Feb. 6, 1940.

W. A. RUSSELL

2,189,474

BLADE SHARPENER

Filed Jan. 21, 1937

Fig. 1.

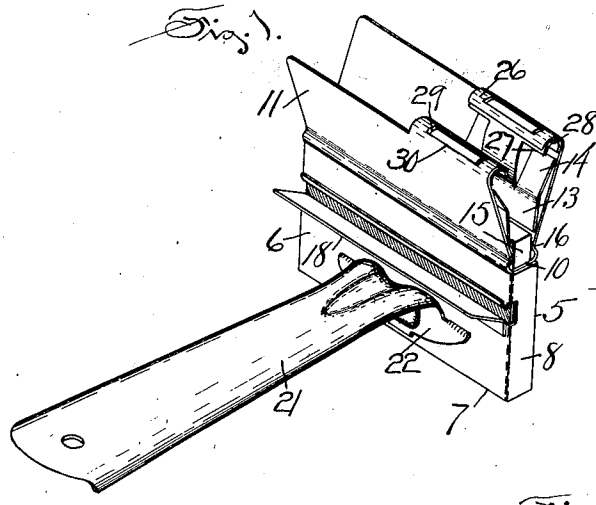


Fig. 2.

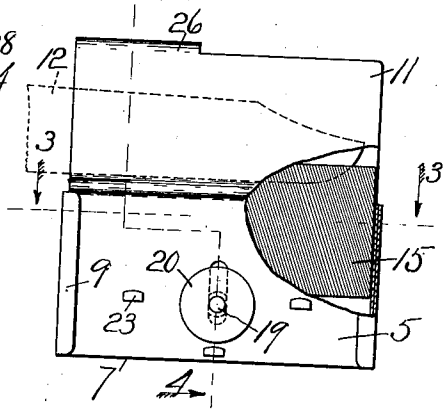


Fig. 3.

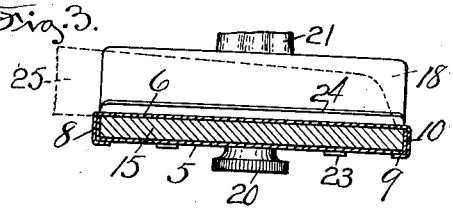
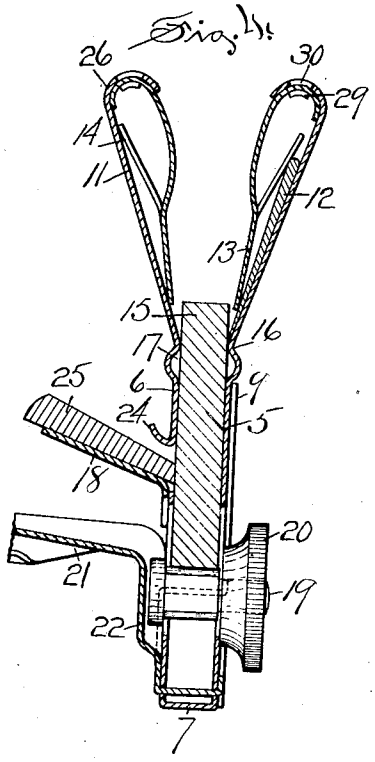


Fig. 4.



INVENTOR
Wilson A. Russell.
by
Arthur B. Jenkins,
ATTORNEY

Patented Feb. 6, 1940

2,189,474

UNITED STATES PATENT OFFICE

2,189,474

BLADE SHARPENER

Wilson A. Russell, Hartford, Conn.

Application January 21, 1937, Serial No. 121,458

3 Claims. (Cl. 76—88)

My invention relates to the class of devices that are employed for sharpening knives, scissors, and other blades requiring a cutting edge, and an object of my invention, among others, is the production of a sharpener for this purpose that shall be simple in construction and particularly efficient in operation.

One form of a sharpener embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawing in which

Figure 1 is a perspective isometric view of my improved sharpener.

Figure 2 is a front view of the same partially broken out.

Figure 3 is a view in cross section on a plane denoted by the dotted line 3—3 of Fig. 2.

Figure 4 is a view on enlarged scale in vertical cross section on a plane denoted by the dotted line 4—4 of Fig. 2.

