March 3, 1942. G. E. HEADBLOOM ET AL 2,274,959

WHEEL DRESSING FIXTURE

Filed June 13, 1939 2 Sheets-Sheet 1

FIG.1.

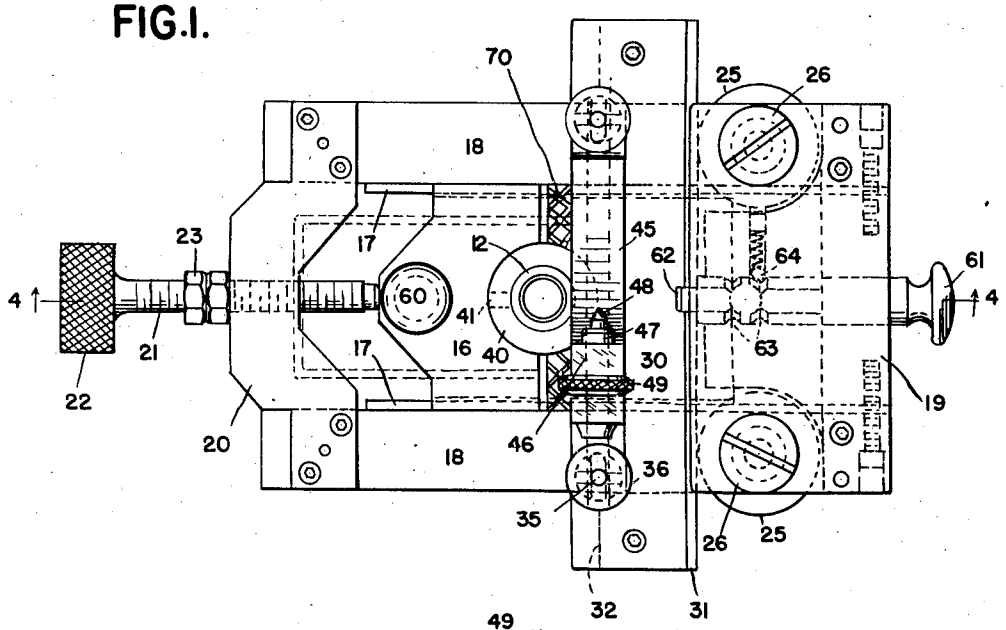
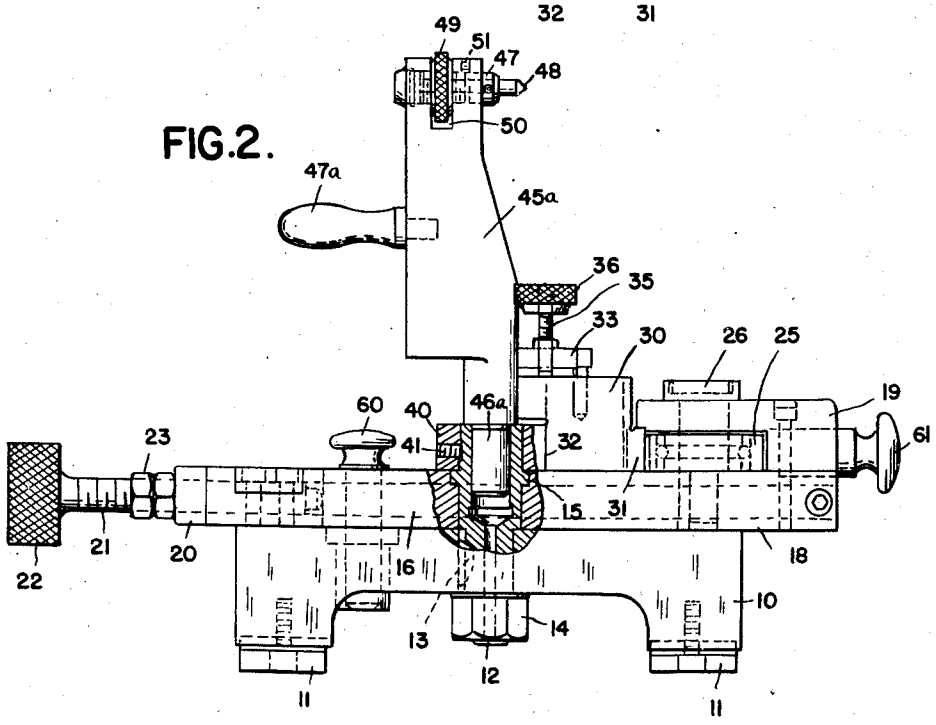


FIG.2.



