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DIAMOND TOOL

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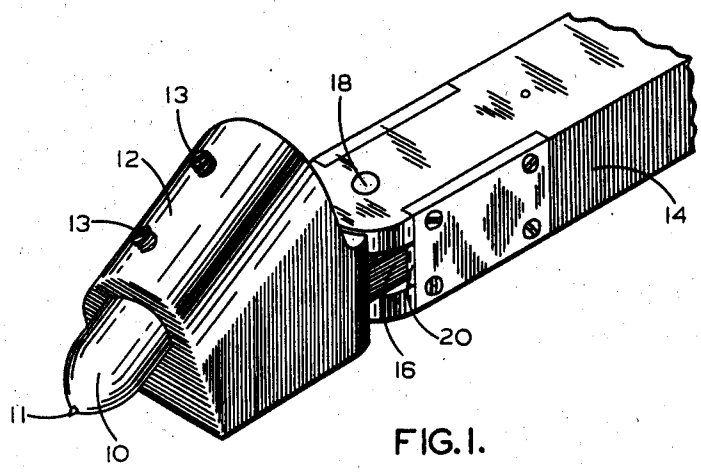


FIG. 1.

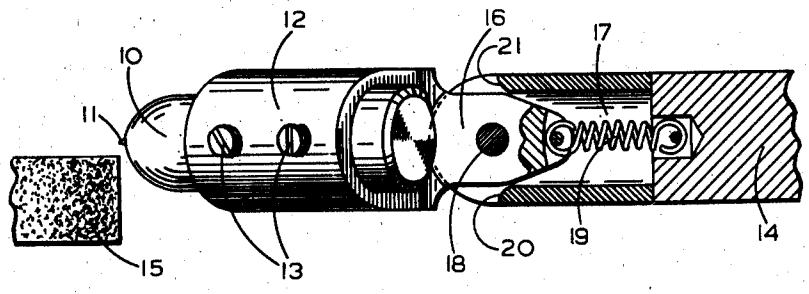


FIG. 2.

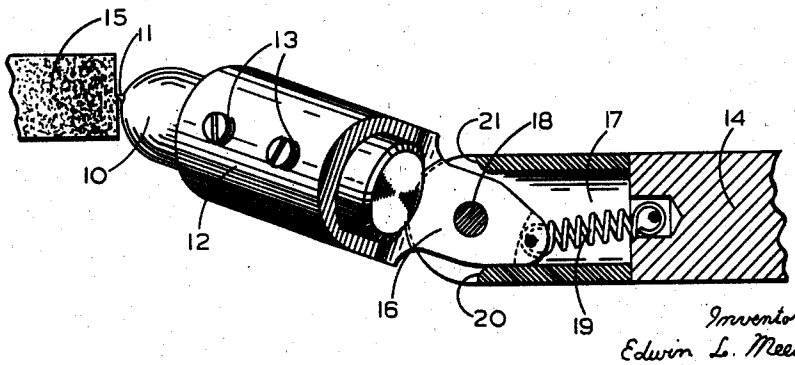


FIG. 3.

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DIAMOND TOOL

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4 Claims. (Cl. 125—39)

This invention relates to diamond tipped tools for use in trueing up abrasive wheels. At present the tool is given either a pushing cut as it is traversed across the cylindrical surface of the rotating wheel, or is presented to the wheel at right angles during this movement. In either case the diamond tends to develop a comparatively large flat surface as a result of wear, which gives a rubbing action against the abrasive wheel. The consequence is that the tool is no longer effective to true up the wheel but, on the contrary, has the reverse effect. Also, the heat due to friction between the wheel and the large flat on the diamond has a deleterious effect on the structure of the diamond.

According to the invention, the tool is mounted so that it is presented to the work in position to give a trailing cut for both directions of travel across the work, and is automatically rocked from one position to the other between successive traverses. Thus the tool holder may be formed with a flat fitting in a slot in the member which reciprocates the tool, and pivoted to said member on a pin extending at right angles to the direction of traverse, appropriately disposed shoulders serving to limit the pivotal movement of the tool holder relatively to the member, and a strong spring being provided which normally holds the tool holder in line with the member. When, however, the tool contacts with the work, it will be displaced against the spring and turn about the pin until it contacts with the shoulder, the position of which defines the angle of trailing cut. When the traverse is finished, the spring will immediately return the tool holder to the initial position. On the return stroke, however, the tool will be swung, as soon as it contacts with the work, in the opposite direction about the pin until it meets the other shoulder which will maintain it in position to effect a trailing cut on the return stroke.

