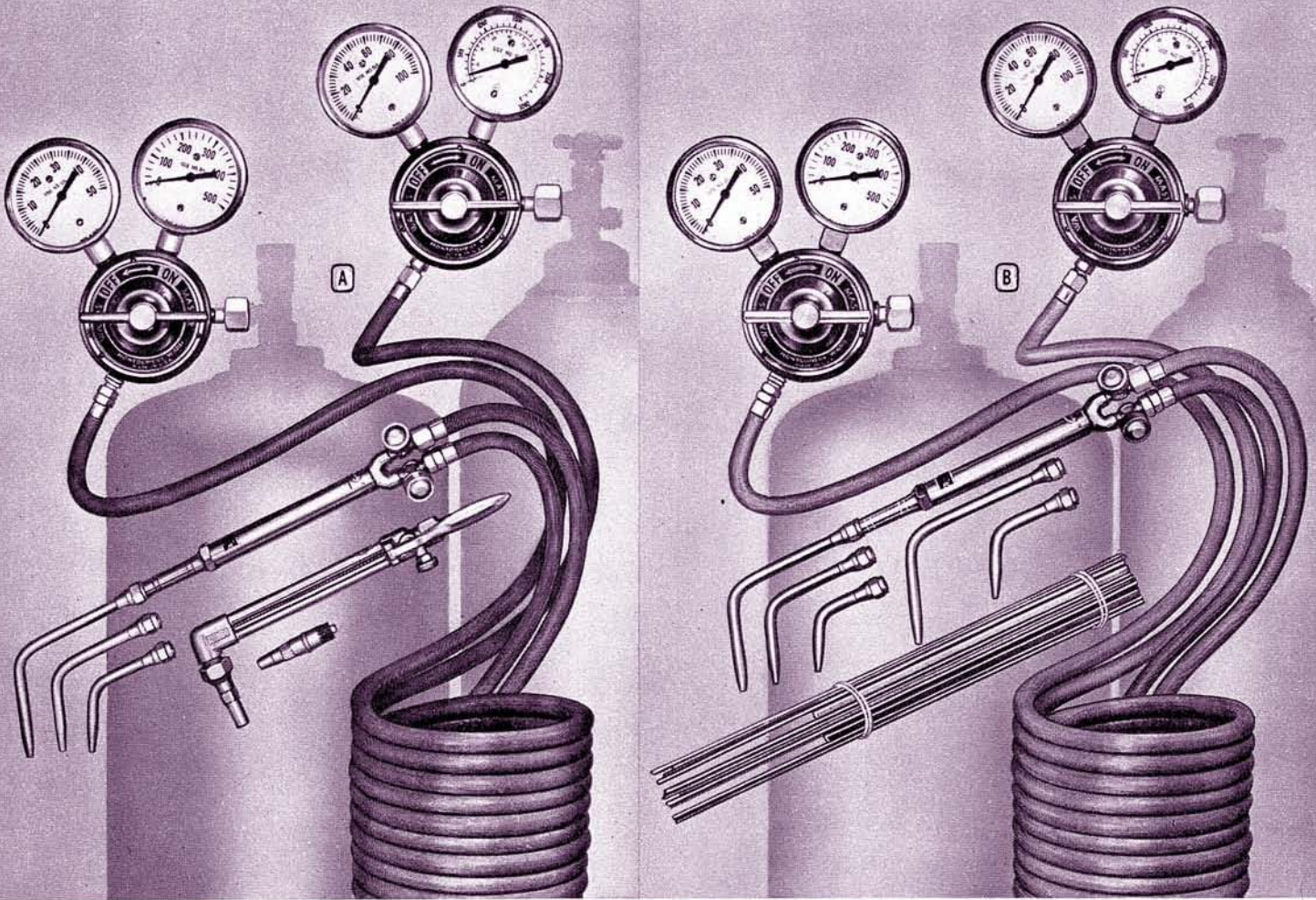
D Speed 3450 R.P.M. Designed for shapers, swing saws and other power tools requiring high operating speed. Eliminates the use of step-up pulleys—prevents loss of speed and power through transmission. Equipped with grease-sealed ball bearings for long, trouble-free service. Open type drip-proof construction . . . prevents falling particles and dripping liquids from entering motor. Manual reset overload protector prevents burn-out—shuts off current when motor is overloaded. Handy on-off switch. Steel frame with cast-iron end bells, slotted base. 8-ft. cord and plug. Gray finish.

$\frac{1}{2}$ AND $\frac{3}{4}$ -HORSEPOWER MODELS. For 115-volt, 60-cycle A.C. only. 3450 R.P.M. $\frac{5}{8}$ -in. diam. keyed double shaft extends $1\frac{7}{8}$ in. at each end. State H. P.

83 KG 4586M— $\frac{1}{2}$ -H.P. Ship. wt. 32 lbs. See Price List
 $\frac{3}{4}$ -H.P. Ship. wt. 35 lbs. See Price List

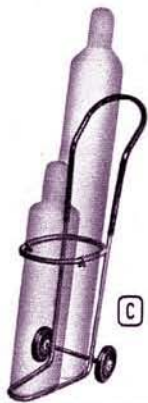
1 AND $1\frac{1}{2}$ -HORSEPOWER MODELS. For 115 or 230-volt, 60-cycle A.C. only. Speed 3450 R.P.M. $\frac{3}{4}$ -in. diam. single shaft extends $2\frac{1}{4}$ in. State H. P.

83 KG 4587M—1-H.P. Ship. wt. 47 lbs. See Price List
 $1\frac{1}{2}$ -H.P. Ship. wt. 51 lbs. See Price List



OXY-ACETYLENE WELDING EQUIPMENT

WARDS MASTER QUALITY WELDING AND CUTTING OUTFITS . . . COMPLETE WITH ACCESSORIES



CYLINDER TRUCK

C Compact—fits easily in small spaces. Carries standard 125-cu. ft. Oxygen cylinder and small size Acetylene cylinder with ease. Easily loaded—easily unloaded—rolls smoothly. Adjustable telescoping tubular device on front holds cylinders securely.

Ruggedly built with all-welded tubular steel construction, mechanical rubber tires and oilless bronze bearings. Lightweight—inexpensive. Balanced design enables it to handle heavy loads easily and speedily. Shipping weight 12 lbs.

84 KG 5860 F—See Price List

44 WARDS:

Every part individually tested. Torch, cutting attachment and regulators approved by Underwriters' Laboratory, Inc. **WELDING TORCH.** Balanced equal pressure type. Strongly made of drawn brass—with comfortable ribbed handle. Non-flash mixer handles all size tips—no extra mixing chamber needed for larger tips. Precision fit needle valves allow for fine adjustments. Heavy knurled knobs—torch can be turned off without disturbing setting at regulators. Hose leads straightaway from torch for right or left-hand operation. Torch length varies from 14 to 19 inches, depending on size welding tip used.

WELDING NOZZLE TIPS. Have four times the flame range of ordinary fixed type tips—will not backfire. Solid drawn copper. Swivel type.

CUTTING ATTACHMENT. With welding outfit (A) only. Converts welding torch into cutting torch. Cuts steel up to 10 in. Solid drawn brass. Convenient lever control of excess oxygen flow, for fast cutting. Length overall 10½ in.

CUTTING TIPS. Included with outfit (A) only. Solid drawn Copper—superior to the usual leaded copper tips.

WELDING AND CUTTING OUTFIT

A COMBINATION WELDING AND CUTTING OUTFIT. Includes items described above as follows: Welding Torch, 3 welding nozzle tips, sizes T-3, T-5 and T-7—welds up to 2-inch metal. Cutting attachment, two cutting tips, sizes C1 and C3—cuts metal up to 6 inches. Oxygen Regulator and Acetylene Regulator with adapter, goggles, torch lighter and wrench. Also included are two instruction books and two 25-foot lengths of welding hose—¼-inch inside diameter and ½-inch outside diameter. Shipping weight 25 lbs. 84 KG 5815 M. See Price List

REGULATORS

OXYGEN REGULATOR as shown in sets (A) and (B).

84 KG 5813—Ship. wt. 6 lbs. 8 oz. See Price List

ACETYLENE REGULATOR shown in sets (A) and (B).

84 KG 5814—Ship. wt. 6 lbs. 4 oz. See Price List

OXYGEN AND ACETYLENE REGULATORS (described individually below). Copyrighted on-off features on regulators are exclusive with Wards—insure correct use and longer life. Larger capacity—diaphragm is 6½ square inches—for more sensitive control and constant, even flame at all tank pressures. Gauges are plainly marked—can easily be read even from a distance.

OXYGEN REGULATOR. Forged polished Brass. 100 and 3000-lb. gauges show pressure and cubic foot content of tank. Double cone inlet screen—prevents admittance of foreign materials, insuring long life and good performance. Clearly marked 2¾-inch diameter gauges.

ACETYLENE REGULATOR. Same as oxygen regulator above but with 50 and 500-lb. gauges and adapter for standard acetylene welding cylinders.

OTHER ACCESSORIES. Outfit includes: Welders' goggles, torch lighter, wrench, Oxy-Acetylene manual and 50-page "Installation and Operation of Oxy-Acetylene Equipment" booklet. (Arrange for Gas Cylinders locally before buying Oxy-Acetylene outfits listed below—not included with outfits.)

