HENDEY

12-INCH High Speed CRANK SHAPER

No. 312-H.S.S.-5

THE HENDEY MACHINE COMPANY TORRINGTON, CONN.

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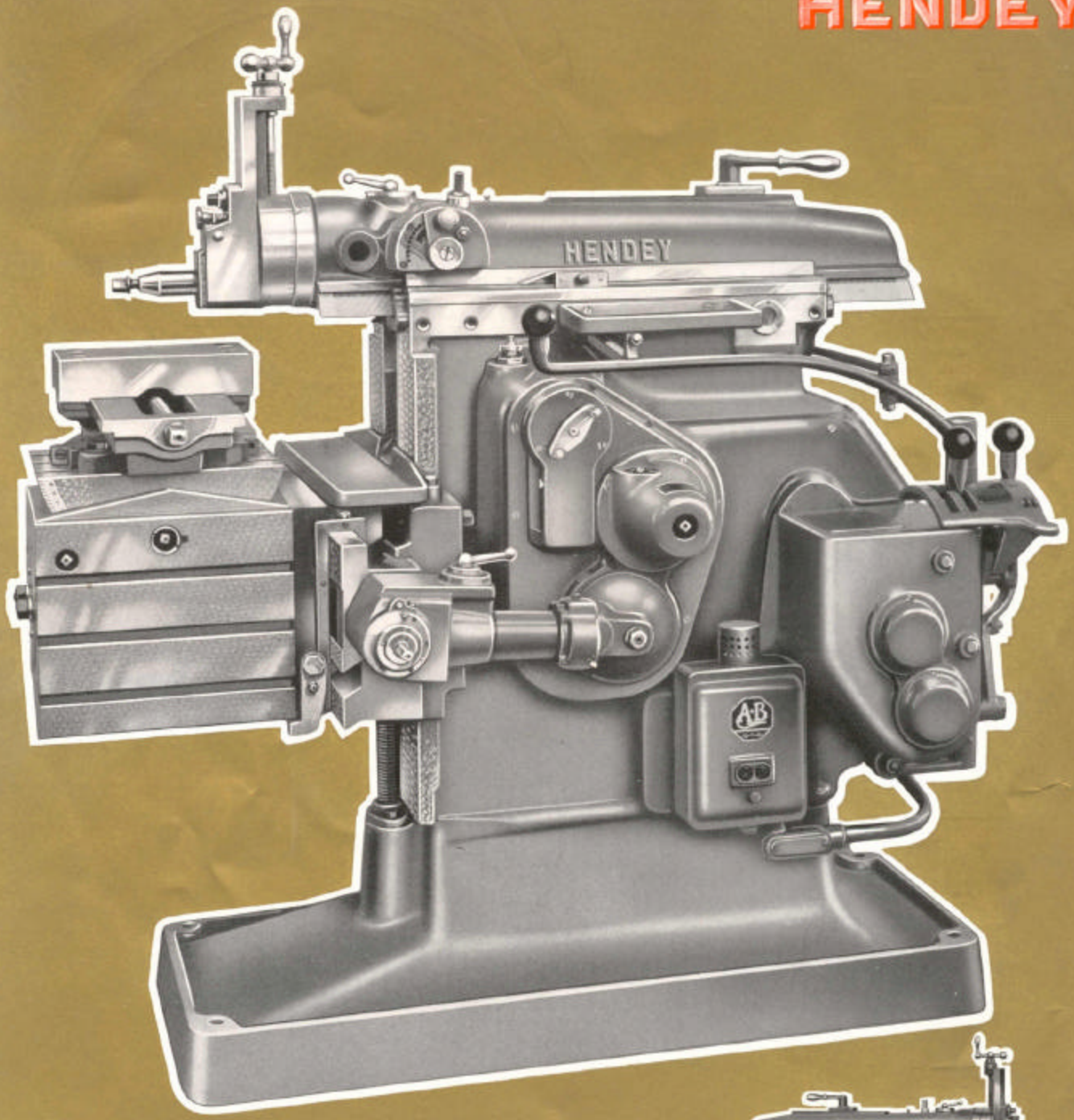


HENDEY 12-INCH CRANK SHAPER

A HIGH SPEED MACHINE that couples SPEED with POWER. MAXIMUM CUTTING SPEED of 182 ft. per minute on 6-inch stroke.

Equally efficient on Tool or Machine Work.

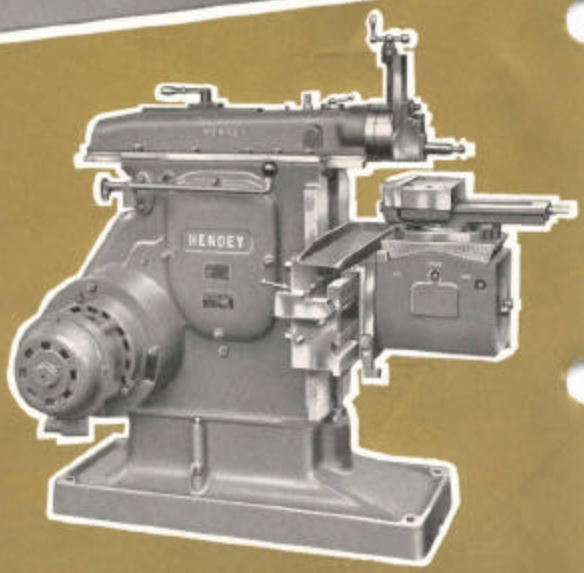
Eight Speed Changes.

Crank Gear runs in massive Timken Bearings.

