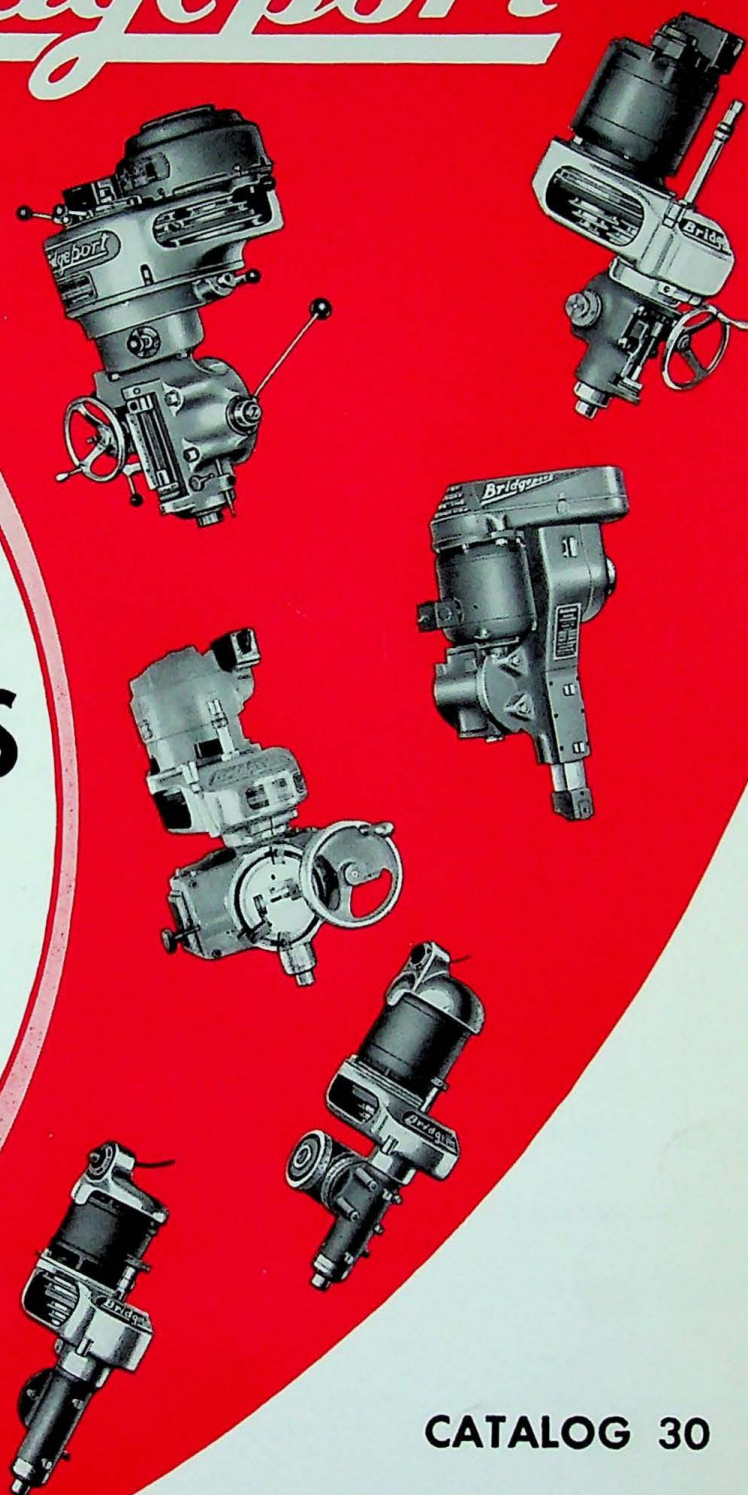


Bridgeport

ATTACHMENTS

A Complete Line



CATALOG 30

MANUFACTURED BY
THE BRIDGEPORT MACHINES, INC.
BRIDGEPORT 6, CONN., U.S.A.

DEVELOPMENT

In 1929 The Bridgeport Pattern & Model Works pioneered the type of Equipment outlined in this catalog. As a result of our effort to provide industry with a universal tool of this kind we can refer you to practically all the leading concerns in this country and abroad who today are users of these attachments.

In 1938 when the BRIDGEPORT TURRET MILLING MACHINE was introduced further expansion was necessary and our Firm was changed to THE BRIDGEPORT MACHINES, INC.

In 1952 further expansion was again necessary resulting in the construction of our new factory.

BASIC FEATURES

ALL OUR MODELS HAVE THESE FEATURES IN COMMON

SPINDLE Chrome nickel alloy heat treated and ground.

SPINDLE HOUSING High grade semi-steel casting.

SPINDLE BEARINGS Precision preloaded ball bearings properly spaced for maximum radial and thrust capacity.

LUBRICATION One oil cup (wick feed) provides clean oil to all spindle bearings.

ALUMINUM V BELT PULLEYS Accurately machined and balanced.

BALL BEARING MOTORS Suitable for operation at any angle.

MOTOR SUPPORT AND BELT HOUSING One piece aluminum motor support and belt housing swivels completely around spindle making it possible to use Attachment at any angle.

MOTORS Remove instantly for mounting in difficult locations or change of belt.

ANGULAR SETTINGS Mounting face of adapters accurately graduated.

PULLEYS Proportioned to give good traction and long belt life.

PIVOTALLY MOUNTED MOTORS For simple adjustment of belt tension.

A SELF CONTAINED UNIT Designed for easy mounting on other machines when not in use on miller.

SPECIAL PULLEYS Providing speeds to suit special conditions are available at slight extra cost.

DESIGN OF ATTACHMENTS AND ADAPTERS Makes it possible to mount units on front and both sides of overarm.

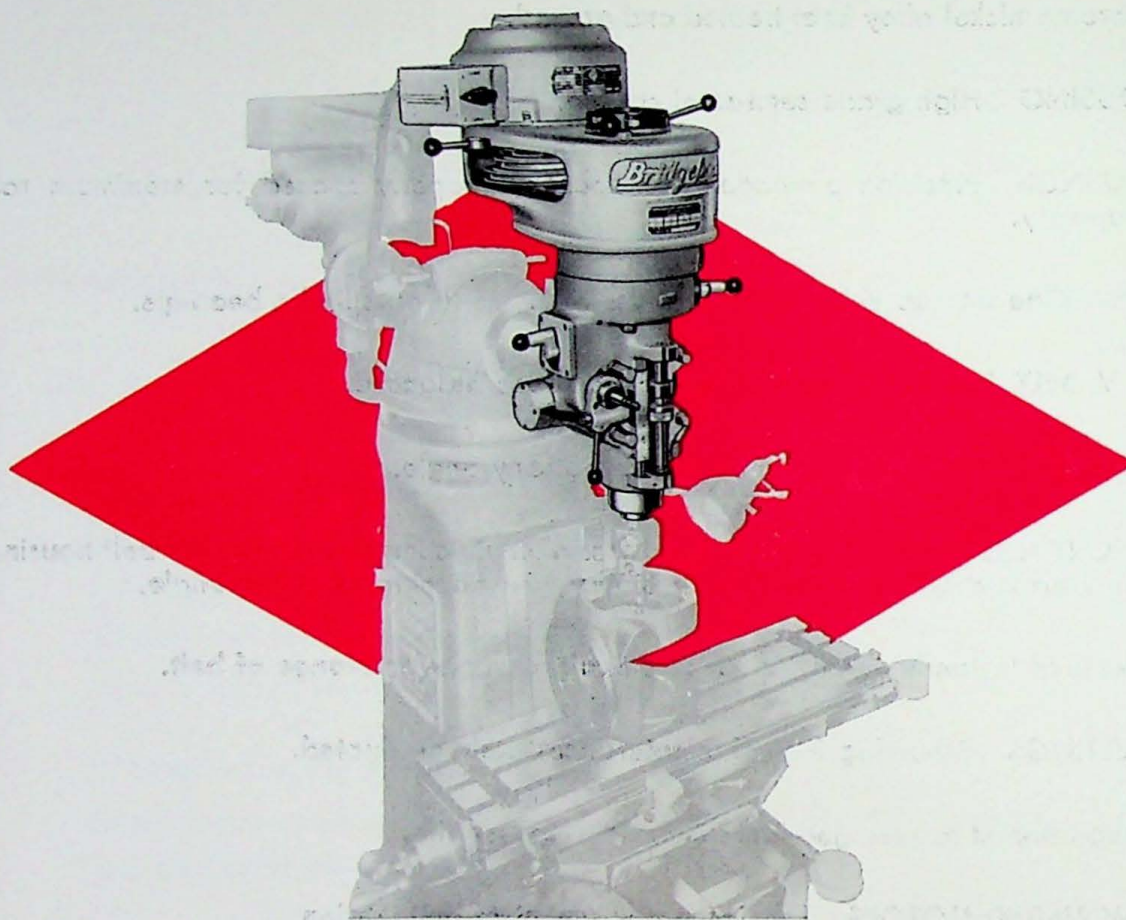
Bridgeport Attachments have no limited field. They serve the one man tool shop or the largest automotive, electrical and machine tool industries with equal satisfaction.