WELDING OUTFIT

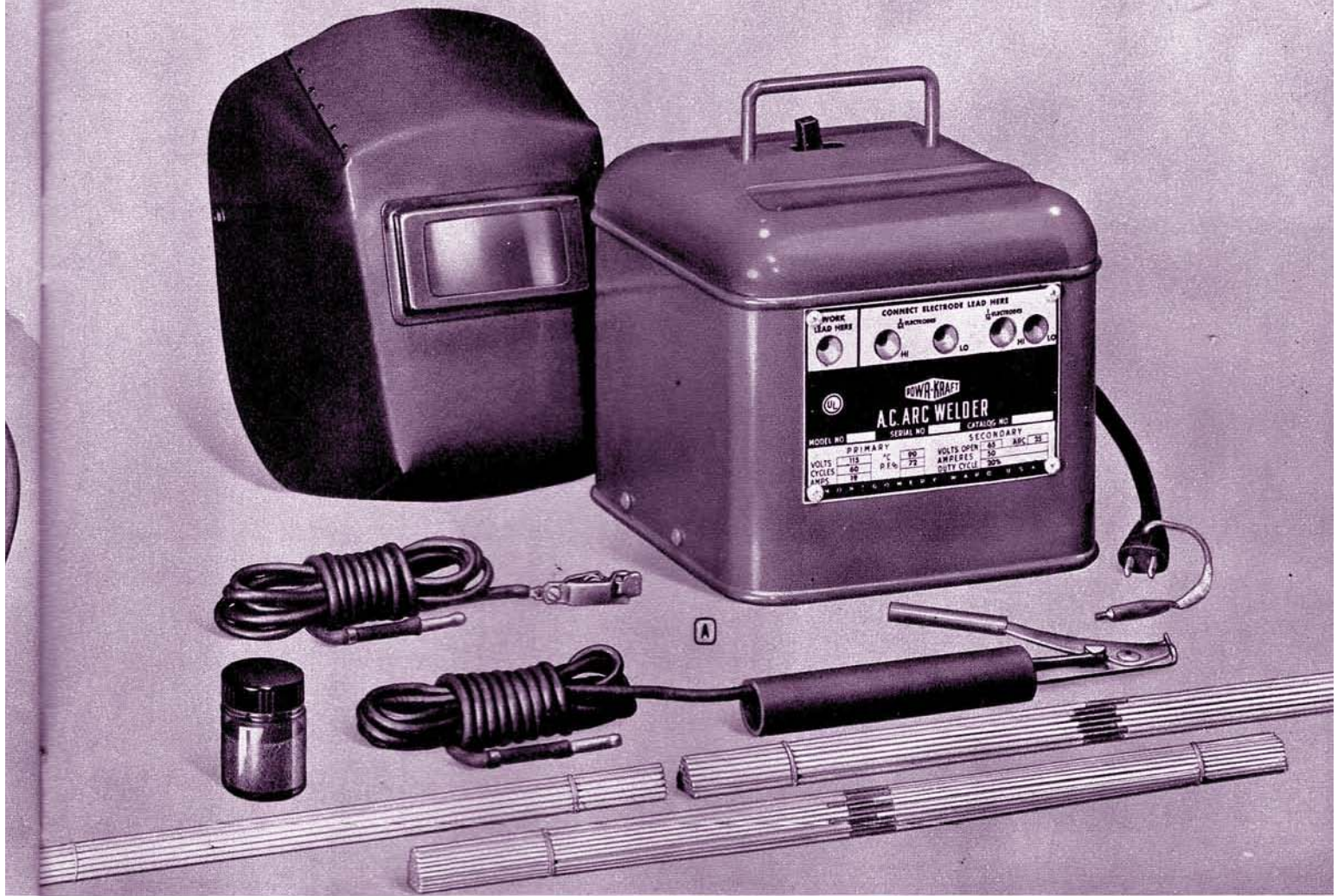
B WELDING OUTFIT. Wards Master Quality. Includes: Welding Torch, 5 welding nozzle tips—sizes T-1, T-3, T-5, T-7, and T-9—welds metal up to 2 inches. Oxygen Regulator, Acetylene Regulator with adapter, goggles, torch lighter and wrench; 10 coppered-steel and 8 cast-iron welding rods; 3 Tobin Bronze brazing rods—¼ and ½-inch diameter, lengths about 18 inches. Also included are two instruction books, ¾-lb. cast-iron and ¾-lb. brazing flux and two 12½-foot lengths of welding hose—¼-inch inside diameter and ½-inch outside diameter. Welding accessories also sold separately on Page 47. Shipping weight 27 lbs.

84 KG 5810 M. See Price List

WELDING TORCH

WELDING TORCH as shown in both sets (A) and (B), and described above. (Welding tips not included).

84 KG 5812—Ship. wt. 2 lbs. 4 oz. See Price List



NEW POWR-KRAFT A.C. ARC WELDER

APPROVED BY UNDERWRITERS LABORATORIES, INC.—SPECIAL WIRING AND PLUGS NOT REQUIRED

A Handy low-priced welder—versatile and efficient. Designed to furnish currents up to 50 amps for welding, cutting, brazing and soldering. More economical to use than gas welding. Welds quickly—minimizes distortion. Ideal for use by garages, metal working shops, farms, home mechanics, schools, hobbyists, etc. Simple to use—no previous welding experience necessary. Thoroughly tested at factory to insure proper construction and correct performance. **SIMPLE TO INSTALL.** Equipped with 10-foot rubber covered cord with 2-prong plug and ground attachment—just plug it in any 110-volt, A.C. receptacle fused for 30 amps. No special wiring or plugs needed. For easiest arc striking and welding use receptacle nearest to main fuse box. Convenient "On-Off" switch located on top of case. **CASE.** Made of sheet steel—approximately .040 inches thick. Compact—size overall is only 9¼ by 8¼ by 9¼ inches. Has convenient handle on top for easy carrying—makes it possible to take to the job. Handle retracts into case when it's not being used. Weighs only 45 lbs.

RUGGED CONSTRUCTION. High quality spun glass insulation—electric steel laminations. The windings are of class B insulation, impregnated and baked against moisture absorption. There are no moving parts to wear out. No adjustment or maintenance is required at any time. Practically impossible to burn this welder out if used on correct current supply.

POWER FACTOR CORRECTED TO 68%. This correction minimizes light flickering, reduces power costs and installation costs.

DUTY CYCLE: (ratio of arcing time to total time welder is in use). This welder has a 20% duty cycle—actual arcing time is 2 minutes out of every ten minutes. Time in between arcing periods is that allocated for changing rods, etc.

EASY TO USE. No special skill required. Start right in welding with only a few minutes practice. Simplified instruction book furnished with welder includes recommended procedures for jobs.

SAFE TO USE. Has unusually low open-circuit voltage—57 Volts maximum (low tap).

DOES WELDING, CUTTING, BRAZING, SOLDERING. Uses 1/16 and 5/64-inch electrodes. Welds up to 1/8-inch metal in single pass. Cuts up to 14-gauge metal with ease.

Brazes quickly. Just plug Arc Torch (listed below) in welder and braze with flux coated brazing rods. Torch has finger-tip adjustment of carbons.

Simplifies wire soldering. Tip of carbon becomes white hot instantly on contact with the wire to be soldered . . . spot heats both wire and solder at the same time.

MINIMIZES DISTORTION. Heat is concentrated right at the electrode, avoiding excess warpage. Finishing work is reduced. Welds fast and easy. Costs little to operate.

ACCESSORIES INCLUDED: See list at left below for complete set of accessories and instructions including cord, ground, electrode holder, helmet, Electrodes and brazing rods. Shipping weight 45 lbs. 84 KG 5951M See Price List

ACCESSORIES INCLUDED

10-foot rubber covered cord, two-prong plug and ground attachment.

Electrode Holder with 10-foot rubber covered cord. 5 copper cored carbons.

Welding Helmet. High-grade, industrial type helmet with cover glass, lens headgear and chin rest.

Electrodes. 5 lbs. 1/16-inch and 5 lbs. 5/64-inch diameters for mild steel, cast-iron and hard surfacing.

1 lb. of 3/32-inch Brazing Rods. Jar of "Easy-Start" granular powder.

Simplified Instruction Book with recommended welding procedures.

EXTRA ACCESSORIES FOR A.C. ARC WELDER

Not included with Welder listed above—order separately.

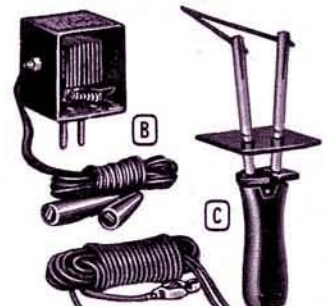
B RECTIFIER. For use as 6-volt battery charger. 84 KG 5952M—Ship. wt. 2 lbs. 8 oz. See Price List

C CARBON ARC TORCH. For cutting metals, brazing, soldering, etc. 6 copper cored carbons included. 84 KG 5915M—Ship. wt. 3 lbs. See Price List

BRAZING RODS (not shown). 1 lb. of 3/32-inch diameter rods. 84 KG 5985—Ship. wt. 1 lb. 8 oz. See Price List

MILD STEEL ELECTRODES (not shown). 5 lbs. 1/16-inch or 5/64-inch size. 84 KG 5986—State size. Ship. wt. 5 lbs. 8 oz. See Price List

CARBONS (not shown). For cutting, soldering, etc. Pkg. of 12. 84 KG 5987—Ship. wt. 1 lb. 4 oz. See Price List





POWER-KRAFT A. C. ARC WELDERS

FACTS ABOUT ARC WELDERS

OUTPUT RATING: The name plate on approved welders must contain a duty cycle rating based on a National Standard Test. Be sure rating claimed is same as rating given on name plate of welder. Wards advertised rating is guaranteed to be the same as is shown on the name plate of the welder.

DUTY CYCLE: A duty cycle is the ratio of arcing time to the total time the welder is in use. For a 20% cycle the actual arcing would be 2 minutes out of every 10 minutes; a 50% duty cycle would be 5 minutes out of every 10 minutes, etc. Time in between arcing periods is that allocated for changing rods, set up for work changes, etc. The type of work you expect to do should determine the kind of duty cycle welder you need.

WEIGHT: Copper and iron in Wards transformers make up about 80% of the shipping weight. Compare weights of welders and buy a welder that draws current for welding and not current for heating.

CASES: Lost transformer magnetism reduces efficiency of the welder and causes heating. Wards non-magnetic stainless steel cases mean lower power bills for operation.

INSULATION: The class "A" insulation allows a temperature rise that must not exceed 50°C. on Time Rating test. For spun glass it is 85°C. Wards welders have class "A" insulation which means longer life, lower operating temperature and current consumption.

These oversize induction type transformers, with built-in reactance maintain a stable arc... increase voltage at low heats... make it easier to strike an arc.

POWER LINE: Furnish your local Power Company with specifications listed in table below at right and first obtain their permission to install before buying welders.

Welders for 460-volt service line are obtainable at same prices given on price list.