Universal Table with Tilting Top.

Motor frame bolted to column with straight line power transmission to input shaft through multiple disc clutch.

Dual start and stop control of ram, operates either side of shaper.



HENDEY 12-INCH High Speed CRANK SHAPER

SPECIFICATIONS

RAM

Length of ram	34″
Ram bearing in column	8″ × 23″
Length of stroke	12¾″
Strokes per minute	14 to 200
Speed changes	8
High speed on 12″ stroke	120′ per min.
High speed on 6″ stroke	182′ per min.
Low speed on 12″ stroke	23′ per min.
Low speed on 2″ stroke	4.5′ per min.

HEAD

Diameter of swivel	6″
Vertical travel of slide	4⅝″
Power down feed range	.0025″ to .030″
Size of tool opening	1½″ × 11/16″

UNIVERSAL TABLE

Size of plain surface	11″ × 12½″
Size of tilting top	10″ × 12″
Top tilts either way	15°

MAXIMUM DISTANCE TABLE TO RAM:

For plain surface	15½″
For tilting top	14 9/16″
Maximum rotation of table	360°
Horizonal travel	17⅝″
Vertical movement	14¼″
Power cross feed range	.0025″ to .090″

CROSS RAIL

Height of bearing on column	11⅛″
Width of bearing on column	13¼″
Height of saddle bearing on C.R.	9″
Width of saddle bearing on C.R.	12½″

VISE

Height of jaws	2¼″
Length of jaws	10″
Maximum opening	10½″
Weight	100 lbs.

MOTOR

A.C. or D.C. Flange mounted
Gear reduction or direct speed type
H.P. 2
R.P.M. of rotor shaft 600

Net weight of Shaper with motor approx.	2825 lbs.
Floor space required	46″ × 68″

Note. Design and dimensions subject to engineering changes without notice.

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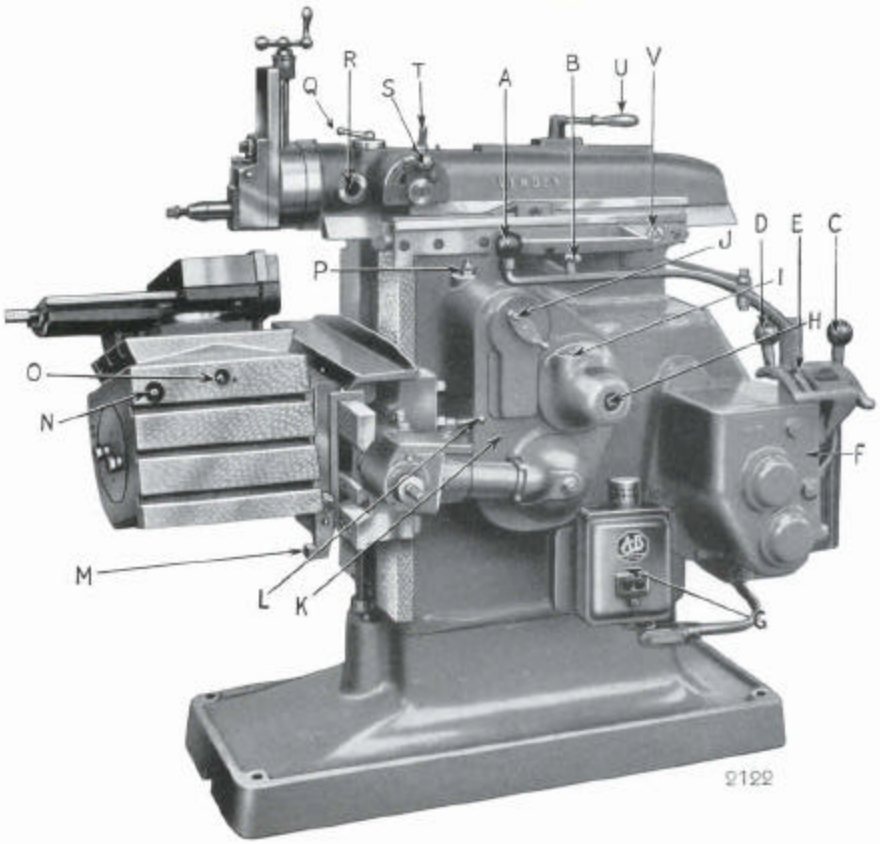
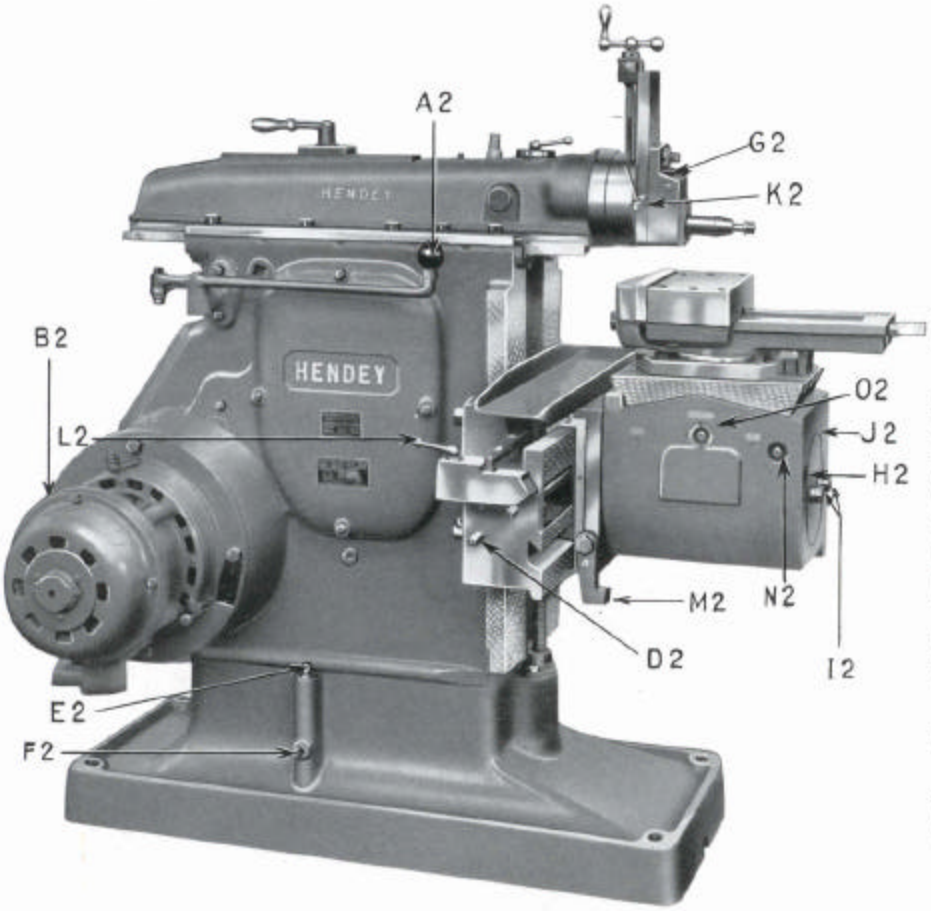
KEY TO INDEX

