SPECIFICATIONS

No. 4B

PLAIN

MILLING MACHINE

CONSTANT SPEED DRIVE

Milling Machines with double overarm are built under arrangements with the patentee.

Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

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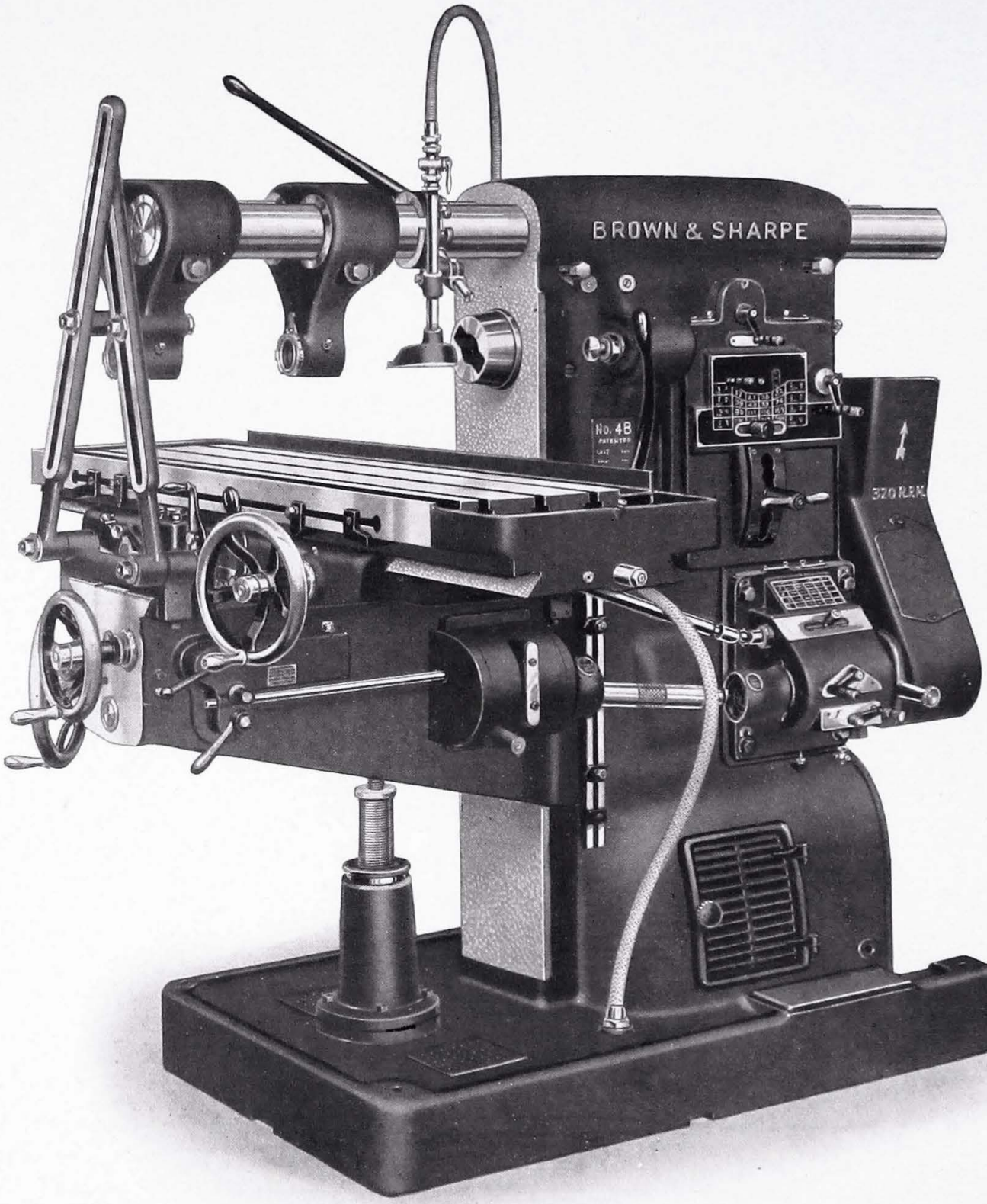
B·S
TRADE MARK