46 WARDS

POWER-KRAFT INDUSTRIAL AND FARM TYPE WELDERS

Approved by Underwriters' Laboratories, Inc. Built-in circuit breaker turns current off at the welder. Oversize induction type transformer and built-in reactance. All have non-magnetic stainless steel cases. The following accessories are included with each welder ordered: electrode cable, ground cable, ground clamp, two plain carbons, assorted cast-iron and steel electrodes, helmet, universal carbon holder. Complete easy-to-follow instructions are included. Thickness capacities stated mean single pass penetration. You can weld any thickness of metal by V-ing. All have rubber tired wheels. Each welder has an outlet box with two wires for power line and means for ground connections. All welders except 84 KG 5941F listed below are 230-volt, single phase, 60-cycle A.C. For additional specifications see table below.

A 75-AMPERE 115-VOLT SHOP WELDER. Power factor corrected. This correction minimizes light flickering and reduces power and installation costs. Welding lead connections are made with tapered brass plugs. Reactor is built-in for arc stabilization. Has capacitor for power factor improvement. Guard is provided at case bottom to protect transformer from damage. Cooled by natural draft, reduces maintenance cost. Welds or cuts metal up to 1/8-inch. Has twelve heats. Includes: two pounds of 3/32-inch electrodes, 8-foot welding cable, 6-foot primary cable and plug. Case size overall: 15 by 13 by 26 in. 84 KG 5941F—Ship. wt. 154 lbs. See Price List

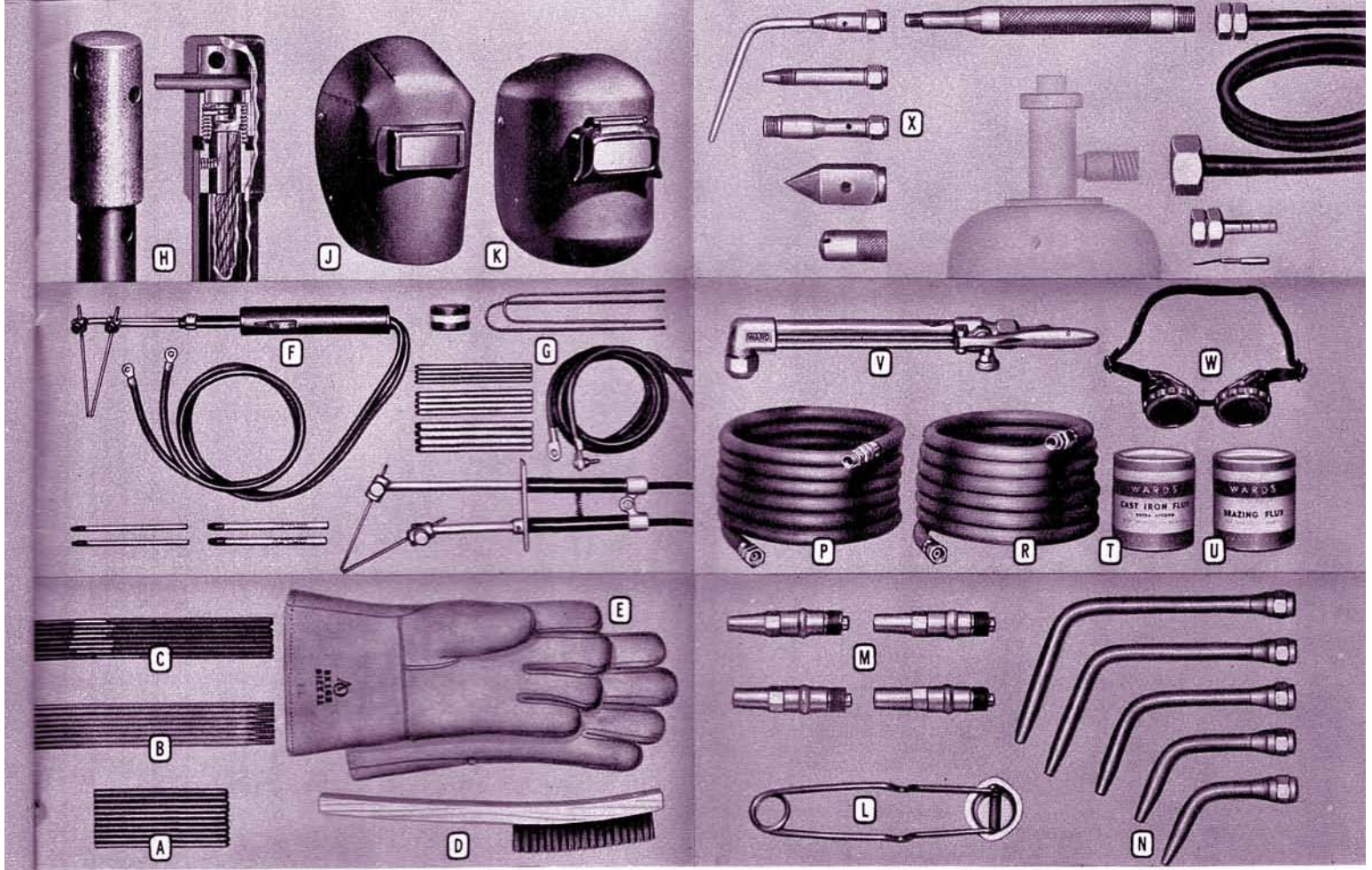
175-AMPERE 230-VOLT FARM WELDER (not shown). With power factor corrected to minimize light flickering and to reduce power and installation cost. Cooled by natural draft, reduces maintenance cost. Built to meet Rural Electrification Association specifications. Similar to 84 KG 5942F described at right except has capacitor for power factor improvement. Has eighteen heats. Selling price includes: four lbs. of assorted electrodes, 15-foot welding cord, 6-foot primary cord, plug and receptacle. Case 15x13x32 in. 84 KG 5943F—Ship. wt. 220 lbs. See Price List

B 225-AMPERE 230-VOLT INDUSTRIAL TYPE WELDER. Transformers are housed in case of non-magnetic steel to minimize vibration, noise, heating and power loss. Guard at case bottom to protect transformer from damage. Windings are made of class "A" insulation, impregnated and baked against moisture absorption. Not power corrected. Reactor is built-in for arc stabilization. Welds and cuts metal up to 3/8-inch thick. Cooled by natural draft, reduces maintenance cost. Has twenty-four heats, 5 lbs. of electrodes, 15-foot welding cable, 6-foot primary cable included. No receptacle or plug. Case size: 18x13x30 in. 84 KG 5944F—Ship. wt. 280 lbs. See Price List

175-AMPERE 230-VOLT INDUSTRIAL TYPE WELDER (not shown). Similar to Industrial Type Welder sold above. Is not power corrected. Reactor is built-in for arc stabilization. Welds or cuts metal up to 5/16-inch thick. Non-magnetic steel case to minimize vibration, noise, heating and power loss. Welded lead connections with tapered brass plugs. Selling price includes: four pounds of electrodes, 15-foot welding cable and 6-foot primary cable. No plug and receptacle included. Case size overall is 15 by 13 by 32 in. 84 KG 5942F—Shipping wt. 210 lbs. . . . See Price List

IMPORTANT: Furnish your power company these specifications and obtain their permission to install.

R.E.A. AND P.F. (power factor) corrected				Primary Rating at Max. Load				Duty Cycle	Temp. Rise	Welding Handled
Welders	Amp. Output	Open Volts	Arc Volts	Amps.	KW	KVA	P.F.%			
84 KG 5941 F	20 to 75	80	25	20	2.25	2.5	90	20%	60°C. to 3/32-in.	
84 KG 5943 F	20 to 175	65	25	26	5.25	6.2	85			
INDUSTRIAL WELDERS, Not POWER FACTOR corrected										
84 KG 5942 F	20 to 175	80	30	36	6.0	8.2	73	50%	60°C.	to 5/32-in.
84 KG 5944 F	20 to 225	80	30	46	7.9	10.6	75	50%	60°C.	to 1/16-in.



WELDING EQUIPMENT AND ACCESSORIES

WELDING RODS, ELECTRODES, CARBON RODS; ACCESSORIES AND EQUIPMENT FOR A.C., D.C. AND OXY-ACETYLENE WELDING

(A) PLAIN CARBON RODS, 1/4x6 in. Pkg. of 10. 84 KG 5912—Wt. 1 lb. See Price List
 84 KG 5911—6-IN. COPPER CORED CARBON RODS. For Twin Carbon Arc Torches. Pkg. of 10. Wt. 1 lb. 1/4-in.; 5/16-in.; 3/8-in. diam. See List

WELDING RODS for Oxy-acetylene welding or use with Twin Carbon Arc Torch.
 84 KG 5856 H—MILD STEEL RODS. Copper coated low-carbon steel. See Price List

Diam.	Approx. lgth.	Rods per 5 lb.	Wt.
1/8 in.	36 in.	About 164	5 1/2 lb.
1/8 in.	36 in.	About 40	5 1/2 lb.
3/16 in.	36 in.	About 18	5 1/2 lb.
1/4 in.	36 in.	About 10	5 1/2 lb.

84 KG 5855 H—CAST-IRON RODS. Produce machinable welds. *State Diameter.* See Price List

Diam.	Approx. lgth.	Rods in 5 lb.	Wt.
3/16 in.	24 in.	About 22	5 1/2 lb.
1/4 in.	24 in.	About 12	5 1/2 lb.

84 KG 5857 H—BRONZE BRAZING RODS. Melts at 1600° F. *State Diameter.* See Price List

Diam.	Approx. lgth.	Rods in 1 lb.	Wt.
1/8 in.	36 in.	About 6	1 1/2 lb.
3/16 in.	36 in.	About 3	1 1/2 lb.

WELDING RODS, ELECTRODES FOR A.C., D.C. WELDERS

(B) 84 KG 5968—WESTINGHOUSE COATED ELECTRODES for mild steel. See Price List

Diam.	Approx. lgth.	Rec. Amp. range	Wt.
3/32 in.	12 in.	30 to 80	1 1/4 lb.
1/8 in.	14 in.	50 to 120	1 1/4 lb.
5/32 in.	14 in.	75 to 170	1 1/4 lb.
3/16 in.	14 in.	100 to 210	1 1/4 lb.