Bridgeport Special Spindles are used for diamond boring and profiling typewriter parts, automobile engine blocks, refrigerator parts and dozen of other applications.

A Bridgeport Attachment in your shop will prove a most useful all-purpose tool, invaluable on tricky time eating jobs.

1 H.P. MILLING, DRILLING AND BORING HEAD

MODEL "J"



This attachment can be depended upon to take care of the most accurate type of work. It is the answer to the trade's request for a head larger than our standard Master attachment with power down-feed as well as up-feed. Construction of this attachment provides for eight speeds ranging from 80 to 2720. The wide range of speeds as well as adequate power makes this a most useful tool for milling, drilling and boring. Integral worm and gear are provided for angular positioning of this attachment. This attachment is designed for continuous duty in vertical positions. Continuous duty, horizontal position requires slight modification to suit customers application. An extremely rigid, exceptionally accurate and yet amazingly sensitive counterbalanced quill and spindle are built into this unit. When operated by hand you can readily feel a small drill feeding down into stock.

Here are a few of the reasons for the outstanding performance of this attachment:

- Eight spindle speeds, from 80 to 2720 R.P.M. are provided

- Spindle drive unit is back geared and designed to utilize full horsepower at all speeds without belt slippage

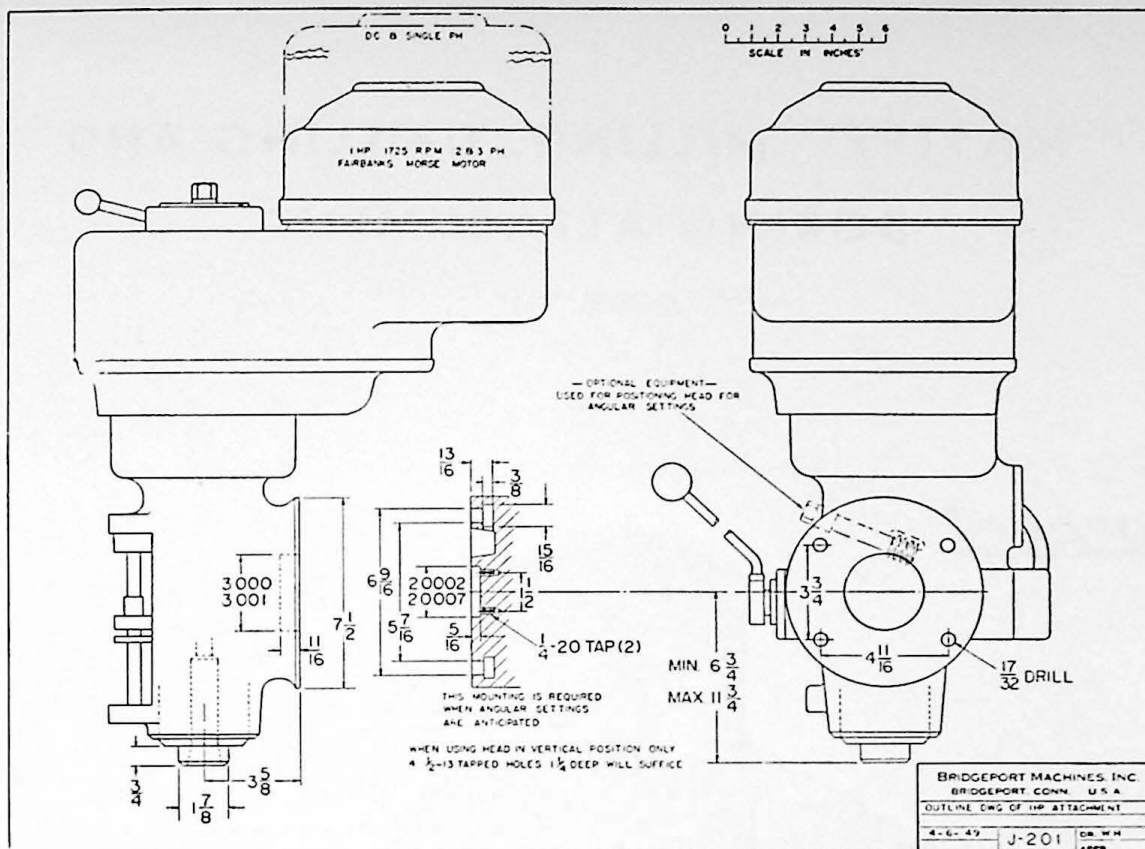
- Quill travel: 5"

- Three steps of power feed to quill: .0015 - .003 - .006 inch per spindle revolution

- Positive 2-way power feed tripping mechanism

- Convenient changing of tools provided by spindle brake and lock

Spindle designed with R-8 Taper to accommodate the following: collet capacity up to $\frac{3}{4}$ " diameter, end mill holders, shell mill holders, stub arbors, fly cutters, drill chucks, etc.



SPECIFICATIONS

Contains reversible switch for right and left hand operation.

Motor support and belt housing swivels completely around spindle, making it possible to use attachment at any angle.

A self-contained unit designed for easy mounting on other machines.

SPEEDS R.P.M.

80	135	220	330
660	1100	1800	2720

POWER FEED IN INCHES PER REVOLUTION

.0015 — .003 — .006

MANUAL FEED

Lever for rapid movement of quill.

Hand wheel for slow movement of quill.

Taper R-8 takes collet up to 3/4".

Quill travel 5".

Dependable micrometer depth stop graduated in thousandths.

Positive quill lock.

1 H.P. motor on 3 phase, 3/4 on 1 phase and DC.

Weight — 183 lbs. (1 H.P. attachment and motor).

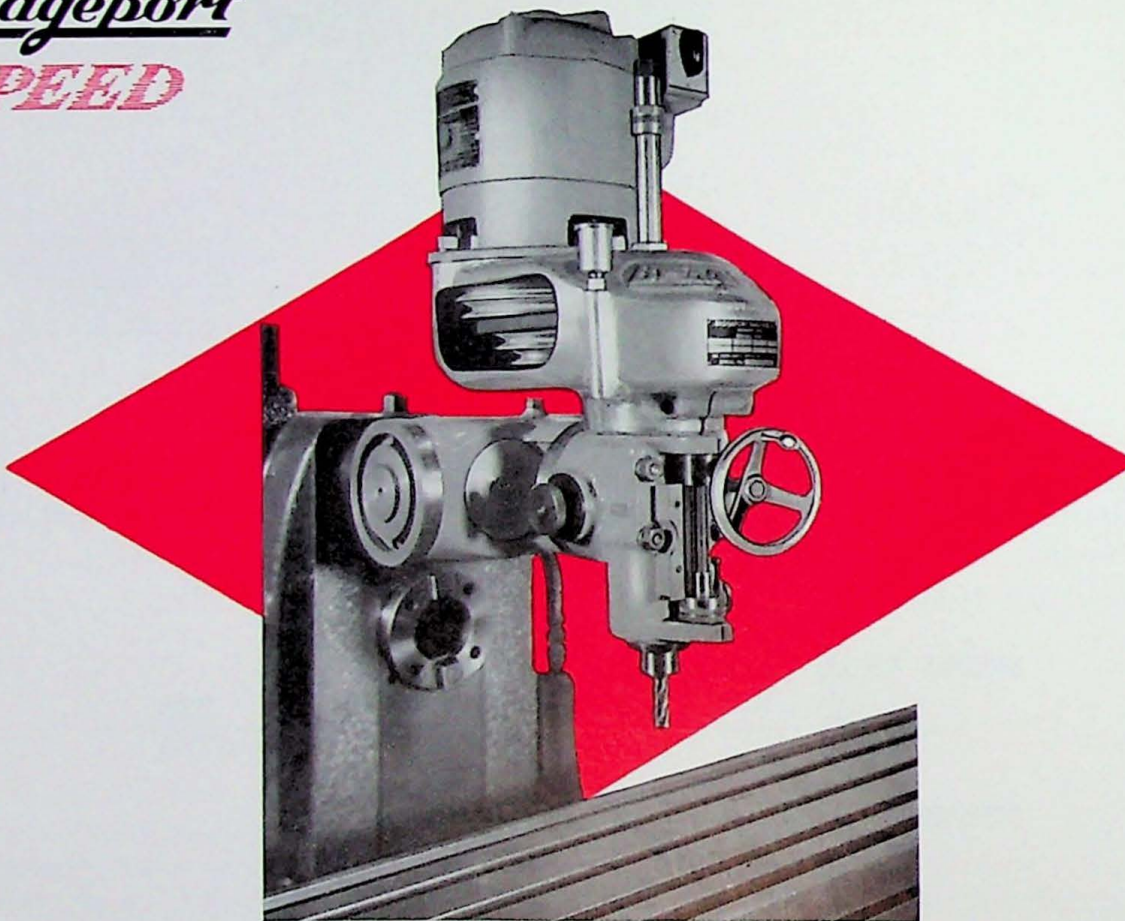
Illustration shows a Fairbanks-Morse motor. The type of motor supplied depends upon availability at time of delivery.

