Oct. 11, 1949. L. A. ROCHELEAU 2,484,590

UNIVERSAL END MILL GRINDING FIXTURE

Filed March 15, 1948 2 Sheets-Sheet 1

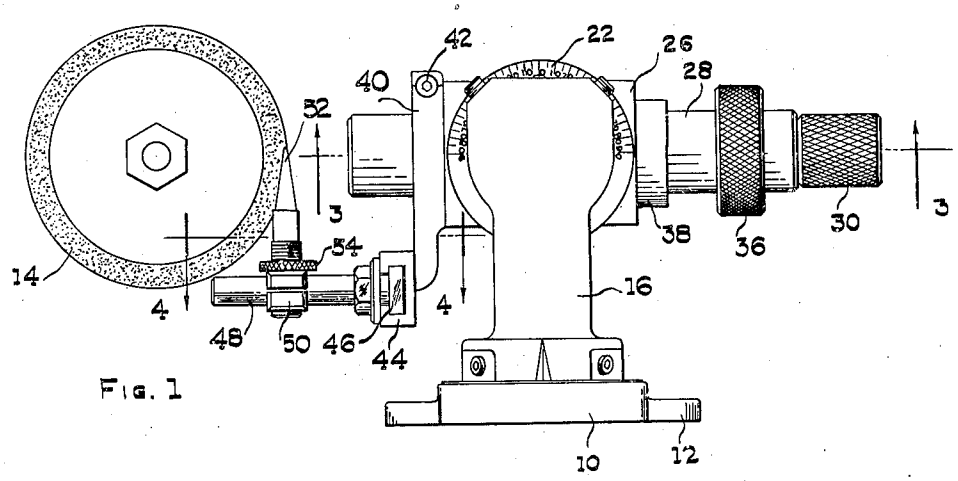


FIG. 1

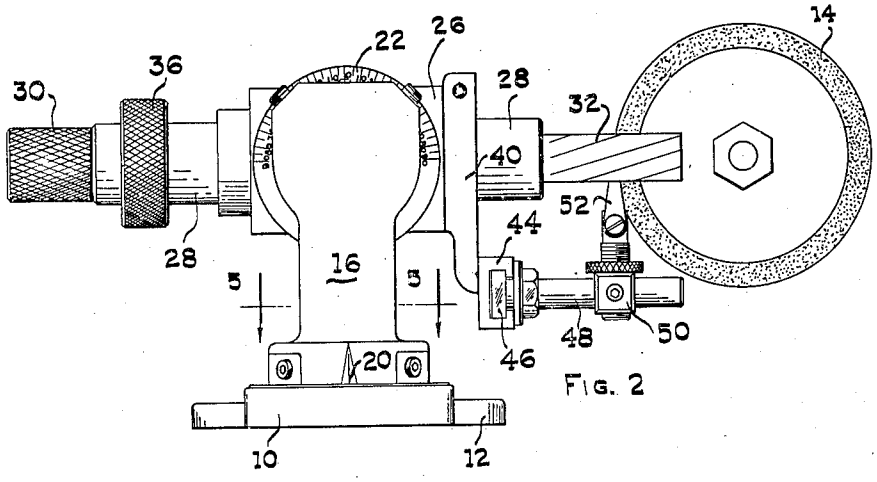


FIG. 2

INVENTOR.
L. A. ROCHELEAU
BY
Charles R. Fay, atty.

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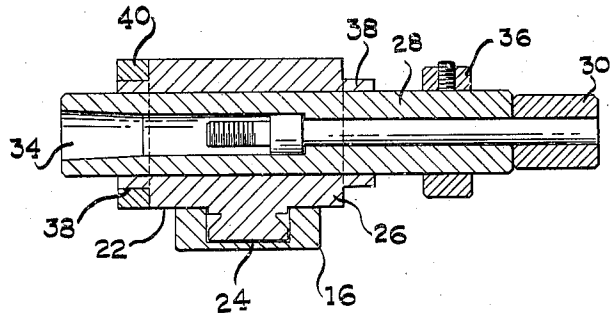


