March 24, 1953 W. MUENCH 2,632,433

DIAMOND HOLDER WITH GAUGING MEANS

Filed March 5, 1947

FIG. 1

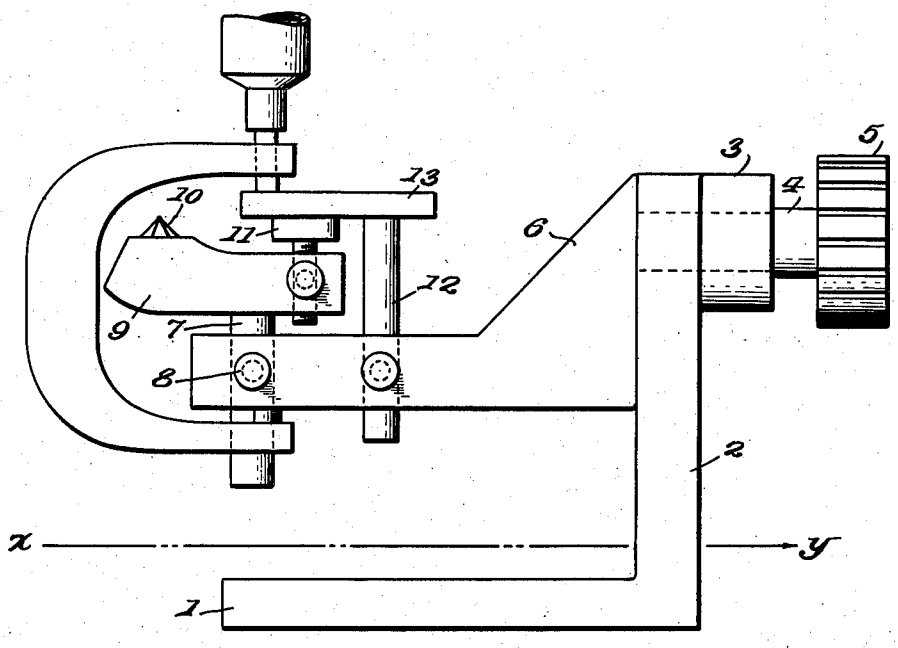


FIG. 2

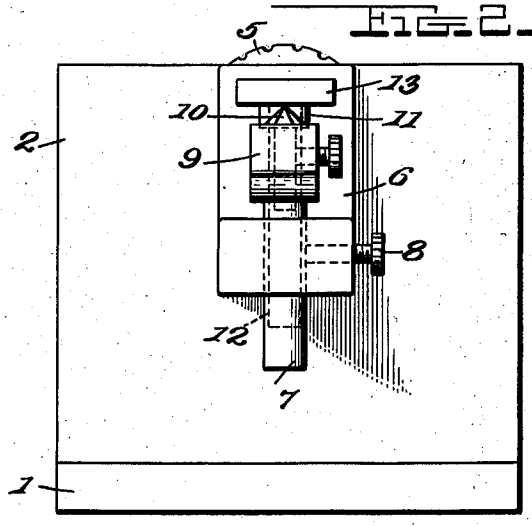
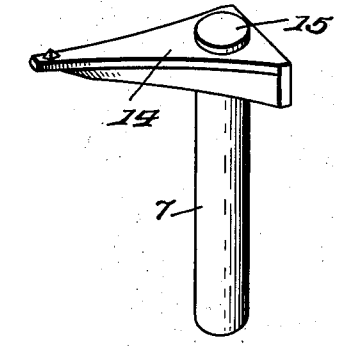


FIG. 3



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DIAMOND HOLDER WITH GAUGING MEANS

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7 Claims. (Cl. 125—11)

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This invention relates to surface grinding wheels in which concave or convex radii are form-generated by a diamond studded shank-proper which is held in a fixture and in the construction of which the mechanical functions are so arranged that the diamond holding shank-proper can be raised or lowered to produce different sizes of concave or convex radii in the grinding wheel periphery.