See page 14 for attachment mounting adapters.

“MASTER” MILLING, DRILLING AND BORING ATTACHMENT

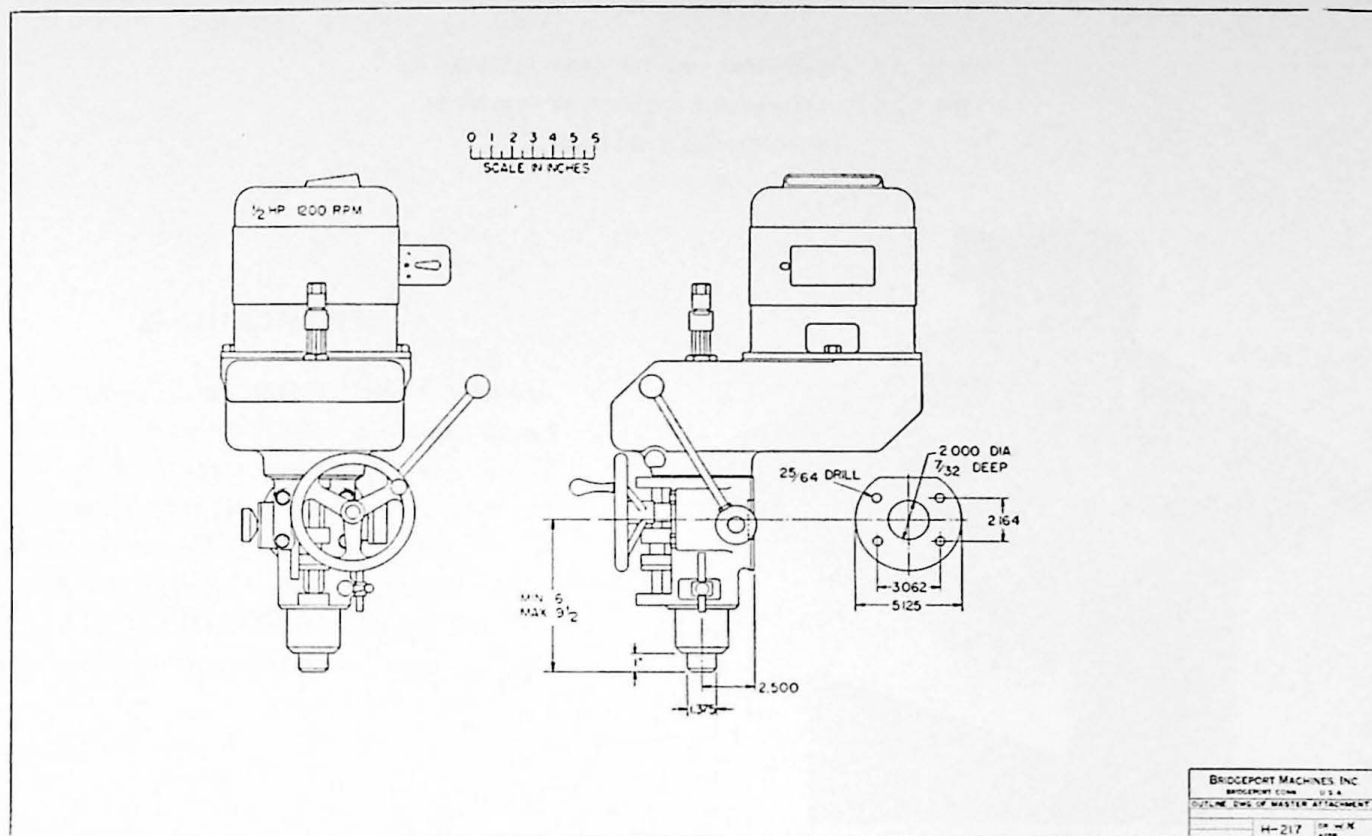
MODEL “M”

HIGH
Bridgeport
SPEED



INVESTIGATE THE APPLICATION OF THIS TOOL THOROUGHLY

We believe it to be the most versatile instrument that can be bought. It can be used for milling, drilling, and boring at all angles without changing the setup of work. It is a precision tool that can be depended upon to take care of the most accurate type of work.



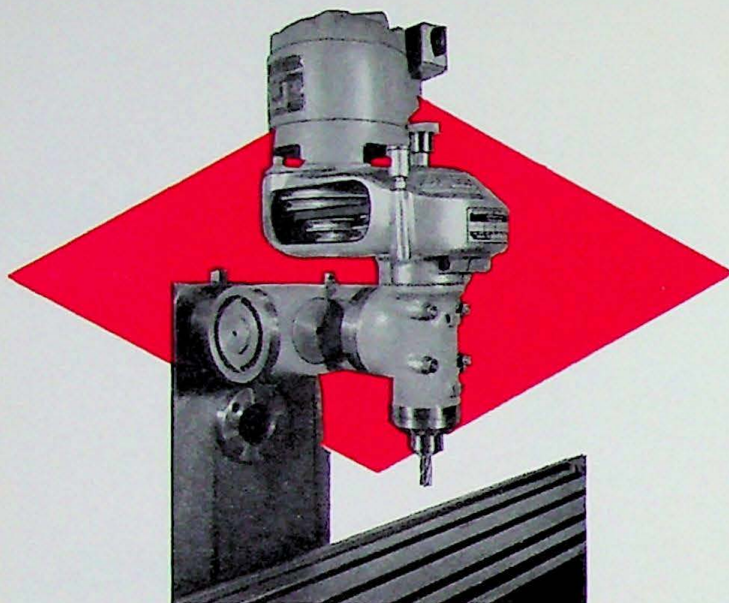
SPECIFICATIONS

Spindle heat treated and ground provided with No. 2 Morse Taper, 7 B&S Taper or B-3 Taper, whichever is preferred. Standard collets to fit these tapers from $\frac{1}{8}$ " to $\frac{1}{2}$ " diameter. Odd sizes made to order. Quill is treated with a special chromium process giving it a surface hardness one point below the hardness of a diamond. Housing is lapped and closely fitted to the ground and lapped quill. Travel of quill, $3\frac{1}{2}$ ". Dependable micrometer depth stop, graduated in thousands. Positive quill lock. Rack and worm feed for drilling and boring. Six standard spindle speeds, 275-425-700-1050-2100 and 4250 R.P.M. Other speeds up to 12,750 can be furnished upon request. The spindle has six splines and is driven by a pulley mounted on separate ball bearings. Weight of spindle and quill balanced to provide sensitivity necessary for fine end milling and drilling. Heavy duty $\frac{1}{2}$ H.P. motor provides ample power to meet most severe milling conditions within capacity of the unit. Four bolt mounting assures rigidity and equal distribution of working strains. Duplicate work and profile milling can be performed by attaching tracer arm to quill.

1/2 H.P. MILLING ATTACHMENT

MODEL "R"

THE 1/2 H.P. ATTACHMENT HAS THE SAME FEATURES AS
THE 1/4 H.P. ATTACHMENT EXCEPT THAT IT IS BUILT
PROPORTIONALLY HEAVIER



SPECIFICATIONS

Spindle heat treated and ground, machined to take collets up to 3/4" diameter. Collets are furnished sizes 1/8" to 3/4" for straight shank end mills and adapters for No. 7 B&S or No. 2 Morse Tapers for taper shank cutters. Spindle speeds are 275-425-700-1050-2100-4250. Large spindle and bearings give ample capacity for heavy cuts.