FIG. 3

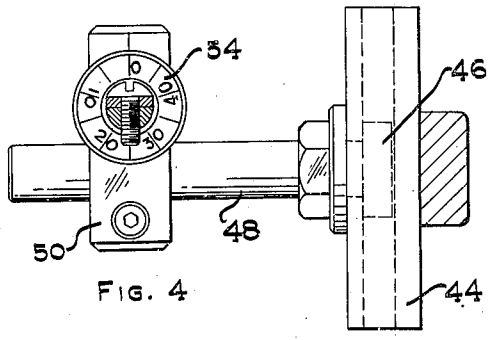


FIG. 4

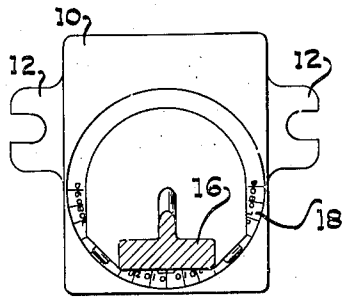


FIG. 5

INVENTOR.
L. A. ROCHELEAU
BY
Charles R. Fay, atty.

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UNIVERSAL END MILL GRINDING FIXTURE

Leopold A. Rocheleau, Leominster, Mass.

Application March 15, 1948, Serial No. 14,963

7 Claims. (Cl. 51—225)

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This invention relates to a new and improved universal end mill grinding fixture which may be used to grind tools at either side of the grinding wheel and the main feature of which involves an adjustable ring-like device clamped to a head and having a guide finger thereon for guiding right or left end mills which are fluted either right or left hand.

Further objects of the invention reside in the provision of a universal tool grinding fixture including a construction which may be adjusted to grind right or left hand end mills on the flutes thereof to sharpen the same; for grinding the end of the end mills; for grinding end mills with either left or right hand spirals, and for grinding tools at any angle.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a view in front elevation of a device according to the invention;

Fig. 2 is a view similar to Fig. 1 but showing the device at the opposite side of the grinding wheel;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a section on line 4—4 of Fig. 1; and

Fig. 5 is a section on line 5—5 of Fig. 2.

As shown in the drawings, there is provided a base 10 which is adapted to be secured to a machine bed by any desired or convenient means, such as the ears 12, which may be bolted to a machine bed or platen in desired relation to the grinding wheel 14 thereof.

Pivotally mounted on the base 10 there is a standard 16 which may be angularly adjusted about a vertical axis to any desired degree as indicated by the indicia 18 which appears on the base 10, the standard 16 being provided with an index finger 20 so as to indicate the degree of angular departure from the zero position shown in Figs. 1 and 2. The standard 16, of course, is provided with a clamping mechanism which may be of any usual or convenient kind.

The standard 16 rises as shown in Figs. 1 and 2 and is provided at its upper end with a rotary index plate 22 mounted on a horizontal axis 24 and adapted to be clamped in any rotative position desired about this axis. Integral with the plate 22 is a barrel or sleeve 26 which is, of course, angularly adjustable therewith. This sleeve slidingly and rotatingly receives a collet 28 having an operating handle 30 for holding a tool 32 therein at 34 and also provided with a handle 36 for moving the collet in and out and rotatably in

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the sleeve 26. Indexing devices may, of course, be used with the collet.

Both ends of the sleeve 26 are milled out on a circle as indicated at 38 to receive a split ring 40 which may be clamped thereto as by means of a screw 42 in any desired position thereon. However, the two positions intended to be used will be those shown in Figs. 1 and 2 and positions at 180° thereto for operating on left handed flutes or spirals as will appear hereinafter.

The ring 40 is provided at one end thereof with a guideway 44 receiving an undercut support 46 for a bar 48 having adjustably mounted thereon as by a clamp 50, a guide finger 52 angularly adjustable thereon and having a collet type of clamp 54.

