Jan. 8, 1952 E. OLDHAM 2,581,496

ATTACHMENT FOR DRESSING GRINDING WHEELS

Filed May 11, 1948 2 SHEETS—SHEET 1

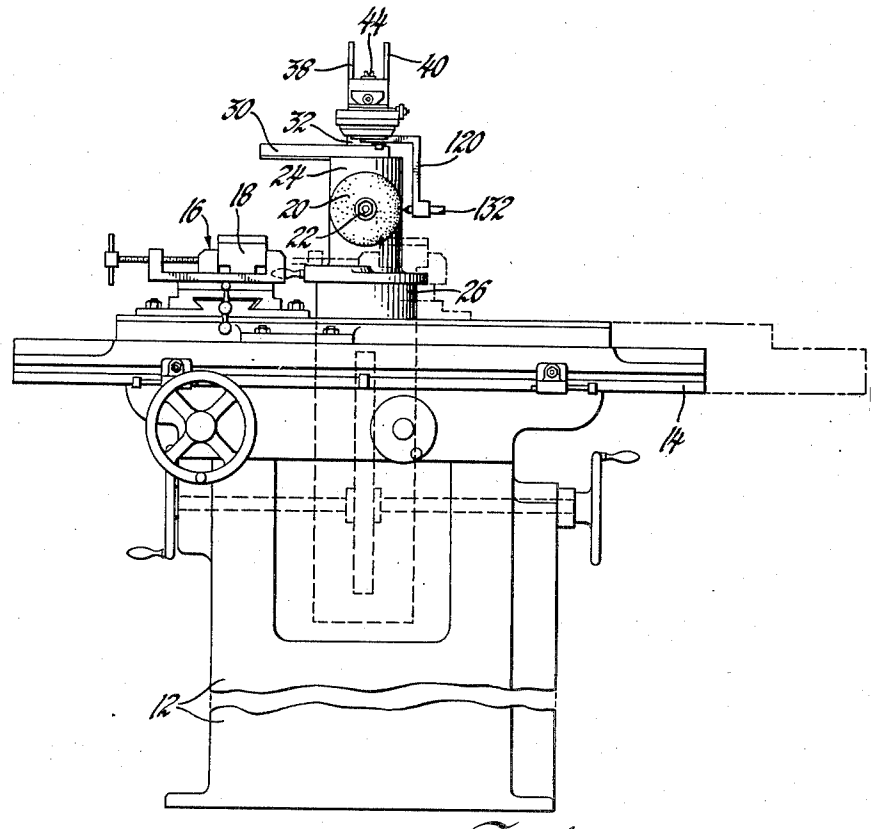

Fig. 1

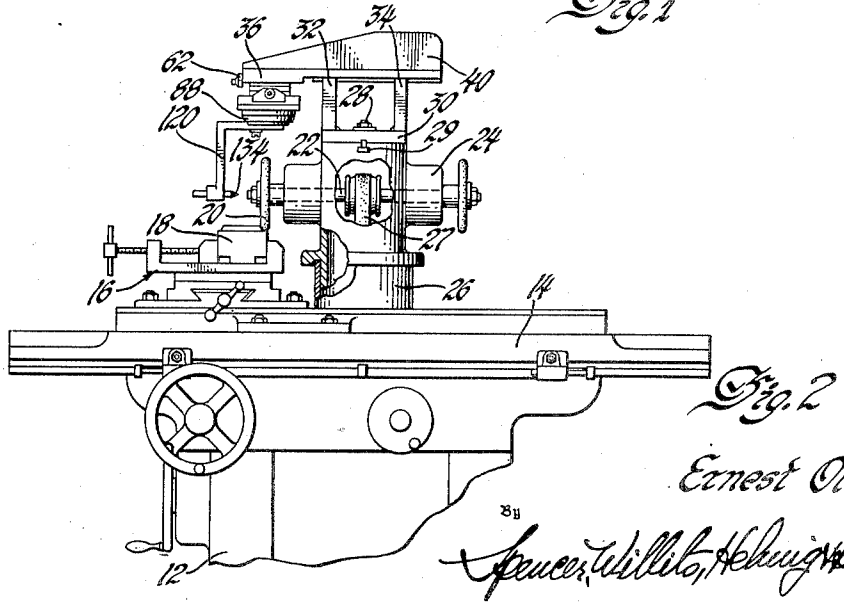

Fig. 2

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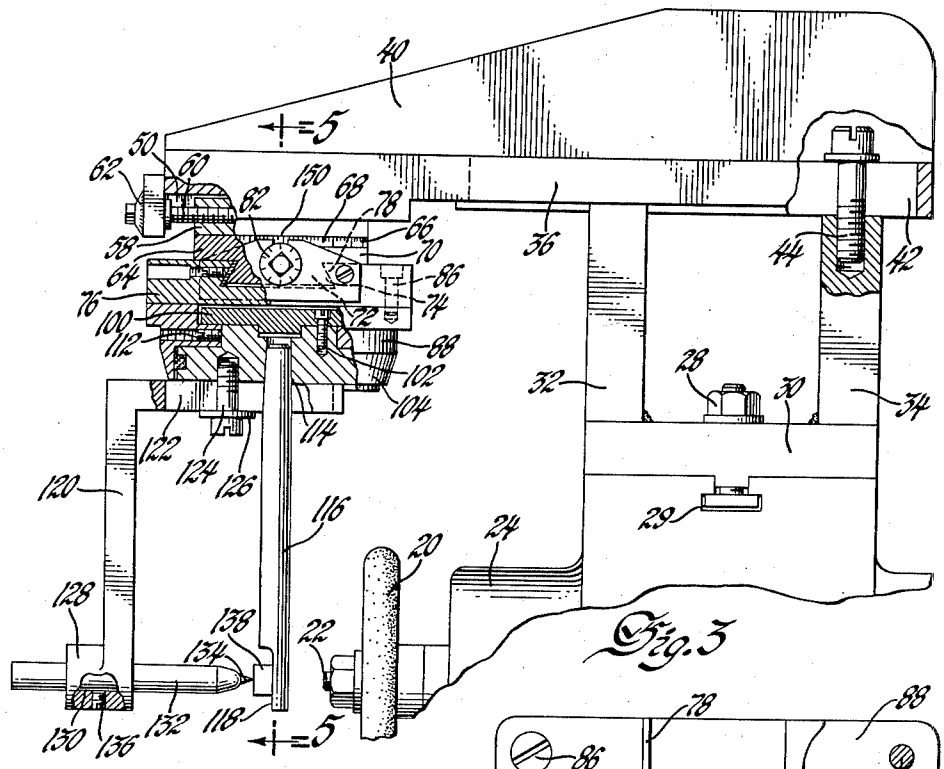

Fig. 3

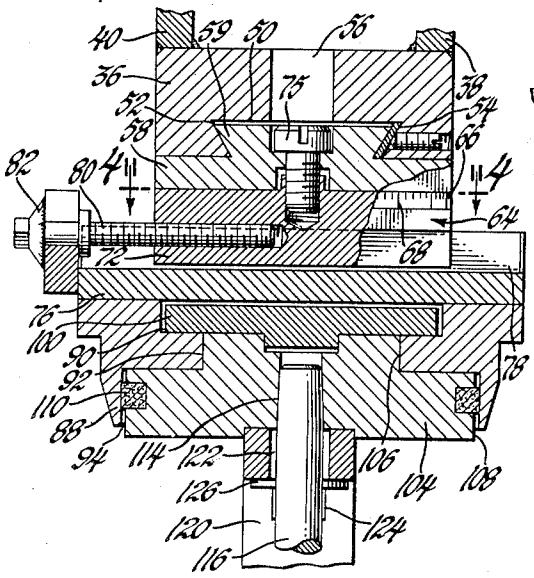

Fig. 5

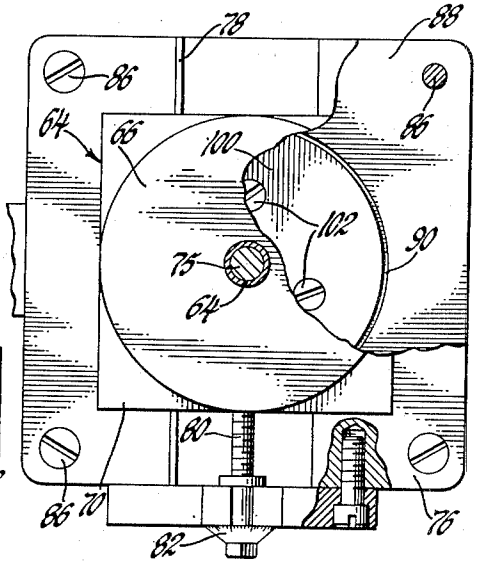

Fig. 4

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ATTACHMENT FOR DRESSING GRINDING WHEELS

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4 Claims. (Cl. 125—11)

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This invention has to do with an improved attachment for cutter grinders wherein the grinding wheel may be dressed to provide thereon either a radius or an angular surface (or a combination of both).