(C) WARDS COATED ARC WELDING ELECTRODES. 84 KG 5973—Cast iron welding. See List

Diam.	Approx. lgth.	Rec. Amp. range	Wt.
1/8 in.	18 in.	130 to 175	1 1/4 lb.
3/16 in.	14 in.	150 to 225	1 1/4 lb.

84 KG 5974—Like (C) at left below, except for welding mild steel.

Diameter in Inches	Approx. Length	Recommended Amp. range	Ship. wt.
3/32	12 in.	25 to 90	1 lb. 4 oz.
1/8	14 in.	55 to 140	1 lb. 4 oz.
5/32	14 in.	90 to 200	1 lb. 4 oz.
3/16	14 in.	120 to 275	1 lb. 4 oz.

(D) WELDERS' WIRE BRUSH. Steel bristles for cleaning work. Hardwood handle. 84 KG 5969—Ship. wt. 12 oz. See Price List

(E) WELDERS' SPLIT HORSEHIDE GLOVES. Welded seams. Full size gauntlet. Large. 84 KG 5960—Ship. wt. 1 lb. See Price List

(F) ERGOLYTE TWIN CARBON ARC TORCH. Use with any welder. Automatic switch-off provides lightning fast make-and-break control of arc flame. Creates flame like oxyacetylene torch. Length 15 3/4 in. With two 5-ft. cables. Will take 1/4-in. cored carbons, 4 carbons and instructions included. 84 KG 5914 M—Wt. 3 lbs. 8 oz. See Price List

(G) TWIN CARBON ARC TORCH. Use with 110 or 220-volt, A.C. or 32-volt, D.C. arc welders only. Creates flame like oxy-acetylene torch. Length 14 in. With 10-ft. cables; 12 asst. copper-coated, cored carbons; two 18x1/8-in. bronze brazing rods; flux; instructions. Universal cable fittings. 84 KG 5910 M—Ship. wt. 6 lbs. See Price List

(H) WOLVERINE ELECTRODE HOLDER. Takes rod 1/16 to 3/8-in. Handles jobs from 0 to 500 amps. Electrode fits in hole at end 3/4 in. from cable . . . locks into position with vise grip. Cable locks with set screw. 84 KG 5913—Ship. wt. 1 lb. 8 oz. See Price List

(J) LOW-PRICED HELMET. Black fiber. Insulated, adj. head band, chin rest. Cover lens protect No. 10 green arc lens. For 75 to 200-amp. welding. Riveted seams. 84 KG 5965 L—Ship. wt. 2 lbs. 2 oz. See Price List

(K) PROFESSIONAL TYPE HELMET. Sturdy, vulcanized black fiber. Insulated and adjustable head band and chin rest. Will tilt to any angle. Arc lens protected by cover lens. Seamless molded model with snap-up lens. Plastic lens retainer. For 150 to 300-amp. welding. No. 12 green lens. 84 KG 5967 L—Ship. wt. 2 lbs. 12 oz. See Price List

(L) TORCH LIGHTER. Spring tension. With two extra flints. 84 KG 5809—Ship. wt. 3 oz. See Price List

(M) CUTTING TIPS. Fit Wards cutting attachments and cutting torches only. Solid drawn copper. 4 sizes: C-1, cuts metal up to 1 in.; C-2, cuts up to 2 1/2 in.; C-3, cuts up to 6 in.; C-4, cuts up to 10 in. *State Size Wanted.* 84 KG 5816—Ship. wt. 6 oz. See Price List

(N) WELDING NOZZLE TIPS. Master Quality. Fit Wards welding torches only. Solid drawn copper. Swivel type and bendable . . . weld in any direction. 5 sizes: T-1, 3 1/2 in. long; T-3, 4 in.; T-5, 5 1/2 in.; T-7, 7 in.; T-9, 8 1/2 in. 84 KG 5811—*State size.* Ship. wt. 10 oz. See Price List

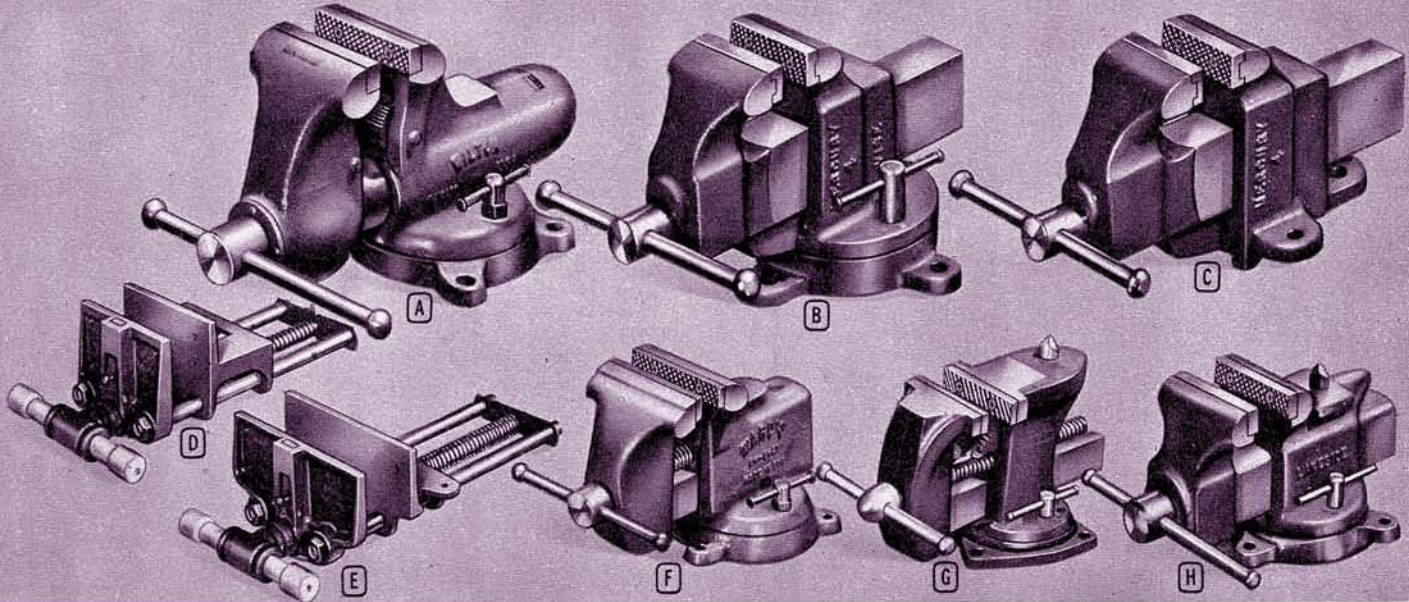
(P) WELDING HOSE. Flexible rayon thread rubber covered. Oxygen and acetylene hose. 1/4-in. inside, 1/2-in. outside diam. Swivel fittings. 12 1/2 ft. long. Wt. 2 1/2 lbs. (P) 84 KG 5818—Green Oxygen Hose See Price List (R) 84 KG 5819—Red Acetylene Hose See Price List

(T) FLUX. Cast-iron welding, brazing flux. Ship. wt. 14 oz. (T) 84 KG 5836—Welding Flux. See Price List (U) 84 KG 5837—Brazing Flux. See Price List

(V) CUTTING ATTACHMENT. Fits Wards welding torches only. Solid brass. UL approved. Length 10 1/2 in. Wrench incl. 84 KG 5820—Ship. wt. 2 lbs. 8 oz. See Price List

(W) WELDING AND CUTTING GOGGLES. Meet U.S. Navy Spec. No. 5 shade green lens. Ventilated eye cups. Cover lens. 84 KG 5835—Ship. wt. 8 oz. See Price List

(X) BRAZING OUTFIT. For soldering and brazing. Uses acetylene only, no oxygen required. Fits Acetylene Regulators, Prest-O-Lite, Acetylene tanks. Soldering copper, paint burning tip, tank and hose connections, 6 in. torch handle, 5 ft. of 3/16-in. rubber hose, tip cleaner, instructions, incl. 84 KG 5802—Shipping weight 2 lbs. 2 oz. See Price List



GARAGE AND MACHINISTS' VISES

MACHINISTS' HEAVY-DUTY VISES

WILTON PRECISION-BUILT MACHINISTS' VISES. Guaranteed 5 yrs. Conform to gov't spec. Built to .005 in. tolerance on working parts. Head is hollow for lighter weight; rounded design and ribbing reinforce malleable iron alloy head. Close fitting spindle reduces leverage required. Anvil and tops of jaws are surface ground and precisely parallel. Replaceable tool steel jaw faces, fitted and serrated. Heavy cast-iron 90° swivel base. Tubular sliding bar guided by tight fitted steel key—no side twist or binding. Body parts encased. Mounts with or without swivel base. Gray finish. Actual and shipping weights are the same.

(A) WILTON COMBINATION PIPE AND MACHINISTS' VISE. Has above features—plus deep case-hardened steel pipe jaws with individually milled teeth—will not slip. Takes pipe 1/8 to 3 1/2 inches in diam. Depth of throat 4 1/2 in. Pipe jaws are reversible and interchangeable. Regular jaws 4 1/2 in. wide; open to 5 1/2 in. 84 KG 5478 R—Ship. wt. 65 lbs. See Price List

WILTON MACHINISTS' VISE (not shown). Swivel base. Similar to (A) shown above but without pipe jaws. See Price List

Catalog Number	Jaw Width	Jaws Open	Spindle Diameter	Throat Depth in.	Ship. Wt.
84 KG 5471 M	3 in.	4 in.	5/8 in.	2 3/16	23 lbs.
84 KG 5469 M	3 1/2 in.	5 1/4 in.	3/4 in.	2 5/8	39 lbs.
84 KG 5473 R	4 in.	7 in.	7/8 in.	3	52 lbs.

(B) (C) MACHINISTS' STANDARD VISES. Meet Army and Navy Spec. Strain points reinforced. Heat-treated removable steel jaw faces—serrated. Semi-steel body and base; enameled rust-resistant finish. Channel cast-iron sliding bar.