My improved sharpener is designed for use in sharpening various articles, as scissors and knives, and it is my purpose to so construct it that different portions of the sharpening member may be used and to such extent that the entire cutting surface of such member may be employed until said cutting surface is exhausted. The device is of very simple construction comprising a case formed of a single piece of sheet metal in proper form to enclose the sharpening element and also guides for the blades to be sharpened.

In the accompanying drawing the numeral 5 denotes the front of the case and 6 its back, said case comprising a single piece of sheet metal bent into U-shape, the bent U-shaped portion comprising the bottom 7 of the case. The back is bent forwardly at its opposite side edges to provide ends 8 which are bent to overlap the front as at 9 to a slight extent, and the front is bent backwardly at its opposite ends, as at 10, to underlap the ends 8, as shown in Fig. 3 of the drawing. This provides an extremely rigid structure to nicely fit the sharpening element to be hereinafter described. The case is thus formed with a closed end and bottom and with a back and front wall, which, while composed of sheet metal, yet are sufficiently rigid for all purposes of the sharpener. The top edges of both the front and back walls are extended upwardly and outwardly in divergent directions to form rests or supports 11 for an article, as a knife 12, to be sharpened. Guides 13 are projected downwardly from the upper edges of the rests or supports 11, and preferably at one end thereof. These parts 13 are spring guides, and they are formed of a separate piece of metal from the supports 11, said supports being comparatively rigid in order to keep a constant correct angle. These guides may be secured in any suitable manner as by welding or otherwise. These guides are cut out preferably at opposite ends to provide spring guides 14 which act to press the upper or back edge of a knife against the rests or supports 11, the lower edges of the guides 13 pressing the opposite edge of the knife into contact with such rests or supports. A sharpening member 15 is located in the case, projecting at its upper edge slightly above the case. This sharpening member may be of any desired construction, as a matter of fact it being my intent that it shall be a fine file which may be readily purchased in the market, and which will therefore be hereinafter referred to as a file, with, however, no intention of limiting it to such. Bends 16, quite sharp, are formed at the lower edges of the rests or supports 11, as shown in Figs. 1 and 4 of the drawing, and grooves 17 are located below these bends. The bends are located in contact with the file but not to exert a material pressure against it.

The extreme cutting edge of a knife blade is ground so that the opposite sides form an acute angle and it is essential in sharpening the blade that the angles of the supports 11 shall be maintained to a maximum extent and to this end the front and back 5 and 6 are extended across the end of the case one being clasped about the opposite wall to rigidly hold the front and back so that the rests or supports 11 projecting from the upper edges of said parts will not be sprung outwardly but will retain their positions so that the angles above referred to will not be materially changed.

Owing to the acuteness of the angles at the sharpened edge of the blade the latter when placed on the guide and moved into contact with the file at the apex of the angle has a tendency to force itself into the apex of the angle and downwardly between the file and the case. In order to maintain the rests 11 in position without materially changing this angle the bends 16 are provided as above noted together with the grooves 17 between the bends. While the bends 16 normally touch the file with a light pressure, as the blade enters the angle between a rest and the file the bends will be forced slightly away from the file and in this position the bend is so curved as to recede from the blade at a point just removed from the extreme edge so that such edge will not come in contact with the metal of the rest but will contact only with the file. This location of the curved surface of the bead opposite the flat surface of the file presents a line contact of the blade against the bead, thereby reducing the friction of the blade against the flat surface of the file to a minimum and also decreases the tendency of the blade to wedge between the rest and the file and therefore permits the blade to be moved with comparative ease. The lower bend 16 localizes the line of bending action at this place as,

owing to the greater leverage on the rests or supports down to this line, any bending action will take place thereat and any slight bending action occasioned will change the angle between the rest or support and the file to a minimum extent and such as to be immaterial. The filings resulting from the sharpening operation will pass into the groove 17 and will therefore not collect in the angle between the rest and the blade. This reduction in the wedging action of the blade prevents the thin extreme edge of the blade from curling away from the file by a substantial elimination of pressure of the blade upon the file.

At a point downwardly from the top edge of the case the back wall is cut through forming an opening, and a scissors blade rest 18 projects outwardly from the edge of this opening and at such an angle as to present the edge of a scissors blade to the file to have the proper angle formed thereon in the sharpening operation. The edge of said opening is bent outwardly as at 24 to create a flaring mouth to receive the scissors blade and thereby form a guide for the entry of said blade 25 into the opening adjacent the rest 18 as shown in Fig. 4 of the drawing, the rest and the guide cooperating to present the scissors blade to the sharpening element in proper position for sharpening.