A Start and stop clutch lever.
B Safety lock for starting lever.
C High and low gear speed lever.
D Speed change gear shift lever.
E H-plate for speed lever positions.
F Speed change gear box.
G Push button station for motor.
H Shaft for changing stroke of ram.
I Index dial for ram stroke length.
J Cross feed range adjustment.
K Carrier plate for cross feed mechanism.
L Cross feed engagement lever.
M Stop for cross horizontal alignment of tilting top.
N Worm shaft for rotating table.
O Binding screw for tilting top.
P Contact spring for feed cam roller.
Q Down feed clutch lever.
R Pilot hole for geared wrench to bind swivel head to ram.
S Down feed range lever and sector.
T Ram positioning shaft.
U Ram nut binder.
V Flow indicator for automatic oiling system.





KEY TO INDEX

A2 Second start and stop clutch lever.
B2 Gear reduction motor with flange mounting.
D2 Shaft for elevating screw.
E2 Filler plug for oil reservoir.
F2 Drain plug for reservoir.
G2 Seating spring for clapper.
H2 Worm shaft for setting tilting top.
I2 Bolts binding table to saddle.
J2 Graduated ring for angular settings of table.
K2 Binder for down feed slide.
L2 Second cross feed engagement lever. See L cut 2122.
M2 Stop for horizontal alignment of plain face of table.
N2 Worm shaft for rotating table.
O2 Binding screw for tilting top.

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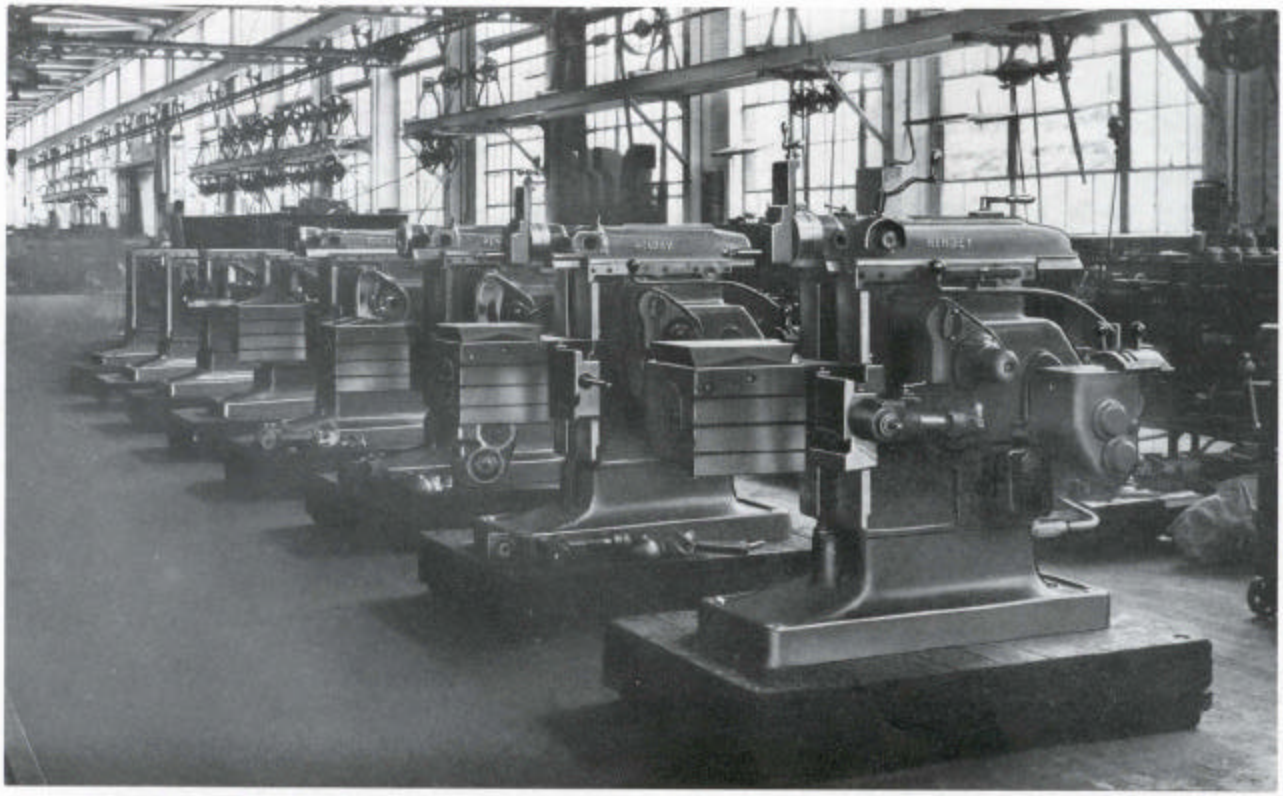
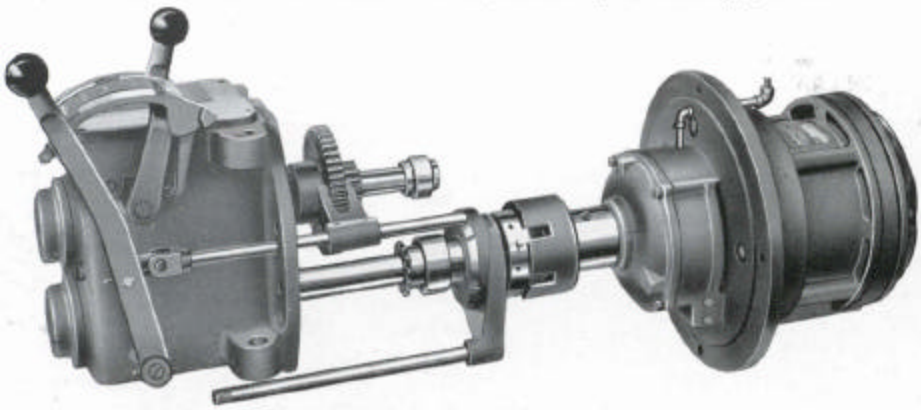


