Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

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This invention relates to a combination sharpener and more particularly to a sharpener especially useful, but not exclusively so, in connection with sharpening knives and scissors.

An object of the invention is to provide a mechanically simple sharpener for renewing the edge of a knife or other tool, implement and the like which has or should have a sharp cutting edge or a beveled edge depending on the type of implement that is being sharpened. For instance, most knives should have a keen cutting edge with the sides of the blade at the edge being properly beveled, while scissors require a different type of edge for most effective shearing action. A sharpener constructed in accordance with the invention possesses a number of features with the underlying object being that the invention is embodied in mechanically simple forms so that the invention may be manufactured at a low unit cost. These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a plan view of one embodiment of the invention.

FIGURE 2 is a sectional view taken on the line 2—2 of FIGURE 1.

FIGURE 3 is a cross sectional view taken on the line 3—3 of FIGURE 1.

FIGURE 4 is a fragmentary elevational view showing the sharpener of FIGURE 1 in use.

FIGURE 5 is a fragmentary elevational view showing the sharpening device of FIGURE 1 in use but distinguishing from FIGURE 4 in that a pair of scissors is being sharpened in FIGURE 5 while a knife blade is being sharpened in FIGURE 4.

FIGURE 6 is an elevational view of a modification of the sharpener in FIGURE 1.

FIGURE 7 is a sectional view taken on the line 7—7 of FIGURE 6.

FIGURE 8 is a cross-sectional view taken on the line 8—8 of FIGURE 6.

FIGURE 9 is an elevational view of a modification of the sharpener.

FIGURE 10 is a cross-sectional view taken on the line 10—10 of FIGURE 9.

FIGURE 11 is an elevational view of a further modification.

FIGURE 12 is a cross-sectional view taken on the line 12—12 of FIGURE 11.

FIGURE 13 is a sectional view taken on the line 13—13 of FIGURE 11.

FIGURE 14 is an elevational view of a further modification.

FIGURE 15 is a sectional view taken on the line 15—15 of FIGURE 14.

FIGURE 16 is a transverse sectional view taken on the line 16—16 of FIGURE 14.

In the accompanying drawings reference is first made to FIGURES 1—5. Sharpener 10 is illustrated therein, the sharpener consisting of a support 12 that accommodates two sharpener members 14 and 16 respectively. These are flat bars made of very hard material, for instance tungsten carbide or steel. Support 12 is made of metal of light gauge and is preferably, but not necessarily, die stamped. The support is elongate with a handle portion 18 at one end to facilitate gripping and holding, and a wide portion 20 at the other end within which the members 14 and 16 are held. There is a peripheral rim 22 around the edges of the support in order to strengthen the construction and thereby enable the support 12 to be made of a higher gauge (lighter) metal.

There are means connected with the support 12 for gripping a stationary surface while sharpening a tool or implement, for instance knife 24 or scissors 26 (FIGURES 4 and 5). These means preferably consist of a row of teeth 28 along one edge of the support.

Members 14 and 16 are crossed so that they include two acute angles and two obtuse angles. The space between the members enclosed by one of the acute angles forms sharpening crotch 30 for knife 24 or any other tool or implement that has a blade capable of being inserted in slot 32 which is formed in the support 12 and which is in registry with crotch 30. Two additional slots 34 and 36 are in longitudinal alignment with each other with the common axis thereof at right angles to the longitudinal axis of slot 32. Slots 34 and 36 are adapted to receive the blades of scissors 26 or any like tool or implement whose edges should be maintained at a bevel similar to the bevel of a pair of scissors.

Members 14 and 16 are each held in place in or on support 12 by a very simple mechanical clamp. The clamp is formed by recess 38 made by an elongate depression in the support 12 and opening through one surface of the support. The recess is shaped as an elongate trough or channel within which member 14 is disposed. Tabs 40 and 42 struck from the metal of support 12, are bent over the ends of member 14 holding it firmly in place within the recess 38. Accordingly, the member is held in a pocket-like structure so that it cannot move endwise or sidewise. The intersection of slots 32, 34 and 36 is, of course, an opening in support 12 forming a discontinuity in the pocket-like means within which member 14 is supported. Member 16 is supported in an identical manner, being located in recess 44 which opens through the opposite surface of support 12 and within which member 16 is disposed. Tabs 46 and 48 on the ends of the recess hold the member 16 fastened in its recess. The recesses 44 and 38 are arranged at an angle to each other, cross each other and have their longitudinal axes coincident with the longitudinal axes of the flat elongate sharpening members 14 and 16.

The embodiment of FIGURES 6, 7 and 8 is very much like the embodiment of FIGURE 1. Support 12a has the same outline as support 12, but it is made of plastic instead of sheet metal. As shown in FIGURES 7 and 8 support 12a is a laminate of two sheets held together by standard fastening means, for instance cementing and/or screws 50 and 51. This is to facilitate manufacture in the assembly of the sharpener 10a since the sharpening members 14a and 16a are in molded recesses between the front and rear surfaces of support 12a. The recesses 32a and 44a and sharpening members 16 and 14 are identical to the sharpening members and recesses in FIGURE 1. Slots 32a, 34a and 36a are the same as the slots 32, 34 and 36, exposing portions of the sharpening members at crotch 30 and along parts of the edges of members 14a and 16a spaced from the crotch 30a.

