"OHIO" SHAPERS

THE OHIO MACHINE TOOL CO.
PLANERS AND SHAPERS
KENTON, OHIO, U. S. A.

"OHIO"
SHAPERS

CATALOG 45

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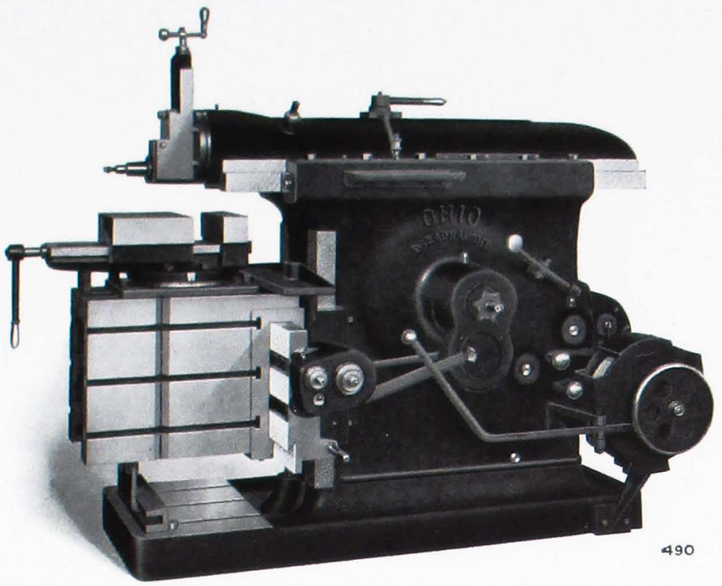


IN the year 1887 The Ohio Machine Tool Company first commenced to build what is known as the "OHIO" SHAPER—about 35 years ago, but as age is only an asset in so far as it applies to improving and perfecting a product, we refer to it merely as evidence that "OHIO" shapers have been tested through years of actual service and are patterned from experience, an experience that is reflected in the SHAPERS which are conceded to be accurate, dependable machines, capable of meeting every modern production requirement.

In each successive step in the manufacture of "OHIO" SHAPERS accuracy is maintained. A complete system of jigs and fixtures being used by men who are past masters in the art of building shapers—men who realize that a GOOD shaper is not only of rigid construction and good outward appearance but must also have the INBUILT qualities to withstand the continual severe service to which the machines are subjected.

It is in the assembling, perhaps, more than in any other stage of the construction that the greatest care must be exercised. Here men are engaged in doing the same work day in and day out, until they have become experts in their particular line and it is to this specialization, in conjunction with the quality of the materials used, that we can guarantee the workmanship and accuracy of "OHIO" SHAPERS.

OHIO engineers have not been content to merely keep step with the various improvements as they have been incorporated and are now to be found on the modern shaper but, in many cases, have suggested radical changes which have increased the possibilities and scope of this versatile tool until there is scarcely any limitations to what the OHIO SHAPER can do in performing all classes of work at the highest speeds consistent with a finished product of dependable accuracy.

General Description

In describing "OHIO" SHAPERS the many points of superior construction will be self evident to the exacting buyer who requires machines that will stand up for years with a minimum of attention.

Column

Is heavy, wide and deep. It is strongly braced and ribbed internally, thus eliminating any tendency to spring which might be caused by the excessive strains to which a Shaper is usually subjected. The column projects in front and rear at top giving the ram an exceptionally long bearing surface which compels accuracy even when the ram is working on short strokes at extreme points.

In the column of each ram runway there is placed an oil reservoir containing a piece of felt for collecting any surplus oil and to keep the ram continually lubricated.

The bull gear and cone pulley hub bearings are cast integral with the main wall of the column and are supported by internal ribs. This rigid construction does not permit the bearing to spring as on machines where the bearings are bolted to the frame. The bearings contain an adequate oil reservoir and ring oilers.

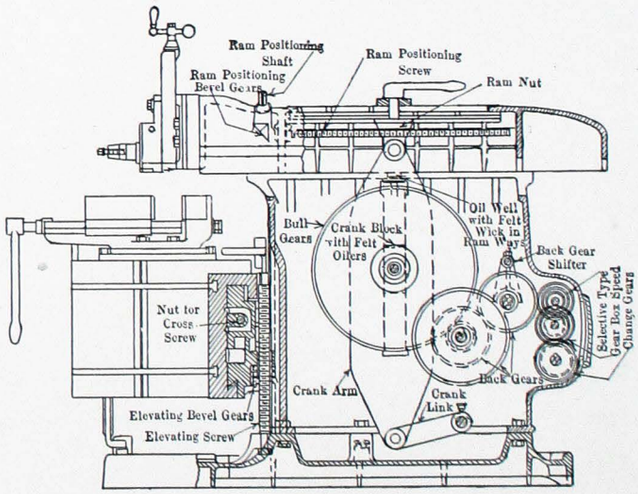
Crossfeed

Is automatic in either direction and the amount of feed can be changed and accurately gauged while the machine is in motion by simply adjusting a nut conveniently located and reading the micrometer collar located in connection with the crossfeed screw. A lifting-and-turning pawl is used to engage and disengage and also to change the direction of the feed. The range of crossfeeds vary from .010 to .180, depending on the size of the shaper. See specifications on Page 13. The crossfeed connecting rod is self-adjusting, automatically adapting itself for any position of the rail so the operator will not have to adjust any connecting rods when position of rail is changed.

Ram

The ram is heavy and well braced with internal ribs and is adjustable to suit the position of the work, so that a long or short stroke is obtained at either extreme or intermediate points. It can be positioned in relation to the work while the machine is in motion. The index which indicates the length of the stroke is always in sight.

The accuracy of the alignment of the ram after years of service depends particularly upon its length and bearing in the column. For that reason we have made the ram and ram bearing extra long so that a large proportion of the ram remains in the column even on extended strokes.



Ram Nut and Screw

The outline drawing above shows in a general way the construction of an "OHIO" Shaper and attention is called to the mechanism for changing the position of the cutting tool to suit the work. The clamp handle shown holds the ram nut securely in the required position inside the ram and when this is released the position of the nut on the ram screw is changed by the operation of the bevel gears thru the ram positioning shaft. Altering the position of the ram nut effects a corresponding change in the position of the cutting tool and this change can be made easily while the ram is in motion.

