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KNIFE SHARPENER

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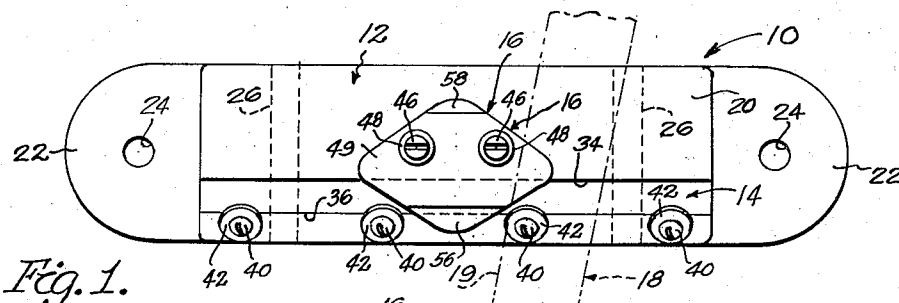


Fig. 1.

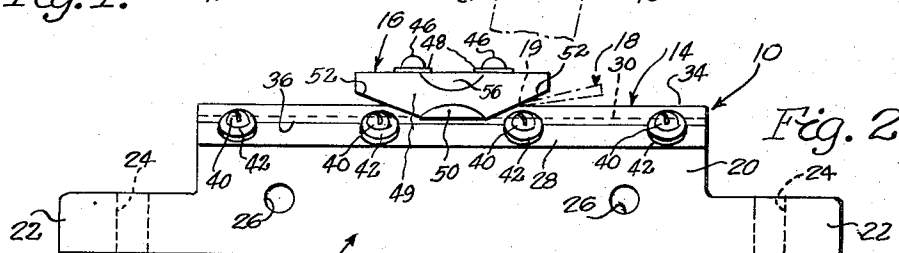


Fig. 2.

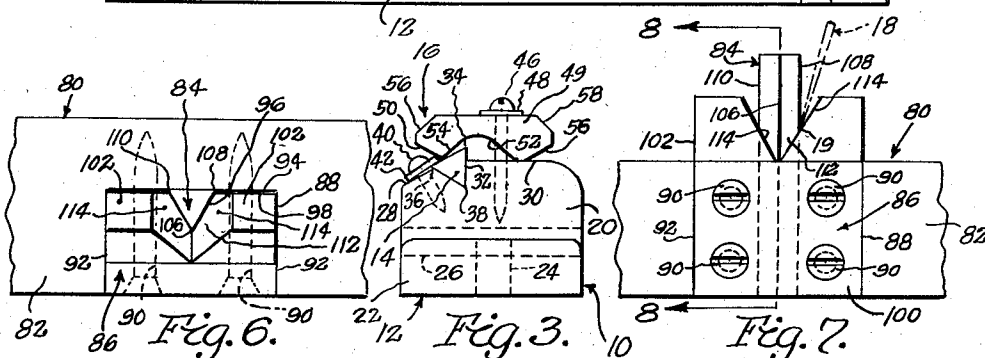


Fig. 6.

Fig. 3.

Fig. 7.

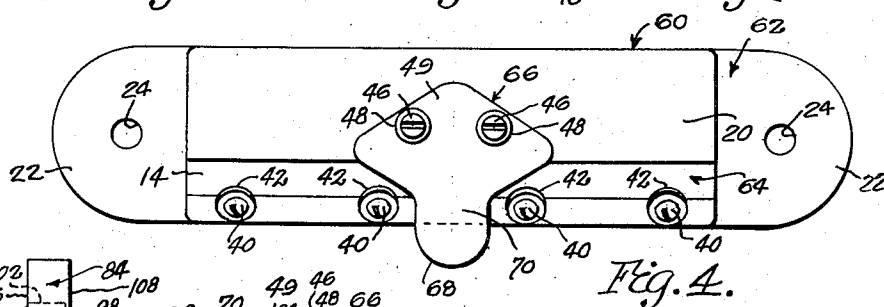


Fig. 4.

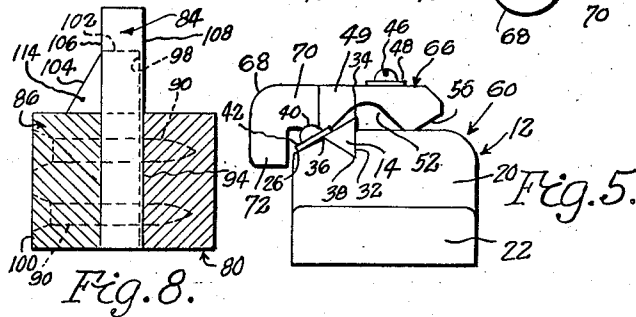


Fig. 8.

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KNIFE SHARPENER

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1 Claim. (Cl. 76—88)

This invention relates to sharpening devices and, in particular, to knife sharpeners.

One object of this invention is to provide a knife sharpener which is mounted in a stationary location and in which the knife to be sharpened is drawn across a sharp-edged sharpening element while held in a suitable position.