With such an arrangement, no flat will be formed on the diamond, but on the contrary it will be worn down to a chisel edge. If the tool is rotatably mounted in its holder, it may then be turned through 90° and the result of further use of the tool will be to form a true point on the diamond. The accuracy of the work will consequently be greatly improved as compared with the known arrangements in which a flat is developed on the diamond.

The tool may be tipped with a single diamond, or with a plurality of diamonds. In the latter case, the diamonds employed are preferably long diamond points mounted with the longer dimension normal to the operating face of the tool.

One form of apparatus constructed in accordance with the invention will now be described in detail, by way of example, with reference to the accompanying drawing, in which,

Figure 1 is a perspective view of the tool and holder.

Figure 2 is a corresponding plan view, partly in section, showing the tool about to engage the work, and

Figure 3 is a similar view showing the position of the tool after it has engaged the work.

The tool **10**, which is tipped with a diamond **11**, is mounted in a holder **12**, being held in position by screws **13**. The holder in turn is supported on a reciprocating member **14** which traverses it to and fro across the face of the abrasive wheel **15** to be trued up. The holder **12** is formed with a rearwardly projecting flat tongue **16** which engages in a slot **17** in the member **14** and can pivot in relation to the member **14** about a pin **18** extending at right angles to the direction of traverse. A strong spring **19** normally holds the holder **12** in line with the member **14** as shown in Figure 2. When, however, the tool contacts with the wheel it will be swung about the pin **18** into position to present the tool to give a trailing cut, as shown in Figure 3, the pivotal movement being limited by the engagement of the tongue **16** with a shoulder **20** at the end of the slot **17**. When the traverse is finished the spring **19** will return the holder to the central position. On the return stroke the holder will be swung in the reverse direction about the pin, thus again giving a trailing cut, its movement in this case being limited by the shoulder **21** at the other side of the slot.

The diamond will be worn to a chisel point as the result of successive traverses across the wheel. By slackening the screws **13** it can then be turned through 90°, in relation to the holder, whereupon further use of the tool will form a true point on the diamond.

Although the tool according to the invention is primarily intended for trueing up abrasive wheels, it may neverthless find other useful applications, for instance, in sawing stone or marble.

We claim:

1. A device of the character and for the purposes described comprising a member adapted for reciprocation across the face of a rotating grinding wheel, a diamond holder pivotally mounted in said member, a spring normally tending to keep said holder in alignment with said member,

and means for limiting pivotal movement of said holder to a trailing position against the restraining action of said spring when traversed in either direction across and in contact with the face of said wheel.

2. A device of the character and for the purposes described comprising a member adapted for reciprocation across the face of a rotating grinding wheel and having a forked end, a wheel dressing tool having a lug pivotally mounted in the forked end of said member about an axis substantially at right angles to the plane of reciprocation of said member, a spring attached at one end to said member and at the other end to the lug on said tool and normally tending to keep the latter in alignment with said member and means for limiting pivotal movement of said tool to a trailing position against the action of said spring when traversed in either direction across and in contact with the face of said wheel.

3. A device of the character and for the purposes described comprising a member adapted for reciprocation across the face of a rotating abrasive wheel, a diamond holder pivotally mounted in said member about an axis at right angles to the plane of reciprocation of said member, and means normally tending to maintain said holder in alignment with said member and adapted when the latter is traversed in either direction across and in contact with the face of said wheel to allow said holder automatically to occupy a trailing position with respect to said traverse.

4. A device of the character and for the purposes described comprising a member adapted for reciprocation across the face of a rotating abrasive wheel, a diamond holder pivotally mounted in said member about an axis at right angles to the plane of reciprocation of said member, resilient means normally tending automatically to maintain said holder in alignment with said member, and co-operating means on said holder and said member for limiting the pivotal movement of said holder to a predetermined trailing position against the restraining action of said resilient means during the traverse of said member in either direction across and in contact with said wheel.

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