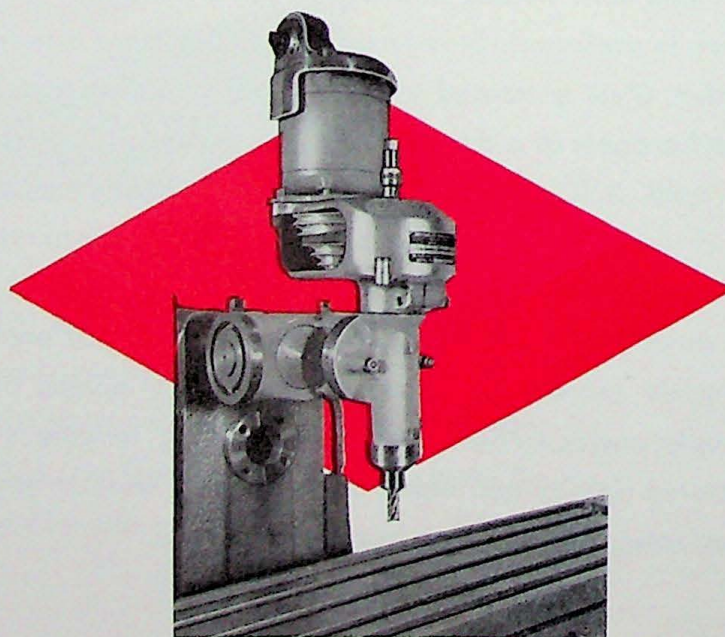
1/4 H.P. MILLING ATTACHMENT

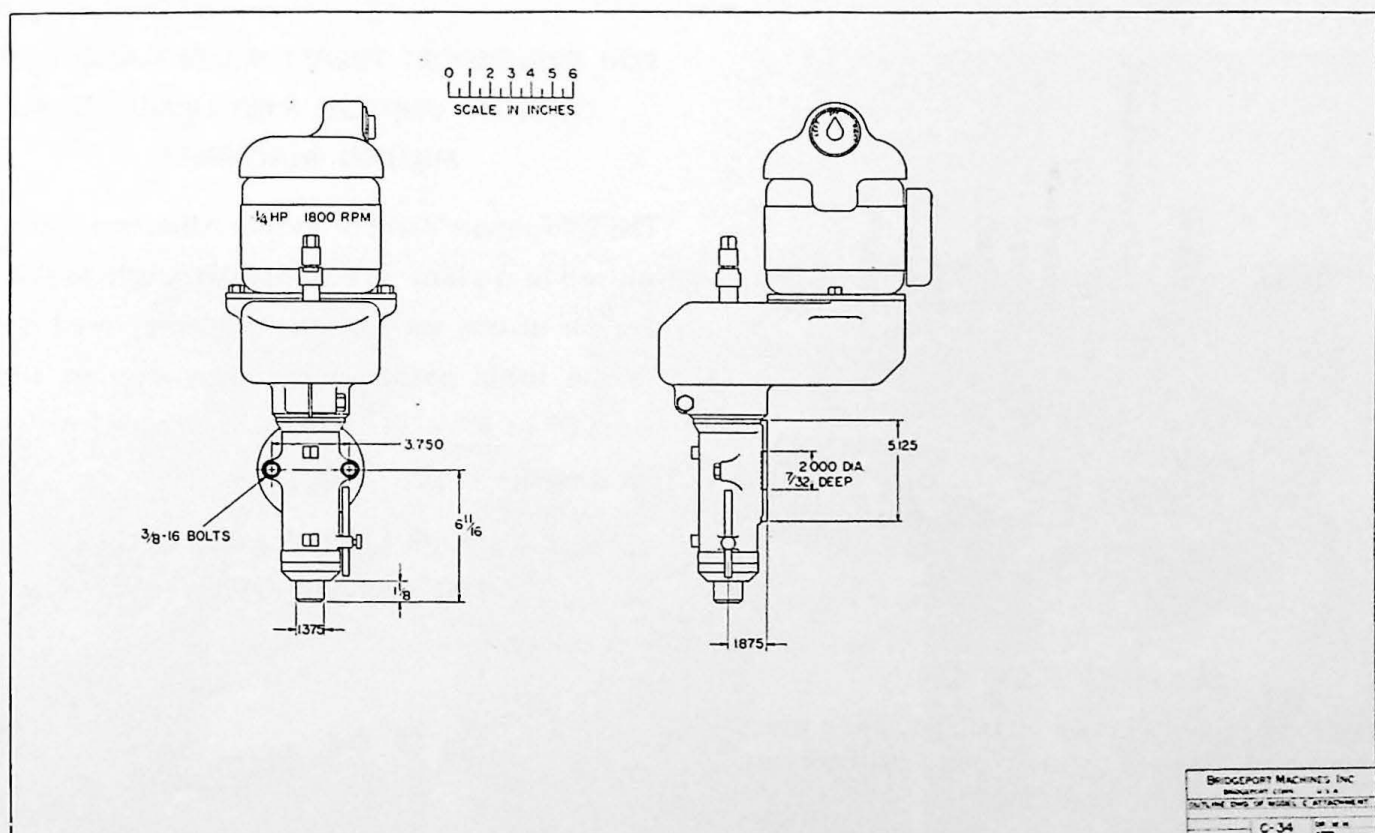
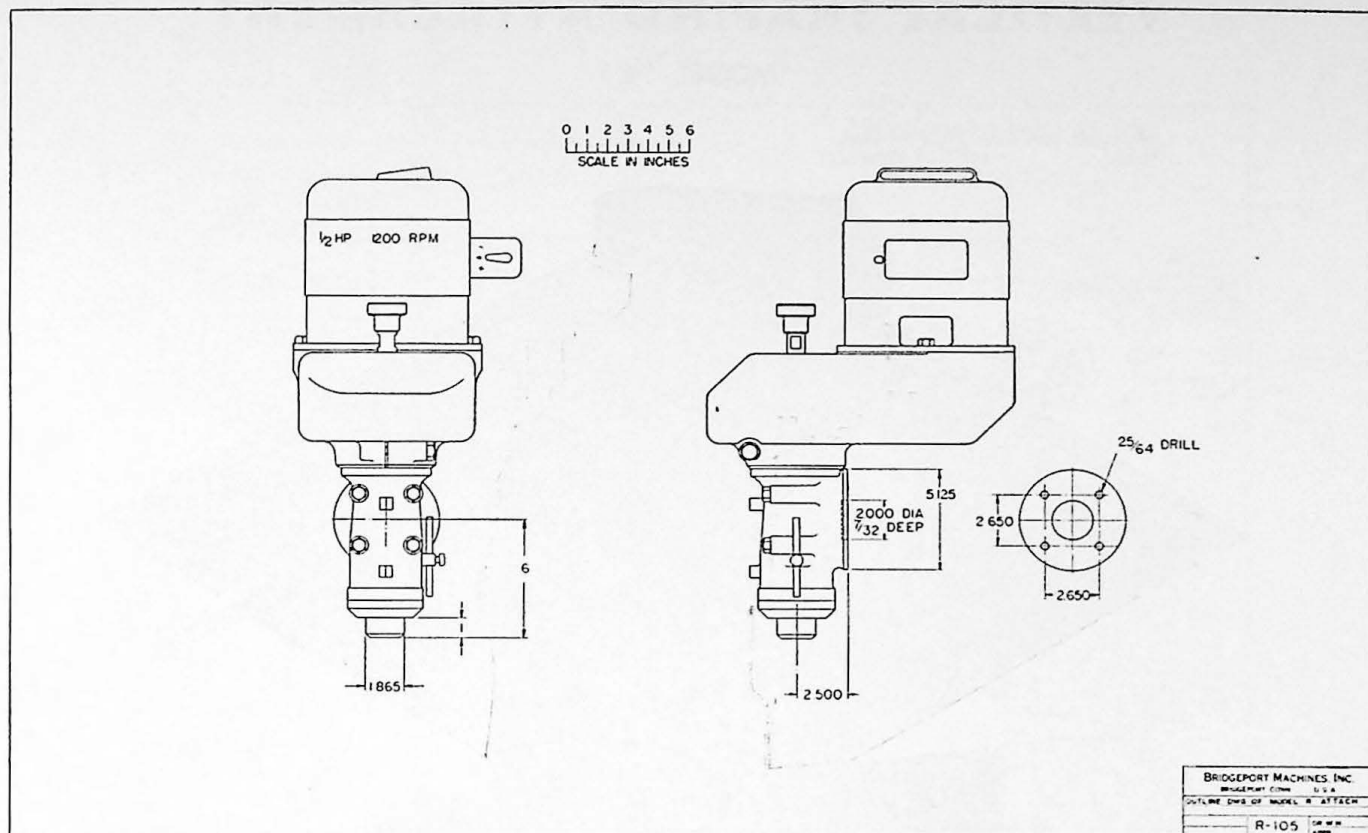
MODEL "C"