Among the objects of the invention are the following: to provide an improved attachment in which the relationship between the abrasive wheel and work piece is not destroyed by the dressing operation; to provide an improved device of the class described in which the dressing tool may be swung into position readily and, after use, swung out of the way; to provide an improved dressing attachment for abrasive wheels whereby either angles or radii (or a combination of both) may be produced upon the abrasive wheel; and to provide a means where the productivity of the machine on form tool work may be increased substantially as compared with devices employed heretofore. Other objects and advantages of the invention will become apparent from the detailed description which follows of a device in accordance with one embodiment of the invention.

In the drawings:

Figure 1 is an elevational view of a tool and cutter grinder on which is mounted an attachment for dressing the abrasive wheel, the dressing tool being shown in operative position for dressing the abrasive wheel.

Figure 2 is a view generally similar to Figure 1 with the grinding wheel head and attachment in a position at right angles with respect to that of Figure 1 and with a dressing tool swung out of contact with the abrasive wheel.

Figure 3 is a view on an enlarged scale as compared with Figure 1 of the dressing attachment, parts being broken away and in section to show the construction more clearly. In Figure 3 is also shown a test bar and gage block employed in setting up the machine for radial dressing and which are removed during the dressing operation. In Figure 3 also the dressing tool is swung 90° relatively to the position in Figure 1.

Figure 4 is a view substantially on line 4—4 in Figure 5.

Figure 5 is a view substantially on line 5—5 in Figure 3.

Referring especially to Figures 1 and 2 there is shown a tool and cutter grinding machine of any desired type to which is attached the dressing device in accordance with the invention. The grinding machine shown includes a base 12 supporting a work table 14 movable back and forth

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in a horizontal plane. To the work table is fixed a clamping device represented generally by reference numeral 16 which holds a tool 18 in position on the work table. Movement of the work table to the right as viewed in Figure 1 brings the tool 18 into contact with a grinding wheel 20 above the work table whereby the tool is ground to the desired shape. The grinding wheel is mounted on a shaft or spindle 22 rotatably mounted in a spindle housing 24, which in turn is supported by an adjustable column 26 which may be moved up and down and also rotated. When in located position the column is clamped in position. Any suitable means, for example the belt drive 27, may be employed for rotating the spindle 22 and grinding wheel 20 mounted thereon. In Figure 2 the column 26 and grinder carried thereby are rotated 90° with respect to the position in Figure 1.

The dressing device is fixed in position on the grinder spindle housing 24 by means of a bolt and nut represented by 28 and a T-slot 29 in the grinder housing. (See especially Figure 3; also see Figure 2.) The dressing device comprises a base 30 contacting housing 24 and to which are welded uprights 32 and 34. Extending transversely of the uprights 32 and 34 is an assembly consisting of a bottom plate 36 and side plates 38 and 40 welded thereto. (See especially Figure 5; also see Figures 3, 2 and 1.) The plate 36 is slotted at 42. Screws 44 extending through the slot are provided, which, when tightened, secure the plate 36 (and side plates welded thereto) in adjusted position on uprights 32 and 34. The outer portion of the plate 36 is provided on its underside with a dovetail portion 50, the side walls of which are tapered at 52, 54 so that the lowermost portion of the dovetail is of less width than the uppermost portion. The dovetail forms ways which support a slide 58, the upper or male portion 59 of which is in mating relation with the female. By means of feed screw 60 actuated by a wrench or crank, the slide 58 may be moved back and forth in a direction parallel to the axis of the spindle which supports the grinding wheel by an amount indicated by a graduated dial 62.