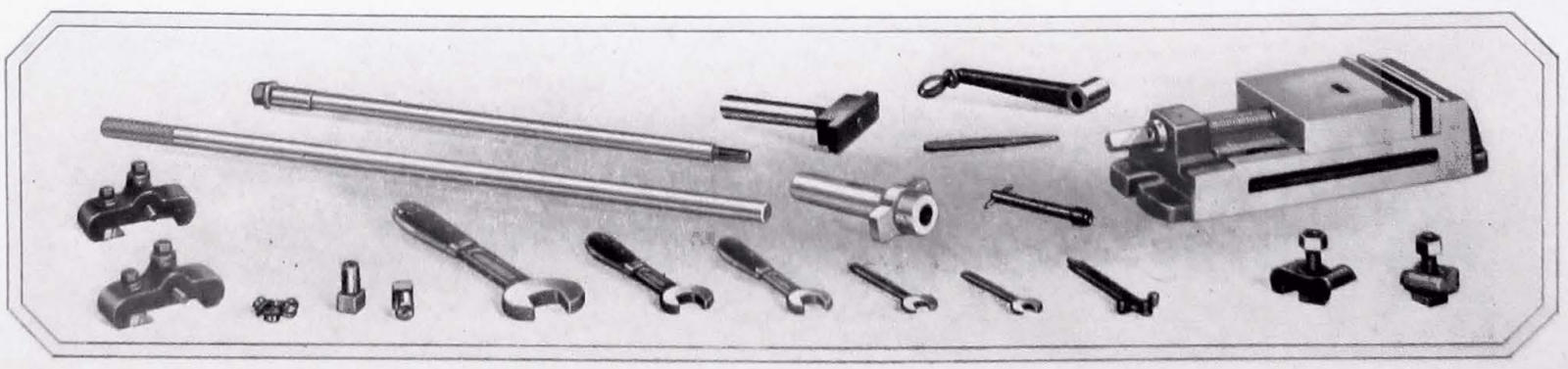


No. 4B Plain Milling Machine

CAPACITY:

LONGITUDINAL FEED, 42″
TRANSVERSE FEED, 14″ } AUTOMATIC
VERTICAL FEED, 20″

ADAPTED TO A CONSTANT SPEED MOTOR DRIVE



Specifications. No. 4B Plain Milling Machine

Adapted to a Constant Speed Motor Drive.

CAPACITY. Longitudinal Feed, 42″. Transverse Feed, 14″. Vertical Feed, 20″. All feeds automatic.

SPINDLE. Of crucible steel. Bearings ground. Phosphor bronze boxes, provided with means of compensation for wear. Front box extends beyond face of column, acting as centering guide for attachments. Front end of spindle tapered, hardened and ground; provided with recess in end to receive collets or arbors with clutch collars. Has No. 12 taper hole. Hole through spindle, 1⅛″ diameter. Spindle can be turned from front of machine for fine adjustments.

DRIVE. With belt, a single driving pulley, 16″ diameter, 5″ belt, enclosed by belt guard.

Driving shaft runs on ball bearings at constant speed, 320 revolutions per minute. Can be driven directly from main line. Has friction clutch operated by levers on either side of column. Clutch provided with means of compensation for wear. Efficient brake in connection with clutch for instantaneous stopping; also positively locks spindle. Back geared. Back gears operated by lever on same side of stand as speed and feed levers. Ratio of gearing, 1 to 20:1. 16 changes of speed in geometrical progression, 16 to 370 R. P. M. Reverse contained within machine. Changes made by adjustment of index slide and levers. Locking device prevents engaging tumbler gear when machine is running. All change gears except back gears are hardened steel. Driving pulley shaft is provided with outer support. Bearings in drive are bronze bushed.