THE 1/4 H.P. ATTACHMENT IS UNEXCELLED FOR ALL TYPES
OF MILLING UP TO 1/2" DIAMETER IN TOOL STEEL

SPECIFICATIONS

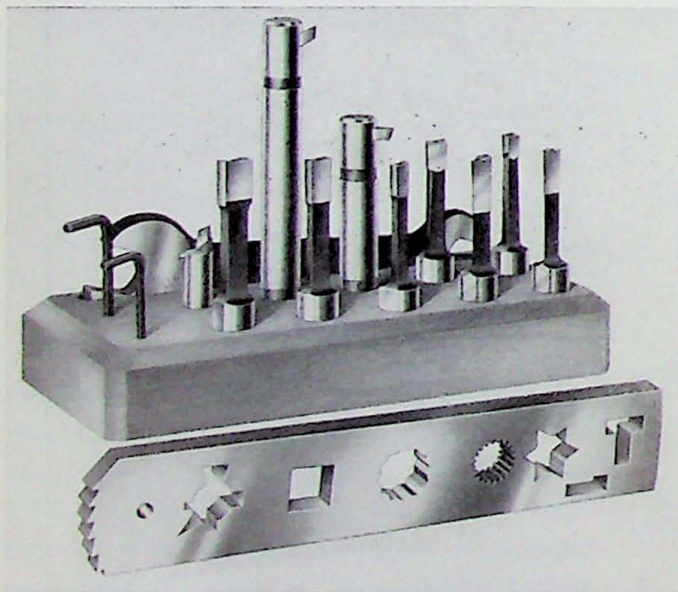
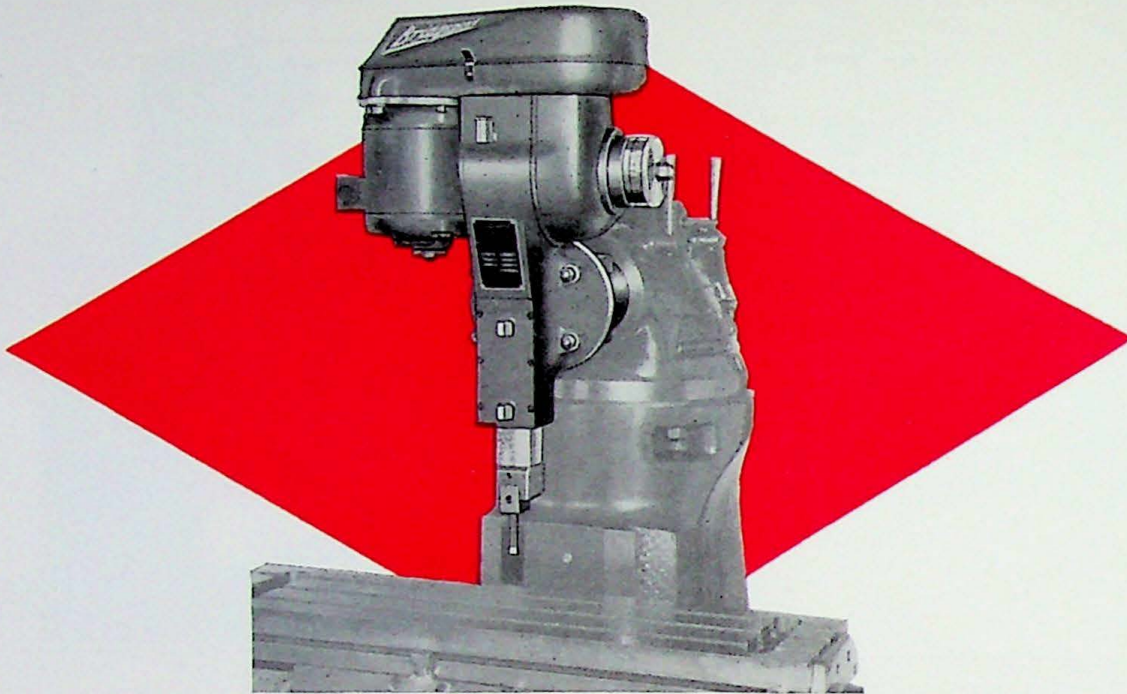
Spindle heat treated and ground, machined to take draw in collets with 1/2" maximum capacity. Speeds of 465-675-1000-1500-2140-4250 R.P.M. are provided by six step V grooved aluminum pulleys. B-3 Collets 3" long are furnished allowing the use of double end mills.





VERTICAL SHAPING ATTACHMENT

MODEL "E"



SHAPING TOOL SET

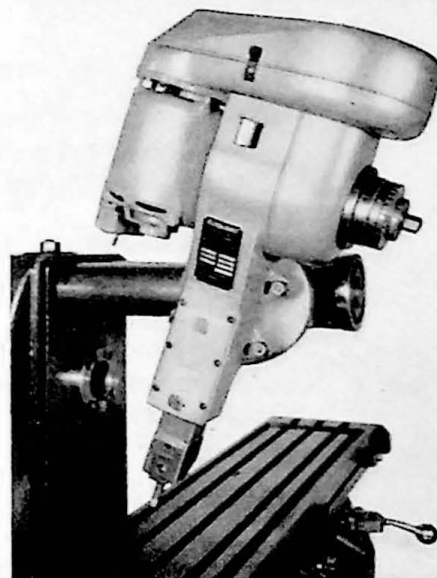
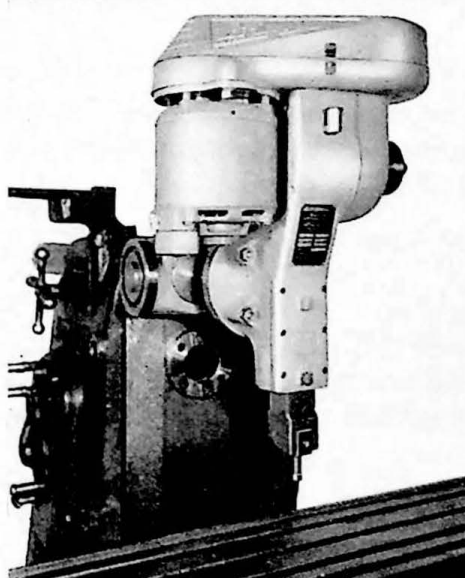
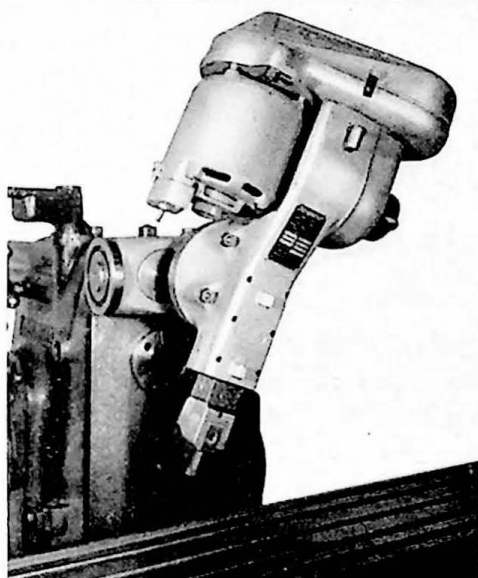
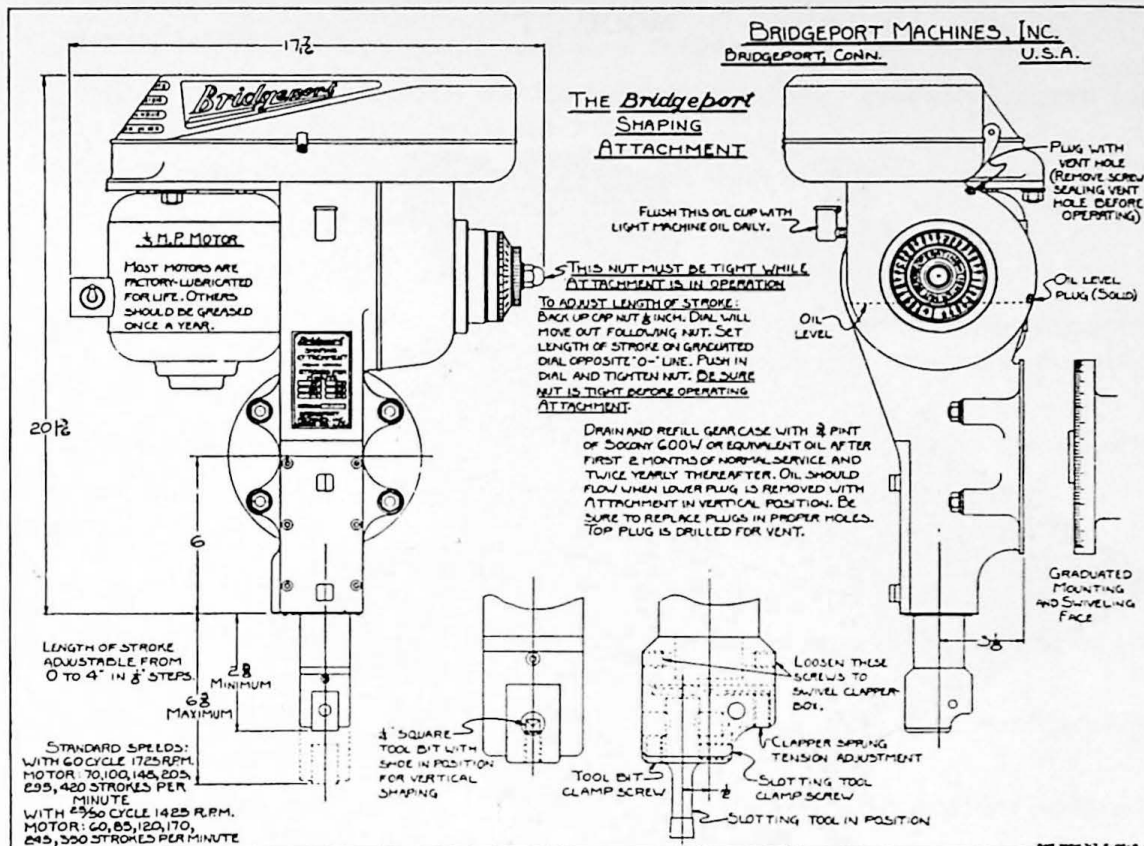
Consists of seven shaped tools and three standard tool bit holders. Sample piece illustrates various shapes cut with these standard tools.