A GROUP OF 12-INCH CRANK SHAPERS ON THE ASSEMBLY FLOOR

THE MOTOR DRIVE

The motor drive for this shaper features simplicity and straight line power transmission.

The motor may be either one of two types: one having a speed reducing gear unit with output shaft running at 600 R.P.M. which is the operating speed of power input shaft of the shaper: in the other type the motor is built to provide a speed of 600 R. P. M. on the rotor shaft direct, eliminating the reducing gear unit.



In either case the frame of motor is suitably flange mounted to a drum like carrier on shaper column. With the motor and input shafts brought into axial alignment a highly efficient straight line transfer of power from motor to shaper is thereby made possible and secured through the medium of a standard multiple disc clutch. A cone type friction brake is mounted on power shaft and is engaged by full reverse motion of clutch lever.

Push button control for motor has pilot light indicating when motor is running.

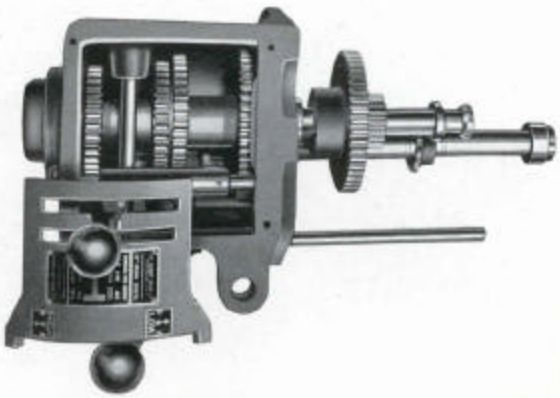
SPEED CHANGING MECHANISM

The speed changing mechanism is of unit construction.

The complete assembly includes the speed gear box with shafts, gearing, H plate and shifter handles, also the high and low speed transfer gears on output shaft.

The shafts run in ball bearings of maximum capacity. All gears are of alloy steel, electrically heat treated, with tooth profile refinished after hardening, and with ends of gear teeth rounded to facilitate speed changes.

Eight geared speed changes are provided for ram travel with the four initial speeds in the gear box doubled through the high and low speed transmission gear. (See page 6.) These changes give a range of 14 strokes per minute minimum to 200 strokes per minute maximum.



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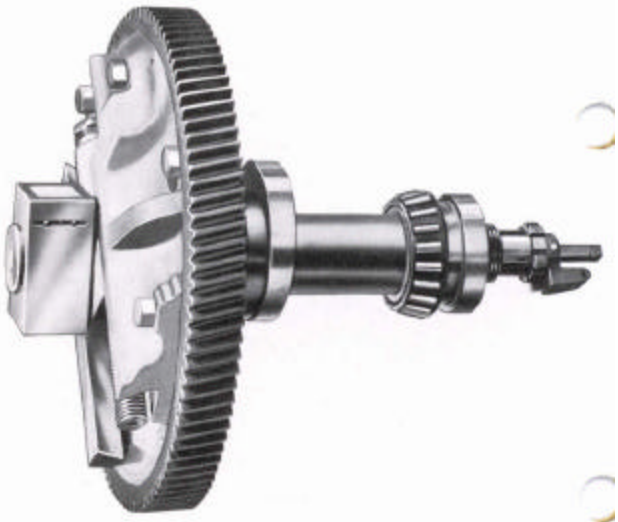
CRANK GEAR

The crank gear and hub are of two-piece construction. The gear ring is cast of special material having high physical properties, and with teeth cut helical to insure smoothness of operation. The hub runs on two massive Timken bearings. These bearings are pre-loaded, insuring a smooth flow of power under maximum working conditions. The feed cam, crank pin and block, stroke adjusting shaft and shaft lock are shown in these assemblies.