Motor Drive Motor R. P. M. H. P. Chain and sprockets in place of driving pulley. Motor entirely enclosed in base of machine. Means of adjustment for tightening driving chain. Chain guard provided.

10 H. P. required to operate the machine at its maximum capacity.

ARBOR SUPPORT. Double overarm, solid steel. Clamped rigidly at two points with wrench. Arm braces furnished. Two arbor yokes furnished, inner and outer. Provision for fastening arm braces to outer arbor yoke. Adjustable phosphor bronze bushings in arbor yokes for supporting arbor. Diameter of holes in bushings, $2\frac{5}{16}$″. Center of spindle to under side of arms, 7⅞″. Greatest distance end of spindle to bushing in arbor yoke, with arm braces, 27″. Greatest distance, end of spindle to bushing in arbor yoke without arm braces, 36¾″. Greatest distance, face of column to arm braces, 33½″.

TABLE. Extra heavy and deep. Including oil pans and channels, 70″ x 18″. Working surface, 63″ x 18″. 3 T slots, ¾″ wide. Feeds: longitudinal, 42″; transverse, 14″; vertical, 20″; all automatic. Provided with constant speed power fast travel of 82″ per minute in either direction. Provision made for driving 18″ and 26″ Circular Milling Attachments directly from table feed shaft.

TABLE FEED SCREW. Of large diameter, stationary and without spline. Power transmitted to it by auxiliary shaft.

FEEDS. Positive. All hardened steel gears in longitudinal feed train. Variable feed case driven direct from machine pulley shaft by chain and sprockets entirely enclosed within machine frame. Safety device at each end of gear train in variable feed case. Feeds independent of spindle speeds. 16 changes varying in practically a geometrical progression from ⅝″ to 20″ per minute. Range for small mills, .0017″ to .054″ per revolution of spindle; for large mills, .039″ to 1.25″. No loose change gears. Changes made by adjustment of index slide and levers. All feeds started, stopped and reversed by single lever on front of knee. Locking device for transverse and vertical feeds.

FEED TRIPPING MECHANISM. Double plunger type on front of saddle, in addition to reverse on front of knee. Very sensitive. Can be set to prevent throwing in of wrong clutch. Arranged to allow reversal of automatic table feed without running dog past trip plunger.

KNEE. Of box form with stout transverse ribs. Long bearing on column extending above top of knee. Clamped from front. Elevating screw telescopic. Sliding covers protect feed screws and gears.

FRAME. Cast in one piece. Hollow with thick walls and rigid internal bracing. Lower part fitted as compartment for motor or as closet. Base has oil rim and drain holes for conveying lubricant back to tank in base. Pan for small tools and rack for wrenches on side.

PUMP AND TANK. No. 2 Pump for lubricant placed inside frame, can be disengaged when not in use. Tank cast in base. Capacity 12 gallons.

HANDWHEELS. Provided for longitudinal, transverse and vertical feed shafts. Automatically disengaged when not in use.

ADJUSTABLE DIALS. For longitudinal, transverse and vertical adjustments. Graduated to thousandths of an inch.

VISE. Flanged. Jaws of tool steel, hardened. Capacity: 7⅛″ wide, 2″ deep, opens 4½″.

FLOOR SPACE. At right angles to spindle, 120″. Parallel to spindle, 95″.

WEIGHTS. Net, about 7200 lbs. Ready for shipment, about 8200 lbs. Dimensions for shipment, 90″ x 53″ x 76″. Space occupied, about 210 cubic feet.

EQUIPMENT. No. 4-F flanged vise, "ST" collet, knock-out rod, wrenches and everything else shown in cuts.

A countershaft, to run 320 revolutions per minute, having one 16″ tight pulley and one pair of 16″ tight and loose pulleys for 5″ belt, can be furnished as an extra.

