

160

THE OLIVER

ACE

UNIVERSAL TOOL AND CUTTER GRINDER



OLIVER INSTRUMENT COMPANY • ADRIAN, MICH., U. S. A.

WONDERFUL DEVELOPMENT

WE name this new Cutter Grinder **ACE**

Because

It Is Absolute "TOPS" in all the qualities that go to make up a SIMPLE, ACCURATE, HANDY and ECONOMICAL Universal Tool and Cutter Grinder.

IT IS SIMPLE, has fewer attachments for the regular run of milling cutters than any other similar machine.

IT IS ACCURATE, only one sliding part with ample bearing efficiently protected from dust.

IT IS HANDY, easy to set up, operator stands in natural position, work always in easy reach and plain view.

IT IS UNIVERSAL, with fewer fixtures; the machine handles a wider range of cutters than the ordinary cutter grinder.

IT IS ECONOMICAL, requires less floor space and requires less outlay in dollars for a superior machine.

A carefully studied design built by a company who have for twenty-five years made a specialty of cutter grinding machinery.

It is truly an **ACE** among cutter grinding machines

AN OUTSTANDING VALUE

These cuts illustrate the complete ACE grinder, the larger cut shows the machine with centers in place and the detail shows the adjustable Timken bearing head with taper for mounting the various types of cutters for which it is adapted.

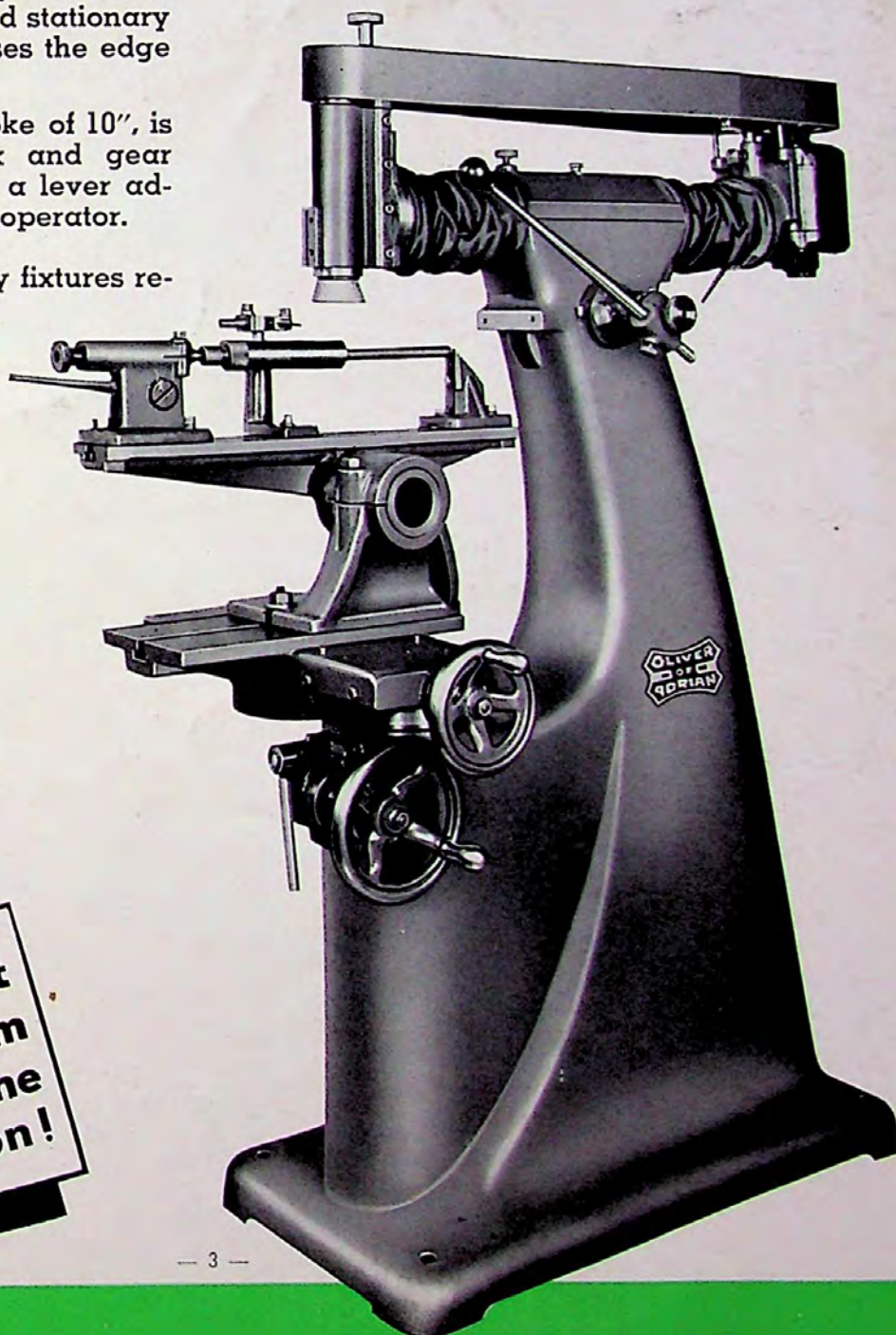
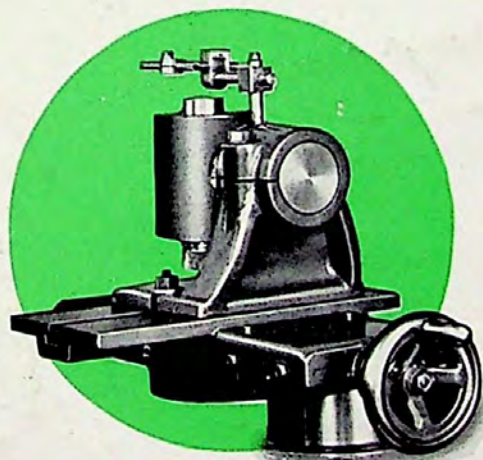
On this machine, the principle of grinding is reversed from the usual type of cutter grinding in that the work is held stationary and the grinding wheel traverses the edge of the cutter.

The grinding wheel has a stroke of 10", is traversed by means of rack and gear which, in turn, is actuated by a lever adjustable to the position of the operator.

The small number of necessary fixtures re-

quired means that in setting up the machine to grind a new cutter and lower initial cost.

Clearance angles are obtained by tilting the grinding wheel the desired amount as indicated on a scale graduated in degrees.

