March 19, 1963 F. H. SMITH 3,081,762

GRINDING WHEEL DRESSING TOOL

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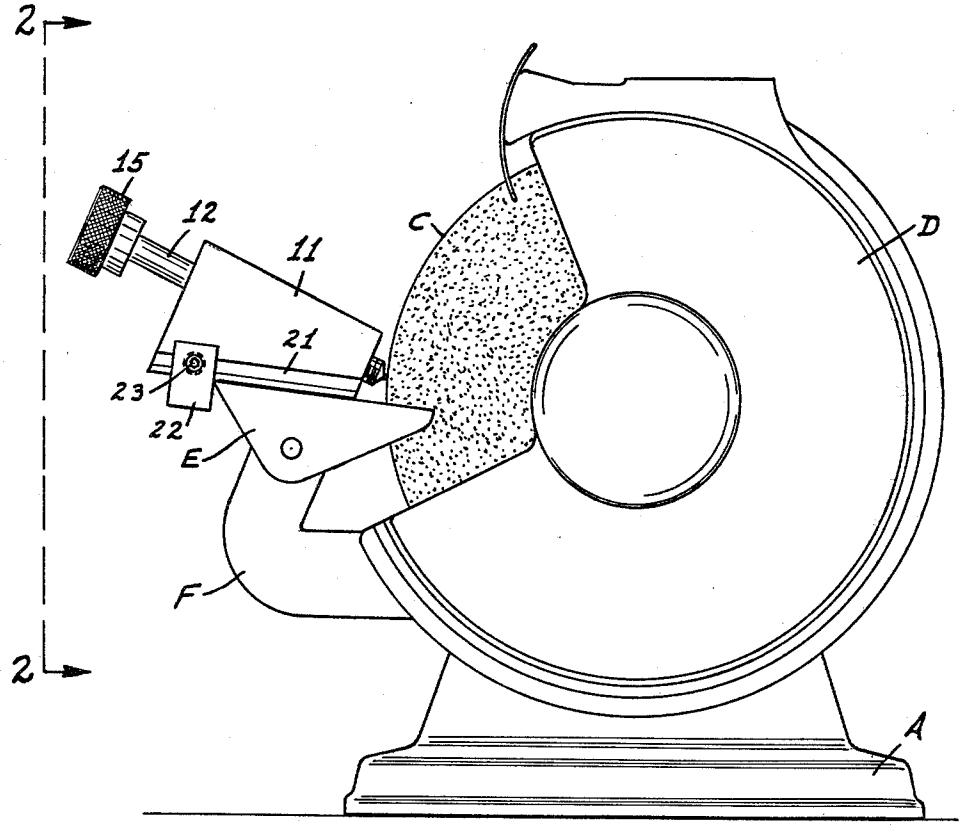


FIG. 1.

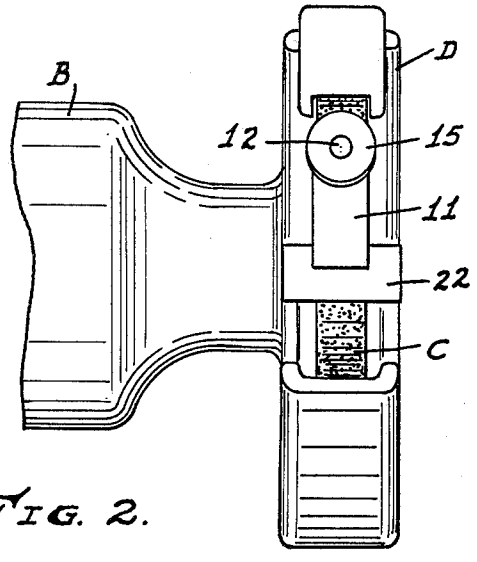


FIG. 2.

FREDERICK H. SMITH,
INVENTOR.

BY Donald E. Windle.
ATTORNEY.

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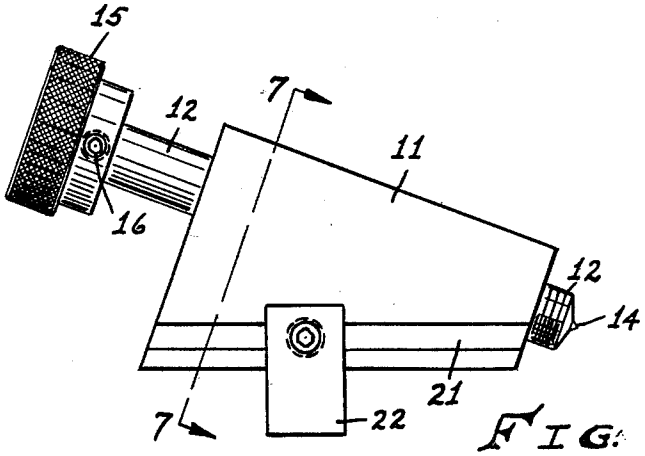


FIG. 3.