(B) WITH SWIVEL BASE. Locking screw holds vise in any position. 84 KG 5460 R—4-in. jaws; open to 6 in. Ship. wt. 52 lbs. See Price List
84 KG 5461 R—4 1/2-in. jaws; open to 7 in. Ship. wt. 67 lbs. See Price List

(C) WITH STATIONARY BASE. Ship. and actual weights are same. 84 KG 5455 R—Jaws 4 in. wide; open to 6 in. Ship. wt. 43 lbs. See Price List
84 KG 5456 R—Jaws 4 1/2 in. wide; open to 7 in. Ship. wt. 56 lbs. See Price List

WASHER, BOLT AND SCREW ASSORTMENTS IN HANDY CONTAINERS

(J) to (N) Handy home workshop Washer, Bolt and Screw Assortments in most popular sizes. Strong plastic transparent cannister. Each size is partitioned for ease in removing. Chromized, cadmium plated, rust-resistant (except for sheet metal screw assortment). For prices and Ship. wts. see Price List

Cat. No.	Type	Pcs.
84 KG 466	(J) Lock Washer & Cotter Pin.	300
84 KG 467	(K) Wrought Washers—3/16, 1/4, 5/16, 3/8, 7/16, 1/2 in.	175
84 KG 468	(L) Round Head Stove Bolts—3/16x3/4, 3/16x1, 3/16x1 1/4, 1/4x3/4, 1/4x1, 1/4x1 1/4 in.	100
84 KG 469	(M) Wood Screws—8x1 1/2, 8x1, 6x3/4, 10x1 1/2, 9x1 1/2, 12x2 1/2, 4x3/8, 6x1 in.	200
84 KG 470	(N) Sheet Metal Screws.	200

WOODWORKERS' VISES

(D) CONTINUOUS SCREW TYPE WOODWORKERS' VISES. Heavy-duty. Cast-iron front and back jaws are 4-in. deep—stop in front jaw. Steel screw 1-in. diam.; side guides 7/8-in. diam. 84 KG 3162 M—7-in. jaws; open to 9 in. Wt. 24 lbs. See Price List
84 KG 3163 M—10-in. jaws; open to 12 in. Wt. 31 lbs. See Price List

(E) QUICK ACTING WOODWORKERS' VISE. Slide jaw to work—1/4-turn of handle locks vise. Cast-iron front and back jaws, 4-in. deep—stop in front jaw. Steel screw 1 1/4 in.; side guides 7/8-in. diameter. Jaws 10-in. wide; open to 12 inches. 84 KG 3164 M—Ship. wt. 33 lbs. See Price List

(F) MASTER QUALITY GARAGE VISE. Swivel base. Precision-built. High tensile strength semi-steel body. Removable steel jaws. Pipe jaws take pipe from 1/8 to 1 1/4 in. 5/8-in. spindle. Close tolerances prevent side play in jaws. Gray finish. 84 KG 5421 M—4-in. jaws; open to 4 1/2 in. Wt. 27 lbs. See Price List

(G) MASTER QUALITY GARAGE VISE. Triple-duty vise—use as garage, pipe vise or anvil. Unbreakable malleable iron body and base. Large polished anvil surface over both jaws. Acme-cut thread steel screw. Alloy steel jaws. Pipe jaws take pipe 1/8 to 2 in. Base swivels 360°. Slide bar locks base. Lag screws furnished. Removable cut off tool. 84 KG 5415 M—3 1/2-in. jaws; open to 4 1/2 in. Wt. 17 lbs. See Price List
84 KG 5416 M—4-in. jaws; open to 5 1/4-in. Pipe jaws take pipe from 1/8 to 2 1/4 inches. Ship. wt. 28 lbs. See Price List

(H) LAKESIDE QUALITY GARAGE VISE. Semi-steel. Use as regular or pipe vise, anvil surface with cut-off tool. Removable hardened steel jaws. Pipe jaws take 1/4 to 2-in. pipe. Base swivels 180°. Screw is enclosed in steel slide. Red enamel finish. 84 KG 5413 M—3 1/2-in. jaws; open to 4 1/2 in. Wt. 19 lbs. See Price List
84 KG 5414 M—4-in. jaws; open to 5 in. Wt. 25 lbs. See Price List

UL APPROVED SOLDERING IRONS

(P) (R) SOLDERING IRONS. Listed by U.L. For 110-120-volt, A.C. or D.C. 6-ft. cord and plug. Includes removable copper tip, stand.

(P) MASTER QUALITY SOLDERING IRON. 200-Watt. For heavy-duty. Concentrates heat instantly at point. 3/8-in. tip. Air cooled baffle plates. 84 KG 6062—Ship. wt. 2 lbs. 14 oz. See Price List
125-WATT IRON (not shown). For light soldering. 3/8-in. tip. 84 KG 6061—Ship. wt. 2 lbs. 14 oz. See Price List

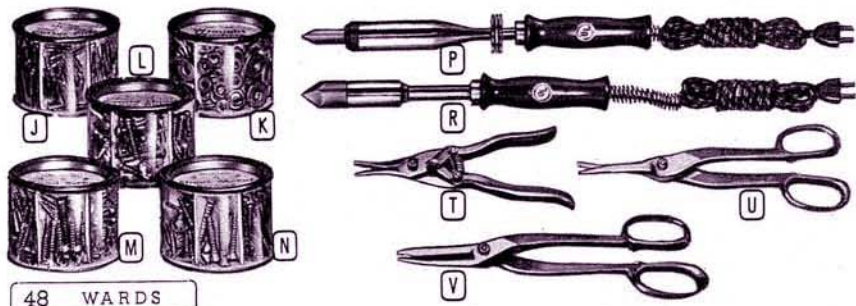
(R) LAKESIDE QUALITY SOLDERING IRON. 150-Watt. 1 1/8-in. tip. 84 KG 6057—Ship. wt. 1 lb. 12 oz. See Price List

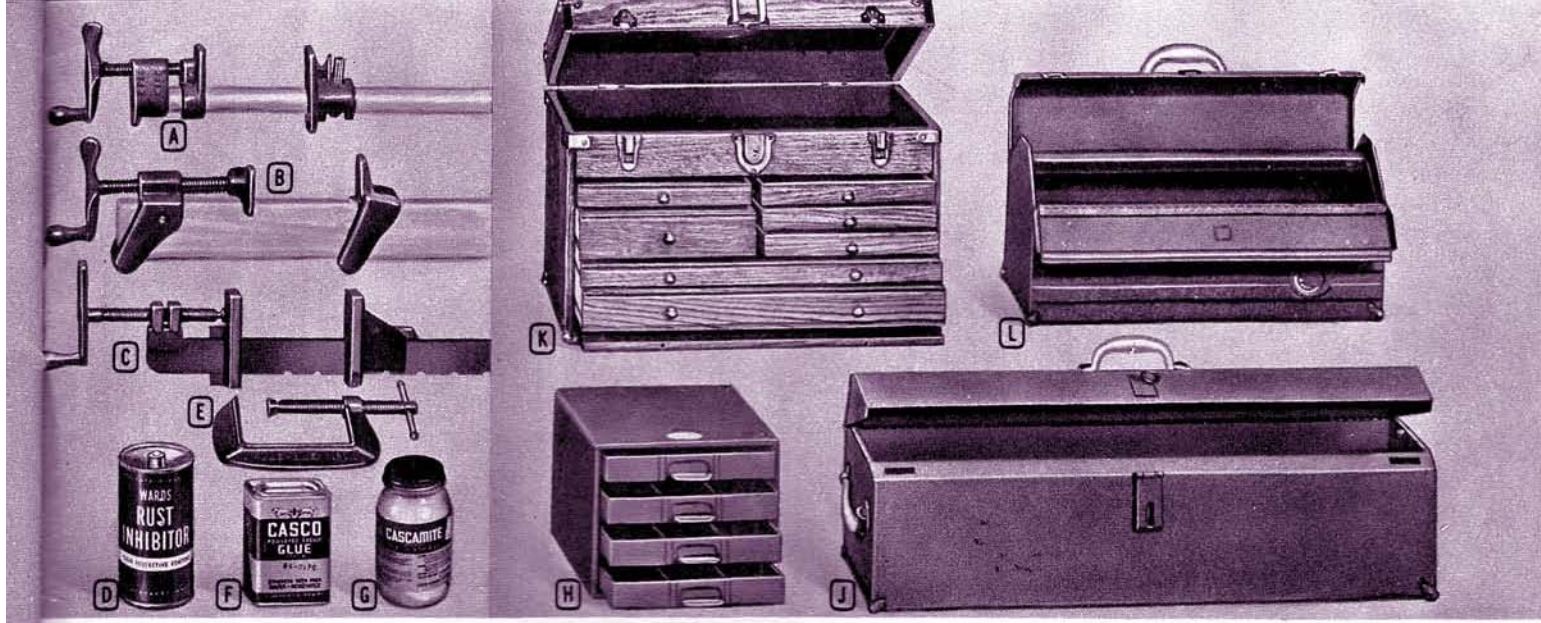
(T) TO (V) TINNERS' SNIPS. Heat treated, tempered.

