July 2, 1957 D. T. PEDEN 2,797,537

ELONGATED HONING STONE

Original Filed April 22, 1952

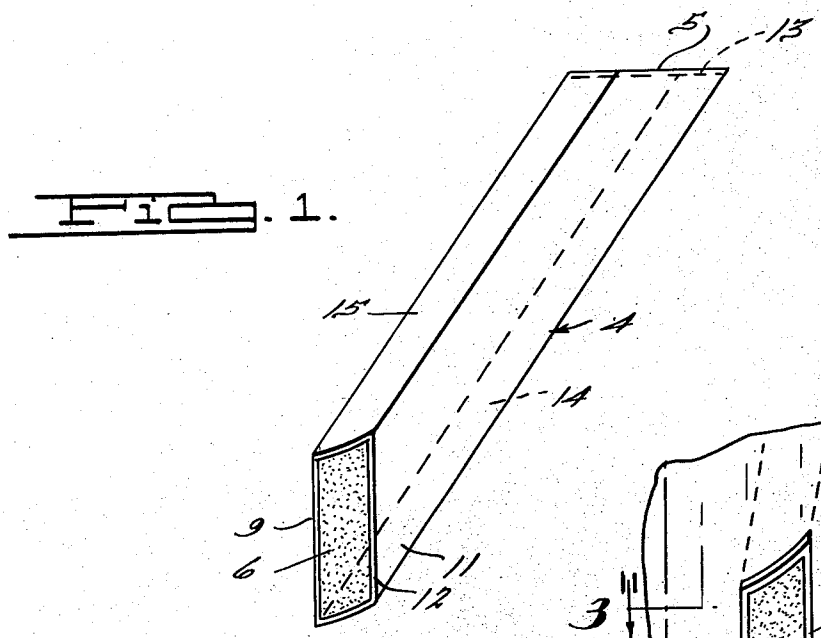


Fig. 1.

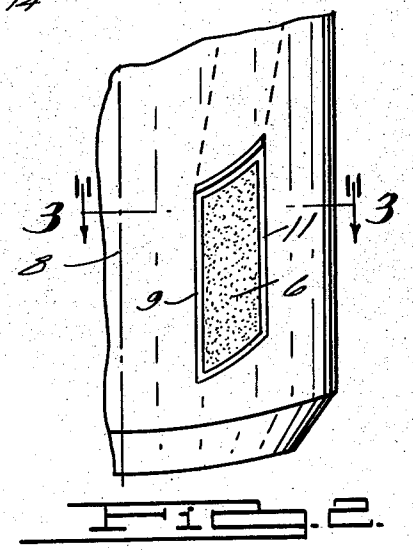


Fig. 2.

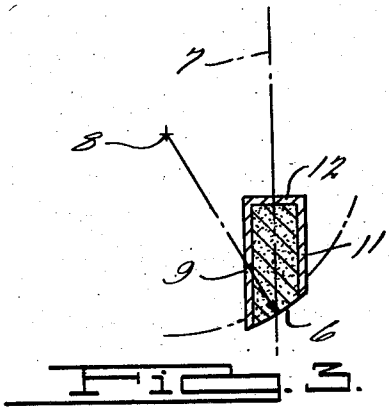


Fig. 3.

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ELONGATED HONING STONE

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Original application April 22, 1952, Serial No. 283,604, now Patent No. 2,694,885, dated November 23, 1954. Divided and this application September 28, 1954, Serial No. 458,768

4 Claims. (Cl. 51—204)

This invention relates to honing stones, and particularly to an elongated stone capable of being mounted in a honing tool at an angle to the axis thereof.

The present application is a division of the patent to Douglas T. Peden, No. 2,694,885, issued November 23, 1954, for honing tool with stones disposed at an angle to the tool axis, and assigned to the assignee of the present invention.

In the parent patent of which the present application is a division, a honing tool is illustrated having a cylindrical body of small diameter through which a plurality of elongated stones extend at an angle in chordal relation to the axis thereof. The stones are of rectangular cross-section, with end working faces of peculiar trapezoidal shape disposed at right angles to a plane through the opposite ends. The arcuate end faces are nonsymmetrical to a central plane through the stone because of their off-radial position in the tool body.