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Features of Construction

No. 4B Plain Milling Machine

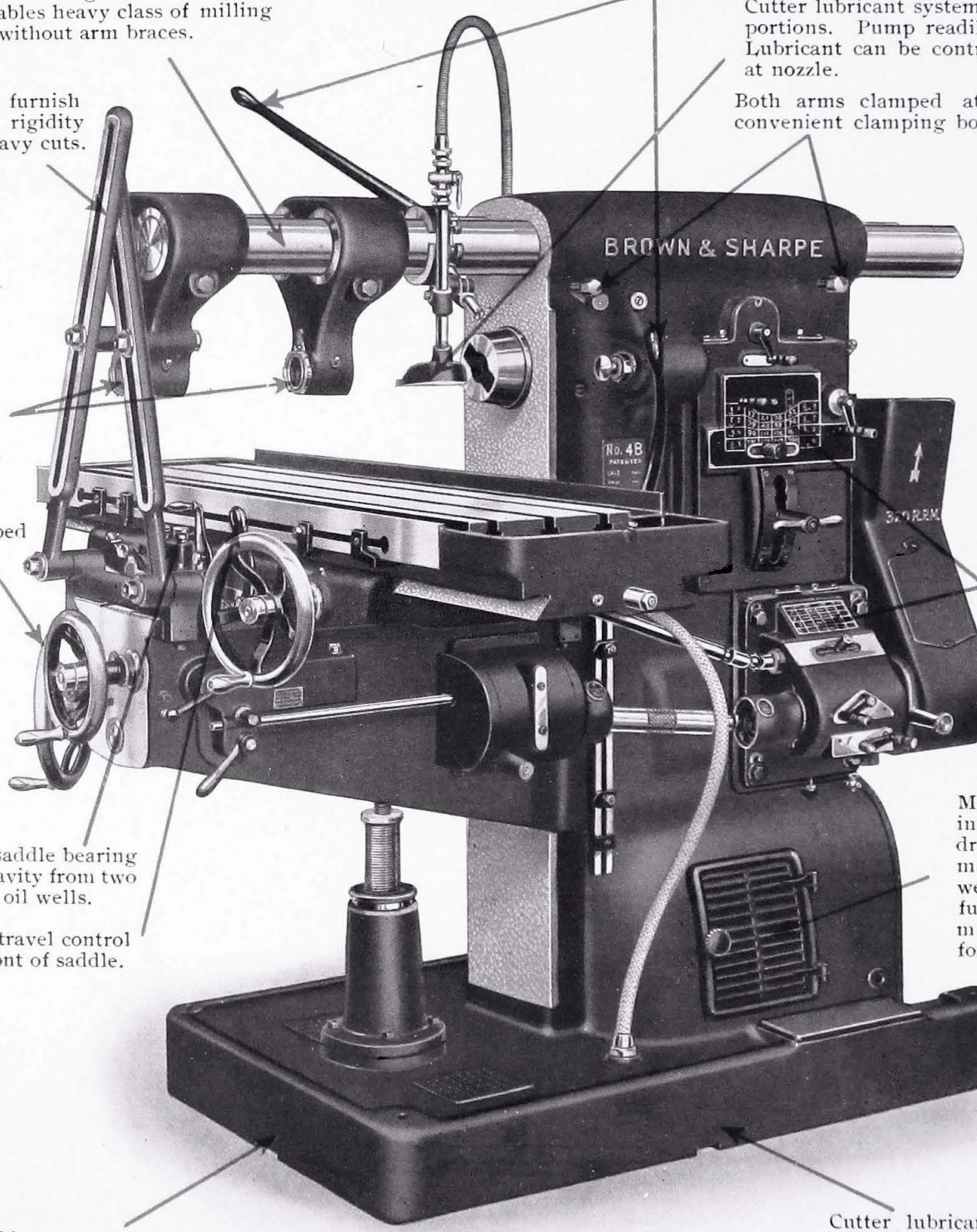
Starting levers conveniently located. Left hand lever adjustable for different operating positions.

