

BATH

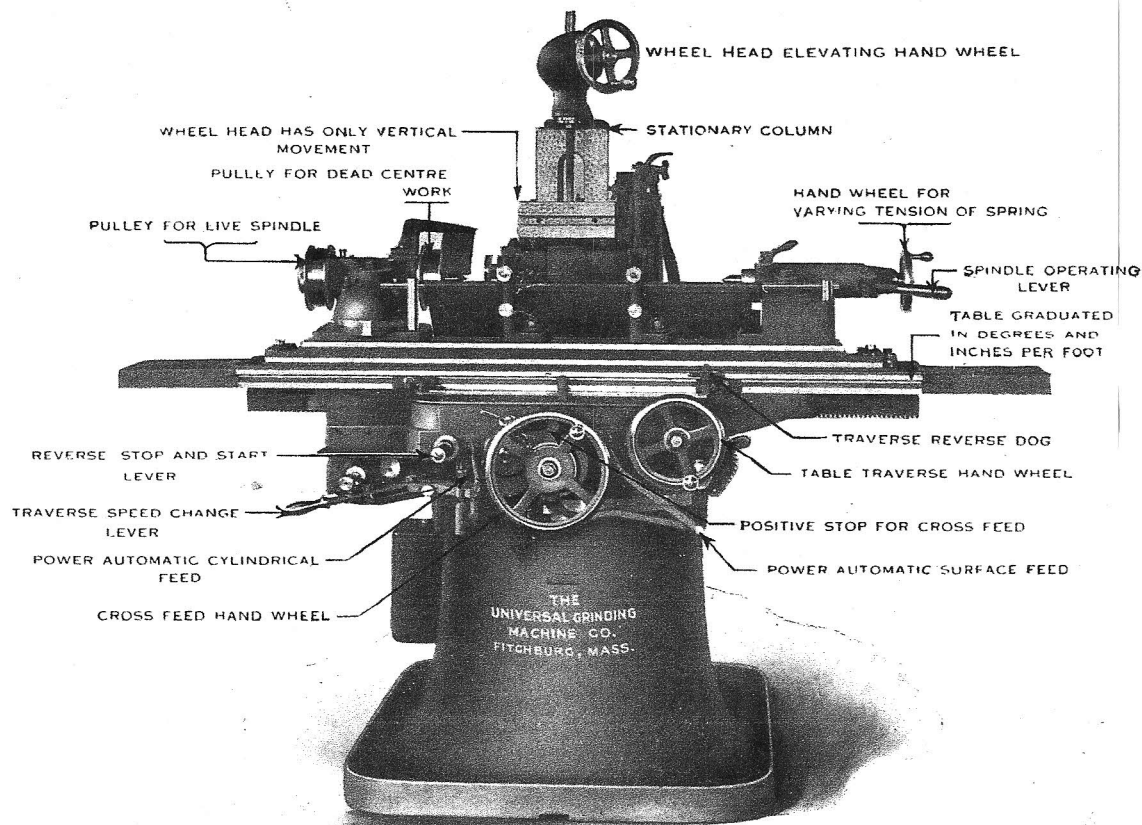
UNIVERSAL GRINDER

A TRULY VERSATILE MACHINE

OVERHEAD BELT DRIVE

FITCHBURG GRINDING MACHINE CORPORATION
FITCHBURG, MASS. U. S. A.





BELT DRIVEN

Bath 10" x 25" Universal Grinder

✓ CAPACITY

External, Cylindrical, swing 10", take 25" length.

Internal, swing 10", take 8" length.

Surface, 20" length, 9" width, within .00025 7½" height under 8" diam. wheel

Disc, 16" diam., 3½" thick.

✓ WHEEL HEAD

Spindle of special steel, heat treated, ground and lapped; 1⅝" diameter. Self-aligning Sadeco bronze bearings 4½" and 4" long adjustable for wear. Four speeds, 1750, 2100, 2600 and 3200 R. P. M. Vertical movement 7½". Spindle driven by 2" belt. Takes wheels 12" diameter 1½" wide. Elevating screw provided with micrometer reading handwheel graduated to .001".

✓ AUTOMATIC FEEDS

Traverse for cylindrical and internal grinding has five speeds, 2, 3.9, 5.4, 7.6, and 10.8 feet per min. For surface grinding, 1.3, 2.5, 3.5, 4.9 and 7 feet per min. Cylindrical cross feed range, .00025" to .0025" at each reversal of table. Surface cross feed range, .0025" to .025" at either or both reversals of table.