Accordingly, the main objects of the invention are: to provide a stone of rectangular shape with an arcuate face which is nonsymmetrical to a central plane through the stone; to provide an elongated stone with an arcuate nonsymmetrical face having the opposite end falling in a plane normal to a plane in the arcuate face; to provide a rectangular stone with a sheet of material which wears away substantially at the rate of breakdown of the stone, with the ends of the stone disposed in planes normal to each other and with the face of one end disposed on an arc in nonsymmetrical relation to a plane through the center of the stones, and, in general, to provide an elongated stone having long life and of rigid construction.

Other objects and features of novelty of the invention will be specifically pointed out or will become apparent when referring, for a better understanding of the invention, to the following description taken in conjunction with the accompanying drawing, wherein:

Figure 1 is a perspective view of a honing stone embodying features of the present invention;

Fig. 2 is a view of the end of the honing stone, showing its association with a honing tool body; and

Fig. 3 is a sectional view of the structure illustrated in Fig. 2, taken on the line 3—3 thereof.

In the figures, a honing stone is illustrated of rectangular cross section having a top end face 5 and a bottom end face 6 the side edges of which are disposed in planes at right angles to each other. The end face 6 is of arcuate shape disposed nonsymmetrically to a plane through the center of the stone. This is evident from an examination of Fig. 3 wherein the central plane 7 of the stone is offset from a parallel diameter through the axis 8 of the tool from which the arcuate end face 6 of the stone is scribed. This nonsymmetrical relationship of the face 6 to the central plane through the stone body is important in view of the fact that a plurality of the stones are employed within the tool body and therefore must be in chordal relation to parallel diameters through the body. In view of such chordal relation, it will be noted that the side 9 of the stone, the side closest to the diameter, is of greater length than the side 11 which is more remote from the diameter.

While the stone is of sufficient size to have enough strength to withstand the pressure of use during a honing operation, it is within the purview of the invention to apply a sheet of material 12 on the four sides of the stone, leaving the end faces 5 and 6 uncovered. It is, however, within the purview of the invention to apply a layer 13 of the material over the upper end face 5. The material may be plastic, metal or the like which is cast, sprayed or bonded to the stone.

Because of the right-angle relation of the end edges of the sides to each other and the chordal relation of the stone to the diameter of the body, the bottom side 14 is substantially longer than the top side 15 and the side 9 closest to the diameter is longer than the side 11 remote from the diameter. With this relationship, a section of a cylinder is formed on the lower face 6 of the stone having an arcuate surface which is nonsymmetrical to the plane through the stone.

What is claimed is:

1. A honing stone of rectangular cross section and of substantial length relative to its width and thickness, one end of said stone being disposed at an acute angle at one side and an obtuse angle at the other side to provide an elongated working face of greater length than the width of the stone, and a nonabrasive material covering the four sides and the opposite end of the stone leaving the face the sole abrasive area.

2. A honing stone made of abrasive material having a length substantially greater than its breadth and thickness, one side of said stone being shorter than the other forming an angularly disposed working face on the end, said face having the thickness of the stone but of substantially greater length than the width thereof, and a plastic material on the four sides of the stone leaving the working face free to perform an abrasive operation.

3. A honing stone of elongated rectangular cross section having a working face on one end thereof, said stone having a top and bottom wall joined by two side walls, the side walls being in parallel relation to each other and with the edges at one end of each side wall disposed in angular relation to the edges at the other end of the side walls, each side wall being in the form of a truncated triangle, with one side wall of greater length than the opposite side wall.

4. A honing stone of elongated rectangular cross section having a working face on one end thereof, said stone having a top and bottom wall joined by two side walls, the side walls being in parallel relation to each other and with the edges at one end of each side wall disposed in angular relation to the edges at the other end of the side walls, each side wall being in the form of a truncated triangle, with one side wall of greater length than the opposite side wall, and a nonabrading material on said four walls.

References Cited in the file of this patent

UNITED STATES PATENTS

1,095,994	Gherky	May 5, 1914
1,520,488	Tone	Dec. 23, 1924
2,009,222	Connor	July 23, 1935
2,694,885	Peden	Nov. 23, 1954