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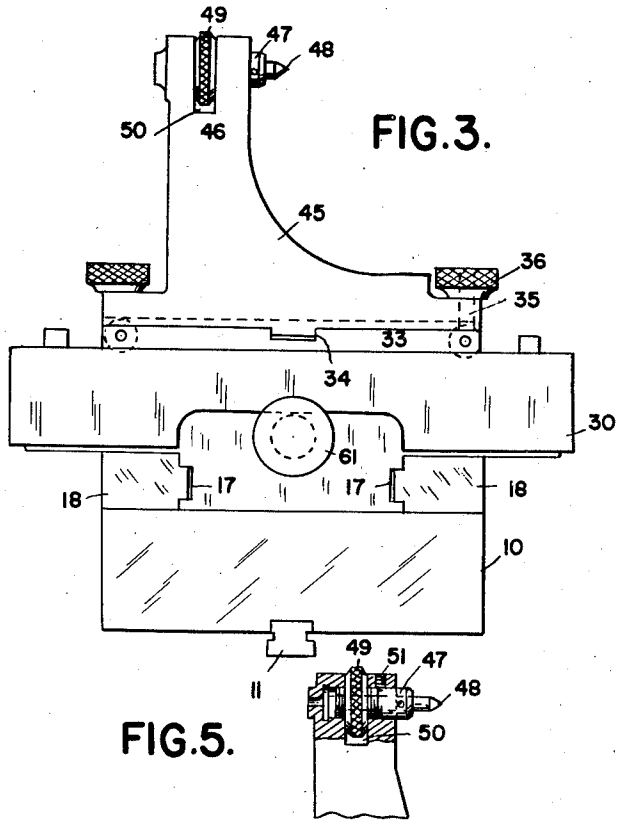


FIG.3.

FIG.5.

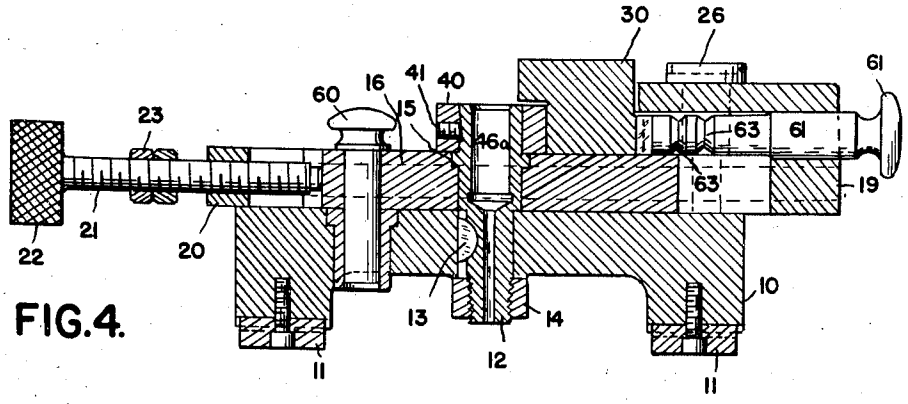


FIG.4.

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WHEEL DRESSING FIXTURE

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Application June 13, 1939, Serial No. 278,929

2 Claims. (Cl. 125—11)

The present invention relates to the dressing of grinding wheels and specifically to a fixture for supporting and guiding a diamond dressing tool.

Among the objects of the invention is a fixture so constructed and arranged that the dressing point is movable in an involute curve.

Another object is a fixture which, by the simple substitution of a single element, is capable of moving the tool in a larger or smaller involute.

Still another object is a fixture which may with slight modification be used in dressing a wheel upon a true radius.

Other objects and advantages will readily occur to those skilled in the art upon reference to the following description and the accompanying drawings in which

Figure 1 is a plan view of the fixture with the cover removed but indicated.

Figure 2 is a side elevation of the same but showing the circular dresser in place.

Figure 3 is a partial elevation with parts in section and viewed as from the right of Figure 1.

Figure 4 is a section on line 4—4 of Figure 1 but with the tool support omitted, and

Figure 5 is a section through the tool holding head and showing this construction.

As indicated in the drawings the device comprises a base 10 provided with slides 11 adapted to fit into the slotted bed (not shown) of the machine carrying a wheel to be dressed.

In the central portion of the base 10 is fixed a vertically arranged hollow pin 12 maintained against turning by a suitable key 13 and held by a nut 14. This pin 12, as shown best in Figure 4, is provided with a small flange 15 a short distance above the base 10 and is shouldered at the base 10.

Rotatably mounted upon the pin 12 and resting upon the base 10, being held in place by the flange 15, is a plate 16 having slide grooves along its lateral edges to receive the slides 17 formed upon the inner faces of two longitudinal frame members 18, a substantially rectangular frame being completed by the cross members 19 and 20.

This frame 18—20 is, as indicated, slidable upon the plate 16 and is adjustably located by the screw 21 passing through cross member 20 and acting against plate 16, the screw 21 being actuable by the knurled knob 22 and fixed in position by lock nuts 23.

The cross member 19 is, as indicated, L-shaped in section with the overhanging portion extending laterally the full width of the frame and extending longitudinally of the frame a sufficient distance to overlie a pair of antifriction bearings 25, the inner races of which rest upon frame members 18 and are held in place by the screw studs 26 passing through the overhung member 19 and into members 18. The outer races of the bearings 25 are free to rotate and serve as rollers for the carriage about to be described.