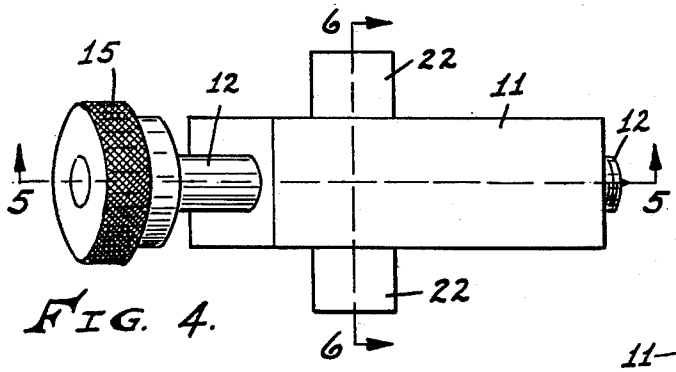


FIG. 4.

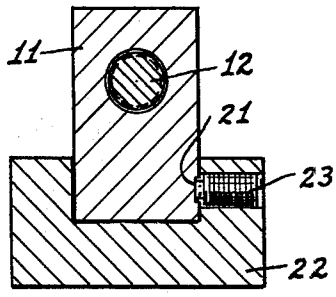


FIG. 6.

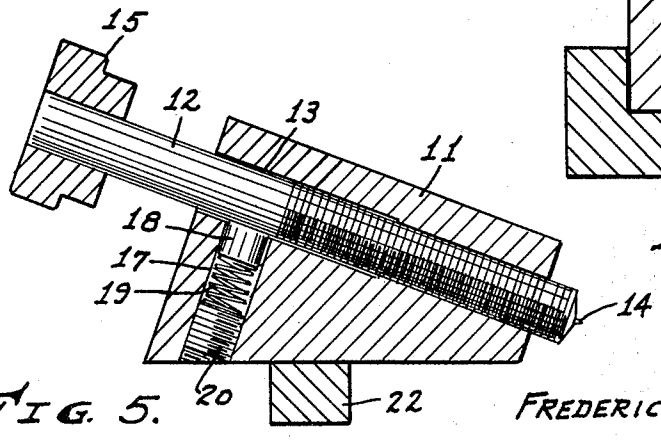


FIG. 5.

FREDERICK H. SMITH.
INVENTOR.

BY Donald E. Windle.
ATTORNEY.

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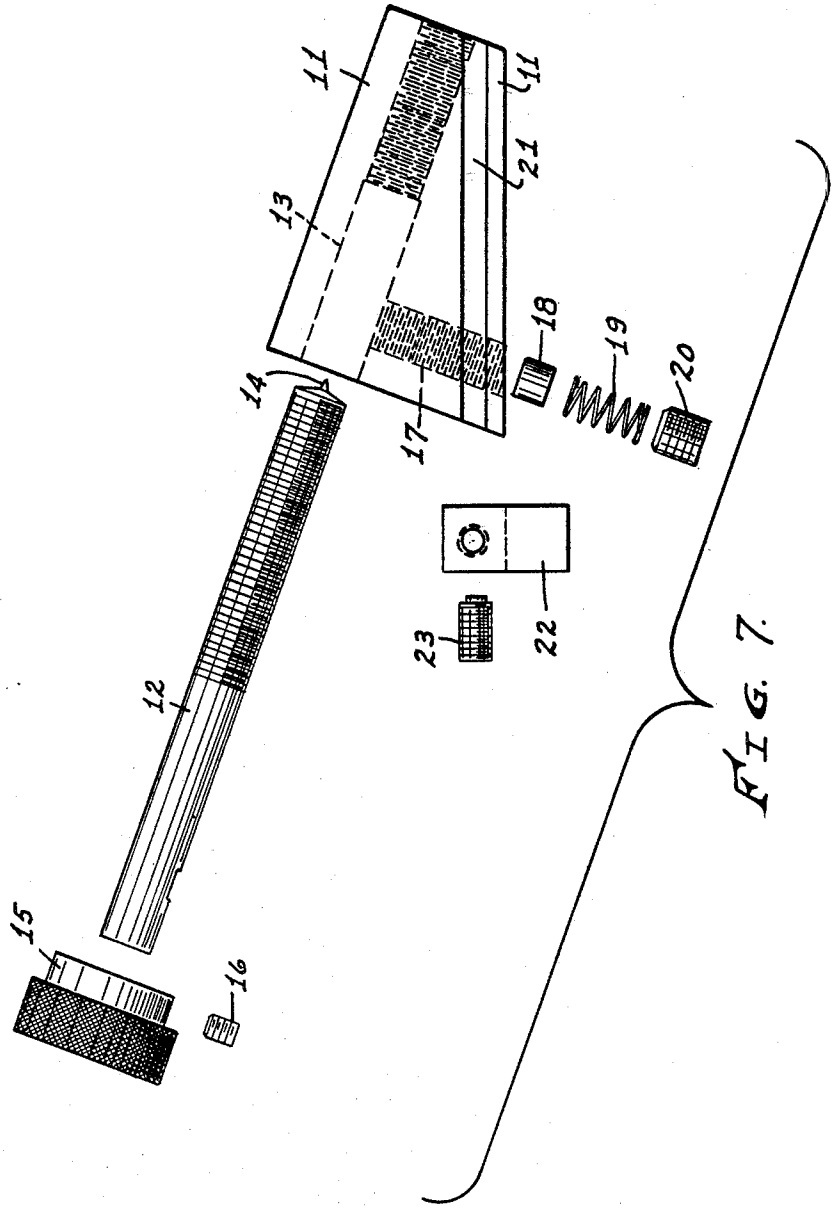