Immediately below the slide 58 is a member 64. (See especially Figures 3, 4 and 5.) The upper portion 66 of member 64 is circular or dial shape and has graduations 68 thereon representing degrees. An intermediate portion 70 of member 64 is of square shape, while a lower portion 72 has outwardly tapered sides 74 forming dovetail ways for a second slide. Member 64 is fixed to the first slide 58 by means of screw

75. An elongated slot 56 in the plate 36 permits the head of screw 75 to be reached by a suitable tool to tighten or loosen the screw. The ways 74 of the lower portion of member 64 support a slide 76, the upper portion of which is of dovetail shape 78 in mating relation with the tapered sides 74 of member 64. By means of feed screw 80 actuated by a wrench or crank, the slide 76 and parts carried thereby are movable back and forth with respect to member 64 by an amount indicated by a graduated dial 82. Fixed to the lower face of slide 76 by means of screws 86 is a housing 88. The housing has an upper, internal circumferential surface 90, an intermediate internal circumferential surface 92 of lesser diameter than that of circumferential surface 90, and a lower internal circumferential surface 94 of a greater diameter than either that of the circumferential surfaces 90 and 92.

Mounted for rotation within the housing 88 is an assembly consisting of an upper disk 100 and a lower member 104, the two being secured together by screws 102. Disk 100 is of somewhat less diameter than that of the upper internal circumferential surface 90 on housing 88 so as to have a loose fit therein. Element 104 has an upper circular-shaped portion 106 in rotatable engagement with the circumferential surface 92 of housing 88 and has, also, a lower circular-shaped portion 108 of somewhat lesser diameter than circumferential surface 94 so as to have a rather loose fit therewith. An annular gasket 110 of felt or other suitable material forms a seal between surface 94 and element 108. By means of a screw 112 in housing 88 (Fig. 3) the members 100 and 104 (and parts carried thereby) may be fixed against rotation in the housing 88. Such condition will exist when the device is used for angular dressing, while for radius-dressing the screw 112 is in loosened position and the assembly of members 100 and 104 is rotatable in the housing. At the axis of rotation of member 104 is an opening 114 adapted to engage one end of a test or gage bar 116 employed in setting up the machine for radius dressing. At the lower end of the test bar there is provided a flat surface 118 at the central axis of the test bar.

Carried by member 104 is a bracket 120 of right-angular shape. A horizontal leg of the bracket has an elongated slot 122 of sufficient cross-sectional width that the test bar may pass therethrough without frictionally engaging the sides of the slot. Also passing through the slot 122 is a screw 124 of lesser diameter than the width of the lot. A washer 126 is of sufficient dimension to bridge the slot. By means of the slot, screw and washer the bracket may be moved to different positions of adjustment and, by tightening the screw, secured in adjusted position. The other and vertically extending leg of the bracket 120 has an enlarged boss 128 having an opening 130 therein through which passes a holder 132 for a diamond 134 which is adapted to dress the grinding wheel. A screw 136 fixes the holder 132 in position. In Figure 3 there is shown a gage block 138 having the thickness of the desired radius to be produced on the abrasive wheel. It will be understood, as described above, that the bracket may be moved as necessary to bring the diamond in contact with the gage block and then the screws 124 and 136 tightened to secure the parts in adjusted position. The test bar and gage block are then removed and the device is then ready for dressing the abrasive wheel to form the desired radius

thereon. In Figure 3 the rotatable parts within housing 88, the bracket 120 carried thereby and the diamond carried by the bracket are shown rotated 90° from that of the dressing position. The parts of the dressing attachment are so proportioned that the diamond point 134 is carried in a horizontal plane through the axis of rotation of the abrasive wheel spindle.

In setting up the machine the screws 44 are loosened and the welded assembly consisting of bottom plate 36 and side plates moved so as to bring the axis of rotation of the member 104 into approximate alignment with the abrasive wheel. This involves movement to the right from the position shown in Figure 3. The screws 44 are then tightened. Finer adjustment of the device may be obtained by adjustment of graduated dial 62. Slide 76 and parts movable thereby may be moved by means of feed screw 80 a desired amount as indicated by graduated dial 82. With the diamond in contact with the rotating abrasive wheel as shown in Figure 1, the bracket 120 is oscillated by hand in housing 88 to form the desired radius on the periphery of the abrasive wheel. By means of the feed screw 80, the diamond 134 may be moved inwardly between or during oscillations of the bracket and parts carried thereby whereby the necessary material may be removed from the grinding wheel.

