

Aug. 2, 1966

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3,263,667

DIAMOND GRINDING WHEEL DRESSERS

Filed July 15, 1963

2 Sheets-Sheet 1

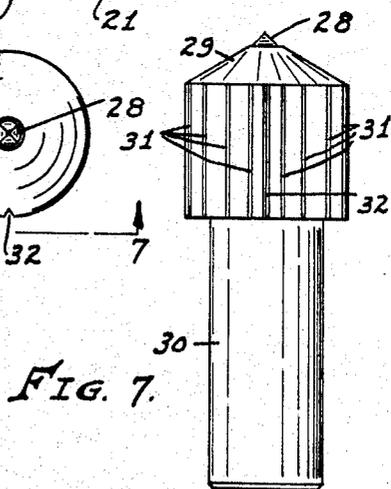
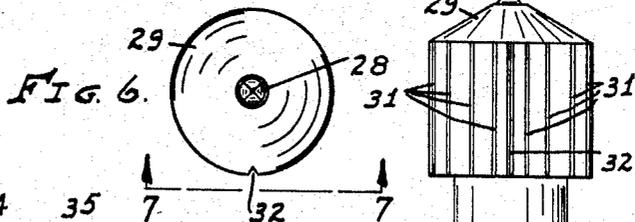
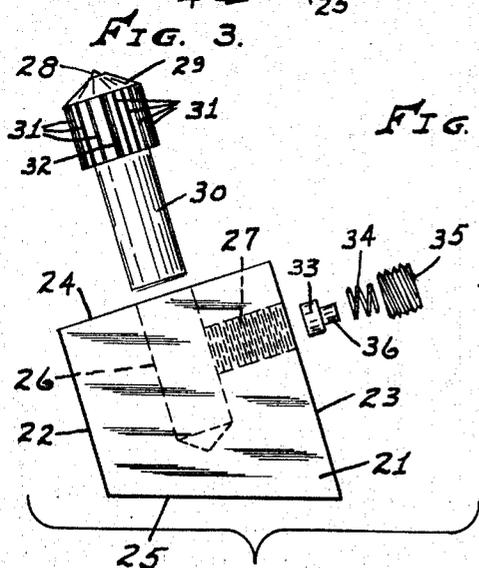
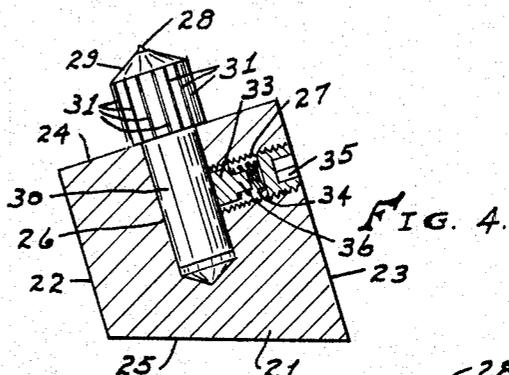
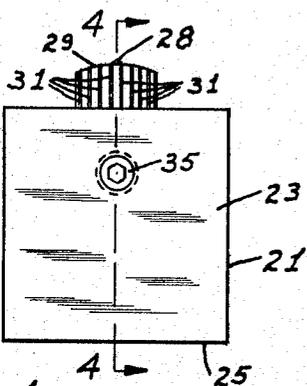
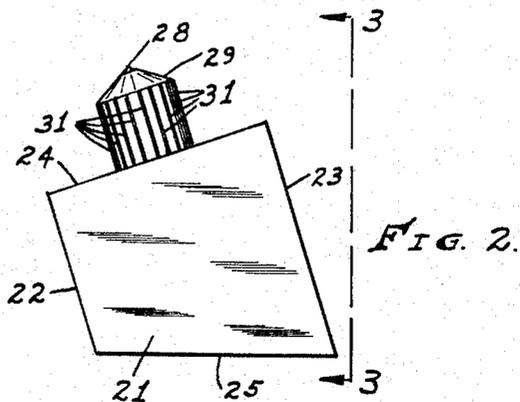
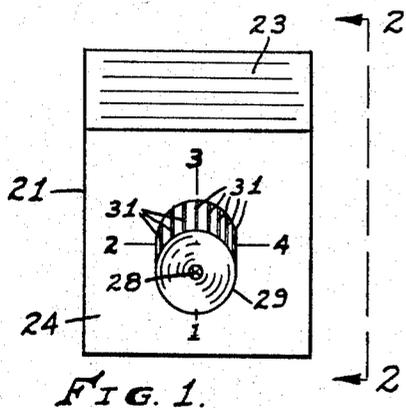


FIG. 5.

