Dec. 16, 1924. 1,519,661

H. BRIX

KNIFE BLADE SHARPENER

Filed Jan. 28, 1924 3 Sheets-Sheet 1

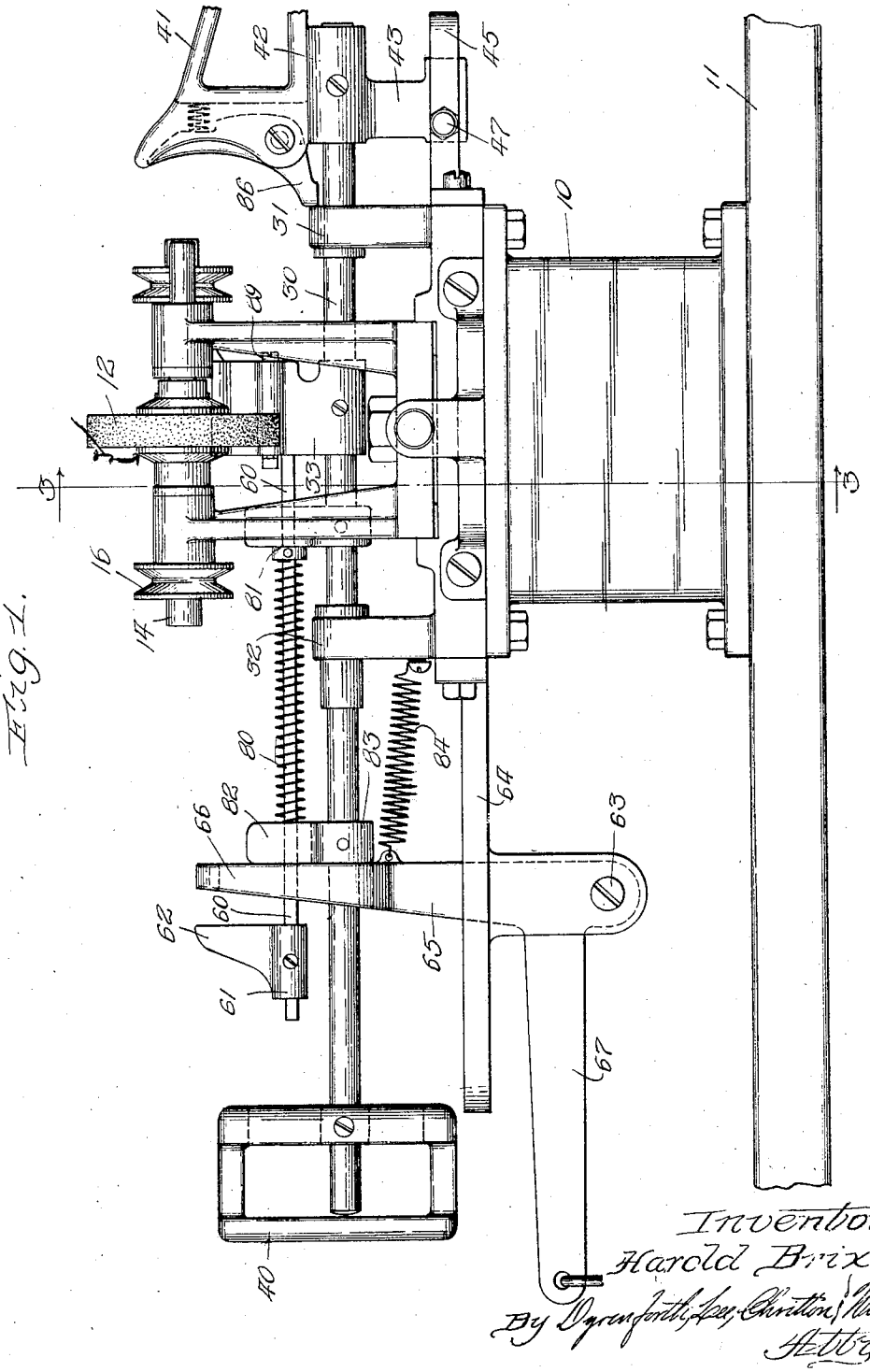


Fig. 1.