A bolt 19 extends through slots in the front and back wall of the case under the file so that it may be raised or lowered for a purpose to be hereinafter described, a thumb nut 20 being applied to the bolt at the front of the case.

A handle 21, preferably made of sheet metal bent to shape, is formed with a base 22 having tangs 23 projecting through holes in both walls of the case, said tangs being riveted on the projecting ends to secure the handle in place. It is obvious that rivets may be employed in place of tangs, if desired. The two upper tangs are located on a line with the bolt 19 in its lowermost position so that the file 15 in its lowest position will rest upon the tangs and upon the bolt. The upper edge of the file will preferably be located slightly above the bends 16 and when this portion of the file has been unduly worn in the sharpening operations the file may be moved upwardly by loosening the thumb nut 20 and raising the bolt in the slots hereinbefore mentioned. This will bring a new sharpening surface into position for use. The bolt also serves to clamp the front and back walls of the case against the file and hold it firmly in place.

As a matter of fact in the device which I have used for demonstration purposes I have employed a file one inch in width, the first and fourth quarter inches from one edge being used to sharpen knives and the second and third quarter inches being for the purpose of sharpening scissors. One-eighth inch of each quarter inch section will first be used until worn out and the second one-eighth inch of said sections will then be employed. When said first one-eighth inch is worn out the thumb nut 20 may be loosened and the bolt 19 raised to bring the second one-eighth inch of the section into play. When the whole sharpening surface for the knives at one edge is unduly worn the blade may be turned edge-for-edge thus bringing the sharpening surfaces at the opposite edge of the file into use as just described. When the entire sharpening surfaces of the second and third sections for the scissors blades on one side of the sharpening element are worn out by raising the blade and by reversing it edge-for-edge as hereinabove described, then the blade may be turned from front to back to provide an equal amount of sharpening surface as that worn out and which may be utilized in the same manner, it being noted that scissors blades are operated upon by one side of the sharpening element only at each sharpening operation, whereas with the knives only one-half of the work by the sharpening element is required for each sharpening operation, as in each operation two sides of the sharpening element are employed.

In the particular means shown herein for securing the guides 13 in place the upper ends of the supports 11 are curved to form guide supports 26 and the upper ends of the guides are curved to fit said supports and are laterally extended to form wings 27. These wings have slots 28 extending inwardly from opposite ends, and tongues 29 are bent downwardly from the ends of openings 30 in the guide slots 26. These tongues extend through the slots 28 and along the under sides of the curved upper ends of the guides 13, thereby retaining the guides in place. These securing means may be reinforced by spot-welding or other similar means as desired.

I claim:

1. A sharpener including a case comprising a support extending upwardly and outwardly from the upper edge of said case, a guide projecting downwardly from the upper edge of said support and forming in connection therewith an opening to receive a blade while being sharpened, a spring tongue located between said support and guide for pressing a blade toward said support within said opening, and a file projecting upwardly out of the upper edge of said case in cooperative relation with respect to said support.

2. A sharpener including a case comprising a support projecting at an angle from the upper edge of said case, a guide projecting downwardly from said support to form an opening to receive a blade while being sharpened and to contact with a blade and press it toward said support, a spring tongue projecting inwardly between said support and guide and composed of metal bent from within an opening created to form said tongue and a sharpening element projecting from the upper edge of said case in angular relation with respect to said guide.

3. A sharpener including a case of box-like shape having an open top, a sharpening member fitting said case and projecting from said open top and having a flat sharpening side surface, and a blade support projecting upwardly from the upper edge of one side of the case at an angle thereto and creating an acute angle between said support and the sharpening surface of the sharpening member, the bend creating said angle being rounded in cross section to provide a line contact between the blade support and sharpening member and extending lengthwise across the case and an outwardly directed arched portion at the lower edge of the blade support parallel with said bend with the upper edge of the arched portion directed toward and merging into the bend at the sharpening line to prevent contact of the extreme sharpened edge of the blade with the case or support and provide a groove at the lower side of said bend to receive filings from the cutting operation.

WILSON A. RUSSELL.