(T) MASTER QUALITY COMPOUND LEVER SNIPS. 84 KG 6033—State length wanted. 8-in. Snips. Ship. wt. 14 oz. See Price List
10 1/2-in. Snips. Ship. wt. 1 lb. 2 oz. See Price List
12-in. Snips. Ship. wt. 1 lb. 6 oz. See Price List

(U) LAKESIDE QUALITY DUCK BILL TIN SNIPS. 84 KG 6026—State length wanted. 7-in. Snips. Cut 2 in. Ship. wt. 14 oz. See Price List
10-in. Snips. Cut 2 3/4 in. Wt. 1 lb. 8 oz. See Price List
12-in. Snips. Cut 3 in. Ship. wt. 2 lbs. See Price List

(V) MASTER QUALITY COMBINATION TIN SNIPS. Cuts 3/4 in. Moly. Steel blade. Drop-forged handle. 84 KG 6027—Lgth. 13 1/2 in. Wt. 1 lb. 4 oz. See Price List





WOODWORKING SUPPLIES, TOOL BOXES

CABINET CLAMPS AND RUST INHIBITOR

A CLAMP FIXTURE. Adjustable pipe type (pipe not included). Use with any length 3/4-in. threaded pipe. Sturdy malleable iron construction. Adjustable sliding jaw has 1 3/4x1 7/8-in. face. Spring tension lock won't slip. Crank adjustment of 1 7/8-in. Steel screw. Ship. wt. 3 lbs. 8 oz.
84 KG 3151L..... See Price List

B CABINET CLAMP ATTACHMENT. Malleable iron. Used in woodworking shops, etc. Wood bar type (wood bar not included). For use on any length wood bar 1 3/8x2 1/2 in. Sliding jaw—1 5/8x1 3/4 in. face. Crank adjustment of 2 7/8 in.
84 KG 3150L—Ship. wt. 4 lbs..... See Price List

C STEEL BAR CLAMPS. Strong, rigid. Sliding jaw has 1 3/4x2-in. face. Locks in notches on steel bar, 1/4x1 1/2 in., by spring tension lock. Swivel knob crank adjustment 3/4 in.
84 KG 3152M—State Length.
3 ft. long. Ship. wt. 9 lbs..... See Price List
4 ft. long. Ship. wt. 10 lbs..... See Price List

D RUST INHIBITOR. Push button spray. Protects every type of surface from rust, corrosion, acid, tarnishing, stains, etc., with a clear protective plastic coating. Waterproof and flexible—won't crack or peel. Heat and cold can't affect it. Dries quickly. Easy to apply—just clean the surface and spray. Excellent for home workshop—protects tools from rust and corrosion. 12-oz. can.
84 KG 6149—Ship. wt. 1 lb. 3 oz..... See Price List

M GENERAL UTILITY WORK BENCH. For heavy-duty use. 30x60-in. top, 2 in. thick. Laminated—No. 1 Northern Maple, reinforced, sanded, finished with resin wood sealer. Legs and rails 3 1/2x1 1/2 in. Kiln-dried lumber. Ht. 33 in. Unassembled.
84 KG 2952F—Ship. wt. 155 lbs..... See Price List

HARD MAPLE TOPS (for making work bench). Without legs and rails. Natural sanded finish. State size. 2 in. thick. Sizes: 36x24, 36x30, 36x36, 48x24, 48x30, 48x36, 60x24, 60x30, 60x36, 72x24, 72x30, 72x36 in.
84 KG 2950F—For prices, ship. wts.... See Price List

R REMOTE CONTROL SWITCH. Fits Angle iron stands (N). Double pole toggle switch. Positive action. Steel cover box. Use with motors up to 1-H.P., 115-230 volts. Ship. wt. 1 lb.
84 KG 2969K..... See Price List

T TILT-TOP MACHINE TOOL STAND. Equally suitable for use at home or in an industrial shop. Adjustable to offset angles of any tilting table machine. Table rides on two cast-iron trunions pivoted on 3/8-in. diam. steel dowels, supported by 1/4-in. cast-iron end plates. Trunion has easy to read graduated segment for tilt up to 45°. Table top 16x28 in.—made of 3/4-in. seven-ply hard plywood. 25 in. high. Steel base with 3/4x1 3/4 in. cross braced steel legs. Holes in base for anchorage to floor.
84 KG 2954K—Ship. wt. 45 lbs..... See Price List

"C" CLAMPS AND GLUE

E WARDS "C" CLAMPS. Used in woodworking shops, etc. Strong, heavy-duty. Deep throat. Malleable iron construction—guaranteed unbreakable. Self-adjusting swivel head. Machine screw thread adjustment screw—cold rolled. State size.
84 KG 3160L—See Price List

Maximum Opening	Depth Center, about	Ship. wt. Lbs. Oz.
3 in.	2 in.	1 2
4 in.	3 in.	1 12
5 in.	3 1/4 in.	2 8
6 in.	3 1/2 in.	3 2
8 in.	4 in.	4 6

F CASCO POWDERED CASEIN GLUE. Water-resistant—stainfree. For indoor use. Just mix with cold water. Makes a strong wood to wood adhesion. 8-oz. can. Ship. wt. 12 oz.
84 KG 3170..... See Price List

G CASCAMITE POWDERED RESIN GLUE. Water-resistant—stainfree. Stronger than wood. Suitable for interior and exterior use. Excellent for use where dampness occurs. Mix with cold water. 8-oz. can. Shipping weight 12 oz.
84 KG 3172..... See Price List

N ANGLE IRON TOOL STANDS. Unassembled.
84 KG 2960K—13x14x29 in. Fits Jig Saw (84KG 2355M); Grinder (84KG5285); Sander (84KG2702); Shaper (84KG2450). Wt. 34 lbs.... See Price List
84 KG 2961M—13x20x25 1/2 in. Fits band saw (84 KG 2315F). Wt. 36 lbs..... See Price List
84 KG 2962M—13x20x28 3/8 in. Fits bench saws (34KG2260, 2253, 2257); Sanders (84KG2712, 2724, 2709); Band saws (84KG2316, 2304, 2314); Jointers (84KG2506, 2521, 2505, 2508); Drill presses (84 KG2530, 2533). Wt. 37 lbs..... See Price List

SMALL PARTS CABINET, TOP BOXES, OAK CHESTS

H SMALL PARTS CABINET. For bolts, screws, nails etc. Two drawers have 1 fixed and 3 removable dividers, making 8 compartments in each drawer; two drawers have 2 fixed, 3 removable dividers, making 12 compartments in each drawer. All drawers 1 1/2 in. deep with stops. 24-gauge steel. Size 10x10x8 1/2 in. Recessed on top, nipped on bottom for stacking. Index card holders.
84 KG 4369M—Ship. wt. 9 lbs..... See Price List

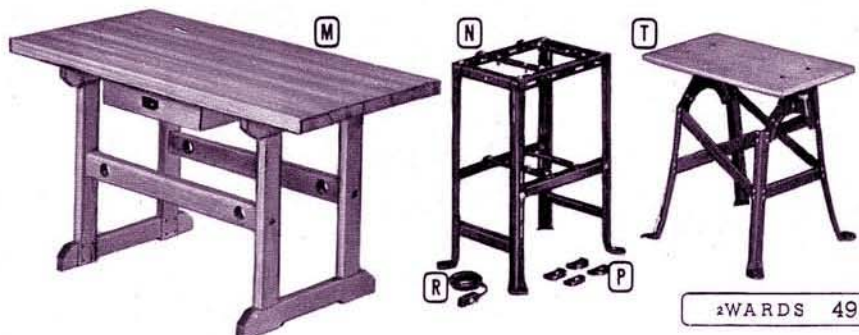
J GABLE TOP BOX. 32x8 1/4x9 3/4 in. high. Gable top gives max. room. Heavy-gauge steel with joints spot welded. Two wood blocks protect sharp-edged tools, help prevent rusting—are slotted to hold saws upright. Two openings for squares, clips for level. Hasp and staple for locking. All hardware riveted or spot welded. Piano type hinge.
84 KG 4312M—Ship. wt. 13 lbs..... See Price List

K SOLID OAK CHEST. Size 19 7/8x9x13 1/4 in. Sturdily built of fine-grained and seasoned solid Oak with hand-rubbed lacquer finish. Dove tailed bottom with heavy corner irons. Open top till compartment has mirror, clip. Steel drawer guides keep drawers from sagging. Front slides out of way under bottom drawer. Side catches, built in surface lock, corner irons, hinges have nickel plated finish. All hardware firmly riveted. Four drawers 8 1/4x6 3/4x 7/8 in. deep; one drawer 8 1/4x6 3/4x2 1/8 in. deep; two long drawers 18x6 3/4 in.—one 7/8 in. deep, other 1 1/2 in. deep. Drawers felt lined.
84 KG 4334M—Ship. wt. 25 lbs..... See Price List

L GABLE TOP TOOL BOX WITH TOTE TRAY. Holds full set of tools. Light weight. Gable top gives max. room. 19x7 3/8x8 3/4 in. Heavy-gauge spot-welded steel body; reinforced corners. Tote tray 18 1/2x6 3/4x2 in. deep with tubular carrying bar. All hardware riveted or spot-welded. Piano-type hinges.
84 KG 4350M—Ship. wt. 12 lbs..... See Price List

84 KG 2963K—13x24x29 in. Fits jig saw (84KG 2356). Ship. wt. 36 lbs..... See Price List
84 KG 2964Y—13x47 1/2x30 7/8 in. Fits lathe (84 KG2002). Ship. wt. 51 lbs..... See Price List
84 KG 2965Y—13x57x30 7/8 in. Fits wood lathe (84KG2005). Ship. wt. 55 lbs..... See Price List
84 KG 2966K—14 1/2x34 5/8x25 1/2 in. For saw and jointer. Ship. wt. 47 lbs..... See Price List

P RUBBER FEET FOR ABOVE STANDS. Set of 4.
84 KG 2968—Wt. per set, 1 lb.... See Price List



NEW SHOPSMITH WITH EXTRA FEATURES

Five Power Tools in One... Each Unit a Practical Single Purpose Tool

COMPLETE PRECISION-BUILT HOME WORKSHOP WITH MANY NEW FEATURES—SOLD WITH OR WITHOUT MOTOR

Large capacity power workshop with many new features. One rugged, compact unit—fits in basement, utility room or garage corner. Because Shopsmith is so versatile, it gives you everything you need to do the job you want to do. Quick, easy changeover from Bench Saw to Vertical or Horizontal Drill Press, Lathe or Disc Sander—accommodates all standard accessories. A man sized tool—not a toy. Unit with motor actually weighs 205 lbs. and is nearly five feet long... yet fits in space only 18 by 60 in. New features added to the Shopsmith include the following: (1) Built-in micro table raising mechanism—arm quickly positioned for micro-adjustment of table height—ball and crank adjustment. (2) Cast-iron extension table bracket slides in channel milled in tailstock—secured with one knob and stud screw. (3) Pressure cast-metal ribbed table extension—has fence bar in front so fence can be quickly secured and locked in any position. (4) Fence has back lock and depth of cut scale engraved on side. Has built-in hole and set screw for simplified mortising hold-down. (5) Large miter gauge with automatic spring stops in all critical settings—slots permit quick insertion or removal of extension. (6) Lathe tailstock has floating sleeve for cup center—provides positive alignment of cup and drive center. (7) Tailstock can be inverted on end of ways so extension table can be used for horizontal drilling. (8) Adjustable depth stroke scale combined with spring housing—can be quickly set at zero in any quill position. (9) Trunnion has spring loaded stop for easy table tilting—stops at 0, 45 and 90°.