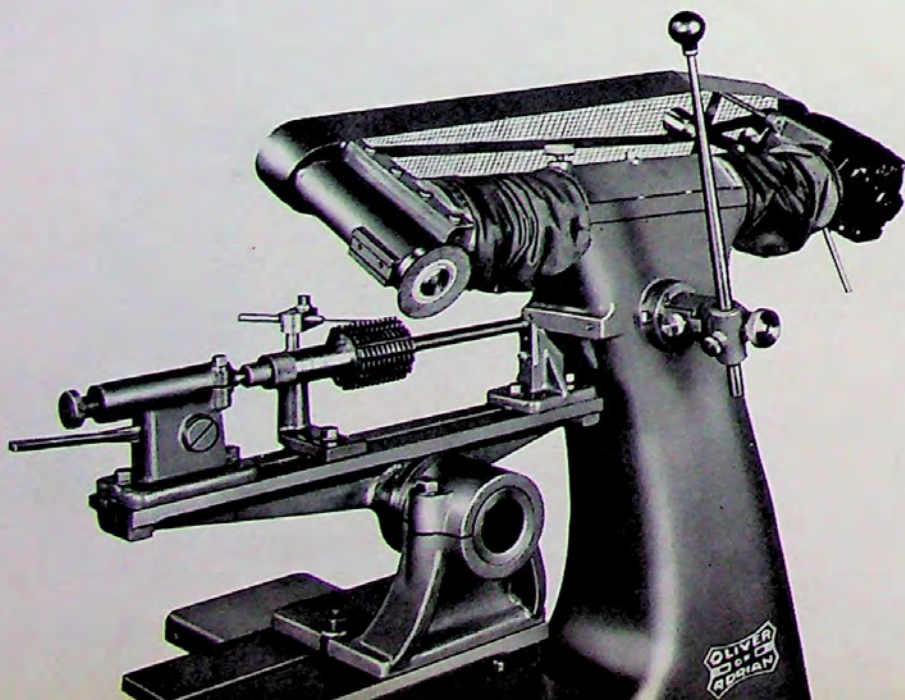
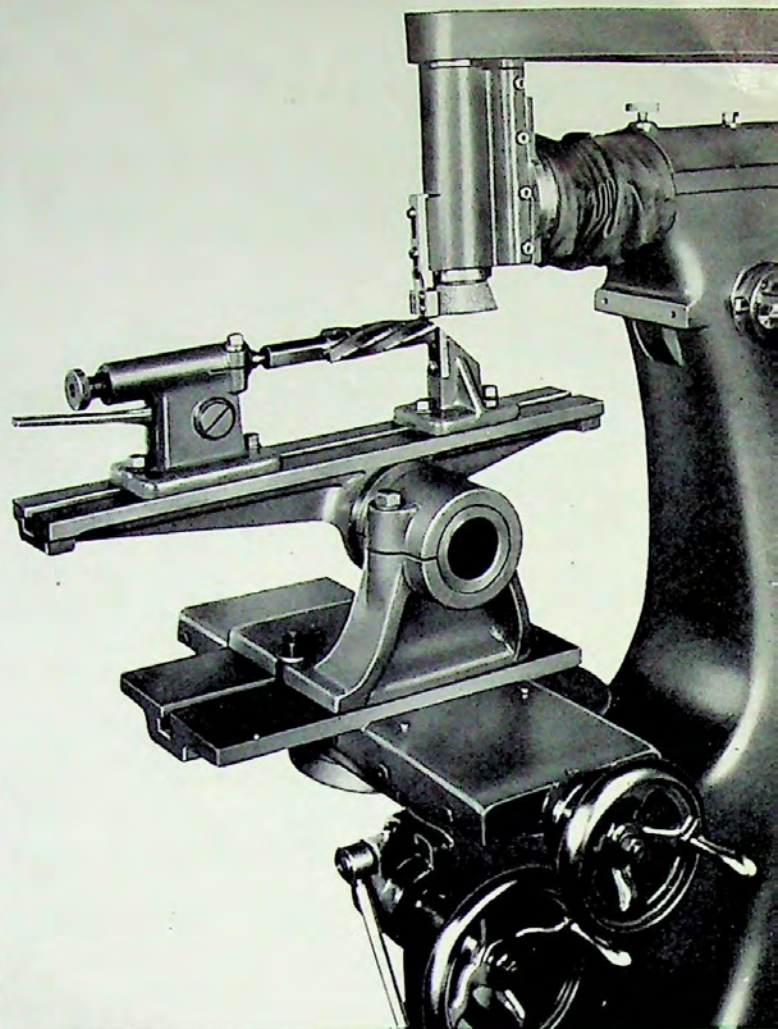


**Don't Neglect
Your Toolroom
It's the Backbone
of Production!**

LET'S GRIND SOME CUTTERS WITH STANDARD FIXTURES

Here's a spiral taper reamer. The table is set to the angle of taper; the wheel is set to the angle of clearance; a lip rest is attached to the spindle bearing which completes the setup.

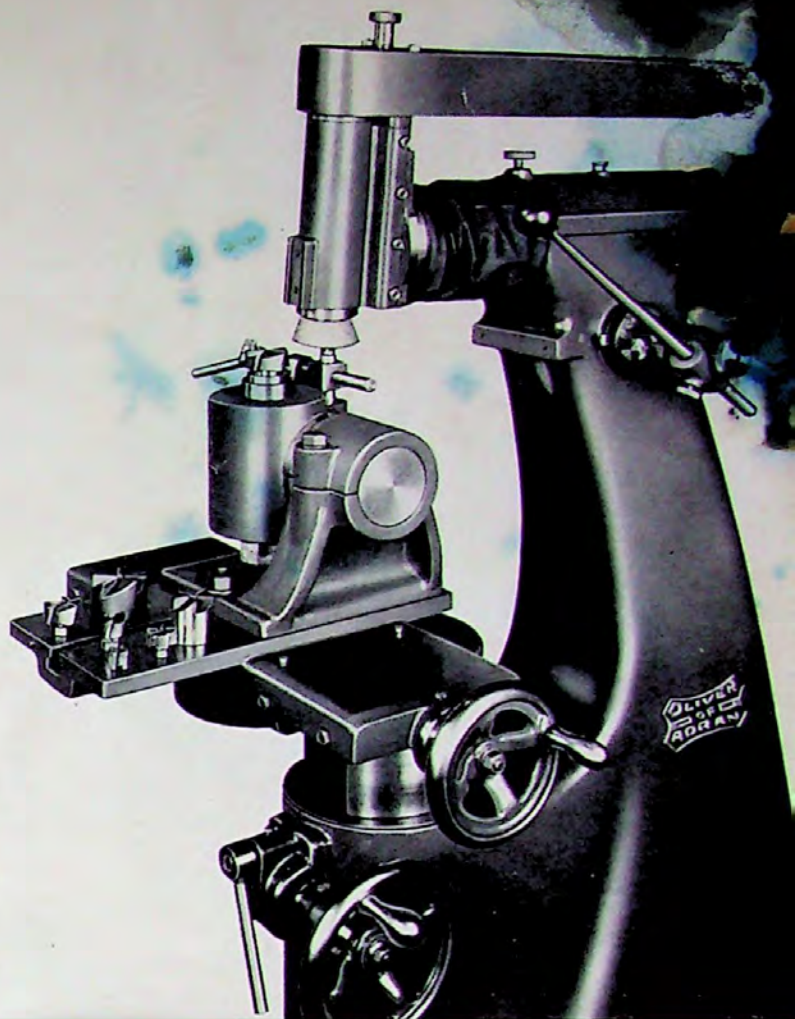
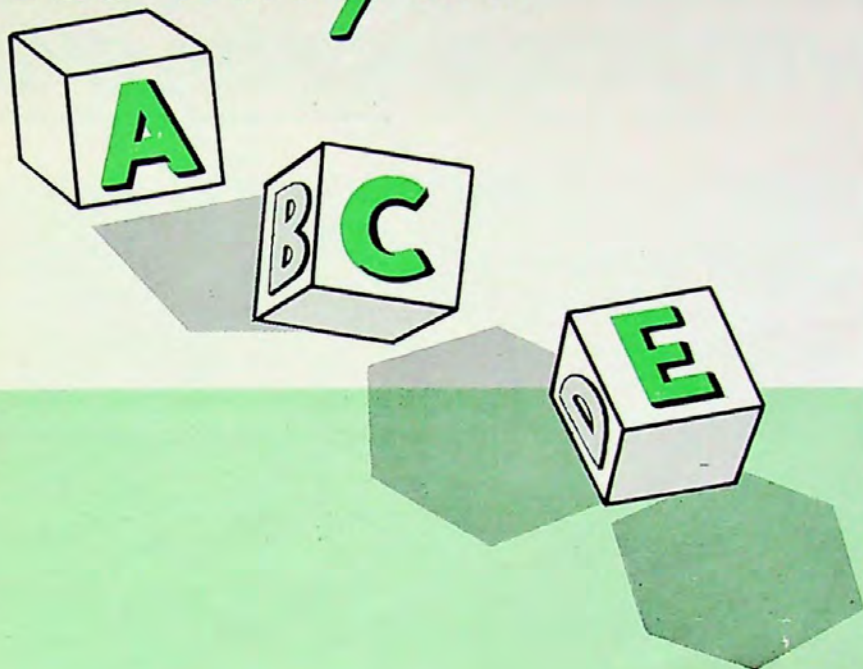
ISN'T THAT EASY?



