April 26, 1932. J. EDGAR 1,855,343

DRESSING FIXTURE

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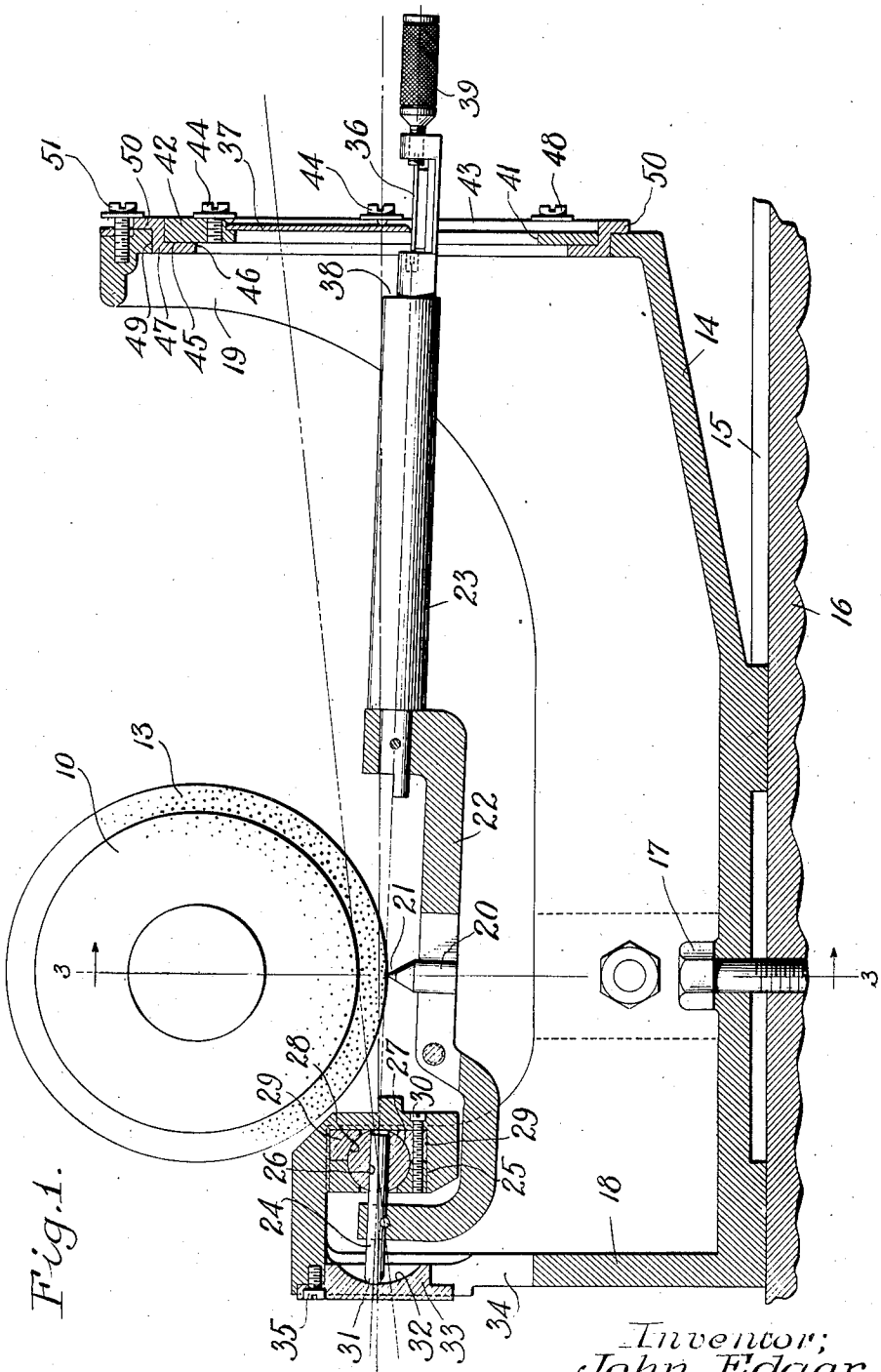


Fig. 1.

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Fig. 3.