To predetermine the size of a radius desired in a grinding wheel periphery, the height of the diamond point in the shank-proper is adjusted relatively to a fixed pivot height in a stationary right angle fixture, which consists of a flat base plate that is held tight to a magnetic chuck, whereas in the upright column a swinging arm is held in a close fitting bearing and it is in this arm that the diamond-shank-proper can be moved up or down and clamped in place after the correct height above the pivot point has been obtained by measuring from the bottom surface of the swinging arm over the point of the diamond, held in the shank-proper.

A micrometer is always used in this measuring procedure to set the diamond point at the right height to dress the grinding wheel for a certain radius and it is by this applied screw pressure of the micrometer spindle on the cutting point of the diamond that damage can easily be done to the small frail diamond with resultant great inaccuracies in the form-grinding of machine parts, tools, molds and dies.

To overcome this malpractice to apply micrometer pressure on the diamond point is the object of my invention.

To enable others, skilled in the art to fully comprehend the underlying features of my invention, a drawing, depicting a preferred form has been annexed as a part of this disclosure and in this drawing similar reference characters denote corresponding parts throughout the several views, of which

Fig. 1 is a side view of a radius dressing fixture with the shank-proper, holding the diamond and the plunger with measuring plate, in place.

Fig. 2 is a front view of the same wheel dresser as shown in Fig. 1 in the direction from X to Y.

Fig. 3 is an illustrative angular view of a modified form of a diamond holding shank-proper.

Referring now to the drawing, 1 designates the base plate, which, when in operation, is held tight to a magnetic chuck and 2 is a right-angle upright plate which is rigidly fastened to the base plate 1. An extension 3 is solidly cast to 2.

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A shaft 4 reaches through 2 and 3, having attached to it at one end the hand-wheel 5, while the other end of the shaft is solidly fastened to the arm 6, which can be swung by turning the hand-wheel 5 through an arc of 180°. At the extreme end of arm 6 the shank 7 is held in place by a set-screw 8. To this shank 7 is cast the extension 9 which holds in one end the diamond 10, while the opposite end is provided with an adjustable heel in the form of a threaded disc pin 11. To the sliding plunger 12 is attached the measuring plate 13, which rests on top of the disc pin 11 and illustrates the very position when measurements for the height of the diamond are taken to form-generate whatever radius is desired in the periphery of the grinding wheel. As regards Fig. 3, here the measuring base is the fixed raised heel 15, which of course is non-adjustable, but is held at the same height as the highest point of the diamond, held in tool 14.

My invention consists in the provision of the raised heel 15 and a modified form of this is the threaded disc-pin 11, which is adjusted to precisely the same height as that of the highest point of the diamond 10 in Fig. 1, so that, when plate 13 rests on top of the disc-pin 11 and a measurement is taken with a micrometer, the diamond remains free and clear of any pressure contact and consequently cannot be damaged or wrecked under the screw pressure of the micrometer when carelessly handled, or when the contact surfaces of the micrometer, that means the anvil and spindle, are not perfectly parallel; which is only too often the case with micrometers that have been in use for a number of years.

The tool shown in Figs. 1 and 2, singled out by characters 7, 9, 10 and 11 is most suitable for dressing any size of a convex radius.

However, the tool shown in Fig. 3, and designated 14, is used preferably only for small concave radii in the sizes from 1/64" up to 3/16". The individual tool sizes are advisably made in steps of 1/64". For these small concave radii forming tools the fixed heel 15 is provided in place of the disc-pin 11 for measuring over; though the adjustable disc-pin arrangement can also be applied whereby the price of the tool would increase considerably. It is of course understood that the heel 15 is ground to the same height as the highest point of the diamond is, in tool 14. When the diamond wears, the heel 15 can be ground down to the same level of the diamond point. The wear of the diamond is checked with a sensitive indicator or a shadowgraph. If the check-up shows a wear of .001 or more of the

diamond, the heel need not necessarily be ground down to compensate for the difference of the height of the heel 15. Really all that is required is to mark the difference in height between the diamond and heel 15 and allow for the difference in the depth of cut when dressing the wheel.

It should be mentioned that the adjustable disc-pin 11 in Fig. 1 must be reset as the diamond wears down in use. A set-screw will hold the disc-pin 11 secure in place after adjustments have been made.