Heavy Duty Shapers

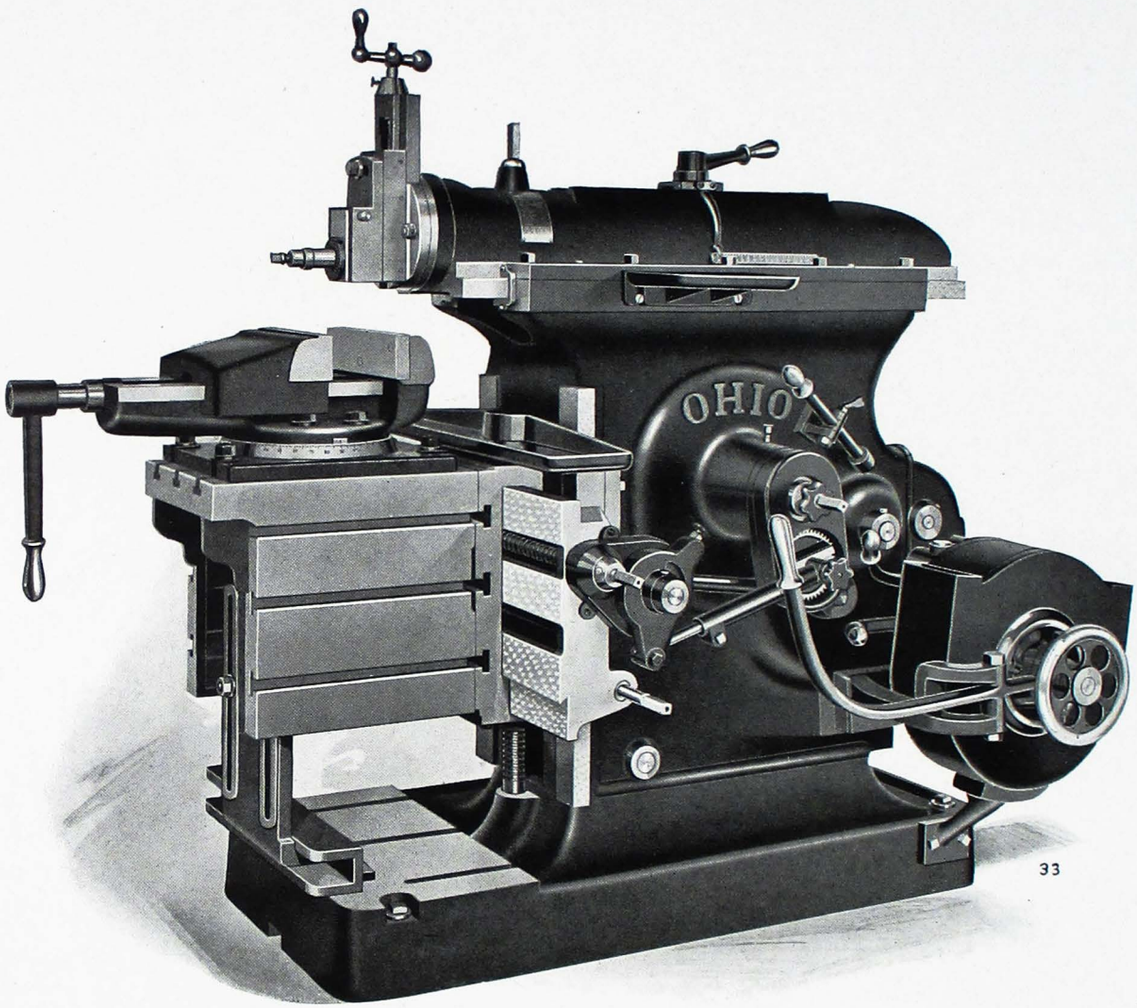
General Specifications

Shaper Size	16″	20″	24″	28″	32″
Actual Length Stroke	16¾″	20¾″	24¾″	28¾″	32¾″
Strokes per Minute	7 to 120	6 to 112	6 to 112	6 to 112	6 to 125
Keyseating Capacity	3″	3½″	3½″	3½″	3½″
Size Tools	⅝″ x 1¼″	¾″ x 1½″	¾″ x 1½″	¾″ x 1½″	1″ x 2″
Length Crank Arm	33½″	41¼″	41¼″	41¼″	42½″
Distance Bull Gear Center above Crank Arm Center	21¼″	35⅝″	35⅝″	35⅝″	4″
Maximum Distance Table and Ram	18″	20¼″	20¼″	20¼″	18¼″
Minimum Distance Table and Ram	4″	4½″	4½″	4½″	2¼″
Rail Bearing on Column	14″ x 15½″	16″ x 18″	16″ x 18″	16″ x 18″	18½″ x 19¼″
Speeds to Ram	8	8	8	8	8
Working Floor Space	50″ x 100″	54″ x 128″	54″ x 128″	55″ x 132″	56″ x 136″
Weight	3000 lbs.	4900 lbs.	5200 lbs.	5500 lbs.	7300 lbs.
Boxed Weight	3700 lbs.	5450 lbs.	5700 lbs.	6020 lbs.	7900 lbs.
Cubic Feet Export Packing	100	146	155	160	180
Table — Length	17″	18″	18″	18″	30″
Table — Width	13″	16″	16″	16″	20″
Table — Depth	15″	18″	18″	18″	20″
Table — Vertical Traverse	14″	15¼″	15¼″	15¼″	16″
Table — Horizontal Traverse	22″	30″	30″	30″	35″
Ram — Length of Bearing in Column	34″	42″	42″	42″	46″
Ram — Width of Bearing	10″	12″	12″	12″	13″
Ram — Length of Ram	43″	56″	56″	56″	62″
Head — Diameter	7⅝″	9¼″	9¼″	9¼″	11″
Feeds — Vertical of Head	8″	8¾″	8¾″	8¾″	10″
Feeds — Cross of Table	22″	30″	30″	30″	35″
Feeds — Range of Cross Feeds	.010 to .080	.010 to .180	.010 to .180	.010 to .180	.010 to .180
Driving Mechanism — Face of Bull Gear	1¾″	2½″	2½″	2½″	3½″
Driving Mechanism — Diameter Bull Gear Bearing Center	5″	6″	6″	6″	7″
Driving Mechanism — Diameter Bull Gear Bearing End	4″	4¼″	4¼″	4¼″	4¾″
Driving Mechanism — Back Gear Ratio	23.9:1	28:1	28:1	28:1	28:1
Driving Mechanism — Single Gear Ratio	7:1	7:1	7:1	7:1	7:1
Driving Mechanism — Width of Belt	2½″	5″	5″	5″	5″
Vise — Length of Jaws	11″	14½″	14½″	14½″	16″
Vise — Depth of Jaws	3″	3¼″	3¼″	3¼″	3¾″
Vise — Vise Opens	13″	15½″	15½″	15½″	16″
Single Pulley Drive — Single Pulley on Machine	14″ x 4½″	18″ x 5½″	18″ x 5½″	18″ x 5½″	18″ x 5½″
Single Pulley Drive — Speed of Single Pulley	350 RPM	400 RPM	400 RPM	400 RPM	400 RPM
Single Pulley Drive — Tight and Loose Pulley on Jack Shaft (if Furnished)	14″ x 4½″	18″ x 5½″	18″ x 5½″	18″ x 5½″	18″ x 5½″
Single Pulley Drive — Speed of Jack Shaft	235 RPM	235 RPM	235 RPM	235 RPM	240 RPM
Cone Drive — Steps on Cone	4				
Cone Drive — Cone Diameters	6½″, 9″, 11½″, 14″				
Cone Drive — Tight and Loose Pulleys on Countershaft	12″ x 4″				
Cone Drive — Speed of Countershaft	350 RPM				

These sizes Manufactured only in the Single Pulley and Motor Drive Types and the specifications given cover such machines only.