SWIVEL TABLE

For grinding tapers, swings on central stud, hardened and ground. Clamps at both ends. Has a V-way insuring alignment of head and footstock, and two T slots. Scale graduated in inches per foot up to 2¾" per foot each side of center and can be moved beyond for greater tapers.

✓ TABLE

Automatic travel controlled by adjustable dogs. 2 Ways have large wearing surfaces. Oil distributed evenly by rolls and grooves. *See 431/27*

✓ SPEEDS AND FEEDS

Speeds of wheel and work and feed of table are independent of each other. Five changes of work speed, 62, 114, 160, 224 and 320 R. P. M. Internal spindle has four speeds, 7000, 8400, 10400 and 12800 R. P. M. A lever starts and stops feed of table.

HEADSTOCK

Swivel base graduated to 90 degrees. Spindle 2" diameter, hardened, ground and lapped. Bronze adjustable bearings. Spindle revolves for chuck and face plate work and can be locked for grinding on dead centers.

FOOTSTOCK

Spindle has variable tension spring controlled by handwheel and may be clamped rigidly for supporting center. Spindle is 2" diameter.

WET GRINDING

Pump attached to rear of machine. Pump needs no priming or packing. Abundant supply of water. Tank built into the base.

✓ COUNTERSHAFT

Main drive. One pair of tight and loose pulleys, 10" diam., 4" face. Speed 800 R. P. M. 3½" belt. 3 H. P.

✓ FLOOR SPACE

114" x 114"

✓ WEIGHTS

Net 4140 lbs., crated 4640 lbs., boxed 5135 lbs.

✓ DIMENSIONS

Boxed, machine 121.6 cu. ft., attachments 17.8 cu. ft., countershaft 39.5 cu. ft.

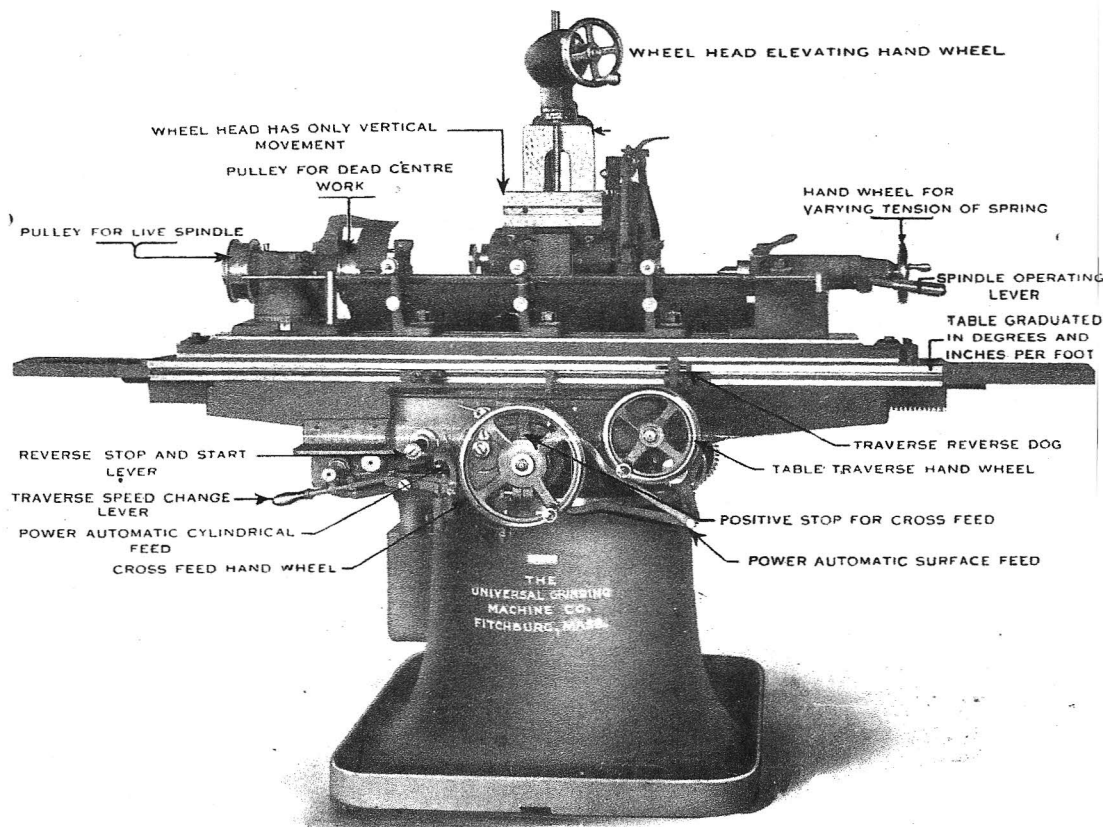


Standard Equipment—10" x 25" Grinder

10" Head and Footstocks
Internal Grinding Attachment
8" Chuck Attachment
2 Spring Back Rests
Center Rests
8" Face Plate
Diamond and Holder
Pump, Water Attachment and Guards
Wrenches
Wheels
2 Grinding Dogs
Wheel Hood
Wheel Flange
Swivel Table Clamps
Complete Countershaft