In the use of the apparatus, as shown in Fig. 1, the device is set for grinding right hand end mills with right hand spirals and the set up of Fig. 2 shows grinding right hand end mills with a left hand spiral. The end mill 32 is inserted in the collet 28 and clamped therein by means of the thumbpiece 30 and one of those spirals of the end mill is engaged with the top of the finger 52, whereupon the thumbpiece 36 is grasped to move the collet through the sleeve into engagement with the grinding wheel 14, the end mill or another tool being ground and the collet being rotated by the engagement of the tool with the finger 52, so that a smooth even grinding cut is obtained.

In order to reset the device from the Fig. 1 position to the Fig. 2 position, the ring 40 may be placed in the other end of the sleeve and the collet 28 reversed or the entire device could be swung about its vertical axis on base 10.

It is also pointed out that the guide finger 52 may be swiveled half-way around to depend instead of rise up from its support 48 or it may be set at any angle if such is desired. The entire device may be set at 90° to the position shown in Figs. 1 and 2, to grind the end of the end mill or it may be swiveled to any degree to grind any angle desired.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed otherwise than as set forth in the claims, but what I claim is:

1. A device of the class described comprising a base, a standard, means to swivel the standard on the base on a vertical axis, a sleeve swiveled on the standard on a horizontal axis, a tool holder slidably and rotatably mounted in the sleeve, a guide finger holder for the tool adjustably and removably mounted on the sleeve at each end

thereof and movable in all adjustments therewith, and a guide finger on the holder.

2. A device of the class described comprising a a base, a standard, means to swivel the standard on the base on a vertical axis, a sleeve swiveled on the standard on a horizontal axis, a tool holder slidably and rotatably mounted in the sleeve, a ring rotatably adjustable on the sleeve at either end thereof, and a guide finger for the tool adjustably mounted on the ring and movable in all adjustments therewith, said guide finger being adjustable about the axis of said sleeve.

3. A universal tool grinding fixture comprising a base, a standard thereon and angularly adjustable with relation thereto on a vertical axis, a sleeve on the standard and angularly adjustable thereon in a horizontal axis, a collet or the like slidable in the sleeve, a ring adjustable on and removable from the sleeve at each end thereof, and a rest in the form of a pin mounted on the ring to engage a spiral of a tool held in the collet.

4. A universal tool grinding fixture comprising a base, a standard thereon and angularly adjustable with relation thereto on a vertical axis, a sleeve on the standard and angularly adjustable thereon in a horizontal axis, a collet or the like slidable in the sleeve, a ring rotatably adjustable on the sleeve and a rest in the form of a pin mounted on the ring to engage a spiral of a tool held in the collet, said rest being revolvably mounted on the ring to depend from the sleeve or to rise up therefrom.

5. A universal tool grinding fixture comprising a base, a standard thereon and angularly adjustable with relation thereto on a vertical axis, a sleeve on the standard and angularly adjustable thereon on a horizontal axis, a collet or the like slidable in the sleeve and a rest in the form of a pin mounted on the sleeve to engage a spiral of a tool held in the collet, and a ring revolvable on the sleeve, the rest being secured in adjusted position on the ring.

6. A universal tool grinding fixture comprising a base, a standard thereon and angularly adjustable with relation thereto on a vertical axis, a sleeve on the standard and angularly adjustable thereon on a horizontal axis, a collet or the like slidable in the sleeve and a rest in the form of a pin mounted on the sleeve to engage a spiral of a tool held in the collet, and a ring revolvable on the sleeve, the rest being secured in adjusted position on the ring, said sleeve receiving the ring at either end selectively.

7. A universal tool grinding fixture comprising a base, a standard thereon and angularly adjustable with relation thereto on a vertical axis, a sleeve on the standard and angularly adjustable thereon on a horizontal axis, a collet or the like slidable in the sleeve and a rest in the form of a pin mounted on the sleeve to engage a spiral of a tool held in the collet, and a ring revolvable on the sleeve, the rest being secured in adjusted position on the ring, said sleeve being circularly recessed at both ends to selectively receive the ring at either end and pointing either up or down at either end for right and left hand endmills with left or right hand spirals.

LEOPOLD A. ROCHELEAU.

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