Should it be desired to use the device for angular dressing an abrasive wheel, the rotatable member 104 carrying bracket 120 is locked in position at 90° to that of Figure 3, by means of set screw 112. The screw 75 is then loosened and the member 64 rotated until the desired angle as represented by a suitable graduation 68 on member 64 is in alignment with a fixed marker line 150 on slide 58. The screw 75 is then tightened. The diamond dressing tool is then moved by rotation of dial 82 to bring the same into contact with the periphery of the rotating grinding wheel to remove material therefrom to thereby form the required angle on the grinding wheel.

From the foregoing it will be seen that an abrasive wheel dressing attachment is provided wherein the relationship between the abrasive wheel and work piece to be ground is not destroyed by the dressing operation, whereas with previous wheel dressing attachments mounted on the work table 14 the relationship between the wheel and work was lost each time it was necessary to redress the abrasive wheel. The dressing attachment permits the dressing tool to be readily swung into position and, after use, swung out of the way. The attachment permits either angles or radii to be produced upon the abrasive wheel. Productivity of the machine, on form tool work, is increased substantially as compared with previous arrangements.

While I have shown and described the preferred means in which the principles of the present invention have been embodied, it is to be understood the invention is not to be limited to the particular means shown and described above, but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

I claim:

1. An attachment for dressing abrasive wheels in which the abrasive wheel is carried by a spindle in a housing having a T-slot in the upper face thereof, an adjustable support mounted on said housing having means securing the support to the T-slot in said housing and having an upper arm extending parallel to and in a plane above

the abrasive wheel spindle, an outer end of said arm having ways thereon for supporting a first slide, a first slide carried by said ways, screw means operably connected to said first slide to move said slide on said ways, a member angularly adjustable with respect to said first slide and carried thereby having ways at the bottom thereof adapted to carry a second slide, said angularly adjustable member having graduations thereon to represent desired degrees of angularity, means securing said angularly adjustable member to said slide in a desired angular relation with respect to said first slide, a second slide carried by the ways on said angularly adjustable member, screw means operably connected to said second slide to move said second slide on the ways on said angularly adjustable means, a housing carried by said second slide, mechanism rotatably carried by said housing, an adjustable right angular bracket having a horizontal leg and a vertical leg, a diamond tool carried by said vertical leg and located in a horizontal plane through the axis of rotation of the abrasive wheel spindle and means securing the horizontal leg of the bracket in adjusted position so that the diamond tool is spaced a predetermined distance from the axis of rotation of the mechanism rotatably carried by said housing.

2. A device as in claim 1 in which the mechanism rotatable in the housing has an opening at the axis of rotation thereof supporting a test bar for use in setting up the machine to form a predetermined radius on the abrasive wheel.

3. A device as in claim 1 having means carried by said housing locking the rotatably mounted mechanism in fixed position in said housing.

4. An attachment for dressing abrasive wheels in which the abrasive wheel is carried by a spindle in a housing having a T-slot in the upper face thereof, an adjustable support mounted on said housing having means securing said support to the T-slot in said housing and having an upper arm extending parallel to and in a plane above the abrasive wheel spindle, and outer end of said

arm being slotted and having ways on the lower face thereof for supporting a first slide for movement parallel to the axis of said spindle and above said spindle, a first slide carried by said ways, screw means operably connected to said first slide to move said first slide on said ways, a member angularly adjustable with respect to said first slide and carried thereby having ways at the bottom thereof adapted to carry a second slide, said angularly adjustable member having graduations thereon to represent desired degrees of angularity, means securing said angularly adjustable member to the underside of said first slide in a desired angular relation with respect to said first slide including screw means underneath the elongated slot in said outer end of said arm, a second slide carried by the ways on said angularly adjustable member, screw means operably connected to said second slide to move said second slide on the ways on said angularly adjustable means, a housing carried by said second slide, mechanism rotatably carried by and within said housing, an adjustable right angle bracket having a slotted horizontal leg and a vertical leg, a diamond tool carried by said vertical leg and located in a vertical plane through the axis of rotation of the abrasive wheel spindle and screw means extending through the slot in said horizontal leg securing the same to said rotatable mechanism in adjusted position so that the diamond tool is spaced a predetermined distance from the axis of rotation of said rotatable mechanism.

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