Another object is to provide a knife sharpener of the foregoing character having a sharpening element provided with multiple sharp edges so arranged that when one of the edges becomes dull, the sharpening element can be removed from its seat and replaced with a new and sharp edge presented to the knives to be sharpened.

Another object is to provide a knife sharpener of the foregoing character in which the knife is guided in its sharpening stroke by means of a guide attached to the sharpener, so that the correct angle of sharpened edge is obtained on the knife.

Another object is to provide a knife sharpener of the foregoing character wherein the sharpening element is in the form of an elongated rod of tool steel or other extremely hard material and having a triangular cross-section with a sharpening edge at each of the three corner edges of the rod, so that the rod not only has two additional knife sharpening edges in reserve but also can be mounted in a projecting position wherein two or even three of the edges can be used at any time, as desired.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings, wherein:

Figure 1 is a top plan view of a knife sharpener, according to one form of the invention, with the blade of the knife to be sharpened shown in dotted or chain lines;

Figure 2 is a front elevation of the knife sharpener shown in Figure 1, with the knife blade to be sharpened similarly indicated;

Figure 3 is a right-hand end elevation of the knife sharpener shown in Figures 1 and 2;

Figure 4 is a top plan view of a knife sharpener slightly modified from that shown in Figure 1;

Figure 5 is a right-hand end elevation of the knife sharpener shown in Figure 4;

Figure 6 is a fragmentary top plan view of a further modified knife sharpener, according to the invention, wherein a sharpening element of triangular cross-section is mounted in an upwardly-projecting position;

Figure 7 is a fragmentary front elevation of the knife sharpener shown in Figure 6; and

Figure 8 is a vertical section taken along the line 8—8 in Figure 7.

Referring to the drawings in detail, Figure 1 shows a knife sharpener, generally designated 10, according to one form of the invention as consisting generally of a base 12, an elongated sharpening element 14 of triangular cross-section mounted therein, and a knife blade guide 16 mounted on the base 12 above the sharpening element 14 for guiding the knife blade 18 while it is being drawn across the sharpening element 14 to sharpen the cutting

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edge 19. The base 12 is in the form of an elongated block having a central upstanding portion 20 and lower end lugs 22 provided with holes 24 for receiving mounting screws by which the base 12 is secured to the top of a bench, counter, table or to a wall (not shown). The upstanding portion 20 of the base 12 is also provided with spaced holes 26 disposed at right angles to the holes 24 by which the base 12 may be secured to the edge of a bench, counter or table.

The upstanding central portion 20 has a forward upper edge surface 28 (Figure 3) which is inclined relatively to the top surface 30 thereof and which is provided with an elongated V-shaped groove 32. The groove 32 is configured to snugly receive the elongated sharpening element or rod 14, which is preferably of triangular cross-section with three sharpening edges 34, 36 and 38. The spaced fasteners 40 and washers 42 on the inclined front surface 28 engage the sharpening element 14 to removably hold it in the groove 32. The groove 32 is so formed that the uppermost sharpening edge 34 of the sharpening element 14 projects a slight distance above the level of the top surface 30 of the block or base 12, so as to permit sufficient freedom of motion of the knife blade 18 to be sharpened.

The knife blade guide 16 is secured by the fastener 46 and washers 48 to the upstanding portion 20 of the base 12 and has a body 49 of approximately diamond-shaped outline when viewed from above. The knife blade guide body 49 has a central substantially flat bottom surface 50 from which inclined bottom surfaces 52 extend upward on either side. The guide 16 has a V-shaped groove or notch 54 in the forward portion of the bottom surfaces 50 and 52 for the passage of the sharpening element 14. The forward and rearward lower and upper edges of the guide 16 have upwardly-inclined and downwardly-inclined surfaces 56 and 58 respectively.

The slightly modified knife sharpener, generally designated 60, shown in Figures 4 and 5, has a base 62 and sharpening element 64 of substantially the same construction as the base 12 and sharpening element 14 of Figures 1 to 3 inclusive, hence similar parts are designated with similar reference numerals. The knife sharpener 60 of Figures 4 and 5 has a knife blade guide 66 also of the same general construction, for the most part, as the knife blade 16 of Figures 1 to 3 inclusive, and corresponding parts are designated with the same reference numerals. In addition to the structure shown in Figures 1 to 3 inclusive, the knife blade guide 66 is provided with a forwardly and downwardly extending L-shaped nose or safety knife guard portion 68 having a horizontal portion 70 connecting it to the main body 49 of the knife blade guide 66, and a vertical portion 72 extending downwardly therefrom below the level of the sharpening element 14.