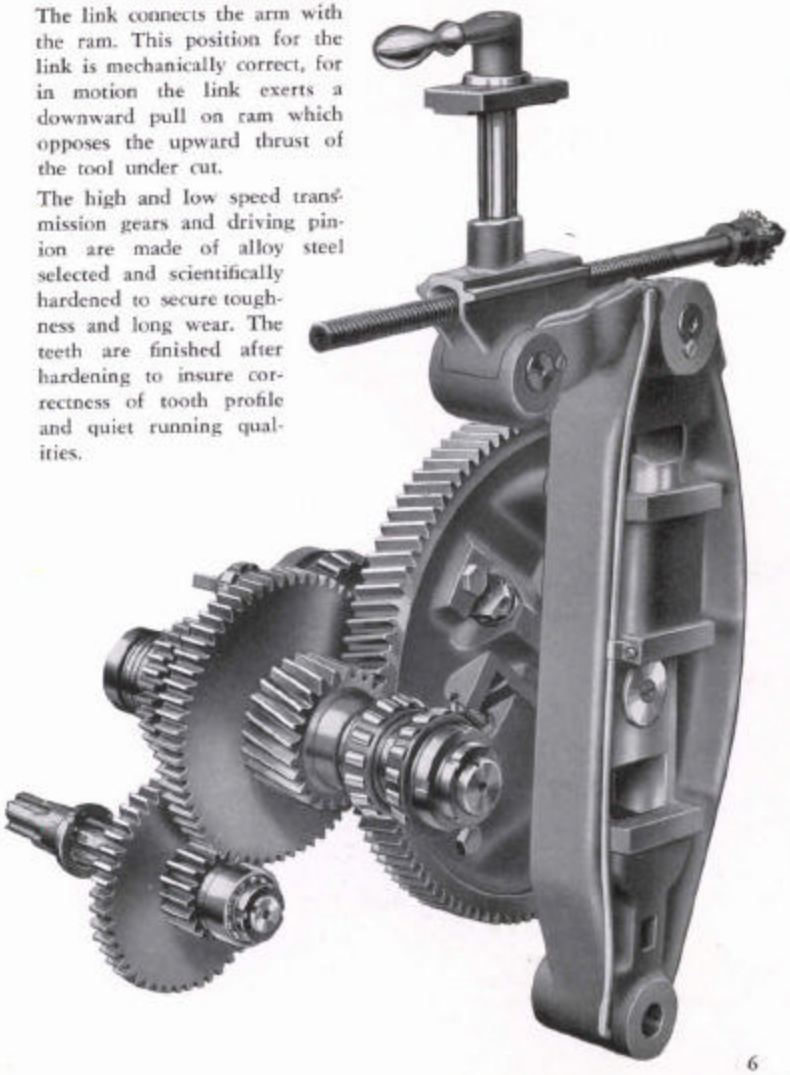


RAM DRIVING GEAR

The rocker arm is pivoted in the base, at which point the weight of the arm is carried and not by the ram. This bottom pivoting neutralizes the tendency of crank pin to raise the ram on the first half of cutting stroke and exert unnecessary pressure on ram ways on second half.

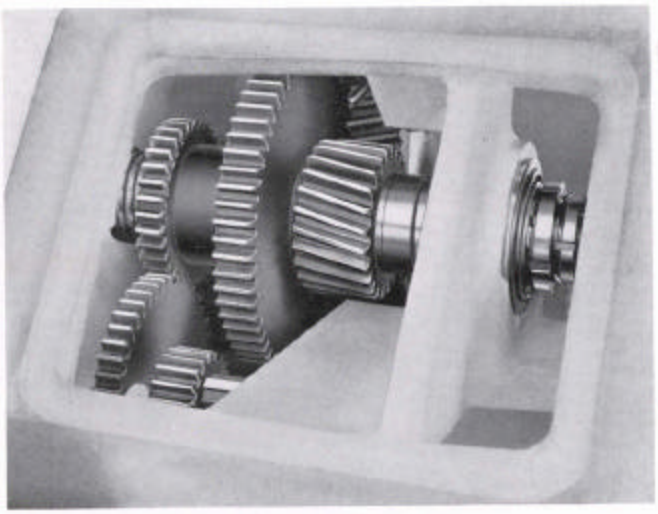
The link connects the arm with the ram. This position for the link is mechanically correct, for in motion the link exerts a downward pull on ram which opposes the upward thrust of the tool under cut.

The high and low speed transmission gears and driving pinion are made of alloy steel selected and scientifically hardened to secure toughness and long wear. The teeth are finished after hardening to insure correctness of tooth profile and quiet running qualities.