It is usually considered difficult to grind a hob accurately, but here's how we do it. We mount it on a sliding sleeve, using a fixed lip rest to contact the back of hob teeth, incline the grinding spindle to the proper angle and the machine is ready to produce an accurate grind.

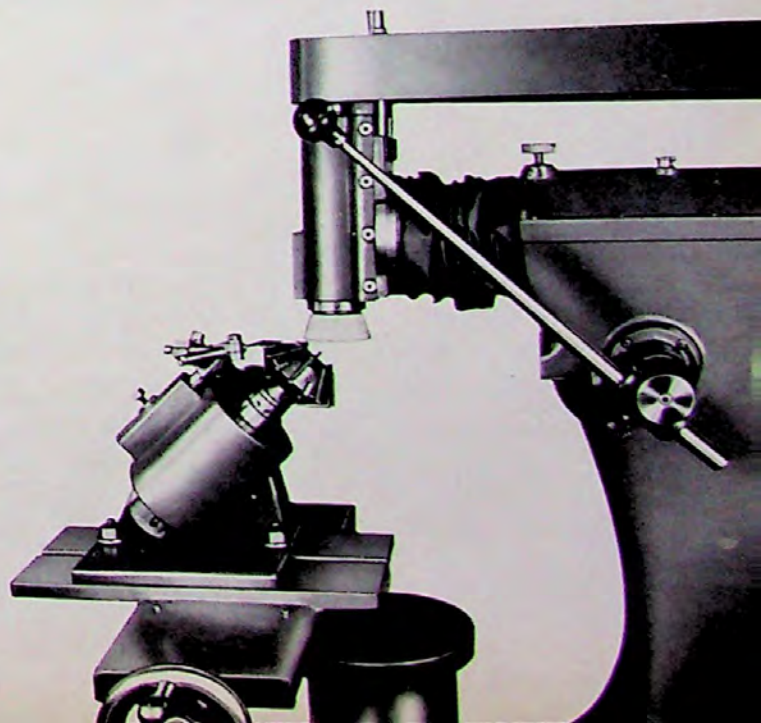
THE SIMPLEST METHOD IS THE BEST

As Easy as

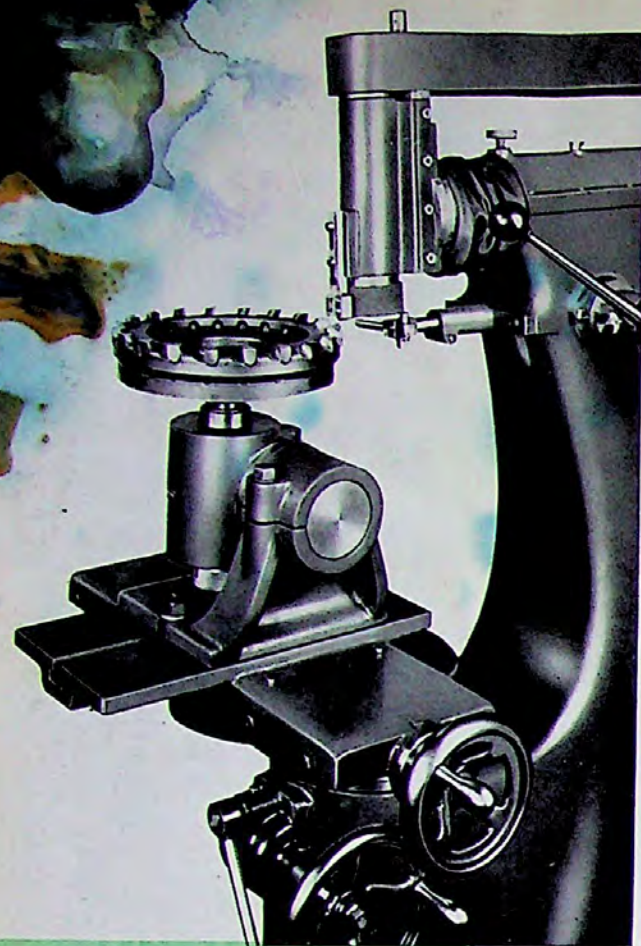


Every shop has quantities of spotfacers, counterbores and end mills that need grinding on the end. A glance at the accompanying cut will show how easy it is to handle this type of work on the ACE. The clearance is obtained by tilting the spindle to its desired angle, a simple lip rest locates the tool and the work proceeds. A rapid, accurate operation. Isn't it?

This double angle cutter is easy to grind on the top face as shown, but the back angle next to the shank is extremely difficult, if not impossible on some grinders. With the ACE it is only necessary to grind the top face as shown, then turn the bearing down until the back angle is horizontal and continue the grind, that is, getting both grinds with one mounting of the cutter. This is a really valuable accomplishment.