Extra Equipment

Surface Grinding Attachment with Automatic Feed, No. 4 Collet and
Surface Diamond Holder
Cutter Bar Attachment
Universal Work Holder and Flange Plate
Vise
High Tooth Rest Stand
Low Tooth Rest Stand
No. 1 Wheel Collet for Special Grinding
No. 2 Wheel Collet for Cup Wheel Grinding
No. 3 Wheel Collet for Cutter Grinding
Spur Gear Cutter Grinding Attachment
Radial Grinding Attachment for Concave and Convex Cutters
Spring Collet Chuck Attachment
Inserted Tooth Cutter Grinding Attachment for Cutters to 24" inclusive
Special Taper Reamer Grinding Attachment
Knife Grinding Attachment



BELT DRIVEN

Bath 12"x36" Universal Grinder

CAPACITY	External, Cylindrical, swing 12", take 36" length. Internal, swing 10", take 10" length. Surface, 25" length, 9" width, within .00025 7 1/2" height under 8" diam. wheel Disc, 16" diam., 3 1/2" thick.
WHEEL HEAD	Spindle of special steel, heat treated, ground and lapped, 1 3/8" diameter. Self aligning Sabeco bronze bearings 4 1/2" and 4" long adjustable for wear. Four speeds, 1750, 2100, 2600 and 3200 R. P. M. Vertical movement 7 1/2". Spindle driven by 2" belt. Takes wheels 12" diameter 1 1/2" wide. Elevating screw provided with micrometer reading handwheel graduated to .001".
AUTOMATIC FEEDS	Traverse for cylindrical and internal grinding has five speeds, 2, 3.9, 5.4, 7.6, and 10.8 feet per min. For surface grinding, 1.3, 2.5, 3.5, 4.9 and 7 feet per min. Cylindrical cross feed range, .00025" to .0025" at each reversal of table. Surface cross feed range, .0025" to .025" at either or both reversals of table.
SWIVEL TABLE	For grinding tapers, swings on central stud, hardened and ground. Clamps at both ends. Has a V-way insuring of alignment of head and footstock, and two T slots. Scale graduated in inches per foot up to 2 1/4" per foot each side of center and can be moved beyond for greater tapers.
TABLE	Automatic travel controlled by adjustable dogs. Ways have large wearing surfaces. Oil distributed evenly by rolls and grooves.
SPEEDS AND FEEDS	Speeds of wheel and work and feed of table are independent of each other. Five changes of work speed, 62, 114, 160, 224 and 320 R. P. M. Internal spindle has four speeds, 7000, 8400, 10400 and 12800 R. P. M. A lever starts and stops feed of table.
HEADSTOCK	Swivel base graduated to 90 degrees. Spindle 2" diameter, hardened, ground and lapped. One adjustable bronze bearing and one ball bearing. Spindle revolves for chuck and face plate work and can be locked for grinding on dead centers.
FOOTSTOCK	Spindle has variable tension spring controlled by handwheel and may be clamped rigidly for supporting center. Spindle is 2" diameter.
WET GRINDING	Pump attached to rear of machine. Pump needs no priming or packing. Abundant supply of water. Tank built into the base.
COUNTERSHAFT	Main drive. One pair of tight and loose pulleys, 10" diam., 4" face. Speed 800 R. P. M. 3 1/2" belt. 3 H. P.
FLOOR SPACE	134" x 134"
WEIGHTS	Net 4421 lbs., crated 4760 lbs., boxed 5455 lbs.
DIMENSIONS	Boxed, machine 133.8 cu. ft., attachments 19.5 cu. ft., countershaft 42.3 cu. ft.