FIG. 7.

FREDERICK H. SMITH,
INVENTOR.

BY Donald E. Windle.
ATTORNEY.

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3,081,762

GRINDING WHEEL DRESSING TOOL

Frederick H. Smith, 2611 Evermur Drive, Dayton, Ohio

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1 Claim. (Cl. 125—11)

The present invention relates to a grinding wheel dressing tool and the principal object of the invention is the provision of a tool which is more efficient in its use than the conventional types of tool now in use for the same purpose.

A second object of the invention is the provision of a dressing tool in which the angularity of the tool with relation to a grinding wheel is predetermined and is provided in the tool.

A third object is the provision of a tool in which the dressing element thereof is maintained in sharpened condition by the angularity thereof with relation to the grinding wheel with which the same is adapted to be used.

A fourth object is the provision of a dressing tool which is flexible in its operation.

Another object is the provision of a dressing tool which is easy of adjustment in providing the proper depth of cut in the surface of a grinding wheel.

A further object is the provision of a dressing tool which is equally efficient in dressing the side surfaces of a grinding wheel.

A still further object is the provision of adjustment of the dressing element and with the adjustment thereof being accomplished by means of a frictional control of the adjustment means.

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 most satisfactory and presently preferred manner of accomplishing the objects of the invention is illustrated in the accompanying drawings forming a part hereof, and in which:

FIGURE 1 is a side elevation of a grinding device with a wheel dressing tool incorporating the embodiment of the invention therein, with the tool being shown in operative condition with relation to the grinding wheel.

FIGURE 2 is a partial front elevation, taken from line 2—2 of FIGURE 1.

FIGURE 3 is a side elevational view of the dressing tool.

FIGURE 4 is a top plan view of the tool.

FIGURE 5 is a detail vertical section-elevation through the tool, as taken on line 5—5 of FIGURE 4.

FIGURE 6 is a cross sectional detail through the tool, taken on line 6—6 of FIGURE 4.

FIGURE 7 is an elevational detail, with the same showing the several parts of the device in pre-assembled condition.

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, A designates the base of a grinding machine which is adapted to support motor housing B. The grinding wheel C is of the conventional type with the same being abrasive. Housing or guard D is provided for protection of the operator. Tool rest E is supported in operative position by means of bracket F.

The dressing tool is composed of body 11, through which spindle 12 is threaded. It will be noted, by referring to FIGURE 5, that bore 13 of body 11 is smooth substantially half the length thereof with the smooth portion being of sufficient size to permit the threaded portion

of spindle to pass freely therethrough. The forward end of spindle 12 has a cutting or dressing element 14 rigidly secured therein and projecting therefrom. The cutting or dressing element 14 is a commercial diamond. A knob 15 is rigidly secured on the rear end of the spindle by means of a set screw 16.

I have provided a bore 17 near the rear end of body 11, with the bore terminating in the longitudinal bore 13 and in communicating relation therewith. In bore 17, I provide a plunger 18 and with the same being adapted to have one end thereof to bear against the under side of spindle 12. A compression spring 19 is provided under the plunger 18 in the bore 17, and with an adjusting screw 20 being threaded into the bore 17 to provide variable pressure against the lower end of compression spring 19, and in turn create more or less friction of the plunger 18 against the spindle 12.