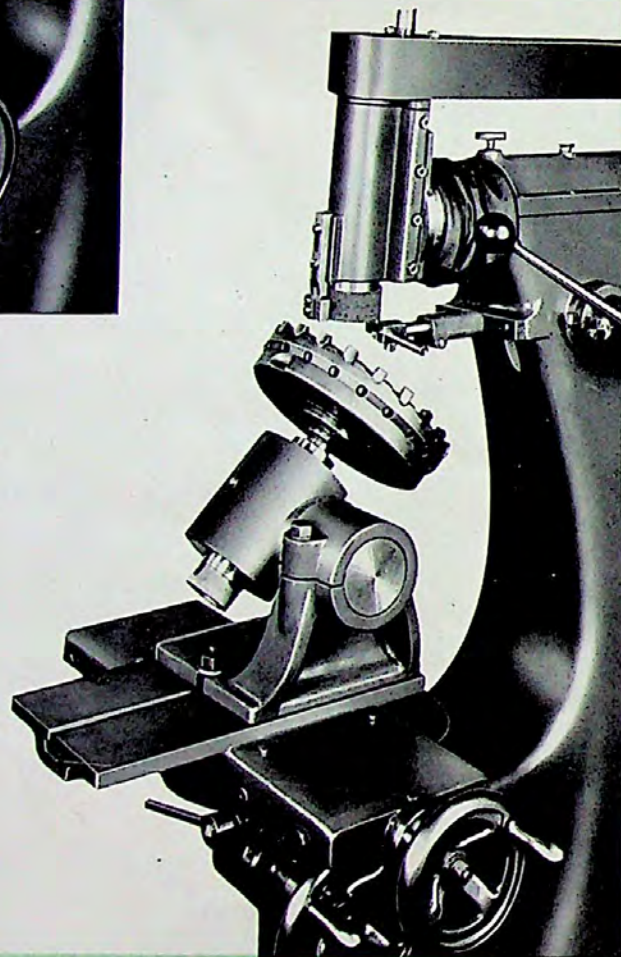


HERE'S SOMETHING YOU WILL APPRECIATE DIFFICULT CUTTERS EASILY GROUND WITH OUR SIMPLE STANDARD FIXTURES



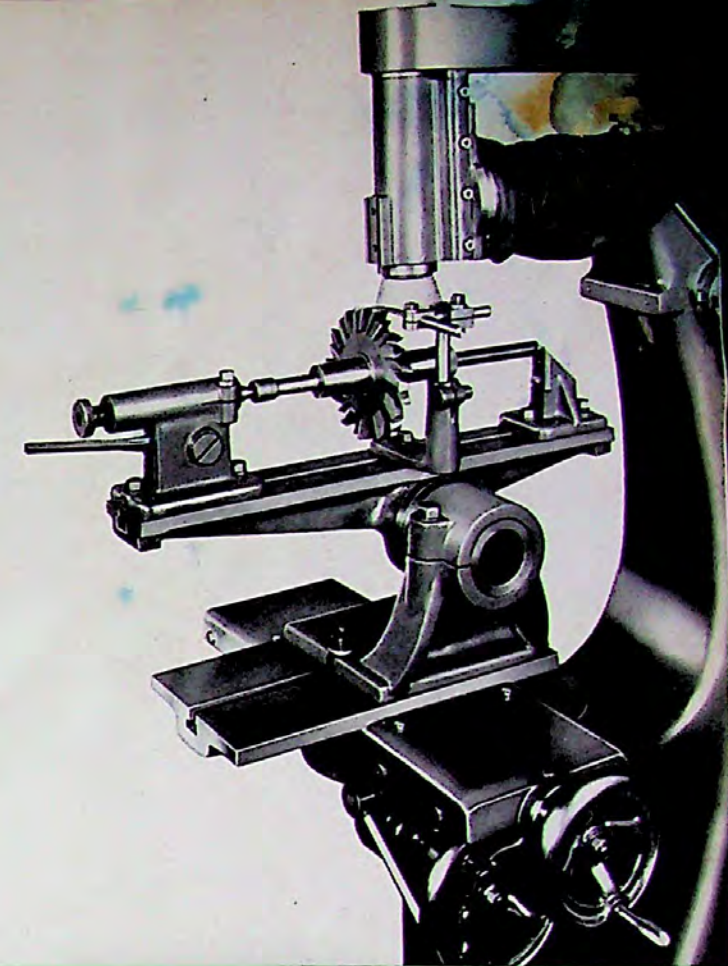
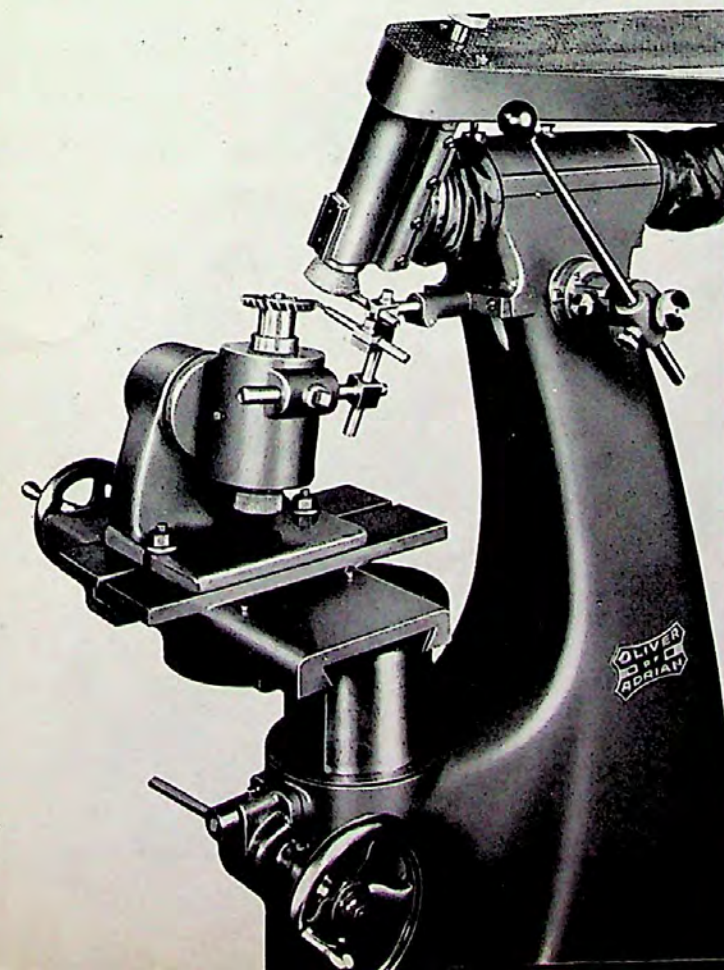
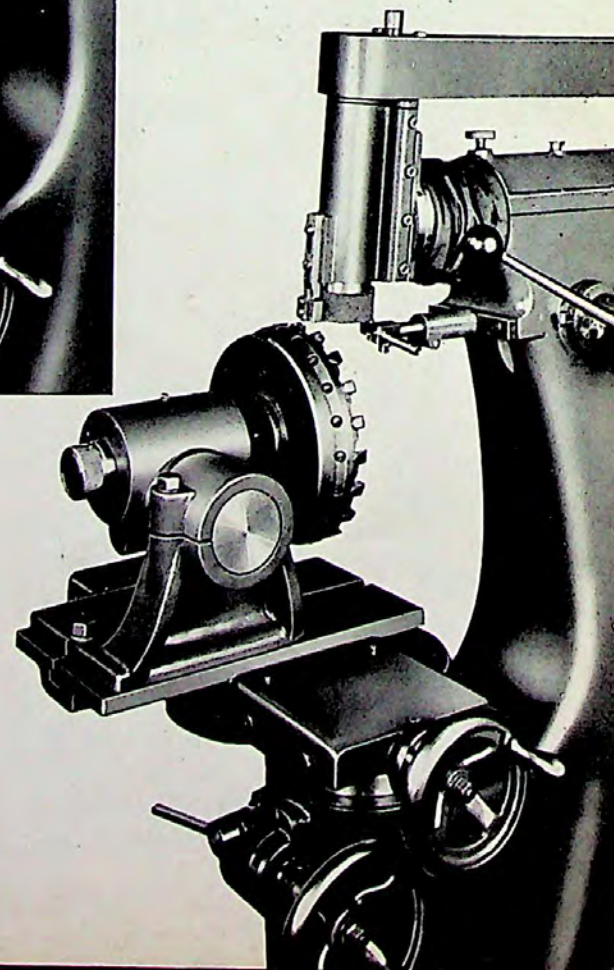
When grinding face mills, the face is, of course, the most particular grind. We assure absolute accuracy by the use of a diamond over which the wheel travels whenever desired. Thus, the wheel wear is compensated by bringing the grinding surface to an absolute level for each tooth at any time, if grinding tungsten carbide, or at any set interval around the cutter. After the face is ground, the bearing is tilted forward to 45°, or any angle desired, and the corner grind completed, using the diamond method to compensate for wheel wear.