The carriage consists of a member 30 sufficiently long to project beyond frame members 18 and Z-shaped in section. This rests upon the plate 16 with its forwardly projecting portion 31 extending under the edge of the overhanging portion of frame member 19 and against the rollers 25, these edges being finished to provide a hold-down slide for the carriage.

The rear face of carriage 30 is stepped to provide a vertical lower wall portion 32 and an overhanging portion extending back a short distance above the level of the pin 12, while the upper face of the carriage is provided with an elevated seat 33 intermediate the ends of member 30 but extending the greater portion of its length. This seat is provided at its center line with a rectangular notch 34 and at each end with a hinged screw 35, each with a knurled nut 36.

Adapted to cooperate with the carriage wall 32 is a disc 40 mounted upon pin 12 and fixed against rotation by means of a set screw 41. This disc 40 is removable and different sizes of discs may be substituted therefor, by first loosening screw 21 to permit the entire frame and associated parts to be moved to the right (Fig. 1). After the new disc has been mounted upon pin 12 the frame assembly is moved back to press the carriage lightly between the disc and the rollers 25.

Upon the seat 33, for the purpose of producing an involute curve, is mounted a tool carrier 45, notched at the ends of its base portion to receive the screws 35, by means of which the carrier is secured upon the seat. The carrier 45 has at one end a standard 46 having suitable means for fixing in horizontal position a dressing tool 47 provided with a diamond point 48, and the fixing means shown is a suitable nut 49 threaded on the tool 47 and arranged in a notch 50 in the standard 46, a set screw 51 likewise being used.

In positioning the tool 47, the point 48 is arranged in vertical alignment with the face 32 of the carriage and to one side of the vertical longitudinal center plane of the assembly, the axis of disc 40 being in this center plane and the rollers 25 being equidistant therefrom.

As indicated best in Figures 1 and 2, centering

means for the frame assembly upon the base is provided in a pin 60 adapted to extend through the plate 16 into a suitable socket in the base and additional means for centering the carriage 30 is provided in a pin 61 extending horizontally through frame member 19 into a suitably located notch 62 in carriage 30. This pin 61 is itself provided with notches 63 adapted to cooperate with a spring pressed ball detent 64 to determine its position.

In using the fixture to dress a wheel, the pin 60 will of course be removed and the pin 61 withdrawn from the notch 62. Then, with the tool 48 in engagement with the wheel to be dressed, the frame and associated elements will be swung laterally around pin 12 as a center. This action causes the carriage to move lengthwise, since the disc 40 is fixed and in tight contact with the face 32 of the carriage, while the rollers 25 are free to turn. Such movement will, of course, cause the point of tool 47 to move in a curve having a constantly changing radius. When, however, it is desired to produce a curve with a constant radius, the tool 47 is mounted in a tool holder such as is indicated in Figure 2.

In this figure, the tool holder 45*a* is a standard having at its lower end a post or stud 46*a* fitting rotatably into the central bore of pin 12 and rotatably by means of a suitable handle 47*a*. In the operation, the carriage 30 may remain fixed in position by the pins 60 and 61.

In order to prevent the smooth operation of carriage 30 upon plate 16 and thereby its accuracy, due to the accumulation of dust or other particles, it is preferred to provide that portion of the plate upon which the carriage rests, with intersecting grooves as shown at 70.

It should be noted that in Figures 1 and 3, the fixture is shown with the diamond tool point located on the line of the face 32 in contact with disc 40 and a short distance to one side (behind) the center line. In dressing a wheel intended to grind involute gear teeth, the curve of the wheel surface will, of course, be concave and the above dressing tool setting will produce such a surface. However, if it is desired to produce a convex involute surface upon the wheel, for example, for grinding a broach such as is shown in our copending application Serial No. 278,928, filed on even date herewith, the dressing tool point will be moved across the center line from the position shown. With such positioning, the wheel will be dressed with a convex involute curved surface.

What we claim is:

1. A wheel dressing fixture consisting of a base provided with an upwardly projecting pin, a frame assembly resting on said base and rotatable about said pin, a pair of rollers with vertical axes carried by the forward end of said assembly and equidistant from said pin, a laterally movable carriage mounted upon said assembly between said rollers and said pin, a cylindrical disc fixed upon said pin, means for clamping said carriage between said rollers and the cylindrical edge of said disc, and a dressing tool fixed upon said carriage.

2. A wheel dressing fixture consisting of a base provided with an upwardly projecting pin, a plate rotatably mounted upon said pin and carrying a slidable frame, a carriage mounted upon said frame and movable laterally thereof, a cylindrical disc fixed upon said pin above said plate, antifriction rollers upon said frame, said carriage being located between said disc and said rollers, means for sliding said frame upon said plate whereby to press said carriage between said disc and said rollers, a dressing tool mounted upon said carriage, means for fixing at will said plate against rotation, and means for centering said carriage.

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