FOR BRIDGEPORT TURRET MILLERS AND OTHER TYPES OF VERTICAL AND HORIZONTAL MILLING MACHINES

The Bridgeport Vertical Shaper Attachment can be placed in a plane strictly at right angle to the table, or at any vertical angle or compound angle to the table as illustrated. Any desired stroke from 0" to 4" in $\frac{1}{8}$ " steps is available by merely turning the dial.

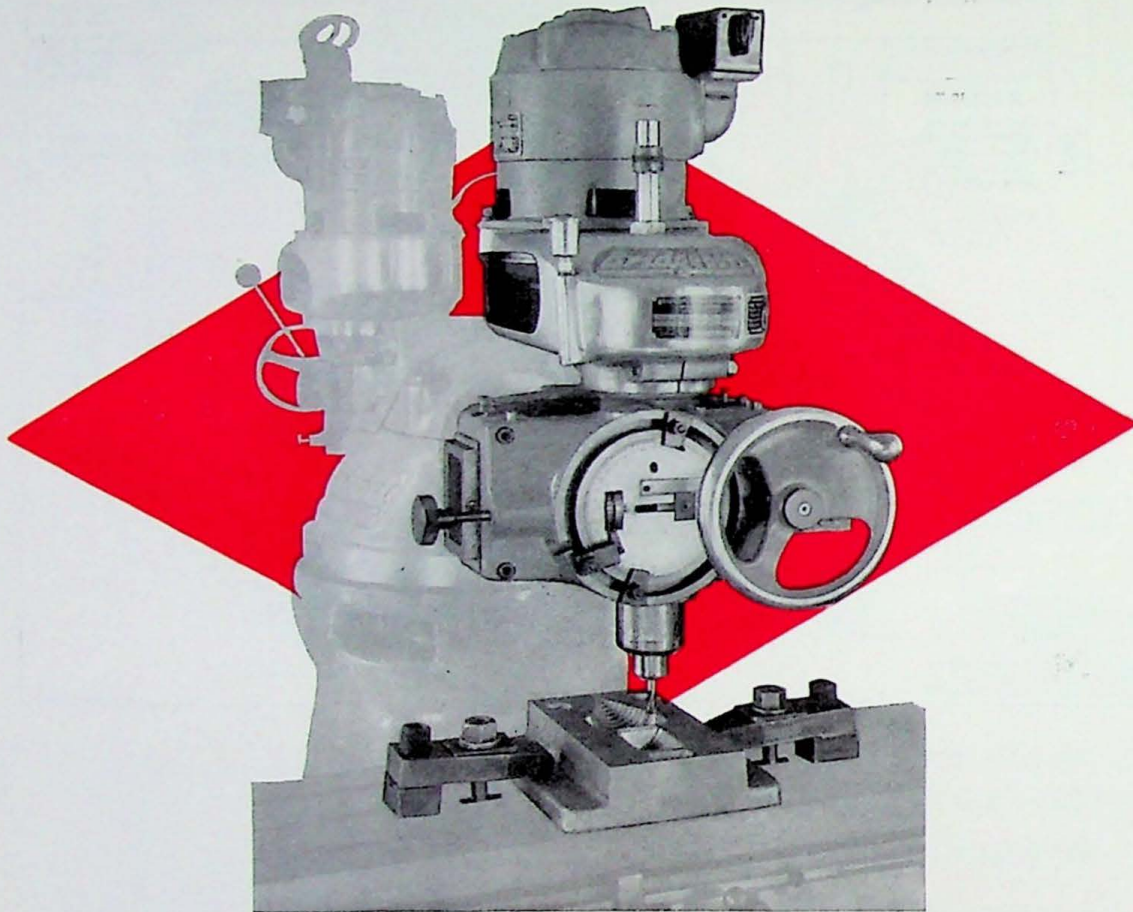
Speed range with $\frac{1}{3}$ H.P. 60 cycle, 1725 R.P.M. motor: 70-100-145-205-295 and 420 strokes per minute.

VERTICAL SHAPING ATTACHMENT



CHERRYING ATTACHMENT

MODEL "T"



The Cherrying Attachment presents an economical solution to what would otherwise prove very costly providing you were to purchase a machine suitable for this type of work.

It will eliminate chipping, filing, scraping, and the difficult hand work of drop-forging dies, etc.

The principal feature of this attachment is an oscillating quill by means of which an ordinary die sinking cutter can be moved through a circular path so that both roughing and finishing cherrying operations can be performed.

BASIC FEATURES

All our models have these features in common:

- SPINDLE chrome nickel alloy, heat-treated and ground.
- SPINDLE HOUSING high grade semi-steel casting.
- SPINDLE BEARINGS precision pre-loaded ball bearings, properly spaced for maximum radial and thrust capacity.
- LUBRICATION one oil cup (wick feed) provides fresh oil to all spindle bearings.
- ALUMINUM V BELT PULLEYS accurately machined and balanced.
- BALL BEARING MOTORS suitable for operation at any angle.
- MOTOR SUPPORT AND BELT HOUSING one piece aluminum motor support, and belt housing swivels completely around spindle, making it possible to use Attachments at any angle.
- MOTORS REMOVE instantly for mounting in difficult locations or change of belt.
- ANGULAR SETTINGS mounting face of adapters accurately graduated.
- PULLEYS PROPORTIONED to give good traction and long belt life.
- PIVOTALLY MOUNTED MOTORS for simple adjustment of belt tension.
- A SELF CONTAINED UNIT designed for easy mounting on other machines when not in use on miller.
- SPECIAL PULLEYS providing speeds to suit special conditions are available at slight extra cost.
- DESIGN of units and adapter makes it possible to mount Attachment on front and both sides of overarm. This Feature is important.

SPECIFICATIONS

Six spindle speeds: 275, 425, 700, 1050, 2100, 4250.

Heavy-duty $\frac{1}{2}$ H.P. Motor provides ample power to meet most conditions within capacity of machine.

Spindle heat treated and ground, designed to take draw-in collets with a $\frac{1}{2}$ " maximum capacity.

It is mounted in four precision pre-loaded bearings with bearings in upper end floating in housing to compensate for expansion or contraction of spindle.

The length of the arc can be positively controlled by two adjustable dogs "C" and "D" for both concave and convex shapes. The measurement or degree of the arc can be accurately determined by the graduations on the face of the rotating drum "H". This drum is graduated in degrees.

A quill lock has been provided for locking the quill in a fixed position when conventional milling procedures are to be followed.

Dial "F" is graduated in .001" increments.

Reference Scale "G" is graduated in 20ths of an inch (.050).

Suitable adapters can be furnished to mount Cherrying Attachments on other machines. Furnish decimal dimensions.

OPERATING INSTRUCTIONS

The Spindle is moved through a circular path by means of handwheel "A". The radius of this arc is adjusted by means of knob "B" and can be set to any radius from 0" to 1 3/4". When making this adjustment one should remember to allow for 1/2 the cutter diameter in the setting.

Example: To machine a 1" concave radius with a 1/4" dia. cutter as shown in section A-A (Fig. 2) subtract half the cutter dia. or 1/8" from the 1" radius, and the resulting 7/8" is the radius at which the attachment should be set.

To machine a 1" convex radius with a 1/4" dia. cutter as shown in section B-B (Fig. 3) add half the cutter dia. or 1/8" to the 1" radius and the resulting 1 1/8" is the radius at which the attachment should be set.

When milling a cone, and a progressive increase or decrease in the radius of the spindle setting is desirable, this can be obtained by hand adjustment of knob "B" at end of each stroke or automatically through use of dog "E".

The finger on this dog is reversible so that it can be used for both increasing or decreasing the radius.

Each time the adjusting dial "F" passes the dog "E" it is engaged by the finger on the dog and is rotated the desired amount, thus eliminating a hand adjustment at the end of each stroke.