16″ Back Geared Shaper

Code Word "Best"



Specification Table, Page 13

Erection Plan, Page 31

Attachments pages 27, 29, 30

Motor Drive, Page 12

Single Pulley Drive

This back geared crank Shaper possesses strength and power for correctly fulfilling the requirements of a tool room, machine shop, forge or railway shop with the use of modern high speed steel tools.

SPECIFICATIONS—The complete specifications covering this machine are given on page 13, but the following information pertaining to specifications should be of particular interest.

RAM—The length and width of the ram and ram bearings in column are very important, due to their influence in preserving the alignment. The length and width of the ram is 43″ x 10″. Length and width of ram bearings in column 34″ x 10″.

GEAR RATIOS—Give direct evidence of the power that can be delivered. Single gear ratio 7:1. Back gear ratio 23.9:1.

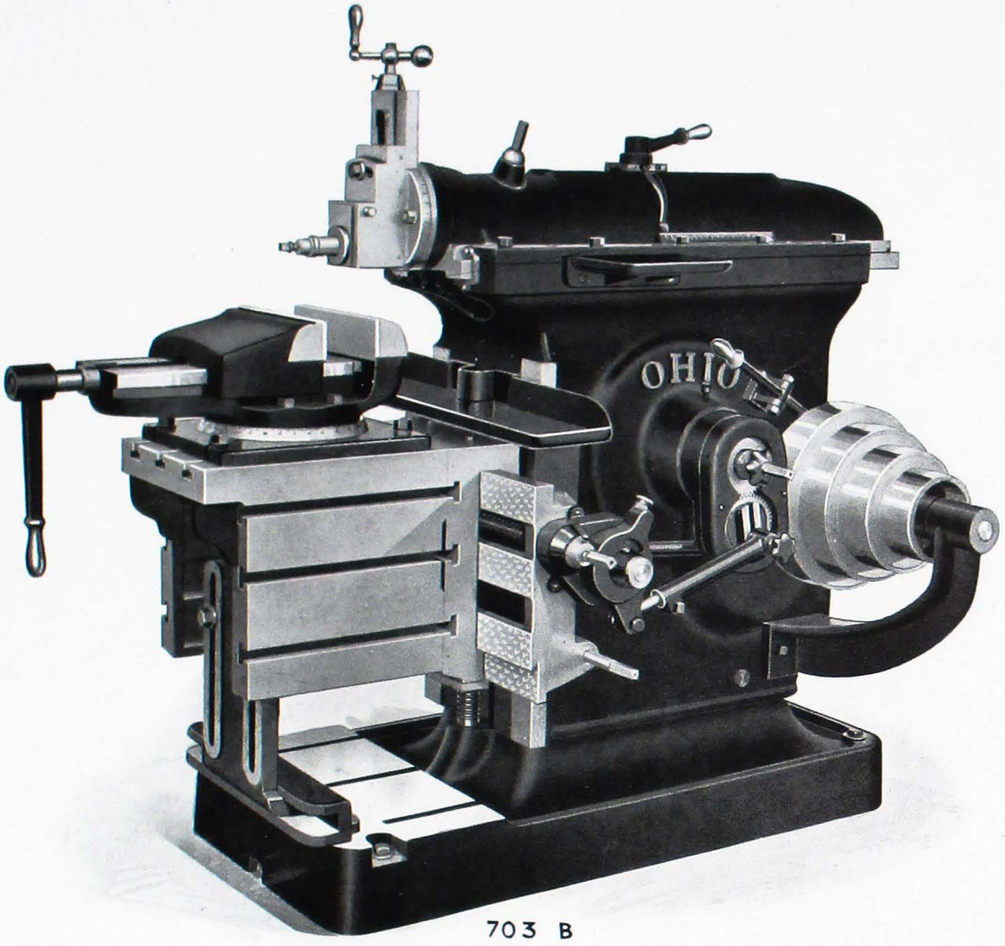
CROSS FEED—Automatic in either direction and has eight changes. Stops automatically at each end. Connecting rod operating cross feed has automatic adjustment for any position of rail. Graduated collar reading to .001″ placed on end of feed screw.

TOOL HEAD—Vertical adjustment of 8″. It is graduated and swivels to any angle thru an arc of 90 degrees. Fitted with graduated collar reading to .001″. Automatic power vertical feed to head can be furnished with slight additional charge.

(Continued on next page)

16″ Back Geared Shaper

Code Word "Fast"



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Cone Drive

Specification Table, page 13
Erection Plan, page 31.
Attachments, pages 27-29-30.
Motor Drive, page 12.

(Continued from previous page)

VISE—An accurate and serviceable vise is furnished. Steel faced jaws 11″ x 3″ and opens 13″. Vise is graduated and can be swiveled and locked at any angle desired.

STROKE—The stroke of the ram is positive and varies from 7 on the single gear to 120 per minute on the back geared. There are eight changes of speed for every change of stroke. Length of stroke and position of ram can be changed while machine is running.

CRANK ARM—Is unusually long with center of bullgear above center of arm, which produces great leverage and gives the machine exceptional power and even action. Length of crank arm 33½″. Distance of bullgear center above crank arm center is 2½″.