Double overarm provides rigid support and accurate alignment for cutter arbor. Enables heavy class of milling to be done without arm braces.

Cutter lubricant system of ample proportions. Pump readily disengaged. Lubricant can be controlled by valve at nozzle.

Arm braces furnish additional rigidity on extra heavy cuts.

Both arms clamped at two points by convenient clamping bolts.



Adjustable bronze bushings for work arbor to compensate for wear.

Knee clamped from front.

Graphic index plates facilitate setting speeds and feeds.

Table and saddle bearing oiled by gravity from two convenient oil wells.

Power fast travel control lever on front of saddle.

Motor enclosed in base for motor drive. Compartment oil tight, well ventilated and furnishes maximum protection for motor.

Column and base one piece casting.

Cutter lubricant tank cast in base, extending under knee with drains in top.

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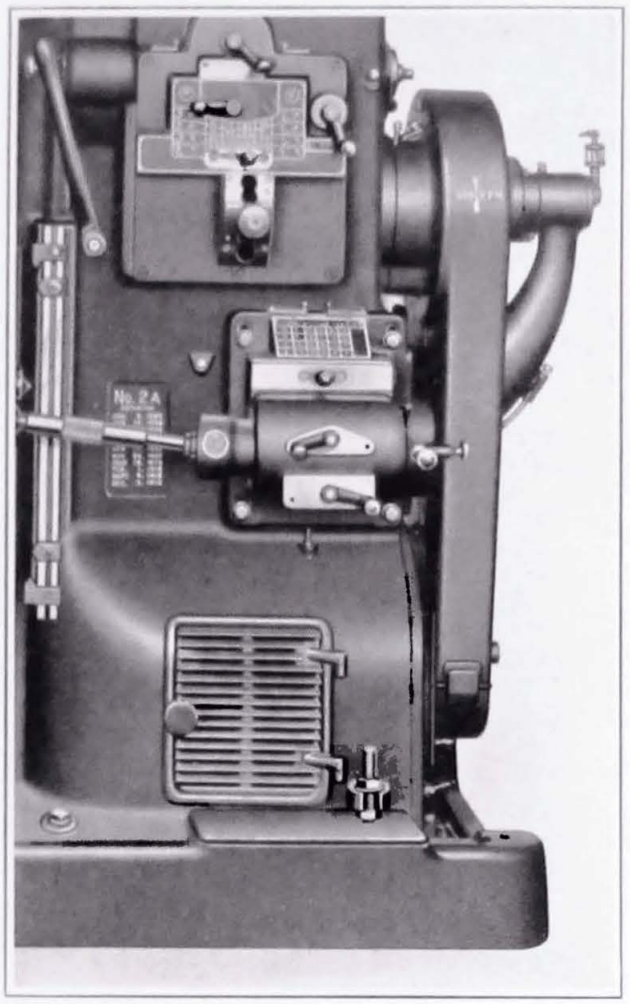
Motor Drive for
Nos. 1A, 2A, 3A Universal
and
Nos. 2B, 3B, 3B Heavy and 4B Plain
Milling Machines



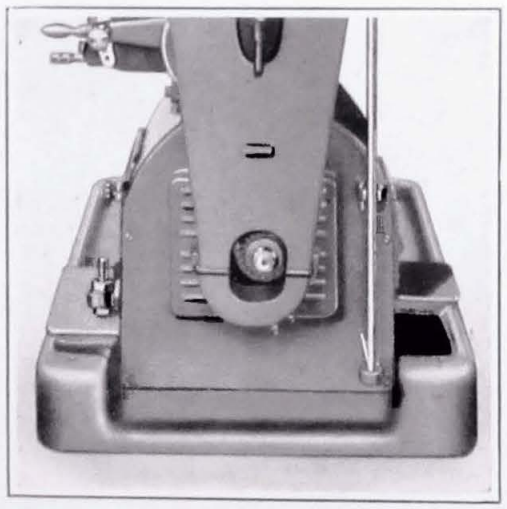
WHERE individual drive is desirable, the "Motor-in-the-Base" Milling Machine offers an unusually compact and efficient production unit, occupying a minimum amount of floor space. The motor is enclosed in a compartment cast in the lower part of the column. Complete protection from oil, cutting lubricant, chips, etc. is provided for the motor as the compartment is oil-tight, being cast with a solid top.