In each of its five uses Shopsmith has equal or greater capacity than most single purpose tools—and one motor drives all five tools! Adaptable to drum sanding, shaping, routing, jig sawing, buffing, mortising, grinding, dadoing and flexible shaft work when used with the proper accessories. Will do a wide range of production and maintenance work in home workshops, furniture and cabinet making, training shops, etc. Easily mounted on stationary bench or portable truck. 1 3/4-in. diameter tubular steel ways. Heavy-duty cast-iron headstock, frame and carriage. Shopsmith does the work of the five following tools:

8-IN. BENCH SAW (shown in (A) at right). Has an effective table width of 56 in. when used with extension. Machined cast-aluminum ribbed table 14 1/2 x 17 in.—tilts up to 45°. Removable ribbed soft metal saw insert. Extension mounted on tailstock may be used to increase distance between blade and fence to 48 in. Machined cast-aluminum rip fence and miter gauge may be used on either side of blade. Miter gauge graduated to 60° both directions. Max. depth of cut 2 1/4 in. Width of cut can be

controlled by micro-adjustment of quill in addition to fence. Blade guard, splitter, 8-inch comb, crosscut-rip blade.

DISC SANDER (shown (B) at right). 12-in. diam. pressure cast-aluminum disc. Miter gauge permits bevel sanding up to 60°. Use miter gauge and rip fence for accurate squaring and finishing. By using sanding disc at end of bed ways, operator can face work. Large adjustable table 14 1/2 x 17 in.—tilts to 45°. With one 12-inch diameter sanding sheet.

WOOD LATHE (shown in (C) at right). 15-inch swing over entire bed ways—4 in. more than usual heavy-duty lathes. Distance between centers, 33 in. Cast-iron headstock, tailstock. Adjustable cast-iron tool rest slides with fingertip pressure, locks in any position. Quill feed 4 in. Operator can face work while face plate and chuck are turning. Speed adjustable from 800 to 3600 R.P.M. Spur and cup center included.

VERTICAL DRILL PRESS (shown in (D) at right). Drills to center of 15-in. circle. Jacobs key chuck fits on 5/8-inch diameter spindle—takes straight shank drills from 5/64 to 1/2-inch diameter. 4-inch spindle feed lever fits on either side of driving head for right or left hand operation. Rugged six-splined spindle has induction hardened tip. Spindle floats on four grease-sealed ball bearings. Maximum distance from table to chuck 27 inches. Large cast-aluminum tilting work table, 14 1/2 x 17 inches is permanently centered. Locks in vertical position with positive screw lock. Speed adjustable from 800 to 3600 R.P.M.

HORIZONTAL DRILL PRESS (shown in (E) at right). Only with Shopsmith is it possible to perform this highly useful function. Has same specifications as vertical drill press. Horizontal drill press eliminates restrictions on length of materials that may be worked—useful for doweling.

SHOPSMITH INCLUDES ALL THESE ATTACHMENTS: Table extension and bracket, saw guard and splitter, 8-in. combination crosscut-rip blade, adapter, 1/2-in. capacity Jacobs key chuck, 12-in. sanding disc, lathe spur and cup centers, tool rest, machined rip fence, miter gauge, 3-step "V" pulley, matching pulley for motor (fits 5/8-in. shaft), 38-in. "V" belt, bench blue print, parts list, instructions. Size overall in horizontal position 59x18x20 in.

84 KGP 3470F—Shopsmith without motor. Ship. wt. 200 lbs. See Price List

84 KGP 3471F—Shopsmith with specially designed 1/2-H.P. 115-volt, 60-cycle A.C. 1725-R.P.M. ball bearing capacitor motor, equipped with inverted end bells, cord and plug. Ship. wt. 235 lbs. . . . See Price List

ACCESSORIES FOR MAKING YOUR SHOPSMITH MORE EFFICIENT . . . MORE VERSATILE

1 SHOPSMITH BENCH ENDS. Heavy-duty 16-ga. sheet steel. Make bench for Shopsmith by attaching ends to two 2x8-in. boards. 60 in. long (not included). Size 18 in. wide by 18 1/2 in. high. Smooth gray finish. With 4 steel braces, nuts, bolts, washers, instructions. 84 KGP 2987K—Ship. wt. 23 lbs. See Price List

2 JIG SAW ATTACHMENT. Add another major tool to the usefulness of your Shopsmith. Quickly attaches to headstock of all Shopsmiths. Cast-aluminum construction. Throat depth 18 in.—cuts to center of 36-inch circle. Max. thickness of cut 2 in. Driving unit has ball and Oilite bearings. Driven from spindle of Shopsmith. Use with Shopsmith table. Upper and lower chuck. Takes plain end blades. Lower chuck takes 1/4-in. shank files. 84 KGP 3452K—Ship. wt. 19 lbs. See Price List

3 ALUMINUM SANDING DISC. 12-in. diameter. Balanced to insure maximum efficiency. 84 KGP 2977—Wt. 2 lbs. 12 oz. . . See Price List

4 DISC SANDING PAPER. 12-in. diam. For above disc. Strong paper backing. In fine, medium or coarse grit, or assortment of six (3 fine, 2 med., 1 coarse grit sheets). State grit. 84 KGP 2978—Ship. wt. 1 lb. 4 oz. . . . See List

5 TABLE INSERTS. Ribbed, pressure cast aluminum. Fit on table. Wt. ea. 10 oz. 84 KGP 2994—No slot. For drill press. . . See List 84 KGP 2993—1-in. Dado slot. . . . See List

6 FRONT TABLE EXTENSION. Increases distance to 12 in. front of blade. Wt. 1 lb. 84 KGP 2981—Cast-aluminum. . . See Price List

7 MITER GAUGE STOP RODS. Use with miter gauge for duplicating cuts. Adj. 0 to 18 in. 84 KGP 2988—Ship. wt. 12 oz. . . See Price List

8 9 FACE PLATES. Cast-iron. Wts. 2, 3 lbs. 84 KGP 2983—6-in. diam. . . . See List 84 KGP 2982—3 3/4-in. diam. . . . See List

10 SHOPSMITH SPEED CHANGER. Provides infinite range of speeds from 425 to 6800 R.P.M. Permits rapid selection of speed for each operation. Can be adjusted while Shopsmith is running. Attaches to bed ways and headstock. Mount as idler pulley between motor, headstock. Floats on spindle. Speeds selected with ball crank handle and speed indicator. With speed chart. 84 KGP 2979K—Ship. wt. 5 lbs. 8 oz. . See List

11 MORTISING HOLD-DOWN. Secured to rip fence. Cast-iron, steel construction. Clamp fingers adjustable for varying thicknesses. Also use as jig for other operations. 84 KGP 3451—Ship. wt. 1 lb. 8 oz. See Price List

REAR FENCE LOCK ASSEMBLY (not shown). Use with (11). Fits old model 2985 (10-E) only. 84 KGP 3458K—Ship. wt. 1 lb. . See Price List

12 MORTISING ATTACHMENT. Can be used in either horizontal or vertical drill press to cut square holes for mortise, tenon joints. Machined cast iron. Attaches to quill. Use with Jacobs Chuck on Shopsmith or 3456 Router Arbor, Nos. 2552, 2553 Chisels and bits. 84 KGP 3450—Ship. wt. 2 lbs. 12 oz. . . See List

13 SANDING DRUM. Expanding rubber type. 2 5/8-in. diam. With one coarse grit sleeve. Extra sleeves (84KG2666) on Page 19. 84 KGP 2975—Ship. wt. 1 lb. 8 oz. See Price List

14 ROUTER ARBOR OR CHUCK. For routing, rotary planing. Use in place of Jacobs Chuck. Also used for small grinders, etc. 84 KGP 3456—5/16-in. Cap. Wt. 12 oz. See List 84 KGP 3457—1/2-in. Cap. Wt. 12 oz. . See List

15 JOINTER-CUTTER. For jointing stock up to 2 1/2 in. Use with jointer-shaper fence. Three removable cutter blades. Fits on spindle—use in vertical or horizontal position. Size overall 2 1/2 x 2 in. 84 KGP 3453—Ship. wt. 1 lb. 8 oz. . . See Price List

16 CUP CENTER. Heat-treated. No. 2 M.T. shank. 84 KGP 2989—Ship. wt. 8 oz. . . See Price List

17 SHAPER ADAPTER ASSEMBLY. Use with jointer-shaper fence for shaping in either horizontal or vertical position. Precision machined. Holds all standard cutters. Ship. wt. each, 8 oz. 84 KGP 3459—5/16-in. diam. shank. . See Price List 84 KGP 3460—1/2-in. diam. shank. . . See Price List