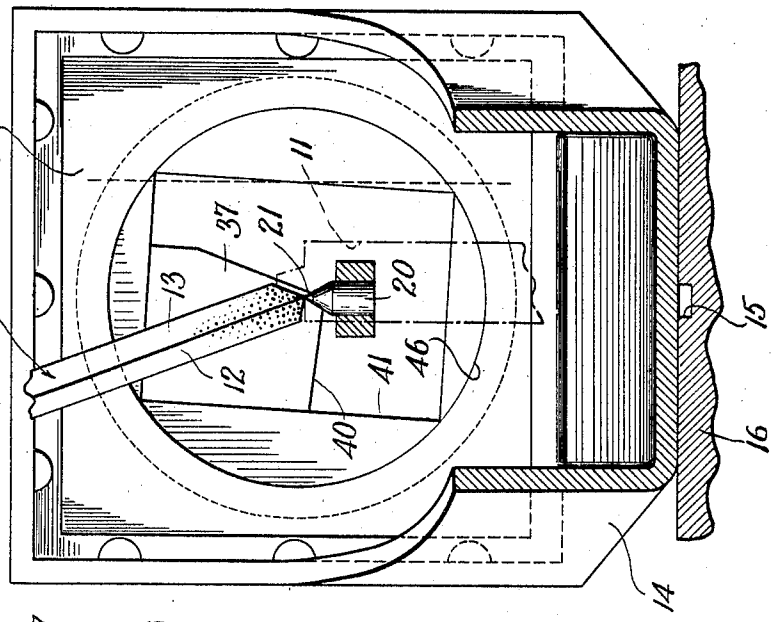
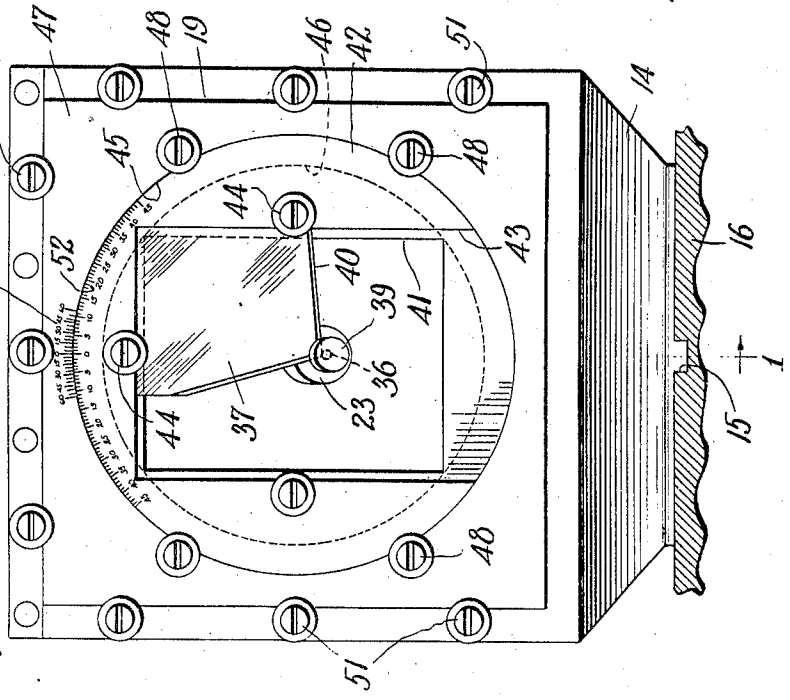


Fig. 2.



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UNITED STATES PATENT OFFICE

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DRESSING FIXTURE

Application filed October 13, 1927. Serial No. 225,894.

The invention relates to improvements in dressing fixtures for grinding wheels adapted to grind form tools such as hobs, and tools for backing off hobs and shaper tools, and has particular reference to improvements in dressing fixtures of the type shown in my copending application, Serial No. 625,939, filed March 19, 1923 (now Patent No. 1,686,802).

In dressing the grinding wheel, the dressing tool is guided by means of a templet to move in a path corresponding to the desired contour. In many instances it is desirable to obtain a distorted contour on the grinding wheel, or to dress different portions of the cutting contour at slightly different angles.

The primary object of the present invention therefore resides in the provision in a dressing fixture of the above character of means for securing the templet in different angular positions.

A more specific object resides in the provision of means whereby the templet can be easily, quickly and accurately adjusted to vary the angular path of the dressing tool.

Further objects and advantages will become apparent as the description proceeds.

In the accompanying drawings, Figure 1 is a vertical sectional view taken along line 1—1 of Fig. 2, and showing a wheel dressing fixture embodying the features of my invention.

Fig. 2 is a right end view of the fixture shown in Fig. 1.

Fig. 3 is a transverse sectional view taken along line 3—3 of Fig. 1.

While the invention is susceptible of various modifications and alternative constructions. I have shown in the drawings and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Referring more specifically to the drawings, the exemplary embodiment of my invention is shown as adapted to dress a grinding wheel 10 for grinding formed cutting tools such as the tool 11, shown in dotted outline in Fig. 3. The grinding wheel 10 has oppositely inclined cutting faces 12 and 13. In certain instances, it is desirable to dress the cutting faces 12 and 13 relatively at different angles. The present invention pertains primarily to a dressing fixture having means whereby the path of the dressing tool can be changed as desired, and in the present instance can be positioned to dress each of the cutting faces 12 and 13 at the desired angle. It will be understood that the dressing fixture is adapted for use on grinding wheels having various shapes and cutting contours, and that the movement of the dressing tool may be adjusted for various purposes.

The dressing fixture comprises a frame 14 of suitable construction which may be mounted upon a convenient part of the grinding machine.

In the present instance, the frame 14 is adjustably mounted in a guideway 15 on a slide 16, and is adapted to be rigidly clamped in position by any suitable means, such as bolts 17. Preferably, the frame 14 has left and right end walls 18 and 19 respectively.

The dressing fixture is provided with a suitable dressing tool 20 which preferably has a diamond point 21 for dressing the wheel 10. The dressing tool 20 is suitably secured in an offset or U-shaped end 22 of an arm or bar 23 which is movably disposed in a horizontal plane below the guiding wheel 10. It will be understood that the arm 23 may be disposed in any suitable position other than that shown.