Now, turn the bearing forward to its horizontal position and grind the outside of the cutter. This completes a series of operations without removing the cutter from the fixture and you may be assured of a cutter that will give you the best there is in it.



Perhaps you have many face mills, shell end mills and similar cutters to grind. If so, you know how difficult it is to have all teeth cutting, especially on the larger sizes.

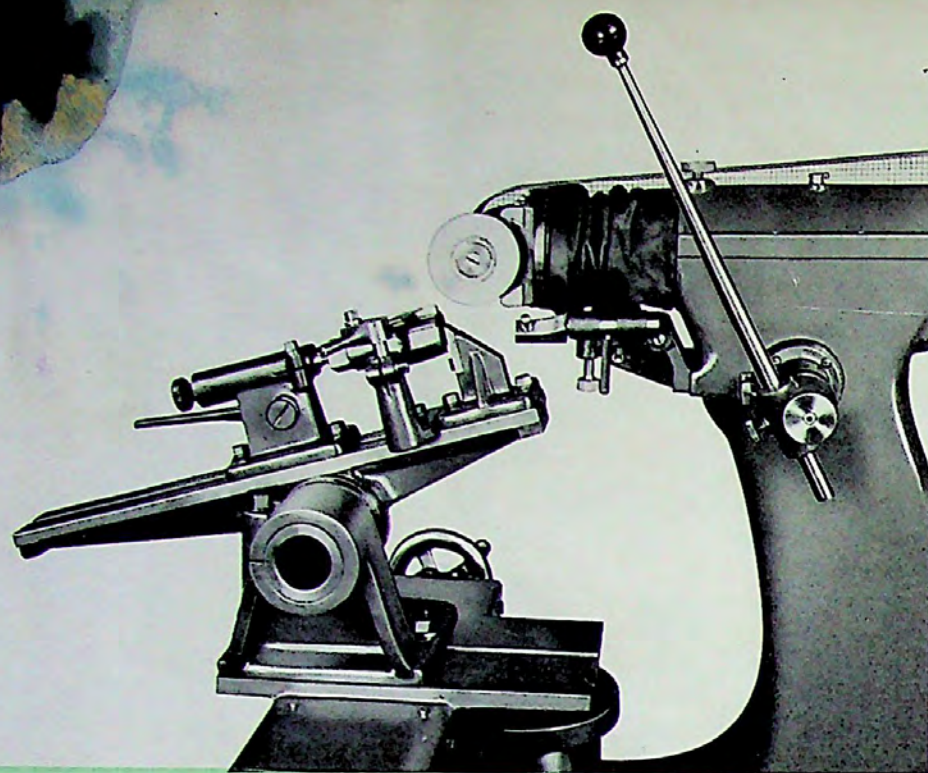
With the ACE you can be assured of an absolutely accurate cutter so far as the grinding is concerned, and this means a lot in the rapid production of good surfaces.



The staggered-tooth cutter is another example of a cutter "hard to grind" accurately on the conventional cutter grinder. On the ACE we mount this cutter on the sliding sleeve and set up a lip rest having a double angle, the same as that on the cutter. The cutter can then be moved back and forth under the wheel, grinding each tooth in succession rather than alternately as is usually done, and producing a cutter accurate on its O. D.

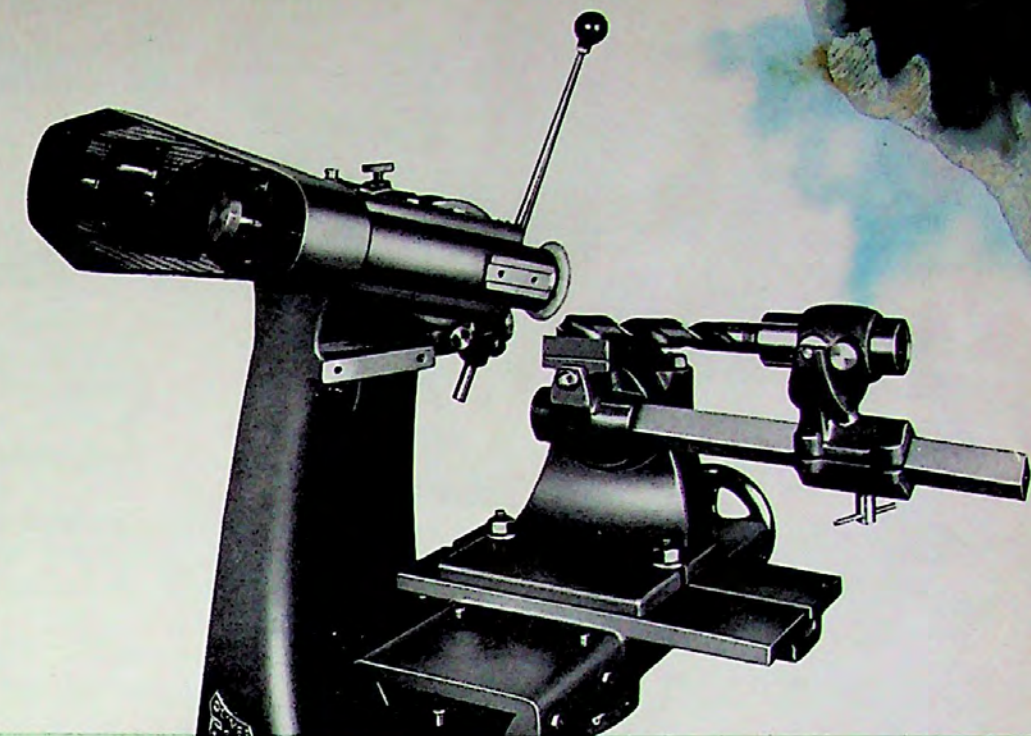
A helical Fellows Gear Cutter is mounted on the anti-friction bearing. The bearing is tilted forward to the angle of top rake. The spindle is turned to the angle of tooth. With the lip rest adjusted, the cutter is ready for a perfect grind.