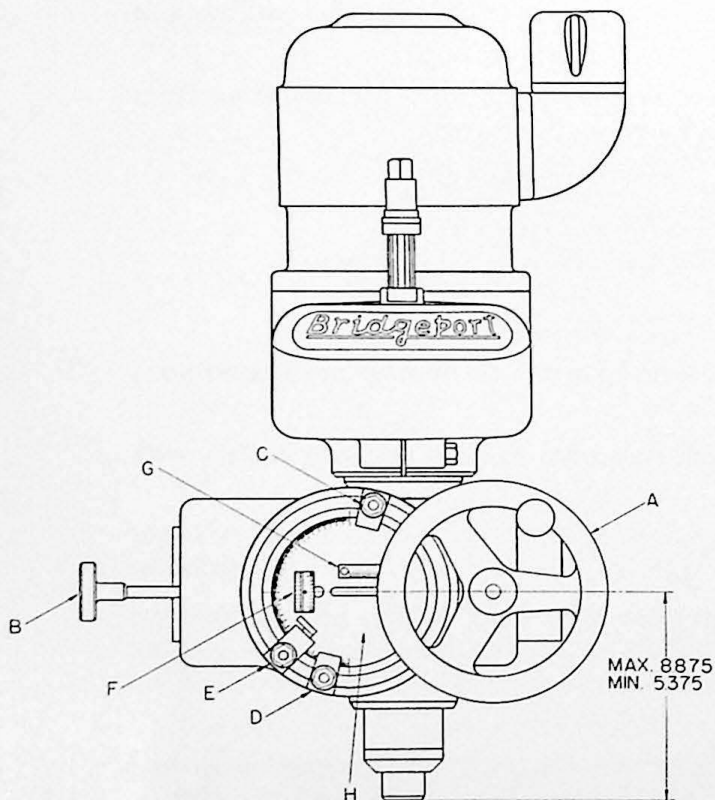


FIG. 1

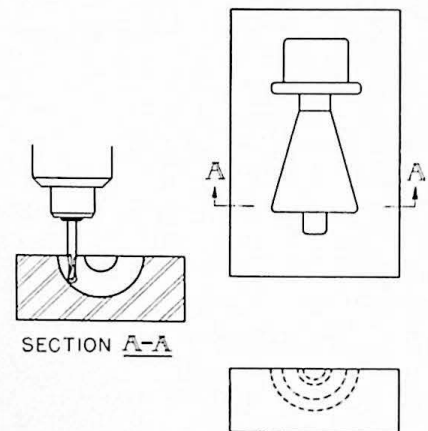


FIG. 2

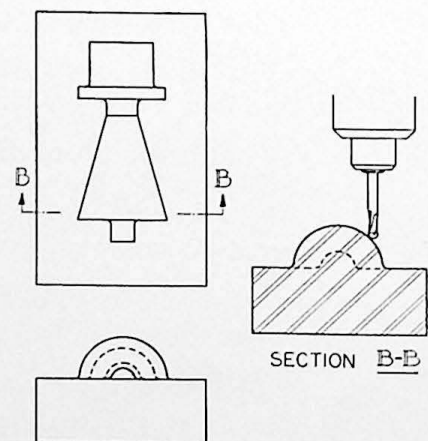


FIG. 3

FIGS. 4 AND 5 SHOW HOW TO CALCULATE SETTINGS FOR MILLING A CONE

- A—Measurement near large end of cone at centerline of cutter.
 B—Measurement near small end of cone at centerline of cutter.
 C—Length of cone minus diameter of cutter.
 D—Total advance of cutter when traveling over length "C".
 E—Change in radius per stroke.
 F—Number of strokes of cutter over length "C".
 G—Feed of work table in direction of "C" per stroke of cutter.

EXAMPLE

$$\begin{array}{ll} A = 1.000 & C = 2.000 \\ B = .500 & E = .005 \end{array}$$

FORMULA

$$A - B = D \dots\dots\dots 1.000 - .500 = .500$$

$$\frac{D}{E} = F \dots\dots\dots \frac{.500}{.005} = 100 \text{ strokes}$$

$$\frac{C}{F} = G \dots\dots\dots \frac{2.000}{100} = .020$$

Summing up the above example; the work table will be fed .020 in direction of "C" (along axis of cone) for each .005 change in radius.

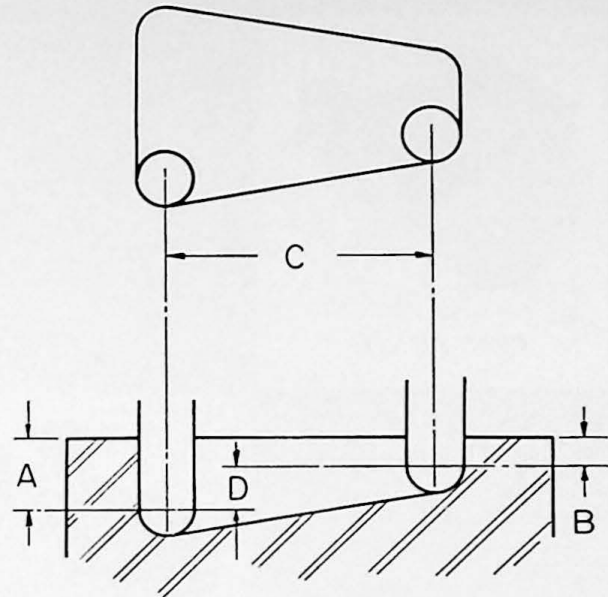


FIG. 4

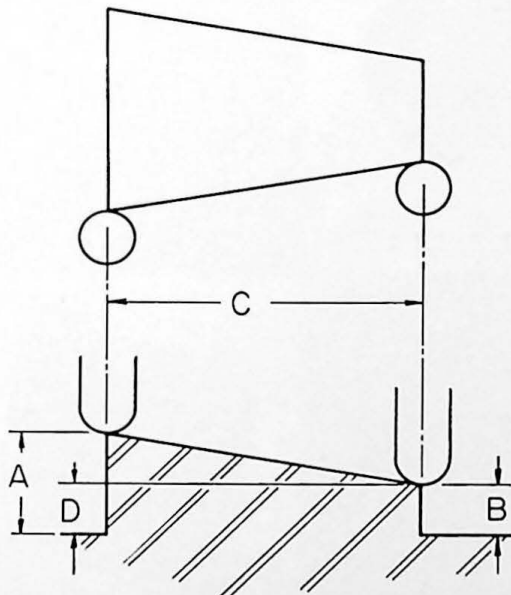


FIG. 5

- A—Measurement at large end of cone.
 B—Measurement at small end of cone.
 C—Length of cone.
 D—Total advance of cutter when traveling length of "C".
 E—Change in radius per stroke.
 F—Number of strokes of cutter over length "C".
 G—Feed of work table in direction of "C" per stroke of cutter.

EXAMPLE

$$\begin{array}{ll} A = 1.000 & C = 2.250 \\ B = .500 & E = .005 \end{array}$$

FORMULA

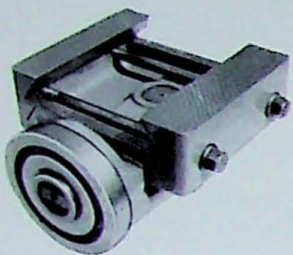
$$A - B = D \dots\dots\dots 1.000 - .500 = .500$$

$$\frac{D}{E} = F \dots\dots\dots \frac{.500}{.005} = 100 \text{ strokes}$$

$$\frac{C}{F} = G \dots\dots\dots \frac{2.250}{100} = .0225$$

Summing up the above example; the work table will be fed .0225 in direction of "C" (along axis of cone) for each .005 change in radius.