CRANK PIN AND BLOCK

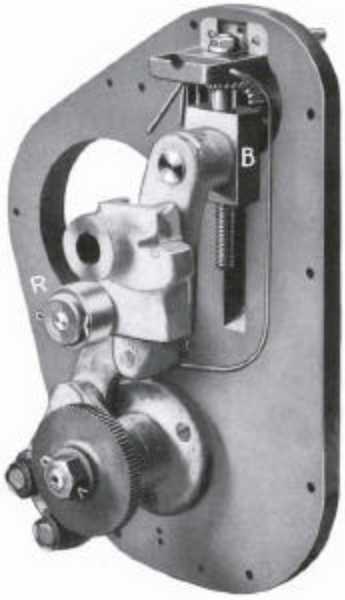
The crank pin is designed for heavy duty service. The guide ways of pin are carefully fitted and taper gibbed to dove-tail slide in the hub head. Bearing surfaces of block are glass hard, with a very high lapped finish, and fitted in the rocker arm ways with extreme accuracy. The block is bushed with a sleeve of hard close-grained cast iron, furnishing an unexcelled bearing for the crank pin. Both the pin and block receive high volume lubrication when in operation, creating an ideal working condition with wear virtually non-existent.



Transmission gears of 12" crank shaper as viewed through the opening in rear of column. Gears are in mesh in the high speed position which gives a maximum travel of 120' per min. on 12" stroke.

CROSS FEED

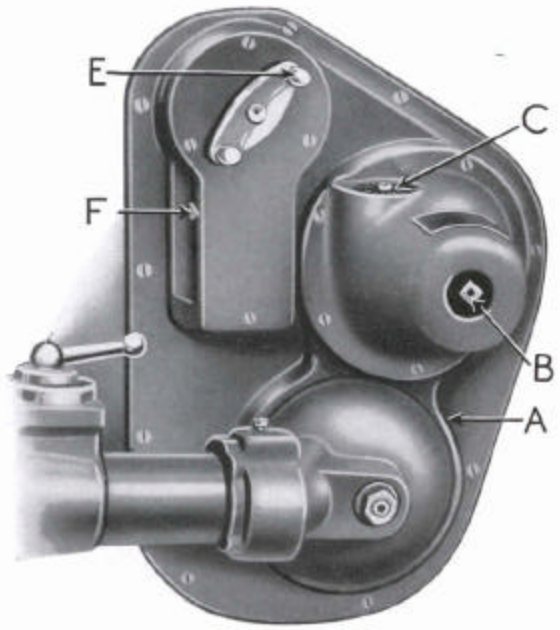
The feed mechanism is mounted on plate A which is screwed and doweled to the flanged opening on the column. The feed is actuated from a cam on the hub of crank gear as seen in the cut on page 6. This cam engages with roller on rocker indicated at R. When the feed slide block B is at its top position the feed is at zero. The maximum feed is obtained when the block is moved to its low position.



The feed changes are controlled by the double crank E. The amount of feed is indicated by a pointer F moving on front edge of auxiliary plate and within direct view of the operator. Range of feed is from .0025 to .090".

The cross feed takes place on the reverse stroke and is of the slow motion type, carried through the return stroke period.

Thrust on cross feed screw is taken on two Timken roller bearings. Cross feed is engaged at either end of rail by levers L, fig. 2122 and L2, fig. 2118, see page 4. A safety stop rod disengages power feed at either end of table travel.



CHANGING LENGTH OF RAM STROKE

This operation is simple. First the hand crank is applied to the end of shaft at B. This engagement automatically releases the shaft lock (see crank gear cuts page 6). Turning this shaft moves crank pin block in its dovetail guide until desired length of stroke is indicated on dial C.

When the hand crank is removed the shaft is automatically locked.

CROSS RAIL

Cross Rail is double walled with a bearing 11⅛ inches high on column and is narrow gibbed.

Rail clamps, adjusted by countersunk screws, hold cross rail to column in close sliding contact, while heavy binding bolts lock rail securely to column when taking cut.

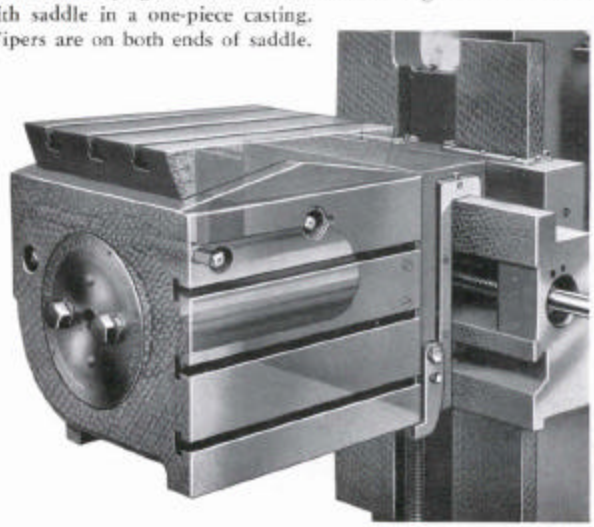
Wipers on top of cross rail bear against column, and a metal guard on cross rail further protects ways on column from chips and dirt. Nut for elevating screw has a ball thrust bearing to reduce the frictional load.

SADDLE

The saddle has three bearings on cross rail with dovetail tongue having taper gib running on narrow guideway.

Trunnion carrying universal table is extra large and is combined with saddle in a one-piece casting.

Wipers are on both ends of saddle.



TABLES

The universal table will rotate through 360 degrees, and has positive stop M, fig. 2122, and M2, fig. 2118, page 4 for either horizontal position. Worm and gear for rotating table are shown in the transparency above.