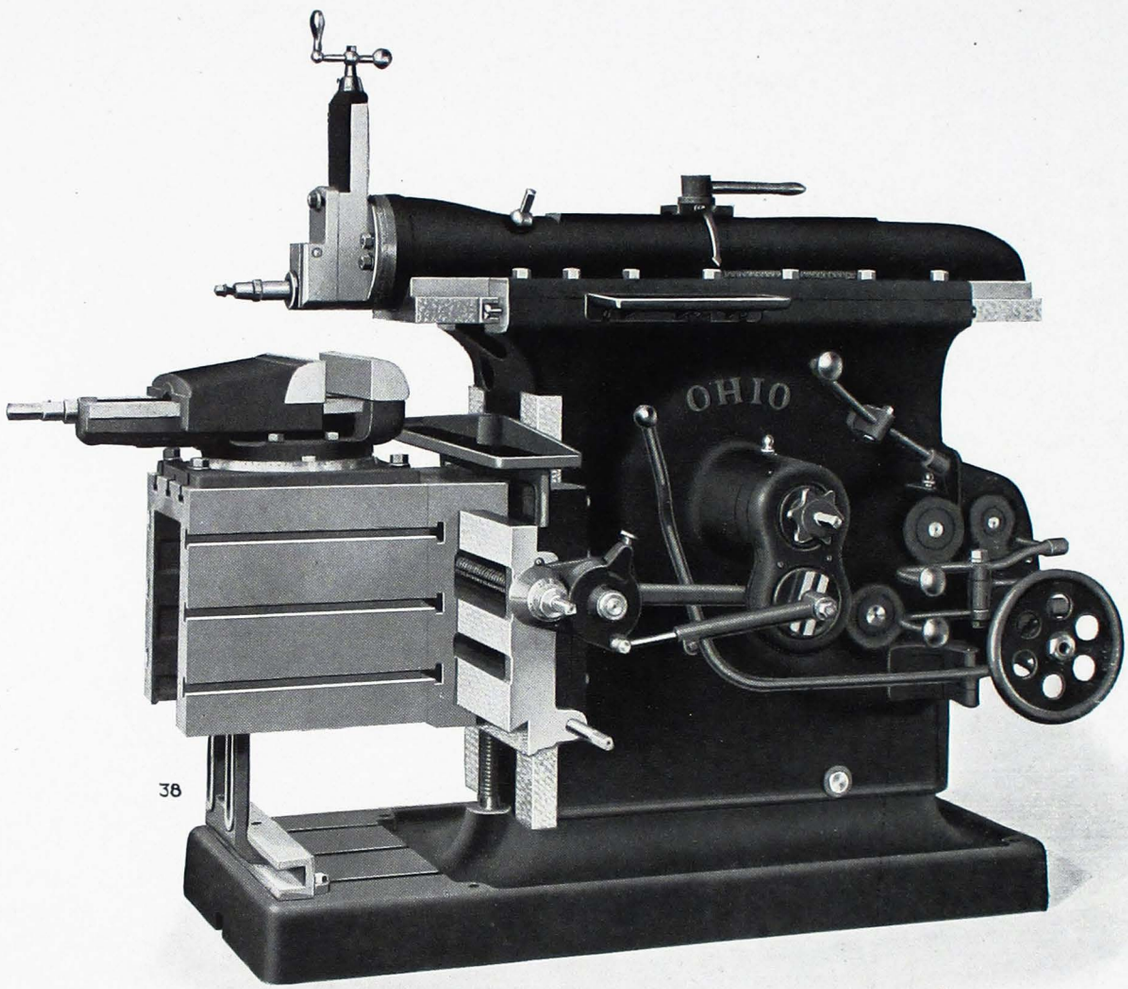
TABLE SUPPORT bearing is protected from chips, is substantial and easily adjusted.

KEYSEATING—Shafts 3″ in diameter and smaller can be keyseated under the ram in regular manner.

BEARINGS—The length of the "life" of a Shaper depends upon accurate bearings, and in the description given on pages 4, 5, 7, 8, and 9, detailed information pertaining to the care exercised in scraping all flat bearings to surface plates is given.

20″ Back Geared Shaper

Code Word "Back"



38

Specification Table, page 13.

Erection Plan, page 31.

Attachments, pages 27-29-30.

Motor Drive, page 12.

The 20″ back geared crank Shaper illustrated above has been designed and built to successfully meet the requirements of tool room, machine shop, forge or railway shop for this style of tool. It is of rigid construction, possessing strength and power beyond that which is ordinarily found in Shapers of this size.

SPECIFICATIONS—The complete specifications covering this machine are given on page 13, but the following information pertaining to specifications should be of particular interest.

RAM—The length and width of the ram and ram bearings in column are very important, due to their influence in preserving the alignment. The length and width of the ram is 54″ x 12″. Length and width of ram bearings in column is 39″ x 12″.

GEAR RATIOS—Give direct evidence of the power that can be delivered. Single gear ratio 7:1. Back gear ratio 28:1.

CROSS FEED—Automatic in either direction and has eight changes. Stops automatically at each end. Connecting rod operating cross feed has automatic adjustment for any position of rail. Graduated collar reading to .001″ placed on end of feed screw.

(*Continued on following page*)

20″ Back Geared Shaper

Code Word "Back"

(Continued from previous page)

TOOL HEAD—Vertical adjustment of 8″. It is graduated and swivels to any angle thru an arc of 90 degrees. Fitted with graduated collar reading to .001″. Automatic power vertical feed to head can be furnished with slight additional charge.

VISE—An accurate and serviceable vise is furnished. Steel faced jaws 14½″ x 3¼″ and opens 15½″. Vise is graduated and can be swiveled and locked at any angle desired.

STROKE—The stroke of the ram is positive and varies from 6 on the single gear to 112 per minute on the back geared. There are eight changes of speed for every change of stroke. Length of stroke and position of ram can be changed while machine is running.

CRANK ARM is unusally long with center of bullgear above center of arm which produces great leverage and gives the machine exceptional power and even action. Length of crank arm is 41″. Distance of bull-gear center above crank arm center is 3″.

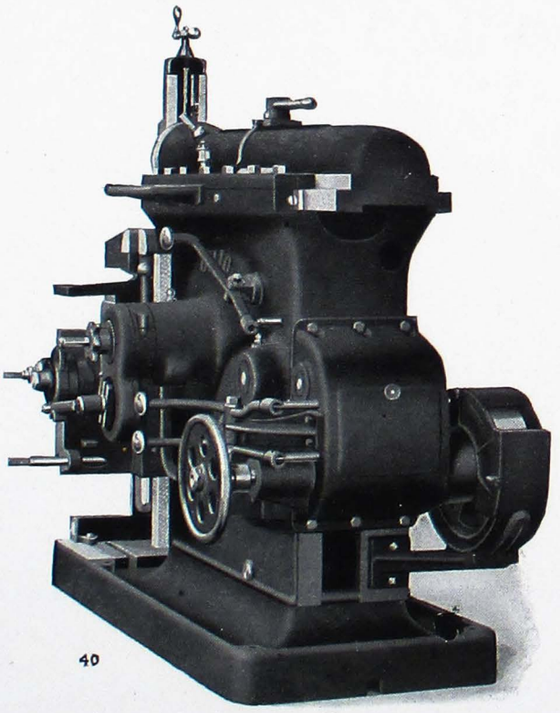
TABLE SUPPORT bearing is protected from chips, is substantial and easily adjusted.