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DIAMOND GRINDING WHEEL DRESSERS

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2 Sheets-Sheet 2

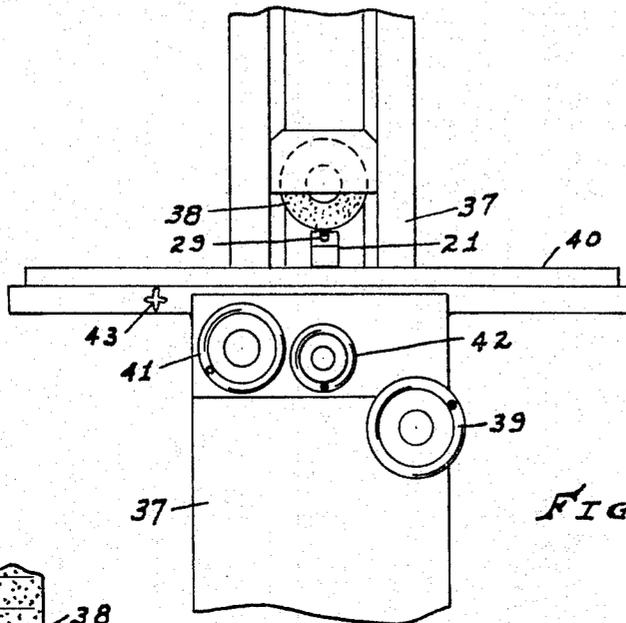


FIG. 8.

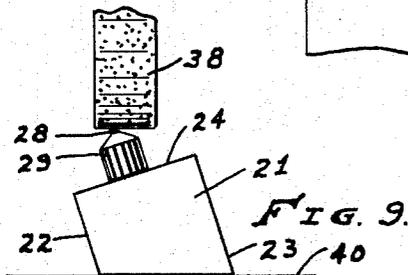


FIG. 9.

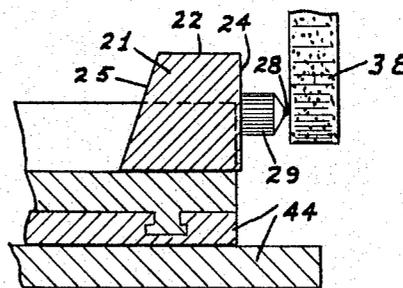


FIG. 11.

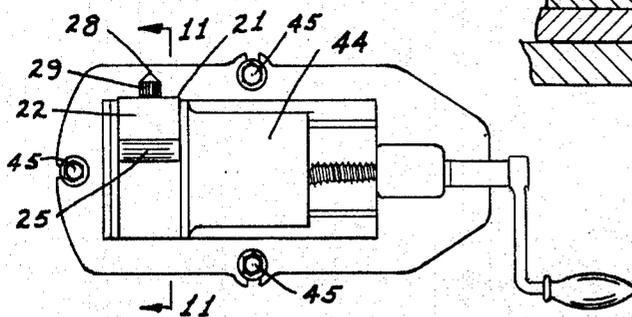


FIG. 10.

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**DIAMOND GRINDING WHEEL DRESSERS**

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1 Claim. (Cl. 125—11)

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The present invention relates to a simplified dressing tool for grinding wheels and the principal object of the invention is the provision of a dressing tool which is particularly adapted to be used in the dressing of grinding wheels on surface grinding machines.

A second object of the invention is the provision of a dressing tool in which the most efficient angle for precision grinding operations is provided in the base of the device.