Double angle adjustments are easy with an ACE.



HERE ARE
THE EXTRAS
WITH THE
Unusual Jobs
Handled with

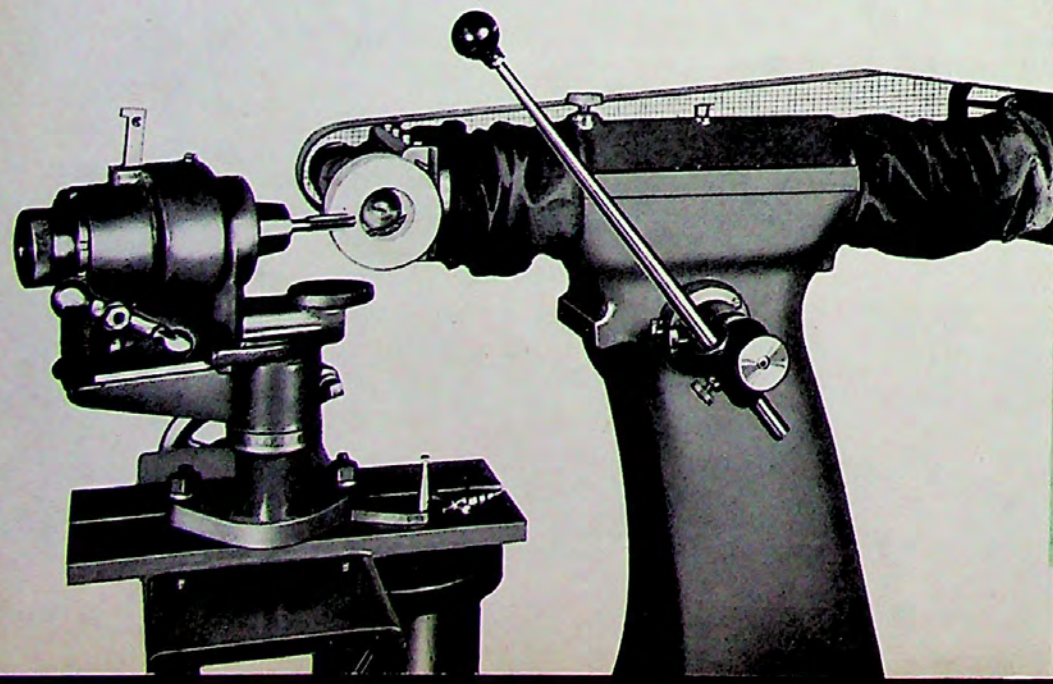
SOME OF
AVAILABLE
ACE
are Easily
Special Fixtures



When you own an Oliver ACE Universal Tool and Cutter grinder, a simple device for forming the wheel will permit you to grind taps up to the limit of swing of the centers. It grinds the tap with a correct eccentric backoff with the proper clearance angle at the cutting edge.

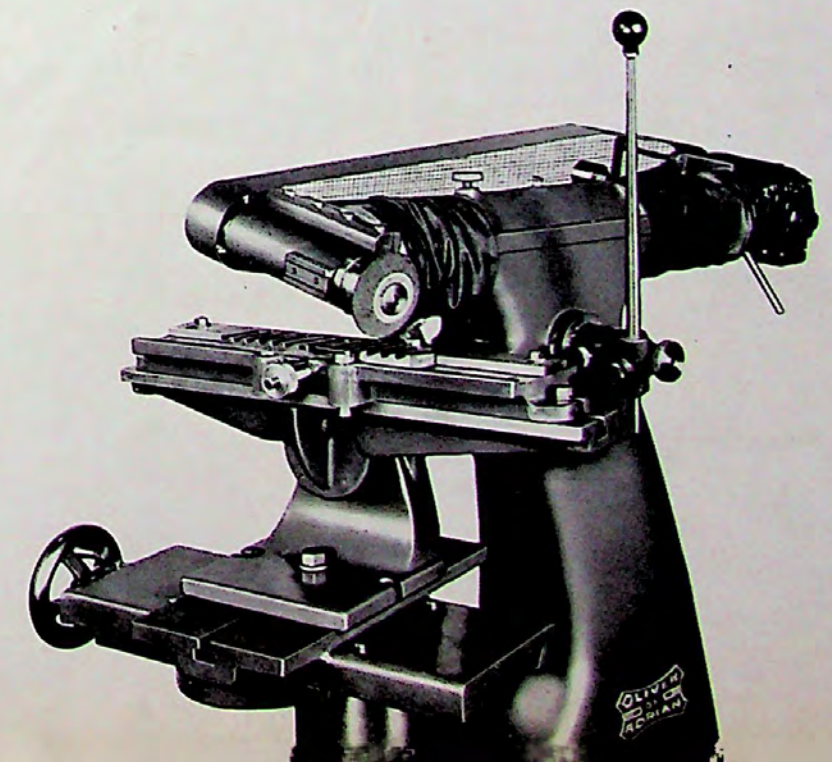
We can supply a simple attachment which provides the user with a complete Point Thinning machine at small cost. This attachment handles drills up to 3" in diameter and many types of thinning can be obtained by its use.