MOUNTING ADAPTERS



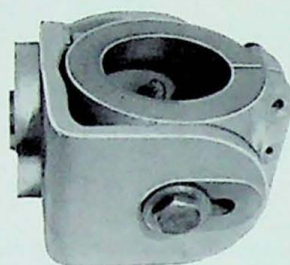
CINCINNATI



DOUBLE OVERARM



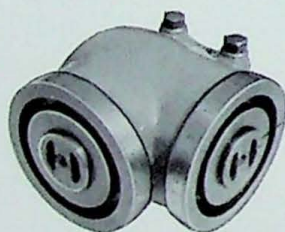
HAND MILLER TYPE B



UNIVERSAL



SINGLE OVERARM



DUAL TYPE



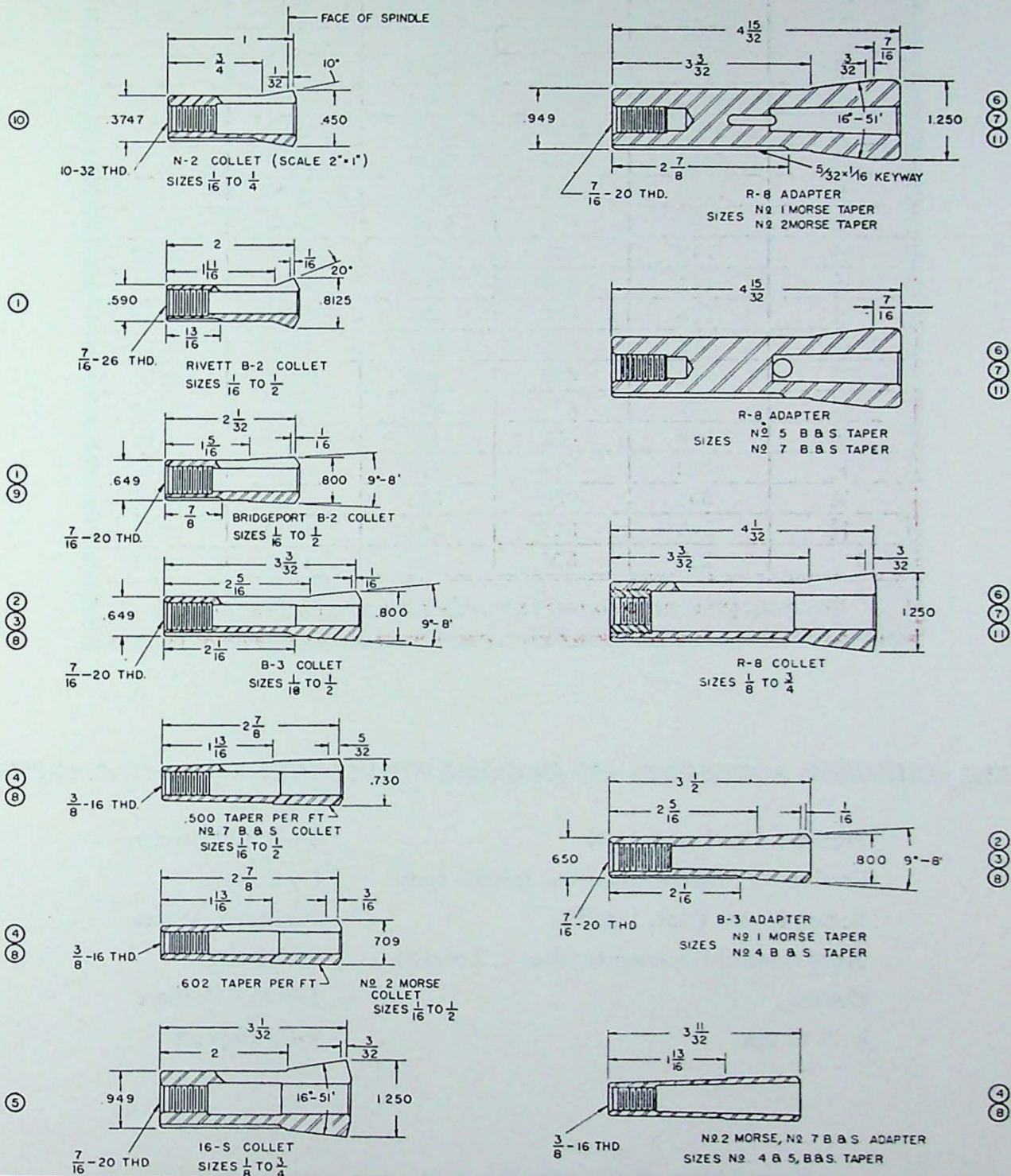
HAND MILLER TYPE A



PLATE TYPE

The image displays four common metal fasteners arranged horizontally. From left to right: a bolt with a hexagonal head and threaded shank; a screw with a hexagonal head and a single-flute design; a hexagonal nut; and a flat washer with a central hole. All components are made of polished metal and are set against a black background.

R-8 ADAPTER for No. 2 Morse
or No. 7 B. & S. Taper



- | | | |
|-----------------------------------|-----------------------------------|------------------------------|
| ① OLD STYLE 1/4 HP ATTACHMENT (C) | ⑤ OLD STYLE 1/2 HP ATTACHMENT (R) | ⑨ № 1 RIGHT ANGLE ATTACHMENT |
| ② STANDARD 1/4 HP ATTACHMENT (C) | ⑥ STANDARD 1/2 HP ATTACHMENT (R) | ⑩ № 2 RIGHT ANGLE ATTACHMENT |
| ③ SPECIAL MASTER ATTACHMENT (M) | ⑦ 1 HP ATTACHMENT (J) | ⑪ № 3 RIGHT ANGLE ATTACHMENT |
| ④ STANDARD MASTER ATTACHMENT (M) | ⑧ CHERRYING ATTACHMENT | ⑫ |

SPEEDS RECOMMENDED FOR HIGH SPEED END MILLS

Diameter of End Mill	Annealed Tool Steel Peripheral Speed 70 Ft. P. M.	Soft Steel Peripheral Speed 80 Ft. P. M.	Cast Iron Peripheral Speed 90 Ft. P. M.	Yellow Brass Peripheral Speed 400 Ft. P. M.	Aluminum Peripheral Speed 775 Ft. P. M.
	R. P. M.	R. P. M.	R. P. M.	R. P. M.	R. P. M.
$\frac{1}{16}$	4276	4888	5498		
$\frac{1}{8}$	2855	3259	3688		
$\frac{1}{4}$	2140	2440	2750	10000	
$\frac{3}{8}$	1420	1625	1830	8000	
$\frac{1}{2}$	1070	1222	1375	6200	12200
$\frac{5}{8}$	856	978	1100	5100	9800
$\frac{3}{4}$	713	815	917	4000	8500
$\frac{7}{8}$	611	698	786	3500	7000
$\frac{1}{2}$	535	611	688	3000	6100
$\frac{9}{16}$	475	543	611	2800	5400
$\frac{5}{8}$	428	489	550	2400	4900
$\frac{11}{16}$	389	444	500	2200	4440
$\frac{3}{4}$	357	407	458	1900	4100
$\frac{13}{16}$	332	379	427	1800	3800
$\frac{7}{8}$	306	349	393	1700	3500
$\frac{15}{16}$	285	326	366	1600	3260
1	267	306	344	1500	3060

Can your present equipment meet these recommended speeds?

THE FOLLOWING ACCESSORIES ARE AVAILABLE FOR USE WITH THESE ATTACHMENTS

Profilers (PM-1 and PJ-1)

Double "V" Belt drive on low spindle speed

Boring Heads (Nos. 1 and 2)

Right Angle Attachments (Nos. 1, 2 and 3)

Collets

Drill Chucks

Shell Mill Holders

Fly Cutters

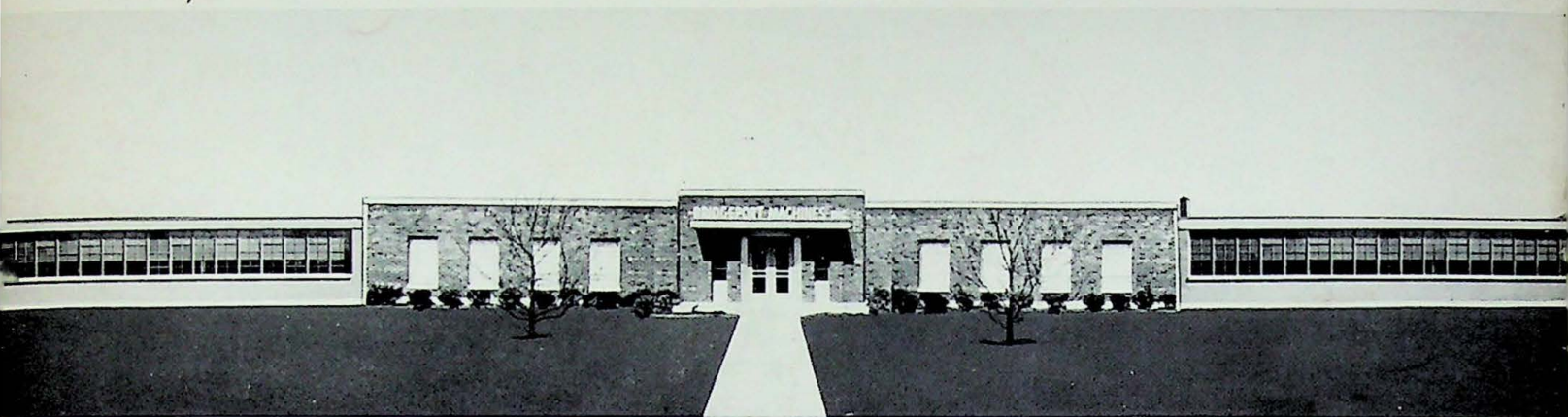
Threaded Arbors

Stub Arbors

End Mill Holders

R-8 Adapters

Also all types of mounting adapters as shown on page 14



REPRESENTED BY

B. H. S. MACHINERY CO.
717 AIRPORT BOULEVARD
SOUTH SAN FRANCISCO, CALIF.
PLaza 5 - 4466

Made by

THE BRIDGEPORT MACHINES, INC.

500 LINDLEY STREET • BRIDGEPORT 6, CONN., U.S.A.