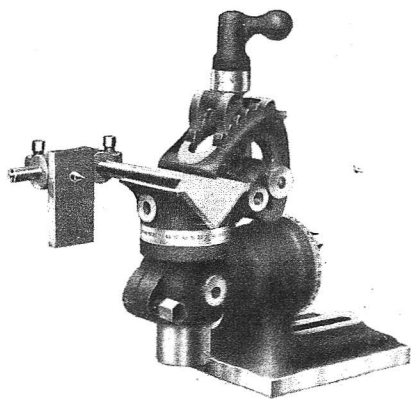


Standard Equipment—12" x36" Grinder

12" Head and Footstocks
Internal Grinding Attachment
8" Chuck Attachment
3 Spring Back Rests
Center Rests
10" Face Plate
Diamond and Holder
Pump, Water Attachment and Guards
Wrenches
Wheels
2 Grinding Dogs
Wheel Hood
Wheel Flange
Swivel Table Clamps
Complete Countershaft

Extra Equipment

Surface Grinding Attachment with Automatic Feed, No. 4 Collet and
Surface Diamond Holder
Cutter Bar Attachment
Universal Work Holder and Flange Plate
Vise
High Tooth Rest Stand
Low Tooth Rest Stand
No. 1 Wheel Collet for Special Grinding
No. 2 Wheel Collet for Cup Wheel Grinding
No. 3 Wheel Collet for Cutter Grinding
Spur Gear Cutter Grinding Attachment
Radial Grinding Attachment for Concave and Convex Cutters
Spring Collet Chuck Attachment
Inserted Tooth Cutter Grinding Attachment for Cutters to 24" inclusive
Special Taper Reamer Grinding Attachment
Knife Grinding Attachment

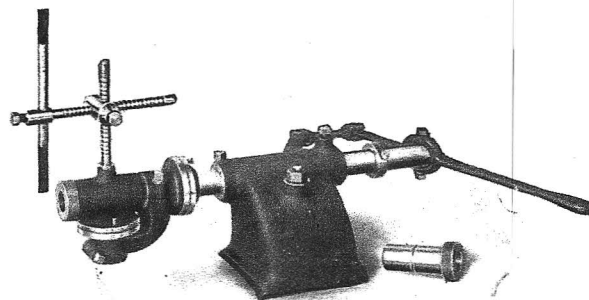


Universal Work Holder

The Universal Work Holder adds greatly to the variety of work possible to be ground on our Universal Grinding Machine. It is of special value for holding inserted tooth mills, counterbores, large end mills, reamers, etc.; with straight or taper shank.

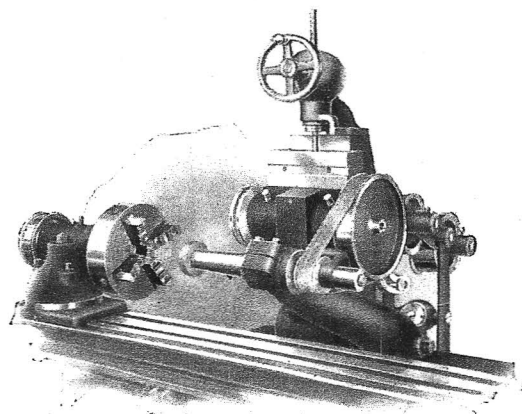
By using Flange Plate, which is furnished with this attachment, gear cutters, flat form cutters, saws, etc., can be readily held.

The Horizontal Vise may be clamped to this Flange Plate, providing means for holding a large variety of work to be surface ground.

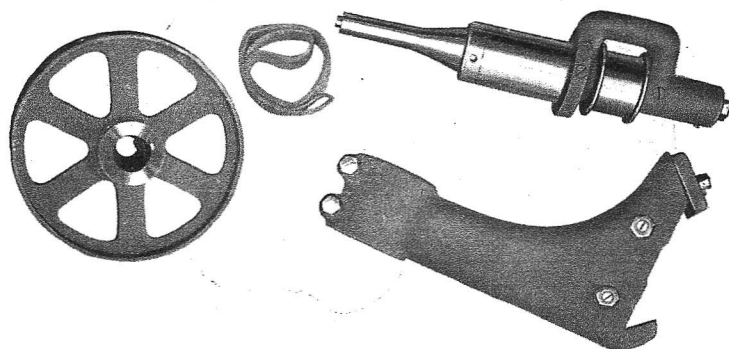


Cutter Bar Attachment

The Cutter Bar Attachment is especially adapted for holding small end mills, angular and straight cutters, etc., when a very sensitive movement is necessary.