A peripheral bead 22a is around the edges of support 12a, and there is a fastening clip 58 at one end of the support to aid in holding the laminate assembled. A similar clip 60 is at the opposite end of the support and has one or more preferably two rows of teeth 28a thereon to grip a stationary surface when using the sharpener. In regard to the plastic support form of the invention, it need not necessarily be made of a laminate, since it is possible to construct the support of one piece, in which
case the recesses would be completely open on one side to insert the sharpening members 14a and 16a. These, then, could be held in place by a variety of standard fasteners including cement, screws and others.

The embodiment of FIGURES 9 and 10 has a sharpening assembly 66 identical to the sharpening assembly in FIGURE 6 except that it not only shaped the same but functions in the same way. The distinction between FIGURES 9 and 1 is found in the shape and use of the support 12b. At one end there is an opening 68 of approximately kidney shape, and a tongue 69 at the edge of the support with the tongue and support turned 60 functioning to open between that is, remove bottle caps from the necks thereof. The opposite end of support 12b has a prong 70 with an angled tongue 71 stuck therefrom and slightly spaced from the point 72 of the tongue. This construction constitutes a can opener and can be used for a variety of purposes, such as opening bear cans, fruit juice cans and others. In this embodiment of the invention tongue 69 can be used as a screw driver.

Attention is now invited to FIGURES 14-16. A slightly modified form of the invention is disclosed in these figures, it being intended that the sharpening blades 10c be stationarily mounted. Therefore support 12c has a mounting flange 74 at one end and at right angles to the main body of support 12c. The mounting flange has holes in it to accommodate fasteners, for instance screws 78. The sharpening assembly 66c is virtually the same as the sharpening assembly 66 of the sharpening blades in the previously described forms of the invention. It is made of two crossed sharpening members 14c and 16c with the angularity therewith forming crotch 30c. They are held in place within crossed recesses 44c and 38c formed in the metal of the support 12c by tabs which are identical to the tabs in FIGURE 1 or FIGURE 9. Although this embodiment of the invention may have slots that respond to slots 34 and 36 of FIGURE 1, there is only one slot 32c illustrated in the drawings, this opening into crotch 30c inasmuch as the principal purpose of the embodiment of FIGURES 14-16 is to sharpen an elongate blade, such as blade 80 of a knife or other tool having a knife-like blade therein.

FIGURES 11-13 differ from the previous embodiments to show that the sharpening members may have a shape other than the elongate flat bars. Two disks 14d and 16d are retained in circular recesses 38d and 44d that are formed as depressions in the support 12d which is the same as the support 12 except for the shape of the recesses and the existence of scissors receiving slots. This leaves 32d the same as slot 32 both in construction and function and it opens into a crotch 30d to accommodate the knife blade edge during sharpening operations. Tabs 42d and 44d overlie a small part of the surfaces of the sharpening members 14d and 16d holding them in place within the recesses 38d and 44d.

In use, the sharpener is held either by a stationary mounting as in FIGURE 14 or by manually retaining it with the aid of the teeth on the support. The implement or tool that is to be sharpened is inserted in the appropriate slot of the support and moved across the surfaces of the sharpening members in the crotch or knife-like blades or along the exposed lateral edges of the sharpening members for scissors-like blades. This is all that is necessary to renew or restore the proper cutting or shearing edge on tools, implements and the like.

The foregoing is considered as illustrative only of the principles of the invention. Numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A sharpener comprising an essentially flat support, means on said support for at least temporarily retaining said support in a fixed position, said support having joined recesses therein which open through opposite flat surfaces of said essentially flat support, comparatively hard sharpening members in said recesses and having portions thereof which overlap each other at the juncture of said recesses to form a crotch therebetween within which to accommodate the blade that is to be sharpened by moving the blade over edges of said members exposed in said crotch, and said support having a slot therein which opens into said crotch and through which the blade can pass in sharpening the blade on said sharpening members, said recesses each conforming in shape to the corresponding sharpening member and seatingly receiving the latter so as to prevent excess linear movement of that sharpening member in all directions in the plane in which the blade can pass in sharpening the blade on said sharpening members, each of said sharpening members overlapping a portion of the side of the other sharpening member remote from the side thereof received in the corresponding recess, tabs on said support overlying portions of said sharpening members to aid in retaining said sharpener with said support having at least one additional slot therein which exposes a part of the edges of one of said sharpening members to accept a further blade to be sharpened by moving that further blade over the last mentioned edge of the sharpening member.

5. The sharpening device of claim 4 wherein said means for at least temporarily holding said support comprises at least one row of teeth on said support.

6. The sharpener of claim 4 wherein said sharpening members consist of a pair of disks with portions that overlap each other at the juncture of said disks to form a crotch therebetween within which to accommodate the blade that is to be sharpened by moving the blade over edges of said members exposed in said crotch, and said support having a slot therein which opens into said crotch and through which the blade can pass in sharpening the blade on said sharpening members, said recesses each conforming in shape to the corresponding sharpening member and seatingly receiving the latter so as to prevent excess linear movement of that sharpening member in all directions in the plane in which the blade can pass in sharpening the blade on said sharpening members, each of said sharpening members overlapping a portion of the side of the other sharpening member remote from the side thereof received in the corresponding recess, tabs on said support overlying portions of said sharpening members to aid in retaining said sharpener with said support having at least one additional slot therein which exposes a part of the edges of one of said sharpening members to accept a further blade to be sharpened by moving that further blade over the last mentioned edge of the sharpening member.

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