The offset end 22 of the arm 23 carries a pin 24 at its free end which has a universal

and slidable connection with a suitable bracket 25 formed on the end wall 18 and in spaced relation thereto. More specifically, one end of the pin 24 is slidably disposed in a diametrical bore 26 in a ball 27 which is rotatably secured in a socket 28 in the bracket 25.

The socket 28 preferably is formed of a plurality of socket members 29 held in assembled relation in the bracket 25 by any suitable means, such as screw bolts 30. The pin 24 is axially alined with the other end of the arm 23, and the diamond point 21 is disposed in the same axis. The outer end of the pin 24 is rounded as indicated at 31, and engages a suitable cam surface 32 which is of a character such that it will cause the diamond point 21 to move in a single plane as it is swung across the cutting face by the arm 23. In the present instance, the cam surface 32 consists of a spherical concave recess formed in the inside surface of a plate 33 removably secured in an opening 34 in the end wall 18 by any suitable means such as screw bolts 35. It will be evident that the plate 33 with the cam surface 32 can be replaced by plates having different cam surfaces.

The free end of the reducing arm or bar 23 extends through the end wall 19, and is provided with a suitable hardened guide surface, such as a hardened pin 36 for coacting with the guide edges of a suitable templet 37. In the present instance, the free end of the arm 23 is reduced in size and is cut away at 38, and the hardened guide pin 36 is suitably secured in said cut-out portion in axial alinement with the arm 23 and the pin 24, and hence in alinement with the diamond point 21. A knurled handle 39 is secured to the extreme end of the arm 23 beyond the pin 36 for manipulating the arm. By locating the dressing point 21 near the pivoted end of the arm 23, the movement at the templet 37 is reduced at the dressing point so that inaccuracies in the templet and the arm are minimized and rendered inconsequential.

The templet 37 obviously may be provided in any shape, and in the present instance is shown as having a straight guide edge 40 for guiding the dressing point 21 in its movement across the surface to be dressed. To make possible a variation in the inclination of the guide edge 40 or whatever guide surface the templet may have without the substitution of another templet, the templet 37 is suitably mounted for angular adjustment in the end wall 19.

In the present instance, the templet 37 is mounted in one upper corner of a rectangular opening 41 in a circular plate 42, and is removably secured in a peripheral notch 43 at the edge of said opening by means of a plurality of clamp screws 44. It will be evident that the templet 37 may be adjusted into different corners of the opening 41, and that templets of different shapes may be substituted. The circular plate 42 is rotatably mounted in an annular notch 45 at the edge of a circular opening 46 in an end plate 47, and is adjustably clamped therein by means of suitable clamp screws 48. The end plate 47 is mounted in a rectangular opening 49 in the end wall 19, and has a peripheral flange 50 removably secured thereto by means of suitable clamp screws 51. A protractor scale 52 is located at the edge of the circular plate 42, and a vernier scale 53 is located at the adjacent edge of the opening 46 in the plate 47. It will be evident that by adjusting the plate 47, the templet 37 can be angularly adjusted into any desired position with a high degree of accuracy.

In operation, the frame 14 is so positioned on the slide 16 that the diamond point 21 is located in a vertical axial plane through the grinding wheel 10. In the figures, I have shown the parts in their respective positions at the beginning of the dressing movement over the cutting face 12. In this position, the diamond point 21 contacts with the lower edge of the grinding wheel 10, and the pin 36 contacts with the lower end of the guide edge 40. Before movement over the surface 12, the arm 23 is tilted to position the diamond point normal to said surface. As the arm 23 is swung along the guide edge 40, the cam surface 32 causes the arm 23 to generate a straight line movement for the diamond point 21. It will be evident that by adjusting the templet, the diamond point 21 may be caused to move at a different angle without the substitution of a different templet. The construction is simple, inexpensive and efficient.

I claim as my invention:

1. A wheel dressing fixture having in combination, a frame, an arm having a sliding and universal pivotal connection in one end of said frame, a dressing tool on said arm, a micrometer plate adjustably mounted in the other end of said frame and a templet mounted in said plate for engagement with said arm, said arm having a hardened bearing pin adapted to engage the guide edge of said templet.

2. A wheel dressing fixture having in combination, a frame, an arm having a sliding and universal connection in said frame, a micrometer plate adjustably mounted in said frame and a templet adjustably mounted in said plate for engagement with said arm.

3. A wheel dressing fixture comprising, in combination, a frame, an arm having a sliding and universal pivotal connection in one end of said frame, a micrometer plate adjustably mounted on the other end of said frame, a templet adjustably mounted on said plate for guiding the movement of said arm, and a dressing tool carried by said arm.

4. A dressing device having, in combina-

tion, a frame, a support movably mounted in said frame, a truing tool carried by said support, a second support on said frame surrounding a part of said first-mentioned support and rotatable thereabout as an approximate center to vary the relative angular positions of said supports, and a templet mounted on said second support for guiding said first-mentioned support in a predetermined path.

In testimony whereof, I have hereunto affixed my signature.

JOHN EDGAR.