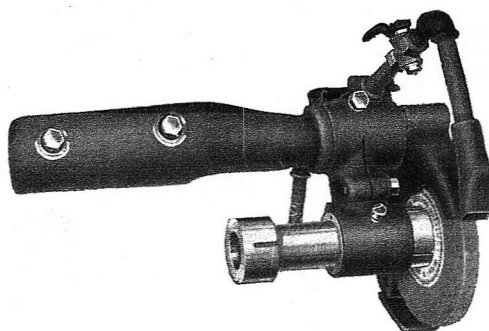
Arranged for Internal Grinding



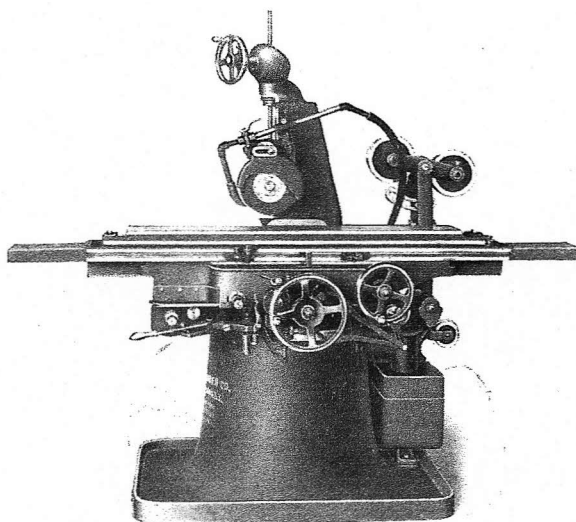
Internal Grinding Attachment

Internal Spindles are made in the following sizes, other sizes made to order.

Attachment No.	For Use On Universal Machine No.	No. of Internal Spindle	Smallest Outside Diameter of Spindle	Maximum Length of Hole Spindle Will Grind	Code Word
1	1	1	$\frac{5}{8}$ "	3"	Umose
2	2 and $2\frac{1}{2}$	2	1"	$2\frac{3}{4}$ "	Ument
3	2 and $2\frac{1}{2}$	3	$1\frac{3}{4}$ "	5'	Ump



Surface Grinding Attachment for No. 2 and 2½ Machines furnished
with the Bath Universal Grinding Machines



Machine arranged for Surface Grinding

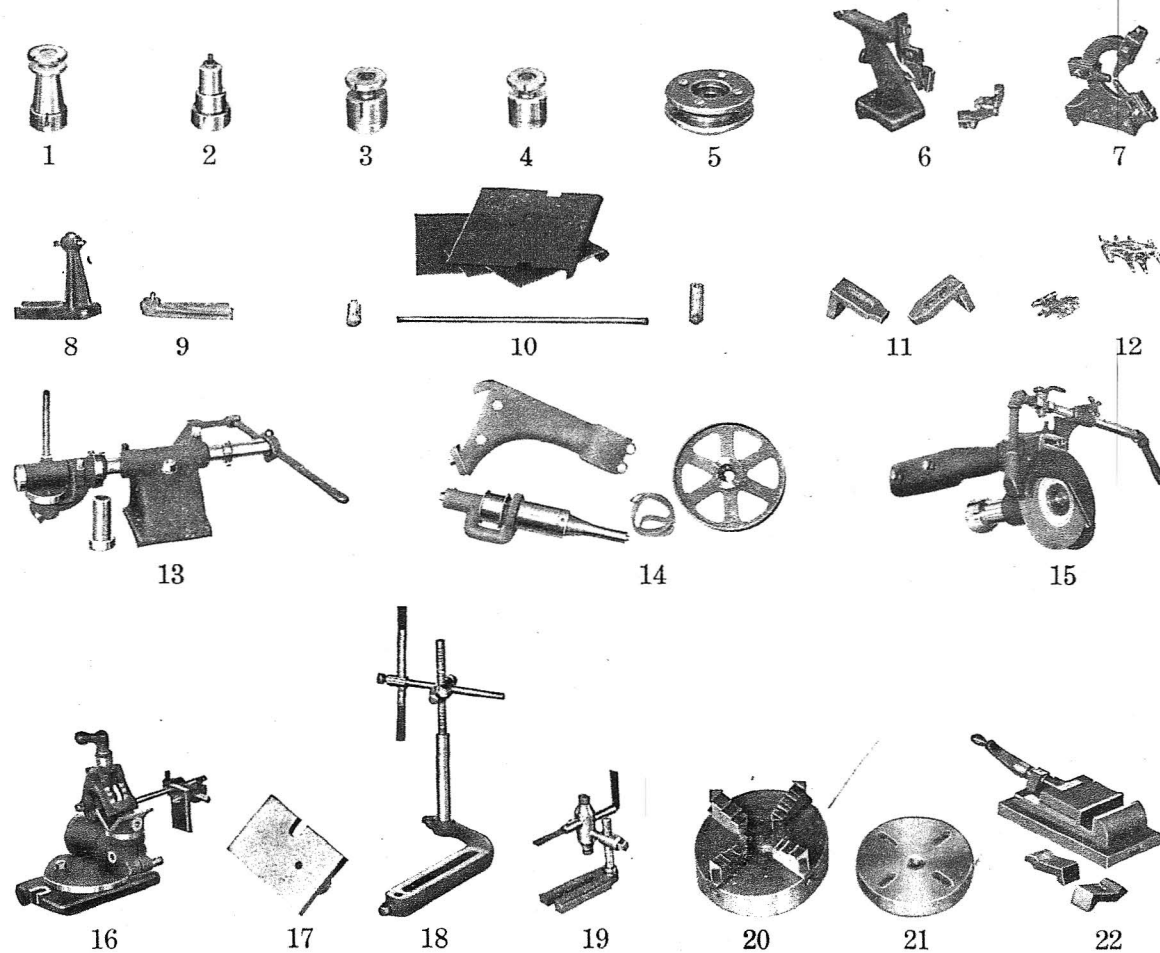
The BATH equipped for surface grinding will do all that any single purpose grinder will do within its corresponding range.