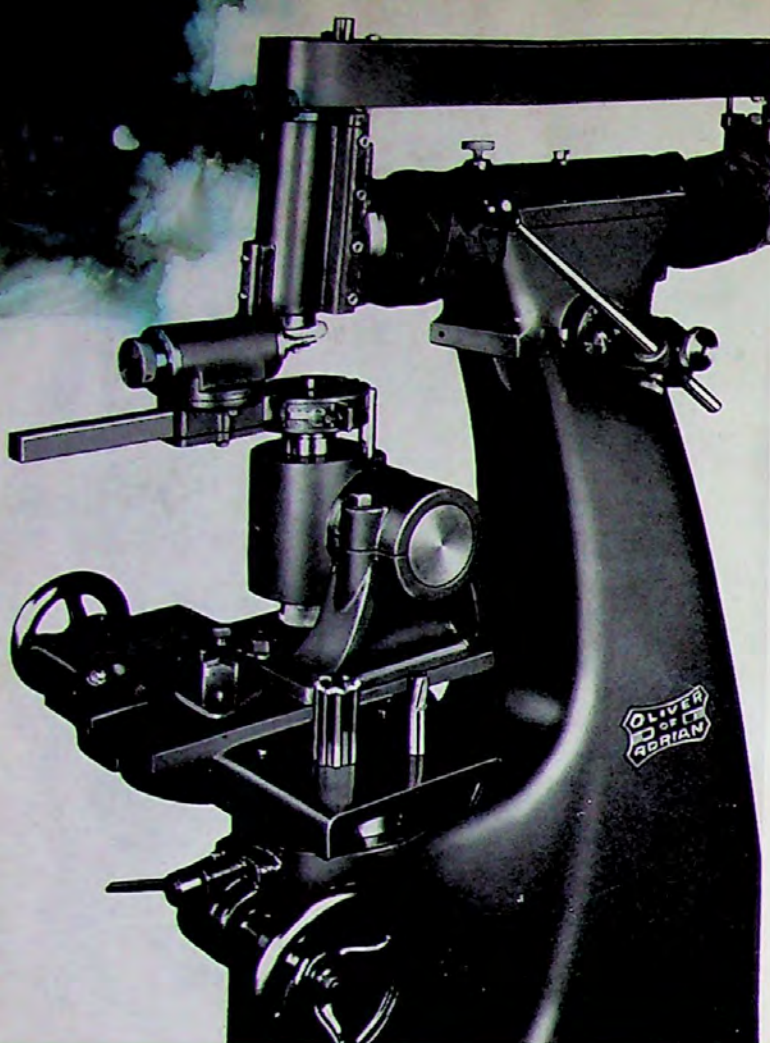
DISCONTINUED



We can also supply our standard Tap Grinder Head which can be applied to the ACE to give a complete tap grinder for taps with shanks under 1" and 2-3-4 flutes.

If you use broaches, we can supply a fixture for grinding them in the throat, maintaining the original spacing of teeth or on the clearance surface of the teeth, maintaining accurately the variation in height between successive teeth.





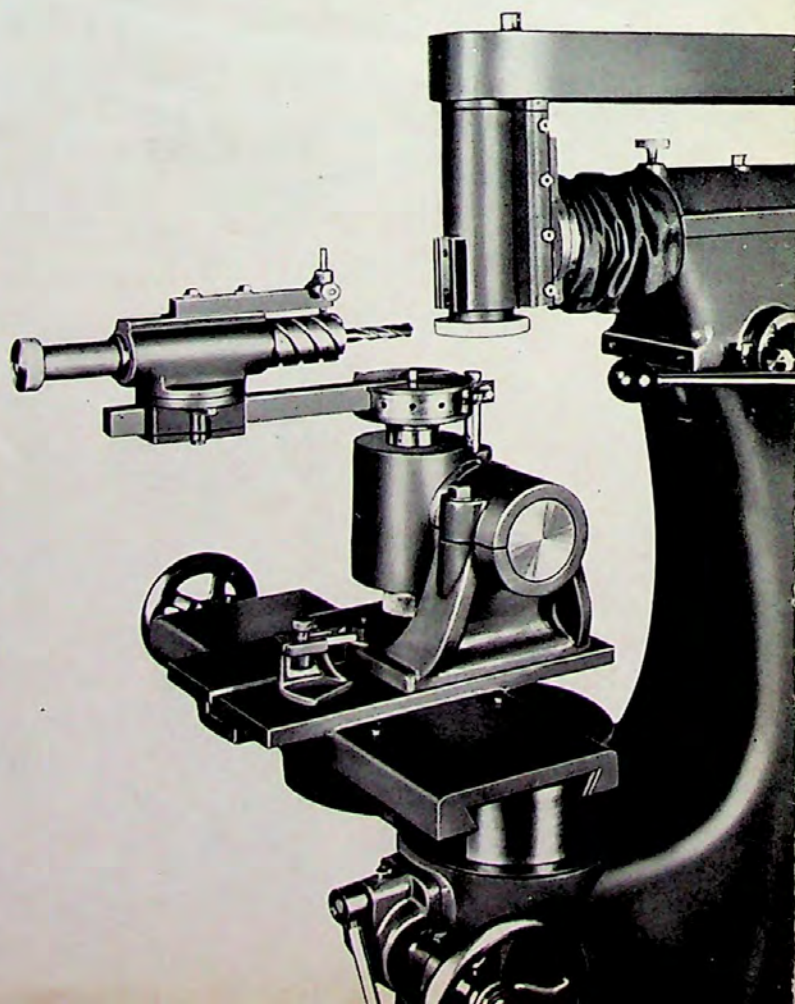
End mills with round corners especially in the smaller sizes are a problem in anybody's shop.

For end mills with round corners large enough to permit the use of a lip rest we can supply a fixture which utilizes the anti-friction bearing as the swinging element. A gage sets the corner radius as desired.

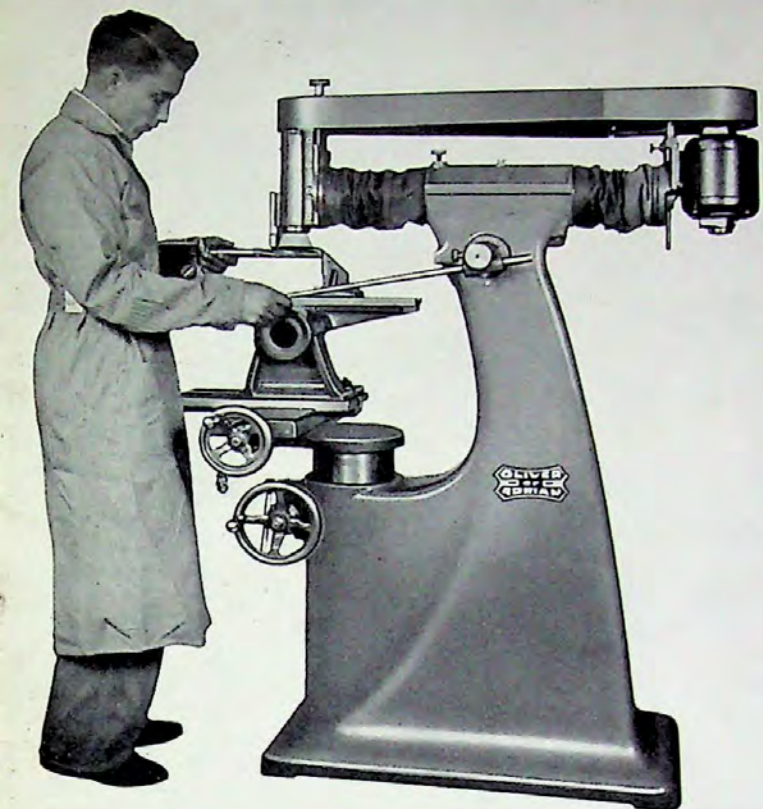
The end mill is mounted in the bearing and swung around the wheel which is set at the clearance angle.