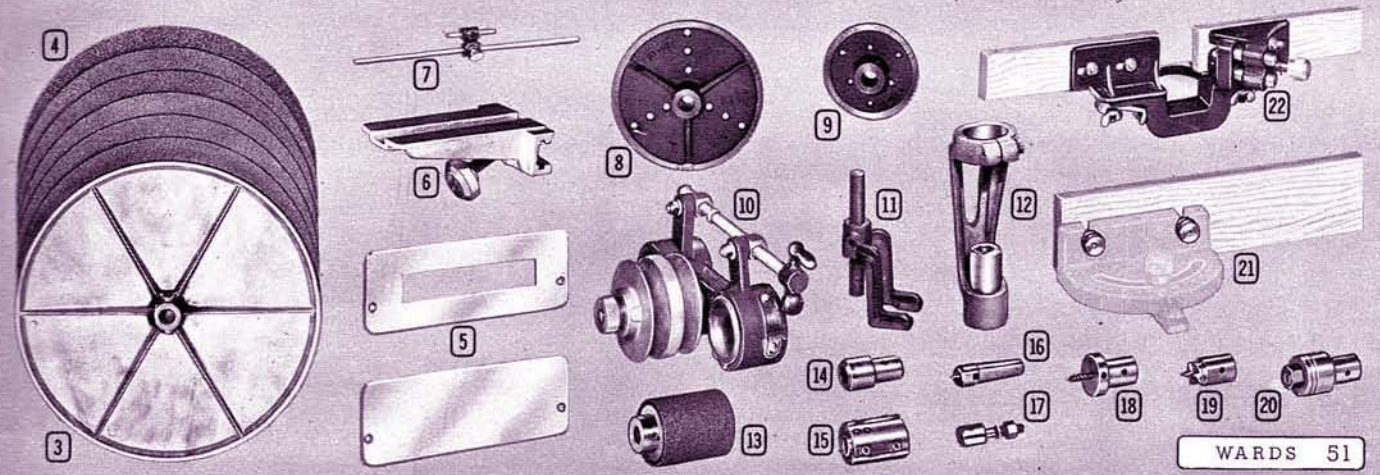
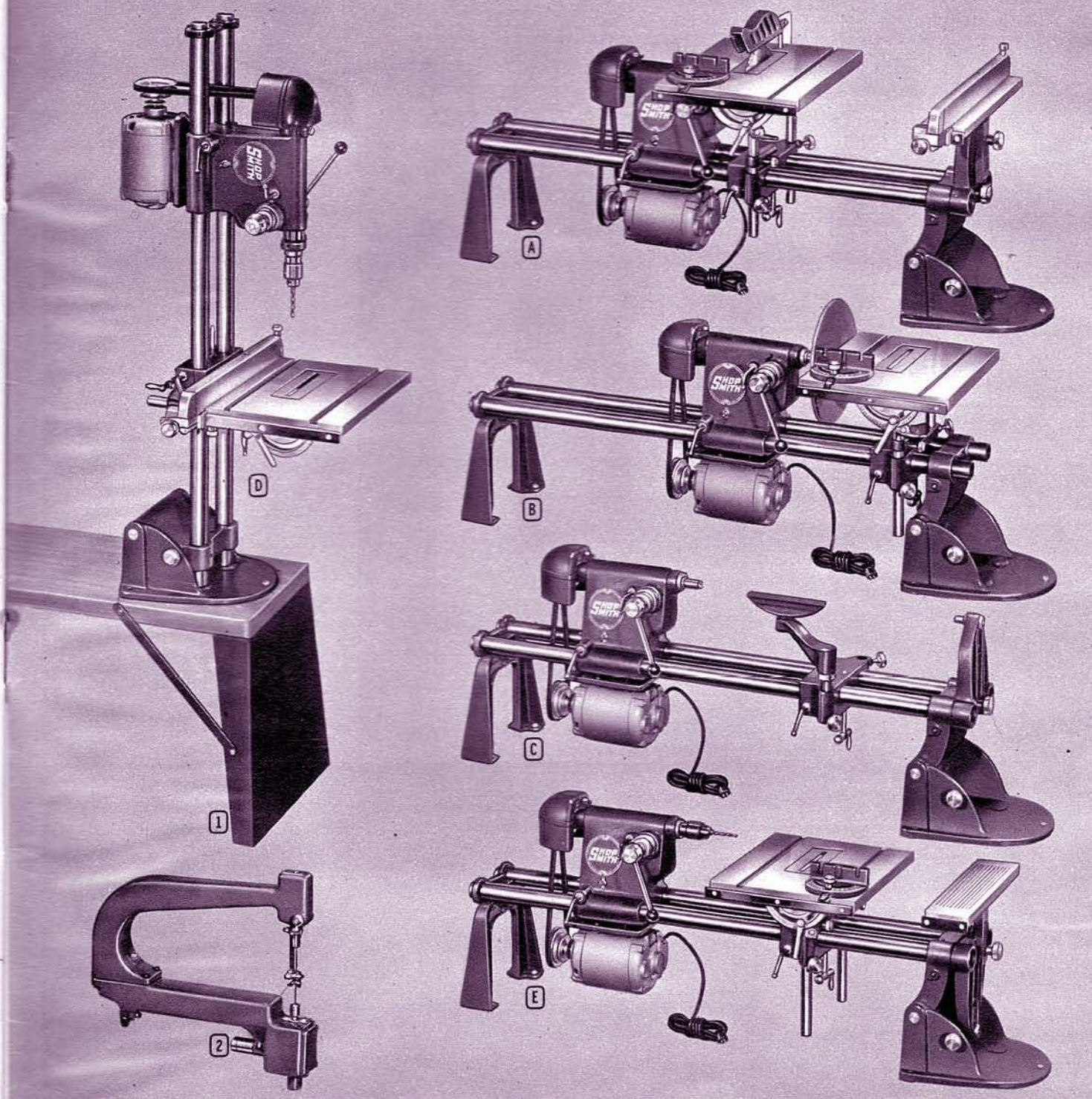
18 SCREW CENTER. For turning small pieces. Replace with any No. 14 wood screw. 84 KGP 2990—Ship. wt. 8 oz. . . . See Price List

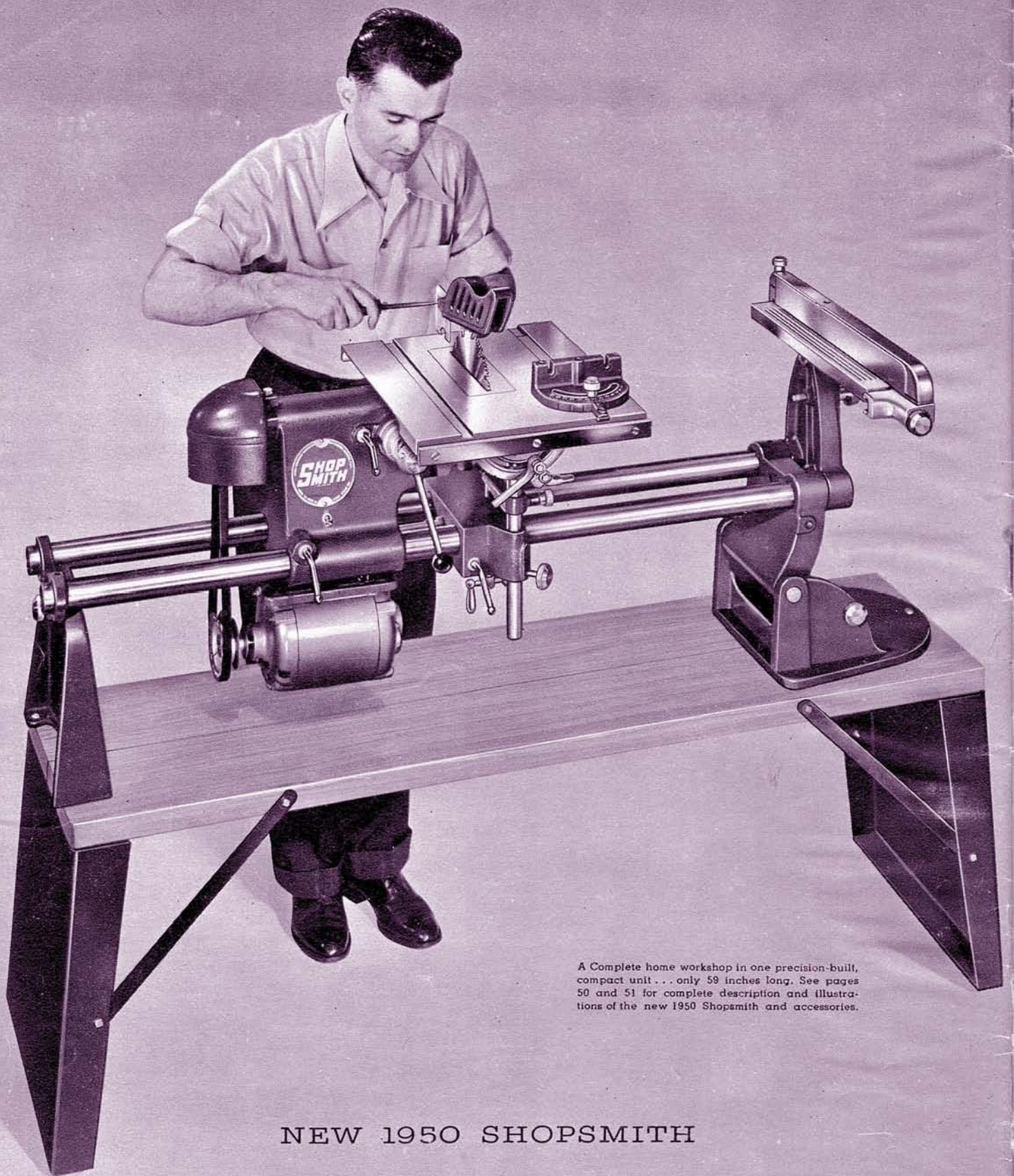
19 SPUR CENTER. Precision machined. Hardened, heat-treated replaceable tip. 84 KGP 2991—Ship. wt. 8 oz. . . . See Price List

20 ARBOR ASSEMBLY. Holds grinding wheels, wire or fiber brushes, etc. Ship. wt. each, 1 lb. 84 KGP 2996—1/2-in.—24 thread . . . See Price List 84 KGP 2997—3/8-in.—18 thread. . . See Price List

21 MITER GAUGE EXTENSION. Provides extra large miter gauge face. Polished hardwood. Attach to miter gauge with mounted knurl studs. 84 KGP 3461—Ship. wt. 1 lb. . . . See Price List

22 JOINTER AND SHAPER FENCE. Fits in table insert opening. For jointing, shaping or moulding in vertical or horizontal position, at any angle. Front face adjustable to fine setting by double bearing screw. Takes jointer-cutter (No. 15) above. Use also with routing bits, drum sander. 84 KGP 3454—Ship. wt. 5 lbs. 8 oz. . . See Price List





A Complete home workshop in one precision-built, compact unit . . . only 59 inches long. See pages 50 and 51 for complete description and illustrations of the new 1950 Shopsmith and accessories.

NEW 1950 SHOPSMITH

Montgomery Ward

Chicago • Baltimore • Albany • Kansas City • St. Paul • Denver • Portland • Oakland • Ft. Worth