The knee, cross slide and table swivels around 90° on the top of the 30" diameter base which brings the traversal of the table at right angles to the wheel spindle.

A coarse automatic cross feed is furnished with this equipment, which further makes of this machine a complete surface grinder.

An 8" diameter wheel is standard with this equipment.

Attachments for Bath Universal Grinding Machine



No.

- 1 Wheel Collet, 6" overall, for Special Grinding.
- 2 Wheel Collet, 4" overall, for Cutter Grinding with 4" cup wheel.
- 3 Wheel Collet, 3 1/4" overall, for Cutter Grinding.
- 4 Wheel Collet, 2 1/2" overall, for Surface Grinding.
- 5 Wheel Flange, 5" Hole Wheel.*
- 6 Spring Back Rest.*
- 7 Center Rest.*
- 8 Diamond Holder for External and Internal Grinding.*
- 9 Diamond Holder for Surface Grinding.
- 10 Water Shields.*
- 11 Two Swivel Plate Clamps.*

No.

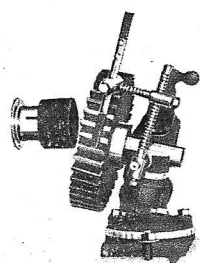
- 12 Two Balanced Grinder Dogs.*
- 13 Cutter Bar Attachment.
- 14 Internal Grinding Attachment including Arm, Spindle, Belt, and Driving Pulley.*
- 15 Surface Grinding Attachment.
- 16 Universal Work Holder.
- 17 Flange Plate for Universal Holder.
- 18 High Tooth Rest
- 19 Low Tooth Rest.
- 20 8" or 10" four jaw Chuck.*
- 21 8" or 10" Face Plate.*
- 22 Horizontal Vise and Clamps.

In ordering specify whether for overhead belt drive or motor drive.

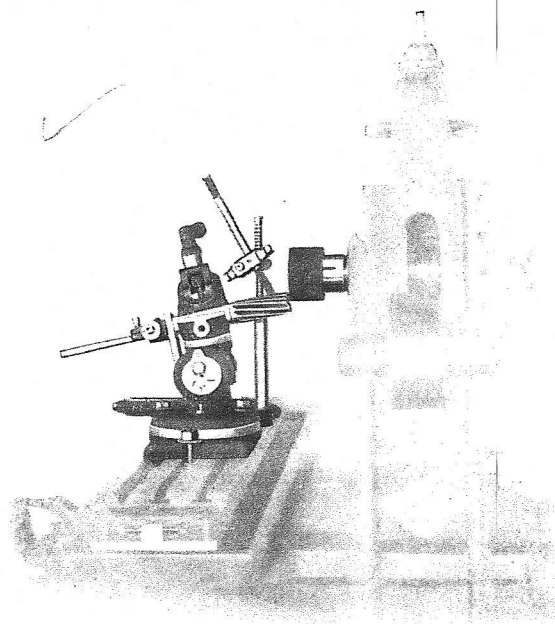
* Included in standard equipment.