KEYSEATING—Shafts 3½″ in diameter and smaller can be keyseated under the ram in regular manner.

BEARINGS—The length of the "life" of a Shaper depends upon accurate bearings, and in the description on pages 4, 5, 7, 8 and 9 detailed information pertaining to the care exercised in scraping all flat bearings to surface plates is given.

Engraving No. 40 shown below illustrates a rear view of the Single Pulley Drive Shaper. Note particularly the compactness which has been obtained without sacrificing any power or efficiency of the machine.

This illustration also shows clearly the convenient location of all the control levers on the operator's side of the Shaper. You can readily understand the resultant saving of time both in the set up and when the machine is in operation.



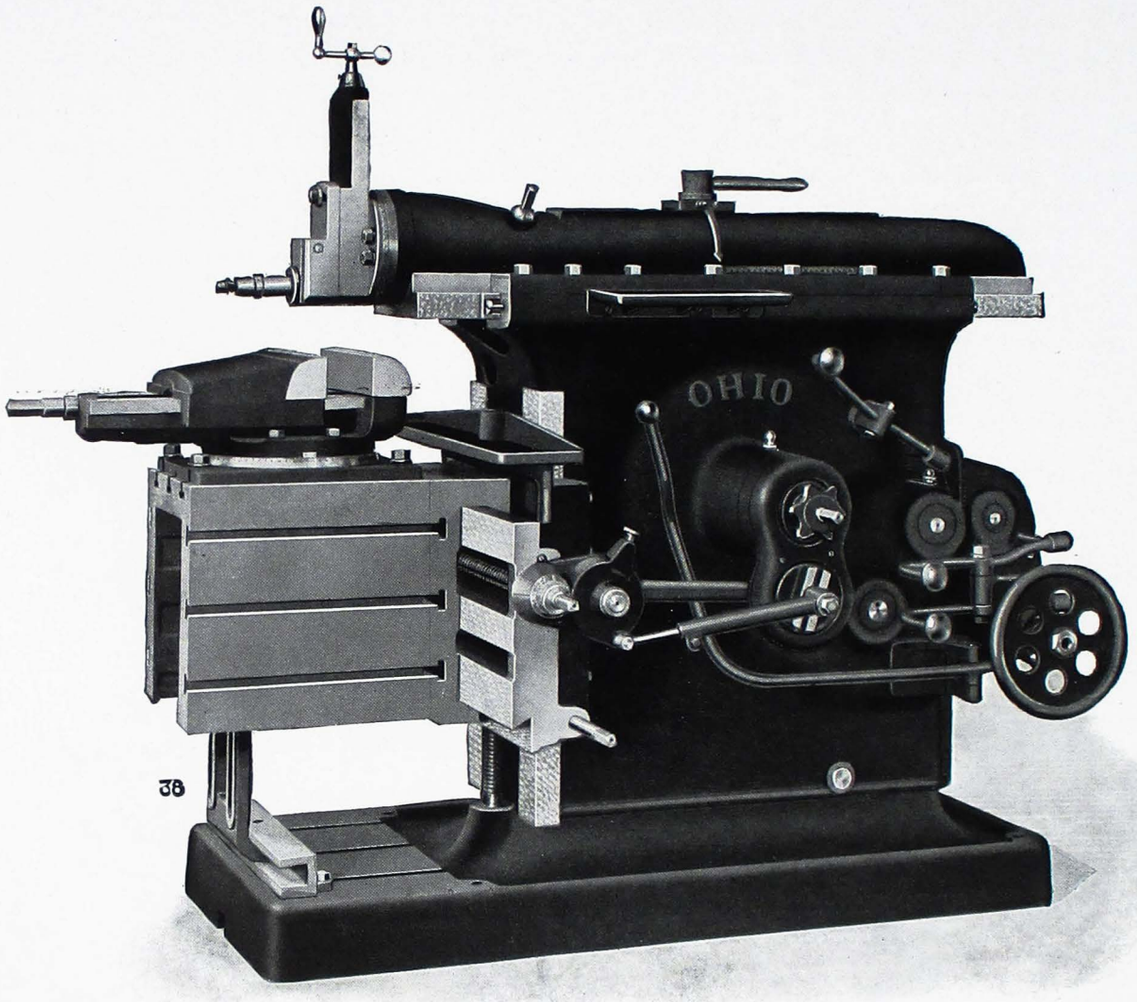
40

Motor Drive is illustrated and described on page 12.

Specification Table, page 13.
Erection Plan, page 31.
Attachments, pages 27, 29 and 30.

24″ Back Geared Shaper

Code Word "Bone"



Specification Table, Page 13
Erection Plan, Page 31
Attachments, Pages 27, 29, 30
Motor Drive, Page 12

The 24″ Shaper described and illustrated herewith is not only accurate, but very rugged and able to withstand the severe requirements of a machine shop, forge or railway shop. This machine is designed to give long life under the most trying conditions of service.

SPECIFICATIONS—The complete specifications covering this machine are given on page 13, but the following information pertaining to specifications should be of particular interest.

RAM—The length and width of the ram and ram bearings in column are very important, due to their influence in preserving the alignment. The length and width of the ram is 56″ x 12″. Length and width of ram bearing in column is 42″ x 12″.

GEAR RATIOS—Give direct evidence of the power that can be delivered. Single gear ratio 7:1. Back gear ratio 28:1.

CROSS FEED—Automatic in either direction and has eight changes. Stops automatically at each end. Connecting rod operating cross feed has automatic adjustment for any position of rail. Graduated collar reading to .001″ placed on end of feed screw.

(Continued on following page)

24″ Back Geared Shaper

Code Word "Bone"

(Continued from previous page)

TOOL HEAD—Vertical adjustment of 8″. It is graduated and swivels to any angle thru an arc of 90 degrees. Fitted with graduated collar reading to .001″. Automatic power vertical feed to head can be furnished with slight additional charge.

VISE—An accurate and serviceable vise is furnished. Steel faced jaws 14½″ x 3¼″ and opens 15½″. Vise is graduated and can be swiveled and locked at any angle desired.

STROKE—The stroke of the ram is positive and varies from 6 on the single gear to 112 per minute on the back geared. There are eight changes of speed for every change of stroke. Length of stroke and position of ram can be changed while machine is running.

CRANK ARM—Is unusually long with center of bullgear above center of arm which produces great leverage and gives the machine exceptional power and even action. Length of crank arm is 41¼″. Distance of bullgear center above crank arm center is 3⅝″.