One side of body 11 has a channel 21 provided therein, with the same forming a guide for the adjustment of bracket 22 longitudinally of the body 11. Bracket 22 is capable of longitudinal movement and can be maintained in its desired position by means of screw 23 which is threaded thereinto with the inner end of the screw engaging channel 21. Bracket 22 is adapted to engage the adjacent edge of tool rest E.

Operation

In the operation of the device, the dressing tool, being assembled as shown in FIGURE 3, is placed on the tool rest E, as shown in FIGURE 1. Bracket 22 is adjusted longitudinally of the body by loosening screw 23 and sliding the bracket to a position which allows the forward end of the body to be in close proximity with relation to the peripheral surface of the grinding wheel C. Set screw 23 is then tightened to maintain bracket 22 in the desired position. With the forward face of the bracket 22 being engaged with the adjacent edge of the tool rest E, spindle 12 is turned inwardly until dressing element 14 comes into contact with the surface of the rotating grinding wheel C, after which the tool is moved in a back and forth or side to side motion across the tool rest E. As the rough surface of the grinding wheel is cut away, the surface of the wheel may be further dressed by turning spindle 12 to move the dressing element 14 toward the rotating wheel. This operation is continued until the surface of the grinding wheel is true.

In order to dress the side surfaces of the grinding wheel, the tool is placed on the tool rest E at either side of the wheel with the bracket 22 being properly adjusted to ride against the side edge of the tool rest E. The operation of dressing the sides of the wheel is the same as that used in dressing the face of the grinding wheel.

After the location of bracket 22 has been established, it is seldom necessary to make any change therein as sufficient adjustment of the dressing element 14 is provided by turning threaded spindle 12 in body 11 to advance the dressing element 14 into the necessary engagement with the grinding wheel.

It will be noted that, with channel 21 being relieved with relation to the adjacent side of the body, any burrs which might be formed by the tightening of screw 23 will not occur on the face of the body 11 which would prevent the smooth operation of the bracket 23 longitudinally of the body 11. It is therefore possible to provide closer clearances between the bracket 22 and the body 11.

From the above, it is readily apparent that the tool is easy of adjustment and operation.

The plunger 18 is adapted to engage the spindle 12 in any desired degree by threading screw 20 toward or away from the spindle. The plunger 18, spring 19, and screw 20 are adapted to provide frictional pressure against

spindle 12. A sufficient frictional pressure is applied against the spindle 12 to prevent accidental displacement thereof longitudinally of the body 11 by rotating and changing the relation of the dressing element 14 against the rotating grinding wheel. With the turning of spindle 12 in adjusting the dressing element 14 toward the grinding wheel, the cutting point or surface of the dressing element 14 is changed with relation to the wheel which prevents a constant wear at one point of the dressing element. This tends to keep the dressing element in considerably better cutting condition. The pressure of the plunger 18 against the spindle 12 does not prevent rotation of the spindle by means of knob 15.

I desire that, while the presently preferred embodiment of the device is shown and described, minor changes may be made in the design of the device and the component parts thereof, insofar as the changes may fall within the scope of the appended claim in its broadest form.

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

In combination with a grinding device having a grinding wheel and a tool rest, a grinding wheel dressing tool resting on the tool rest, said dressing tool being composed of a body member positioned on the tool rest with the body having a channelled groove formed exteriorly in one of its sides, a bracket adjustably secured to the body member and engaging an edge of the tool rest, a set screw threaded into and extending through a portion of the bracket with the set screw engaging the channelled groove of the body, a spindle threaded into the body member and extending therethrough, a knob rigidly secured on one end of the spindle, a dressing element positioned in the other end of the spindle, with the dressing element being movable toward and away from the grinding wheel by the rotation of the spindle in the body member and with adjustable friction means engaging the spindle.

References Cited in the file of this patent

UNITED STATES PATENTS

1,508,939	Reeves	Sept. 16, 1924
1,612,371	Gleason et al.	Dec. 28, 1926
1,819,091	Guild et al.	Aug. 18, 1931
2,341,820	Schoger	Feb. 15, 1944
2,390,967	Swenson	Dec. 11, 1945
2,475,401	Prince	July 5, 1949
2,638,886	Chandler	May 19, 1953
2,708,432	Eller	May 17, 1955
2,726,650	Faila	Dec. 13, 1955
2,748,761	Winegar	June 5, 1956
2,785,510	Garrison	Mar. 19, 1957

OTHER REFERENCES

"Diamond Tool-Grinder Dresser," Metalworking Production, April 26, 1957, page 730. (Copy in Scientific Library and Div. 58.)