A third object is the provision in the tool for maintaining the diamond cutting point in a sharpened condition resulting in a considerably longer life to the cutting point.

A fourth object is the provision of a dressing tool which is adapted for use in reconditioning grinding wheels used on surface grinders and with the dressing tool being adapted to be carried by a magnetic chuck without the use of clamping means therefor.

Another object is the provision of a dressing tool which is equally adaptable for dressing the peripheral surface and the sides of grinding wheels.

Further objects and particular advantages of the invention will become more apparent in the course of the following description, and that which is new will be pointed out in the appended claim.

The preferred and most satisfactory manner of accomplishing the objects of the present invention is illustrated in the accompanying drawings, in which:

FIGURE 1 is a top plan view of a dressing tool incorporating the feature of the invention.

FIGURE 2 is a right side elevation of the dressing tool, as taken from line 2—2 of FIGURE 1.

FIGURE 3 is an elevational view of the back or rear side of the dressing tool, taken from line 3—3 of FIGURE 2.

FIGURE 4 is a detail vertical section-elevation through the dressing tool, taken on line 4—4 of FIGURE 3.

FIGURE 5 is an elevational detail, with the same showing the several parts of the dressing tool in pre-assembled condition.

FIGURE 6 is a top plan view of the diamond cutting point and its mounting head.

FIGURE 7 is a detail side elevation of the mounting head and its shaft or spindle.

FIGURE 8 is a partial front elevation of a surface grinding machine having a travelling table on which the dressing tool is shown in position for grinding the peripheral surface of the grinding wheel, and with the travelling table being magnetized for holding the dressing tool in operative condition.

FIGURE 9 is a side elevation showing the tool positioned on the magnetic chuck, with the tool being positioned for peripheral dressing of the grinding wheel.

FIGURE 10 is a top plan view showing the dressing tool secured in a vise in a position for dressing the side surfaces of a grinding wheel.

FIGURE 11 is a detail section-elevation taken on line 11—11 and showing the diamond point in operative position with relation to a grinding wheel.

Like characters of reference designate like parts throughout the several views of the drawings.

In order that the construction and the operation of the invention may be more fully understood and appreciated, I will now take up a detailed description thereof in which

the same will be more fully and comprehensively set forth.

Referring now to the drawings in detail, numerals 21 generally designate the body block of the device, with the front side 22 thereof being shorter than the rear side 23.

5 With the front side 22 and the rear side 23 being of different lengths, the top surface 24 is out of parallel with relation to the bottom surface 25. A smooth bore 26 is formed in the block and is centrally located in the top surface 24 and at a right angle with relation thereto. A threaded aperture 27 is formed in the body block, with the same extending from the rear side 23 and connecting with the smooth bore 26, and with the threaded aperture 27 being at right angles with relation to both the rear side 23 and the smooth bore 26, as more clearly shown in FIGURES 4 and 5.

15 The diamond cutting point 28 is embedded in the head of spindle 29 with the end of the point protruding above the upper end of the head. The spindle 30 is of smaller diameter than the head 29 and is adapted to fit snugly into the smooth bore 26, and with the depth of insertion being determined by the under side of the head 29 seating on the upper surface 24 of the block. The head 29 has serrations 31 formed in the peripheral surface thereof with the same providing a gripping surface for manually rotating the spindle. A vertical groove 32 is formed vertically on the head with the same providing an index line, the purpose of which will be more fully set forth hereinafter.

25 The top surface 24 of the body block has numbered index lines formed thereon and provide means by which the operator can determine the different settings of the spindle 30 and the diamond point 28. After the diamond points has been used in one position, the spindle can be manually rotated to the next position, with the vertical groove 32 being aligned with the next index line. This provides means for using the diamond point 28 to the best advantage, with the same having four facets, as shown more clearly in FIGURE 6.