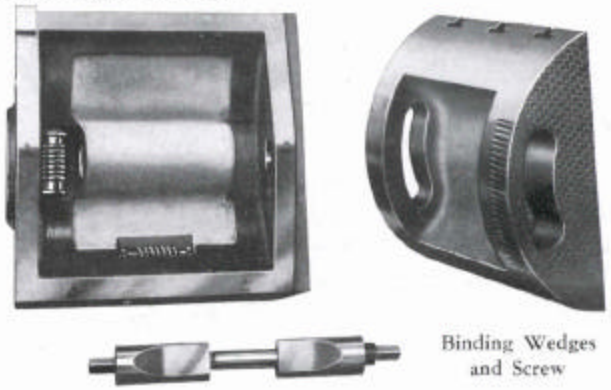
For angular settings readings are made on the large graduated dial shown on front end of trunnion.

TILTING TOP

The tilting top is seated with a full length accurately fitted circular bearing in the table proper and when clamped in working position is absolutely firm under heaviest cuts.

The tilting top can be set at an angle of 15 degrees either side of horizontal. Graduations are on right forward side of top and are read from the adjacent rim of table. Settings are made through worm shaft, H2, fig. 2118, page 4. Binding of top with table is done with opposed wedges operated by screw indicated at 0, fig. 2122, page 4.

This shaper may be furnished with a plain box table in place of the universal if preferred.



Binding Wedges and Screw

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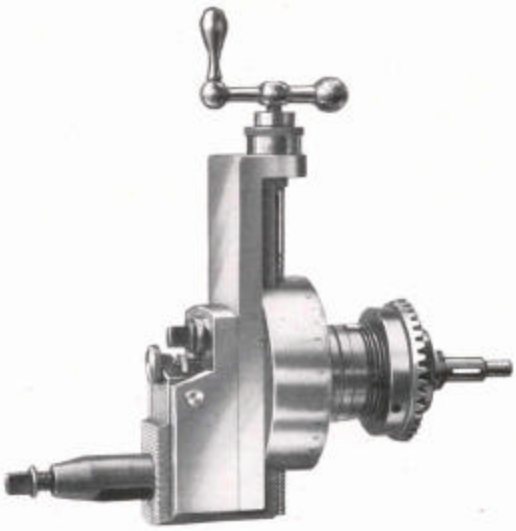
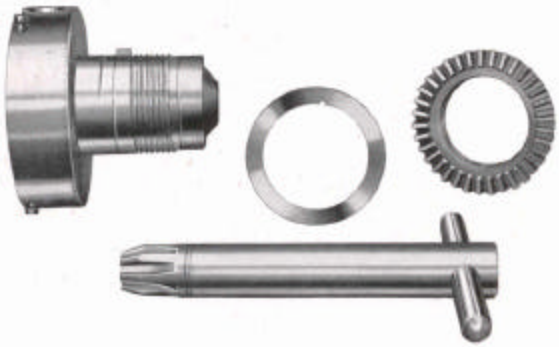


TOOL SLIDE

The tool or down feed slide is 11¼" in length, 3½" wide, and has a travel of 4⅝". The tool post is slotted to take tool shank of 1¼" x ⅝". The tool slide has a binder shown at K2, fig. 2118, page 4, to keep slide from creeping when taking a cross cut. It is taper gibbed for wear, and upward thrust on feed screw is taken by large collar nut below crank handle.

SWIVEL HEAD

The swivel head is clamped to head of ram without distortion by means of large geared nut running on threaded sleeve keyed to ram head.



This nut is easily tightened or loosened by means of pinion-wrench which is inserted through pilot hole shown at R, fig. 2122. When properly tightened the swivel head will not slip.

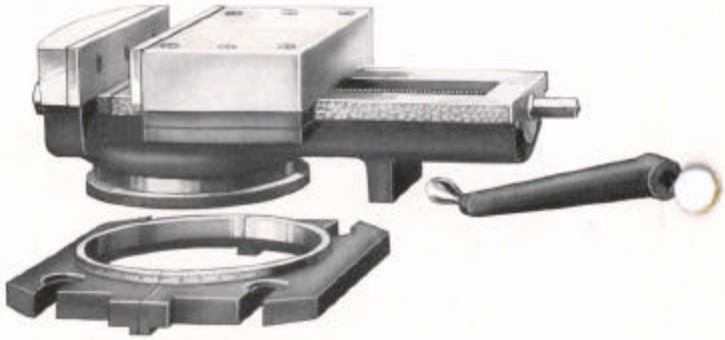
POWER DOWN FEED

The power down feed is optional on the 12-inch Shaper *(see* Q and S, fig. 2122) page 4. It has a range of .0025-inch to .030-inch.

VISE

Vise is of the single screw type with gibbed sliding block. Jaws are faced with hardened and ground alloy steel plates.

Thrust of screw is taken at head end of main casting by means of large washer and nut on the outside. The screw is in tension thus relieving the base casting of all unnecessary stress.



The graduated clamping ring is of 2-piece construction. It has four bolts, and exerts a direct downward pull on flange of vise hub, preventing it from slipping under heaviest cuts. A boss is cast on under side of vise block at the rear, which furnishes added support when vise is used in line with table.

Vise has maximum opening of 10½" between jaws. (See general dimensions page 3.)