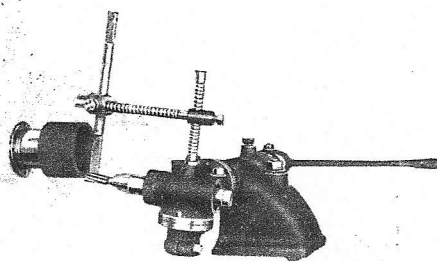
The Bath Universal Grinding Machine Arranged for Cutter Grinding



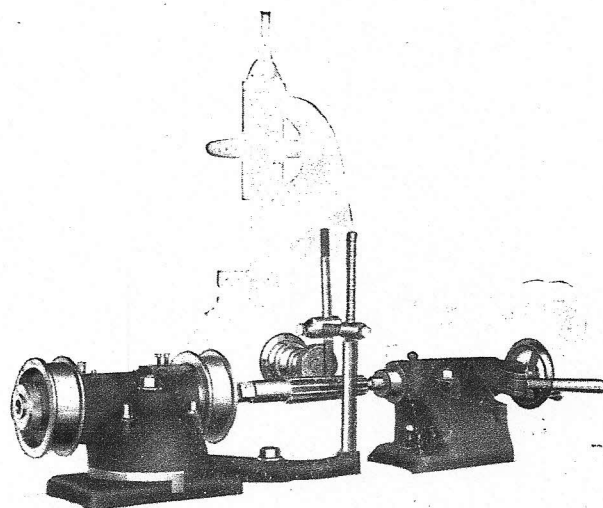
Sharpening side teeth of a 14" inserted
tooth Milling Cutter
with the Universal Holder



Sharpening an End Mill

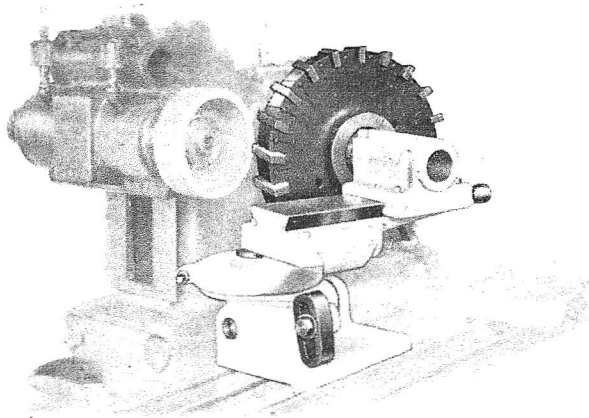


Sharpening a Small End Mill
with the Cutter Bar



Sharpening a Taper Reamer

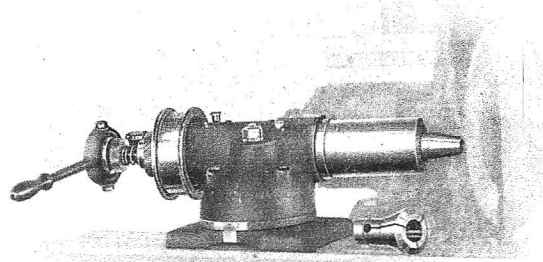
Special Attachments for Bath Universal Grinding Machines



ROUND CORNER GRINDING ATTACHMENT

For rounding the corners of milling cutters.

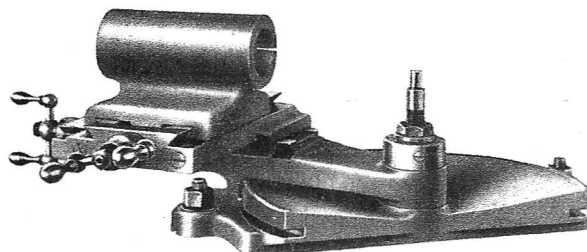
12" diameter maximum.



The SPRING COLLET CHUCK ATTACHMENT, is fitted to the Headstock. This makes an excellent device for holding work for external or internal grinding, when there is a large number of duplicate pieces to be ground. The strain of the spring is taken by the spindle and does not add extra friction on thrust bearings.

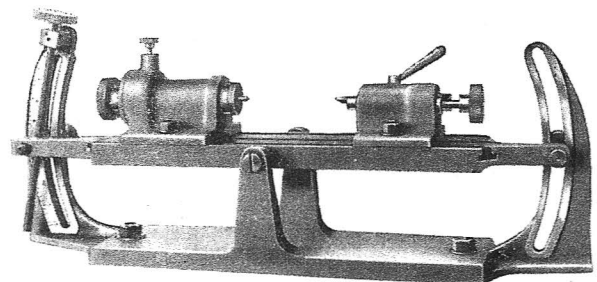
The tension of spring is adjustable.