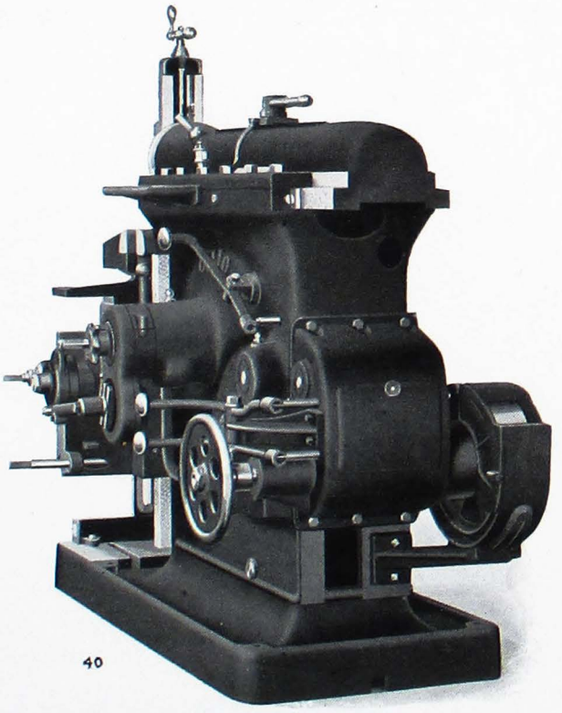
TABLE SUPPORT—Bearing is protected from chips, is substantial and easily adjusted.

KEYSEATING—Shafts 3½″ in diameter and smaller can be keyseated under the ram in regular manner.

BEARINGS—The length of the "life" of a Shaper depends upon accurate bearings, and in the description on pages 4, 5, 7, 8, and 9, detailed information pertaining to the care exercised in scraping all flat bearings to surface plates is given.

Engraving No. 40 shown below illustrates a rear view of the Single Pulley Drive Shaper. Note particularly the compactness which has been obtained without sacrificing any of the power or efficiency of the machine.

This illustration also shows clearly the convenient location of all the control levers on the operator's side of the Shaper. You can readily understand the resultant saving of time both in the set up and when the machine is in operation.



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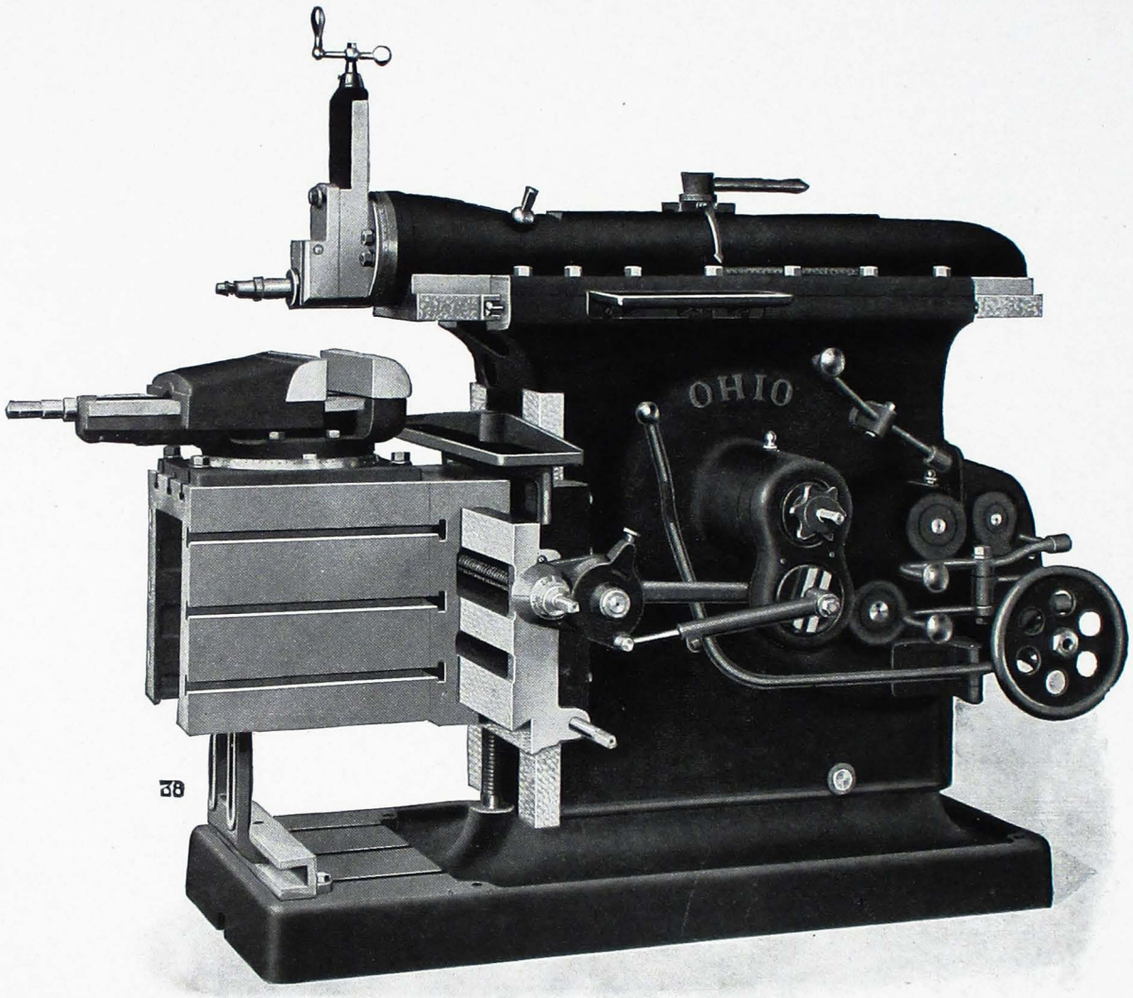
Motor Drive is illustrated and described on page 12.

Specification Table, page 13.
Erection Plan, page 31.
Attachments, pages 27, 29 and 30.

28″ Back Geared Shaper

Code Word "Bag"



Specification Table, Page 13
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Attachments, Pages 27, 29, 30
Motor Drive, Page 12

This 28″ back geared crank Shaper will successfully meet all the requirements of machine shop, tool room, forge or railway shop for this style of tool. It is of rigid construction, possessing reserve strength and power to meet the most exacting shop conditions.

SPECIFICATIONS—The complete specifications covering this machine are given on page 13, but the following information pertaining to specifications should be of particular interest.