It is quick to set up, easy to operate and produces an excellent job.

For end mills too small to use a lip rest or used in a quantity of one size, we have developed a fixture using a dummy which indexes the end mill and guides the helical tooth past the grinding wheel when the dummy strikes the bearing, the fixture is swung around the pivot and a round corner is generated in the same operation.



HIGHLIGHTS OF THE **AC**



- 1** The grinding wheel spindle is mounted on double row precision spindle bearings with spring take-up.
- 2** Motor and spindle are interconnected and are always in line. When setting for clearance, the unit is clamped by one lever.
- 3** The ram is a square section of cast iron and is carried in a bearing 15" in length, the weight is supported in ball bearings and adjustment is easily made.
- 4** The operator stands in a natural position (see cut) to operate the machine with the control lever in easy reach and the work in direct view.
- 5** The operating lever can be adjusted for length and position and a stop is provided for the ram at either end of the stroke.
- 6** Only two complete fixtures are supplied which are sufficient for all the general run of cutters and reamers and for many types impossible to sharpen on conventional grinders.

SPECIFICATIONS

SUITABLE FOR GRINDING

Face Mills up to 15" in diameter.
Slitting Saws, End Mills, Angular Cutters,
Dovetail Cutters, Slab Mills, Spot Facers,
Side Mills, Formed Cutters, Reamers, Taper
Reamers, Spiral Taper Reamers, Gear Cut-
ters, Double Angle Cutters, Fellows Helical
Cutters, Etc.

Floor Space 3 x 5 feet.

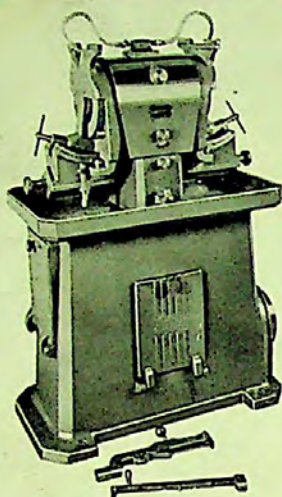
Maximum distance between centers	15"
Swing of centers	8"
Cross carriage travel	8"
Angular adjustment of carriage	180°
Longitudinal adjustment of table	10"
Angular adjustment of spindle head	180°
Angular adjustment of table in vertical plane	45°
Maximum distance between grinding wheel and tilting table	7 1/2"
Maximum distance between grinding wheel and base table	16 3/4"

Maximum horizontal travel of grinding unit	10"
R.P.M. of grinding wheel spindle	6000
Vertical adjustment of base table	12 1/2"
Size of center table	3 1/2" x 24"
Vertical adjustment of grinding wheel	1"

STANDARD EQUIPMENT

Universal Fixture	
Centers and Table	
Center arbor	
Anti-friction bearing head	
1/2 H.P. 3600 R.P.M. Ball Bearing Motor	
Drive belt, endless construction	
3"-2 1/4" x 1 1/4" x 5/8" No. 11 Cup wheel	
4" x 3/8" x 5/8" Saucer wheel	
3" x 1 1/2" x 5/8" Straight cup wheel	
Assortment of Lip Rests	
Wrenches, Stick dresser, Diamond, Belt guard	
Net weight machine	1090 Lbs.
Domestic shipping weight	1450 Lbs.
Export shipping weight	1550 Lbs.
Case measurements	35" x 57" x 60"

Other OLIVER Products



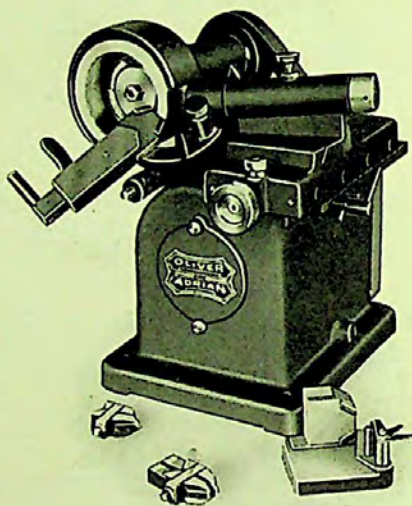
TEMPLATE TOOL BIT GRINDER

A new type of single point tool grinder — works from a master template — assures exact reproductions. A heavy, rigid, vibrationless machine for accurate work.



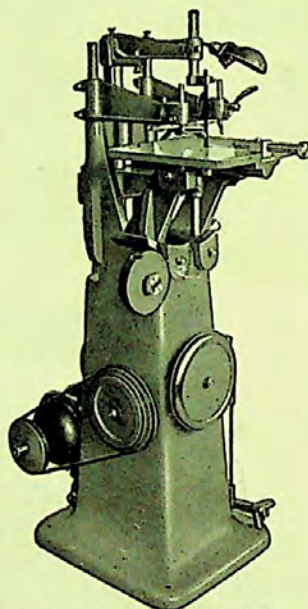
No. 510 DRILLPOINTER

For Drills $\frac{1}{4}$ " to 3" — 2-3-4 flute. Variable clearances, variable point angles. Automatic operation. Produces a theoretically perfect point that is always the same.



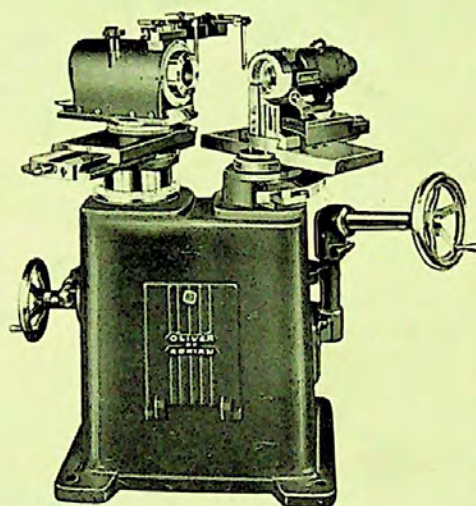
OLIVER BENCH DRILL GRINDER

Bench grinder, hand operated, for drills No. 57 to $\frac{1}{2}$ ". Right hand, with an improved point. (Attachments available for grinding oil hole drills, left hand and other special points.)



DIE MAKING MACHINES

Saves 50% to 60% of the labor over hand methods, in the cost of making expensive dies, gages, cams, templates, stripper plates, experimental work, etc. A complete line, both bench and pedestal types, for work in materials up to 3" thick. A machine that will pay for itself in 30 days if kept busy.



NO. 2 ARC FACE MILL GRINDER

A precision machine, hand operated, designed for the accurate sharpening of face mills, 6" to 26" in diameter. Cutters may be sharpened either with or without radius. The radius may be varied from 0" to 2". Available for full automatic operation.

OLIVER INSTRUMENT COMPANY

ADRIAN, MICHIGAN, U. S. A.

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