In the operation of the knife sharpener 10, let it be assumed that the base 12 has been secured in a stationary position by attaching it to a bench, counter or table as mentioned above, so that it cannot move accidentally during the sharpening operation. To sharpen a knife blade 18, the user inserts the rearward or handle end of the knife blade into the wedge-shaped gap between the inclined bottom wall 52 of the knife guide 16 and the upper edge 34 of the sharpening element 14, as indicated in chain lines in Figures 1 and 2, and then draws the knife blade 18 toward himself, with the edge thereof inclined slightly to the sharpening edge 34. As the knife is drawn rearwardly in this manner, the sharpening edge 14 removes a slight amount of metal from the portion of the knife blade adjacent its cutting edge 19. The opposite side of the knife blade 18 is then presented to the wedge-shaped space on the opposite side of the guide 16 and again drawn across the sharpening element 14, again causing its sharpening edge 34 to remove metal from the

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opposite side of the knife blade 18. In this manner, the sharpening edge 19 of the knife blade 18 is quickly given an extremely keen cutting edge. When the upper sharpening edge 34 of the sharpening rod 14 becomes dull after a period of considerable use, the fasteners 40 may be loosened to release the grip of the retaining bar 44, whereupon the rod 14 may be withdrawn, rotated 180 degrees, and replaced with a new edge 36 or 38 facing upward.

The operation of the modified knife sharpener 60 shown in Figures 4 and 5 is the same as that described in connection with the form of the invention shown in Figures 1, 2 and 3, with the additional advantage that if the user is careless in drawing the knife blade 18 across the sharpening edge 34, and applies undue lateral pressure in a direction toward the knife guide 16, the downwardly-extending knife guard portion or nose 68 will intercept the knife blade the instant it has been released from the wedge-shaped space between the guide 66 and the sharpening element 14, thereby preventing the user from accidentally cutting himself as a result of his inadvertence.

The further modified knife sharpener, generally designated 80, shown in Figures 6 and 8 inclusive consists of a base block 82 in which a sharpening element or rod 84 of triangular cross-section is held by means of a combined retaining and guide block, generally designated 26, secured in a rectangular recess 88 thereof by the fasteners 90. The base block 82 may consist of a block similar to the base 12 of Figures 1 to 5 inclusive, or it may consist of the edge of a table, counter or bench in which the recess 88 is cut. The recess 88 has flat parallel side walls 92 and a flat rear wall 94 (Figure 6) against the latter of which the flat rearward side of the sharpening element 84 is held by the block 86, which has a vertical V-notch or V-groove 96 in the rearward face thereof for snugly receiving the sharpening rod 84. The V-groove 96 cooperates with the adjacent portion of the rear wall 94 to form a hole of triangular cross-section which serves as a socket for the sharpening rod 84. The V-groove 96 is made of a depth slightly less than the thickness of the sharpening element 14 so as to provide a slight clearance between the surfaces 94 and 98 of the recess 88 and block 86 respectively, in order to firmly clamp the sharpening element 84 in its vertical position. The lower portion 100 of the retaining and guide block 86 is approximately in the shape of a rectangular body slightly thinner than a cube, whereas the upper or guide portion 102 thereof has an inclined front face 104 (Figure 8) which slopes upwardly and rearwardly toward the forward sharpening edge 106 of the sharpening rod 84 which has two other laterally-disposed sharpening edges 108 and 110. The upper portion 102 of the block 86 is also provided with a V-notch 112 having downwardly-inclined side surfaces 114 for guiding the knife blade 18 so that its cutting edge 19 is presented at the proper angle to the sharpening edge 108 or 110 of the sharpening rod 84 which is being used at the moment.

In the operation of the modified knife sharpener 80 of

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Figures 6 to 8 inclusive, the user places the rearward end of the knife blade in the wedge-shaped space between the inclined notch surface 114 and the lateral sharpening edge 108 or 110, as shown in the chain lines in Figure 7, with the cutting edge 19 of the knife 18 facing downward. He then draws the knife blade 18 toward himself while applying a slight downward pressure thereto, with the result that the cutting edge 19 is sharpened by its engagement with the sharpening edge 108 or 110 of the sharpening rod 84.

In the event that the sharpening edge 108 or 110 becomes dull, a new portion can be presented by loosening the fasteners 90 so as to release the block 86 from its clamping grip with the sharpening rod 84, thereby enabling the latter to be pulled upward a slight distance to present a new portion of the sharpening edge 108 or 110 to its intersection with the inclined V-notch surface 114 adjacent it. By sufficiently loosening the fasteners 90, the sharpening rod 84 may be completely withdrawn, rotated 120 degrees and dropped back into its recess 96, thereby presenting the cutting edge 106 to the V-notch in order to use the cutting edge 106.

What I claim is:

In a knife sharpener adapted to be secured to a substantially flat supporting structure, an elongated substantially rectangular predominantly horizontal base block having a horizontal extent greatly exceeding its height and having a substantially flat bottom surface configured to fit the substantially flat stationary supporting structure, said base block having therein an upwardly-directed elongated hole of approximately triangular cross-section disposed approximately perpendicular to said bottom surface, an elongated upstanding sharp-edged knife-sharpening rod of substantially triangular cross-section having its lower end portion mounted in said hole and having a pair of longitudinally-extending laterally-disposed cutting edges thereon, and an upstanding knife blade guide member secured to said base block adjacent said knife sharpening rod and disposed approximately perpendicular to said bottom surface, said blade guide member having in the top thereof a V-notch wider than said sharpening rod, said sharpening rod being disposed substantially in the center of said V-notch, said V-notch having knife blade guide edges converging downward toward said cutting edges of said sharpening rod.

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