The attachment can be applied at any time to our standard headstock and is not included in the regular equipment.



RADIUS GRINDING ATTACHMENT

For concave or convex cutters to 6" diameter inclusive. Has removable gauge plug in center of swivel for setting cutter at the correct distance.



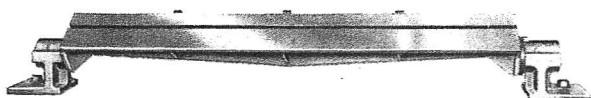
SPECIAL TAPER REAMER GRINDING ATTACHMENT

For grinding the flutes of taper reamers. Comes equipped with one index plate for direct indexing.

Maximum over all length of reamer 10 inches. Maximum diameter 4½ inches.



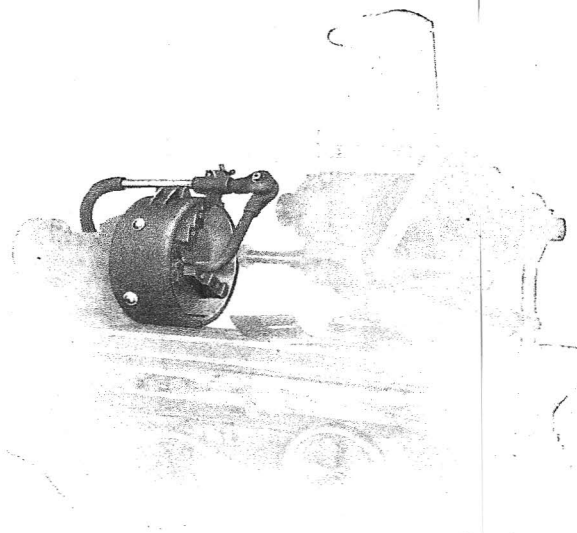
Special Attachments for Bath Universal Grinding Machines



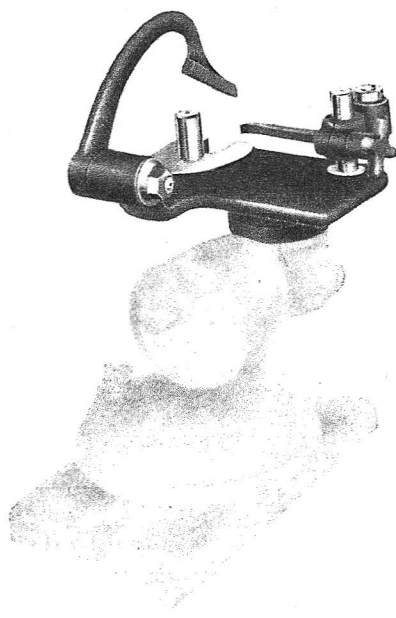
KNIFE GRINDING ATTACHMENT 36" long for the standard machine.

Can be made 48" long used with machine equipped with longer table.

Will grind blades from right angles to the sharpest bevel.

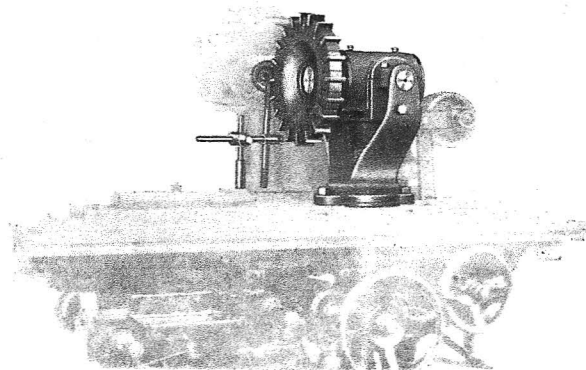


The INTERNAL GRINDING WATER GUARD provides for using water when internal grinding on our Universal Machines. It is self-contained and can be readily clamped to the headstock. The front half of guard is free to be swung out of the way when gauging or clamping work in place. The water nozzle is provided with a universal joint.



THE GEAR CUTTER GRINDING ATTACHMENT is designed to insure the grinding of gear cutter teeth radial. It is provided with a positive gauge which swings over cutter, for setting tooth to, and a spring pawl carried by an adjustable holder which allows pawl to be adjusted against heel of tooth.

This attachment is made to be attached to our Universal Work Holder, as shown on above cut.



The INSERTED TOOTH CUTTER GRINDING ATTACHMENT will Grind Cutters up to 24" in diameter inclusive, and may be moved through 360° horizontally and 10° vertically for clearance.

FOUNDATION PLAN