AUTOMATIC LUBRICATION

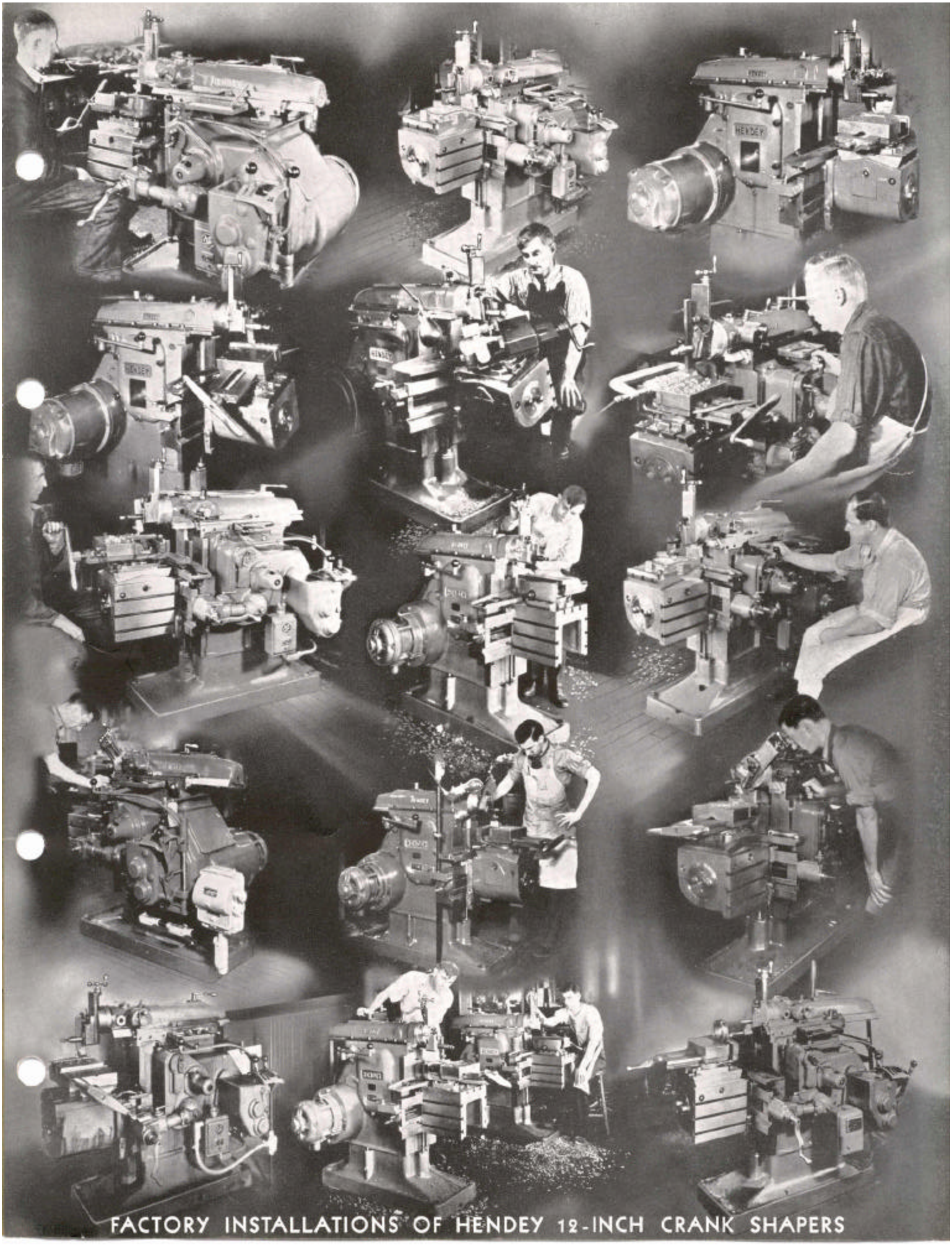
The entire driving mechanism is automatically lubricated

The speed change gears run in oil circulating through the gear box.

The crank gear, driving pinion and back gearing, each has its independent supply of oil flowing to it under positive circulation, and which contributes effectively to noiseless operation.

Oil is also pumped to and distributed over the ram ways, rocker arm ways, crank pin and block, and the feed mechanism, the circulation being shown at the flow indicator *(see* V, fig. 2122) page 4.

The oil in circulation is continuously filtered before entering the distributing system.



FACTORY INSTALLATIONS OF HENDEY 12-INCH CRANK SHAPERS

HENDEY

12-INCH High Speed CRANK SHAPER

A MACHINE THAT HAS ESTABLISHED NEW RECORDS

This small shaper has found a permanent and dominating place in scores of nationally known shops throughout the country because of its exceptional merit, expressed in a grade of performance hitherto unapproached in quality of workmanship and rapidity of operation and production.

A HIGH SPEED TOOL

Primarily, it is a high speed cutting tool.

On 6-inch stroke it has a maximum cutting speed of 182 feet per minute; and on 12-inch stroke a high cutting speed of 120 feet per minute.

Through the skillful distribution of light weight alloy material of high physical properties in the ram, rocker arm and head castings the reciprocations of ram traveling at high speeds are effectively secured and maintained without disturbing the equilibrium of the machine.

This 12-inch Shaper is not limited, however, to the high working speeds. For forming tool cuts and other heavy duty work there is ample power and range in the slower speeds as needed, the minimum being 23 feet per minute on 12-inch stroke and 4.5 feet per minute on 2-inch stroke.

Ease of handling of this shaper is facilitated through right and left side starting and stopping levers for ram motion, (see A and A2, page 4,) and right and left side levers for engagement of table cross feed (see L and L2, page 4). These conveniences make for high efficiency of operation and are sure to please the tool maker.

This shaper is extensively used by representative manufacturers of

BALL BEARINGS
ROLLER BEARINGS
AUTOMOTIVE PARTS
AUTOMOBILES
TYPEWRITERS
SMALL ARMS
ELECTRICAL MACHINERY
SILVERWARE
SPORTING GOODS
PAPER BOXES
SMALL HARDWARE
CAN MACHINERY
TOOLS AND DIES

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