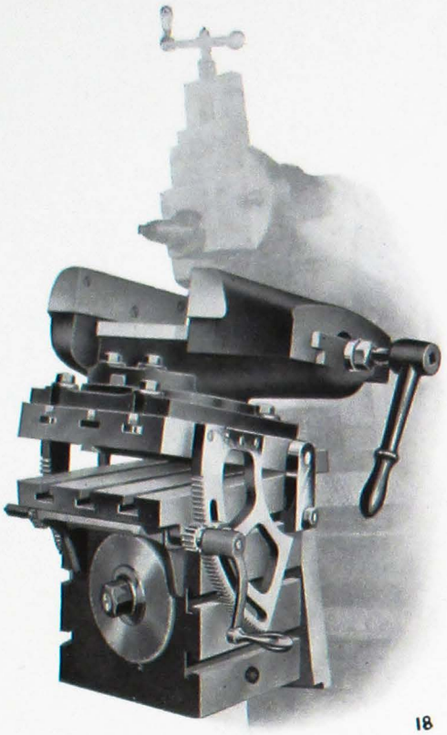
RAM—The length and width of the ram and ram bearings in column are very important, due to their influence in preserving the alignment. The length and width of the ram is 56″ x 12″. Length and width of ram bearings in column is 42″ x 12″.

GEAR RATIOS—Give direct evidence of the power that can be delivered. Single gear ratio is 7:1. Back gear ratio is 28:1.

CROSS FEED—Automatic in either direction and has eight changes. Stops automatically at each end. Connecting rod operating cross feed has automatic adjustment for any position of rail. Graduated collar reading to .001″ placed on end of feed screw.

(Continued on following page)

Attachments



18

Tilting Top on Table (Photo No. 18)

An attachment of this kind should be extremely valuable to many shops where there is considerable work placed on an angle.

The mechanical features of this attachment are very simple. In the first place, we have a regular table, to which is attached the tilting top, and this top is machined and scraped carefully so when it rests flat on the regular table it will be absolutely horizontal.

This top can be tilted to a 20 degree angle by the handle operating rack on both sides of the table, and when the required angle, or tilt, is obtained, as noted by large graduations on the segment, same can be locked in position by clamping nuts.

This tilting top attachment can be adjusted very quickly, and at the same time you will note it is substantial in ever respect.

Operators find that seldom, if ever, will it be necessary to move this attachment from the table.

Revolving, or Swiveling, Table (Photo No. 18)

An attachment of this kind is useful in tool room or in shop where it is necessary to plane angles or make special work of that nature.

The table swivels on a large trunnion, which is an integral part of the saddle or apron.

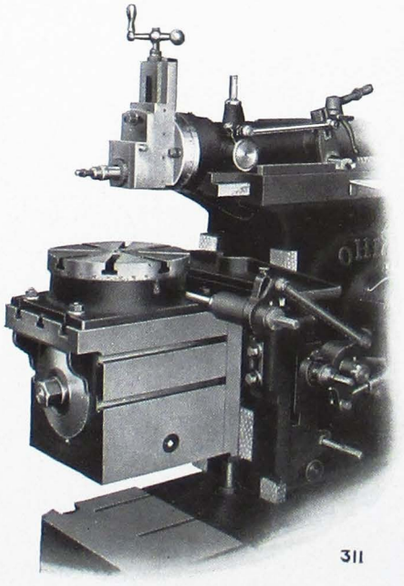
A large dial in front is graduated in degrees for close and accurate adjustment, and the table can be swiveled thru an arc of ninety degrees and locked in any position required.

Circular Table (Photo No. 311)

This attachment is used for planing special work. It is fastened to the top of the regular table by four bolts and can be easily removed at any time and vise substituted for regular service.

You will note this table is graduated on its whole circumference, so that the operator can make his adjustment quickly and accurately.

Hand and automatic power feed are furnished for this attachment.



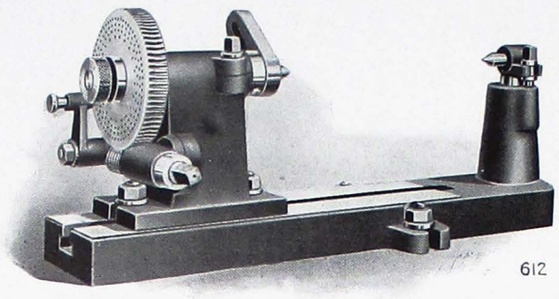
311

Automatic Power Down Feed to Head (Photo No. 311)

On manufacturing or productive work, such as splining shafts, planing slots or recesses, the power down feed demonstrates its value. It is exceedingly simple, serviceable and will not get out of order, and a broad range of feeds is obtainable and can be readily secured to suit the nature of the work.

Shaper illustrated in Photograph No. 311 on this page shows a ram equipped with power down feed to the head and you will note the absence of all complicated parts.

Attachments



Index Centers (Photo No. 612)

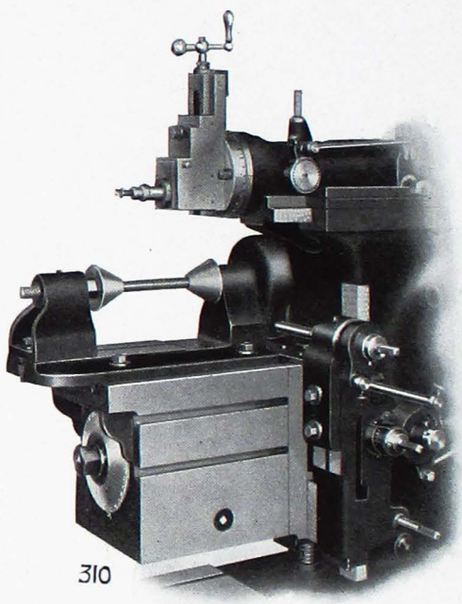
The accompanying photograph shows the index centers we are in a position to furnish the trade. They are provided with a movable head stock operated by means of screw and ball, giving a variation of 18″ between centers.

The index feature is obtained by three circles of holes accurately spaced in the worm wheel, and a suitable index pin to engage with same. The work is revolved by means of a worm and gear. The handle that operates same is provided with an index pin engaging with a hole in side stock, thus enabling work to be spaced in any division of the worm wheel, which has 72 teeth.

The tail stock center is inserted in a block adjustable up and down, for convenience in planing bevels and tapers.

SPECIFICATIONS

Swing	8″
Index plate divisions	20–33–35
Maximum distance between centers	18″
Number of teeth in worm gear	72
Spindle Morse Taper No.	2
Distance between centers of binding bolts	10¾″
Weight boxed	100 lbs.



Cone Mandrel (Photo No. 310)

This attachment is used for various kinds of circular planing.

The cone mandrel is fastened to top of the Shaper table after removing the vise.

In order to insert work for machine in position one end of the cone mandrel can be detached.