The motor is mounted and locked on a dove-tailed slide fitting into a heavy plate which is hinged at one end and arranged so that it may be adjusted from outside the compartment to keep the proper tension upon the driving chain. A "run-in" driving chain is used which has had the initial stretch removed. The dove-tailed slide and gib arrangement of motor plate permits quick alignment of sprockets. A substantial cast iron chain guard is provided over driving chain. Ventilators located on three sides of the motor compartment provide an ample supply of cooling air for the motor. The ventilator door also provides easy access for oiling and wiring purposes.

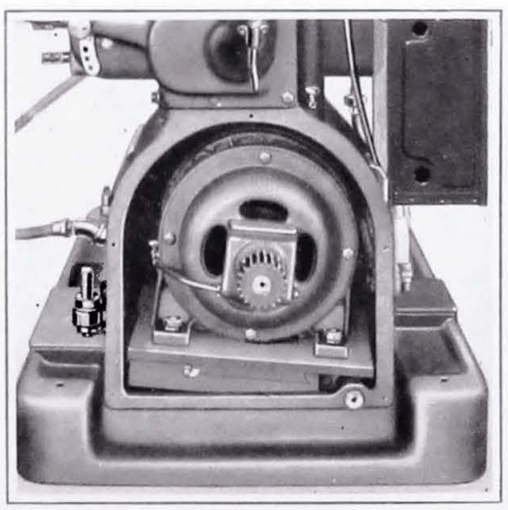
On Nos. 1A, 2A and 2B Machines a magnetic switch control box is placed on the left side of the machine with the push button control in a convenient operating position.

The larger machines (Nos. 3A, 3B, 3B Heavy and 4B) have for alternating current, a hand starting compensator mounted on a bracket near the machine. For direct current, the control box is placed on a bracket near the machine and the push button control mounted on the side of the machine convenient to the operator. Both the compensator and control box are adaptable to wall mounting.

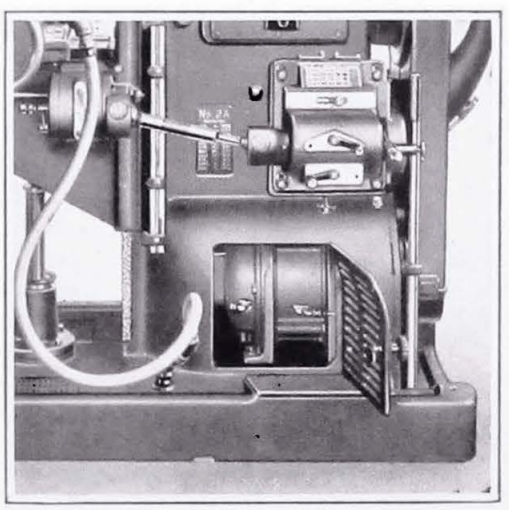
Machines fitted *with* motor include constant speed motor, motor plate, chain, sprockets, chain guard, controlling arrangement and wiring complete. Option is given on several makes of motors for either direct or alternating current systems. Machines fitted *for* motor include motor plate, chain, sprockets and guard. If at any time it is desired to change a machine from motor to belt drive, it can be easily and quickly done.



Exceptional ventilation for the motor is provided by three sets of ventilators.



Notice how securely the motor is held in place and how provision is made for adjusting the driving chain from the outside.



Note the accessibility of the motor for oiling and wiring.

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