It should also be noted that the sliding plunger 12 with its attached measuring plate 13 is taken out of the fixture after the correct height of the diamond has been obtained by measuring with a micrometer as previously explained. The removal of the plunger-unit is necessary for the operation of the fixture under a wheel.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details and construction or otherwise altering the arrangement of the correlated parts without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In a diamond holder for form dressing grinding wheels, a support arm swingably mounted for swinging movement relative to a wheel which is to be dressed, a diamond holder mounted on and movable with said arm, a diamond carried by said holder and having a wheel dressing extremity projecting away from the holder for presentation against a wheel which is to be dressed, a gaging heel carried by said holder and spaced to one side of the diamond thereon, said support arm having a gaging surface lying in a plane paralleling the axis about which the support arm is swingable, and said gaging heel having a gaging surface facing away from the holder and at a common level with the wheel dressing extremity of the diamond in a plane paralleling the other said plane whereby a gaging means can be applied to the gaging surface of the support arm and the gaging surface of the heel so that by determining the spacing of said gaging surfaces the accuracy of the degree of projection of the wheel dressing extremity of the diamond can be gaged without direct contact of the gaging means with the dressing extremity of the diamond.

2. Apparatus as defined in claim 1 in which the diamond holder is adjustably mounted on the support arm to enable variation of the degree of projection of the wheel dressing extremity of the diamond from said support arm, and wherein the gaging heel is adjustably mounted on the diamond holder to enable variation in the degree of projection of the gaging surface of said heel to compensate for wearing of the wheel dressing extremity of the diamond.

3. Apparatus as defined in claim 1 in which the diamond holder is adjustably mounted on the support arm to enable variation of the degree of projection of the dressing extremity of the diamond from said support arm, and wherein the gaging heel is adjustably mounted on the diamond holder to enable variation in the degree of projection of the gaging surface of said heel to compensate for wearing of the dressing extremity of the diamond, said adjustable mounting

of the diamond holder comprising a mounting shank slidably received in the support arm and projecting from said holder intermediately of the positions of the diamond and the gaging heel.

4. A work dressing device comprising a longitudinal mounting shank, an arm carried at one end of the shank and projecting in a direction perpendicular to the axis of said shank, a diamond projecting from the arm in a direction paralleling the axis of said shank, said arm having a bore paralleling the axis of the shank and spaced to one side of the diamond, a gaging heel having a gaging face facing away from said arm in the direction in which the diamond projects from said arm and a shank adjustably mounted in said bore so that the gaging face can be placed in accurate alignment with the dressing surface of the diamond.

5. A work dressing device as defined in claim 4 in which the mounting shank projects from the arm intermediately of the ends thereof, the diamond being mounted adjacent one end of said arm, and the gage heel being mounted adjacent the other end of said arm.

6. A work dressing device comprising a longitudinal mounting shank, an arm carried at one end of the shank and projecting in a direction perpendicular to the axis of said shank, a diamond and a gaging heel arranged side by side in spaced relation on the arm and projecting substantially identical distances and in like direction therefrom, that portion of the arm extending between the shank and the end adjacent which the diamond is mounted having converging and oppositely concaved side portions which will clear a wheel being dressed as the arm is rocked about an axis generally paralleling a line running through the length of the arm.

7. A work dressing device comprising a longitudinal mounting shank, an arm carried at one end of the shank and projecting in a direction perpendicular to the axis of said shank, a diamond and a gaging heel arranged side by side in spaced relation on the arm and projecting substantially identical distances and in like direction therefrom, that portion of the arm extending between the shank and the end adjacent which the diamond is mounted having converging and oppositely concaved side portions which will clear a wheel being dressed as the arm is rocked about an axis generally paralleling a line running through the length of the arm, and the gaging heel being rigidly supported in position for being intersected by the axis of the shank.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,585,706	Hanson	May 25, 1926
2,006,854	Winter	July 2, 1935
2,127,614	Parker	Aug. 23, 1938
2,377,934	Greig	June 12, 1945
2,404,148	Thompson	July 16, 1946
2,411,223	Machemov	Nov. 19, 1946

FOREIGN PATENTS

Number	Country	Date
475,096	Great Britain	Nov. 8, 1937
554,875	Great Britain	July 22, 1943
589,170	Germany	Dec. 4, 1933