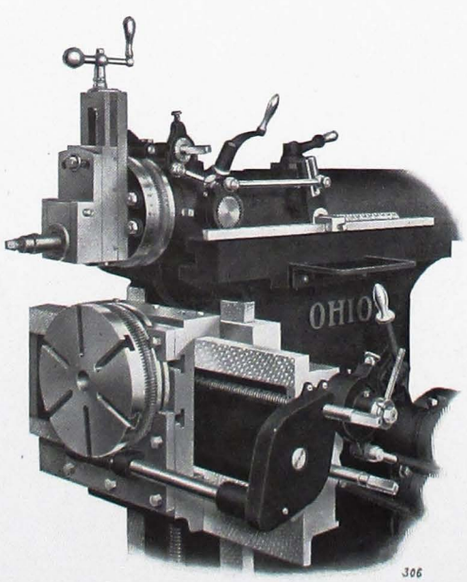
Hand and automatic power feed is regularly furnished.

An attachment of this kind will oftentimes be a great help in a machine shop where it is found necessary to radiate the work being machined.

This attachment can be used for machining teeth in gears.

Concave Attachment (Photo No. 306)

The concave and convex attachments, altho dissimilar, are shown in photograph No. 306.



The concave attachment, as its name implies, is used for planing concave surfaces and the work to be planed can be held in a vise fastened to the table in the regular manner, or the work can be clamped to the apron or to the top of the table itself.

The machine is operated in the regular manner, and on each stroke the head revolves to a certain degree, depending on the amount of the feed. This is accomplished by a worm operating in the worm gear as shown in photograph. Various radii can be obtained by raising or lowering slide.

Convex Attachment (Photo No. 306)

The convex attachment consists primarily of a circular table fastened to the apron on the front of the rail. The work is fastened to the slots in the table or in any holding device that might be attached thereto.

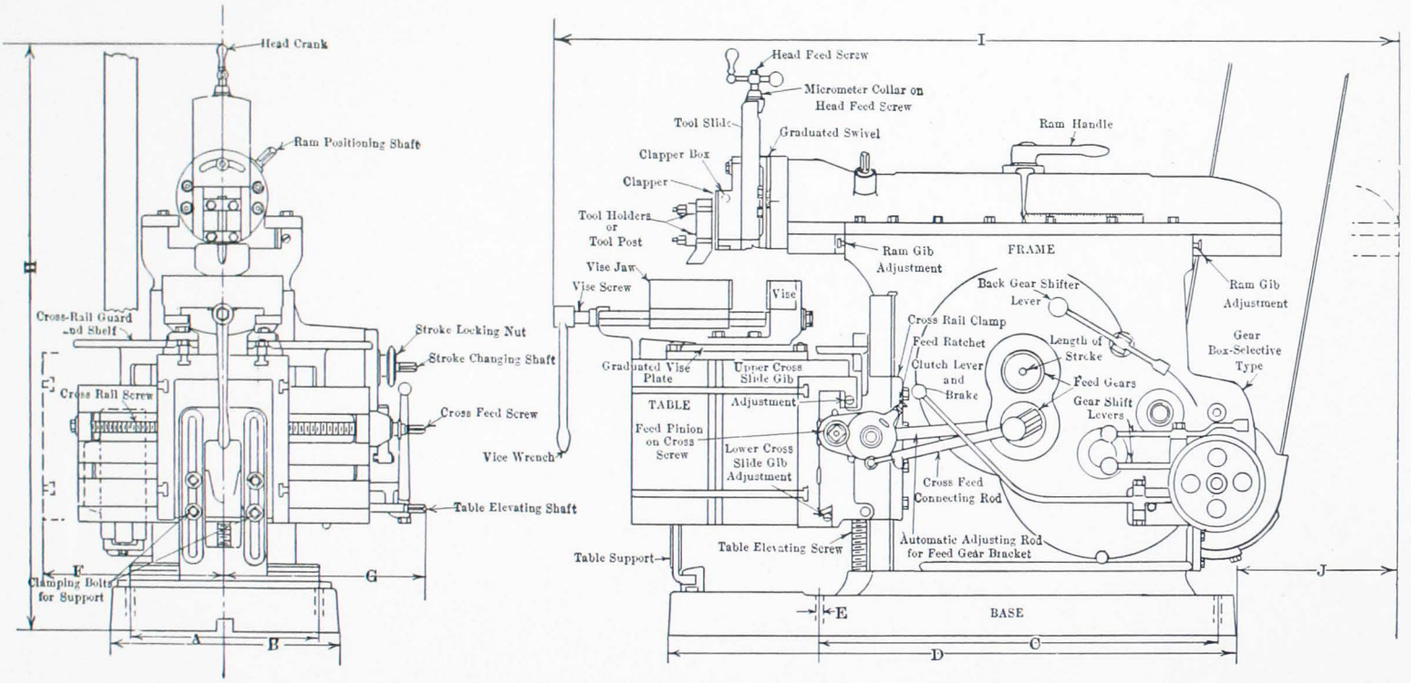
This machine is operated in the usual manner and after each stroke the circular table revolves a certain amount, depending on the feed, and in that manner the convex surface is obtained.

The radii can be varied by moving position of work or slide.

The table has hand and automatic power feed.

Erection and Care of "OHIO" Shapers

1. After placing Shaper on firm foundation, level lengthwise and crosswise with a high grade, accurate level.
2. Clean machine thoroughly, and after locating ring oiling reservoirs and oil holes, see that same have sufficient oil.
3. Keep your Shaper clean. A dirty machine does not look well and will impair accuracy.
4. Before moving rail wipe off column bearing and top of rail and then loosen table support clamping bolts; also loosen only the hexagon head bolts in the rail clamps on both sides of column, but do not adjust fillister head screws that hold the clamps in tension.
5. After rail is in correct position, tighten these bolts before operating Shaper.
6. After length of stroke is set, tighten up stroke locking nut by hand—just enough to tension it—so it can be loosened by hand.
7. Be sure ram clears work before starting Shaper.
8. Tighten ram handle after ram is correctly positioned for your work.
9. Do not operate back gear shifter lever while machine is in motion.
10. See that feed operates on return of stroke of ram and not while in the cut.
11. Don't brush cuttings and dirt onto bearings or into gears in the interior of Shaper.
12. Do not allow tools to mar the bearings. This is a very prolific source of inaccuracy.
13. Keep crank block well oiled.



DIMENSIONS IN INCHES

Size	R. P. M. Counter or Single Pulley	A	B	C	D	E	F	G	H	I	J
16″	375	20½″	23″	31⅞″	50⅞″	¾″	20″	27″	60″	82″	21″
20″	350	23″	28″	45⅜″	63⅞″	⅞″	23″	24″	70¾″	106″	25″
24″	350	23″	28″	45⅞″	63⅞″	⅞″	23″	24″	70¾″	106″	25″
28″	350	28″	28″	45⅞″	63⅞″	⅞″	23″	24″	70¾″	106″	25″
32″	342	23″	28″	48½″	68½″	⅞″	24″	25″	72″	117″	29½″

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