30 A friction plug 33 is provided for frictional engagement with the spindle. The plug 33 is urged toward the spindle 30 by means of compression spring 34 and threaded plug 35. Variable friction between the spindle 30 and the friction plug 33 is accomplished by turning the threaded plug inwardly or outwardly. A tip 36 is formed on the outer end of friction plug 33, with the tip being adapted to enter the inner end of the spring 34. Frictional pressure of the friction plug against the spindle is adjusted to prevent the spindle from turning during the dressing operation yet permits the operator to manually rotate the spindle, together with the head 29 and the diamond point 28, from one index position to the next index position without disturbing the adjustment of screw or plug 35.

*Operation*

35 In the use of the device, the same is adapted to set on a sliding table which is magnetized and provides a magnetic chuck, as shown in FIGURE 8 which shows a surface grinding machine 37 having a grinding wheel 38 arranged for vertical movement controlled through hand wheel 39. The machine has the table 40 which is adjustable laterally by means of hand wheel 41. The table is also capable of longitudinal adjustment provided by hand wheel 42. In the grinding operation, the dressing tool is set on the magnetized table 40. A table lock 43 is provided on the machine to lock the table 40 against movement.

40 In the dressing operation with the above described machine, the dressing tool is located in substantial relation to the grinding wheel 38. With the grinding wheel being rotated in the usual manner, hand wheel 39 is adjusted to bring grinding wheel 38 into dressing relation with the diamond point 28. Any longitudinal adjustment of the

dressing tool with relation to the grinding wheel 38 is accomplished through hand wheel 42. Dressing of the peripheral surface of the grinding wheel is accomplished by turning hand wheel 41 giving a lateral movement to the table 40 and the dressing tool, with the diamond point engaging the peripheral surface of the grinding wheel, as shown in FIGURE 9.

The dressing tool is further adapted for dressing the sides of grinding wheels. In situations where the table 40 is not magnetized, the dressing tool is clamped in a suitable vise 44 which is secured to the table by means of screws 45, as shown in FIGURES 10 and 11. With the dressing tool being securely clamped in the vise, the grinding wheel is lowered to the proper position for side dressing and the diamond point is brought into engagement therewith by means of hand wheels 41 and 42.

It is obvious that the dressing tool is versatile and is not limited to the specific dressing operation described above.

While the invention is shown and described in its presently preferred form, I desire that it be understood that I am not to be limited to the specific form as shown, but that minor changes may be made therein insofar as the changes may fall within the scope of the appended claim in their broadest form.

Having now shown and described the invention, what I claim and desire to secure by Letters Patent of the United States, is:

A diamond grinding wheel dresser comprising a body block, a spindle aperture formed in the upper portion of the body block, a spindle set into the aperture and being capable of rotation therein with said spindle having a head portion formed on the upper end thereof with the head portion being of larger diameter than the diameter of the aperture formed in the body block with the under side of the head portion of the spindle providing means limiting the depth of the spindle into the body block, a diamond dressing point partially embedded into the head portion of the spindle and projecting upwardly therefrom, a series of index lines formed in the upper surface of the body block with said index lines being consecutively num-

bered about the spindle aperture, a vertically-disposed index line formed on the side of the head portion of the spindle and adapted to be aligned with the index lines of the upper surface of the body block in consecutive order, with the upper surface of the body block being out-of-parallel relation to the bottom surface of the body block and establishing an angle of inclination of the spindle with relation to the bottom surface of the body block, a threaded bore formed in one side of the body block and extending from the exterior surface of the side of the body block into the spindle aperture, a friction means located in the threaded bore, said friction means comprising a friction plug bearing against the surface of the spindle, a threaded plug fitting into the threaded bore, a compression spring located between the outer end of the friction plug and the inner end of the threaded plug with adjustment inwardly of the threaded plug providing greater pressure of the friction plug against the surface of the spindle and adjustment of the threaded plug outwardly providing a reduced pressure of the friction plug against the surface of the spindle, with the friction means providing adjustable means of pressure against the rotation of the spindle permitting manual rotation of the spindle from one index line to the next consecutively numbered index line, with the proper adjustment of the friction means preventing accidental rotation of the spindle, and with the body block being adapted to be magnetically secured in place with relation to a table member of a surface grinding machine.

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