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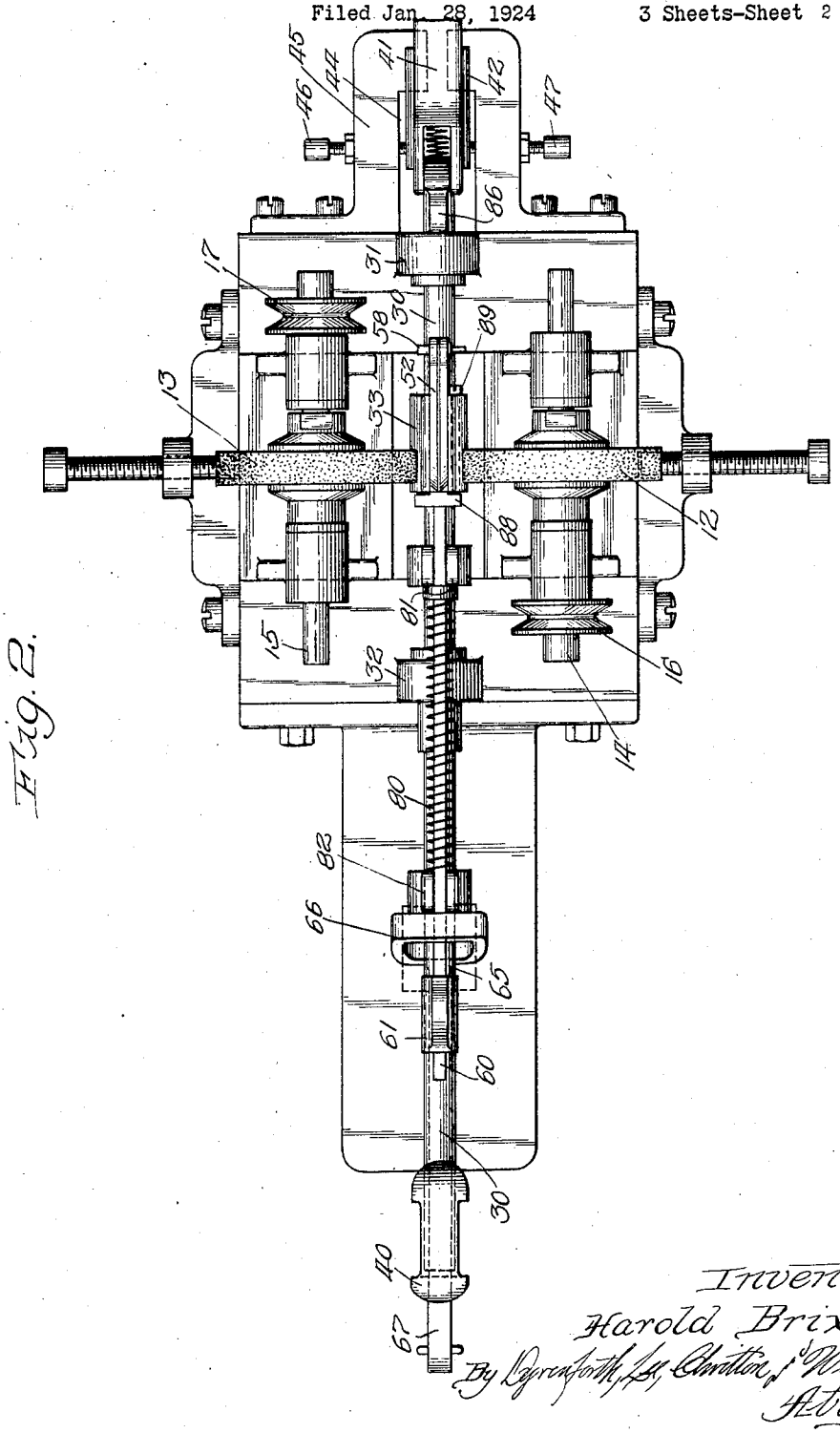


Fig. 2.

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Filed Jan. 28, 1924 3 Sheets-Sheet 3

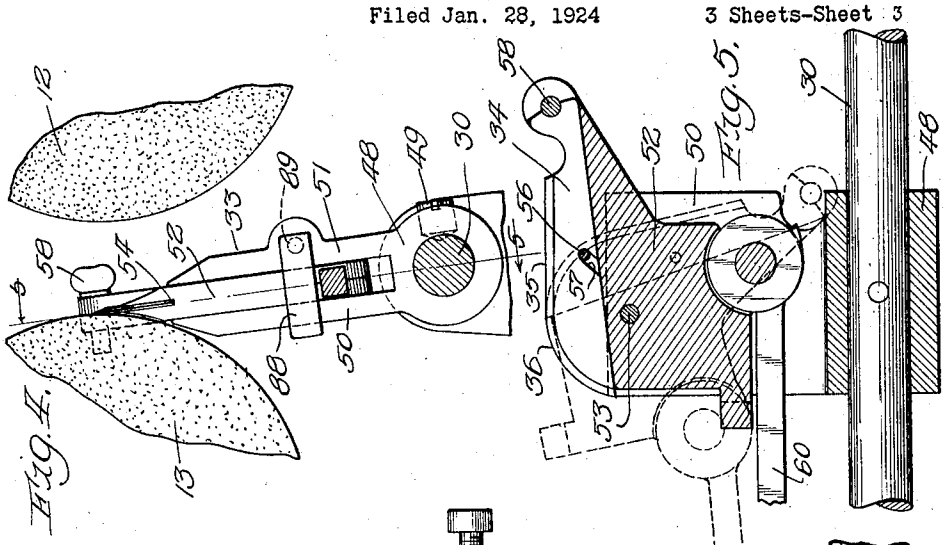


Fig. 4.

Fig. 5.

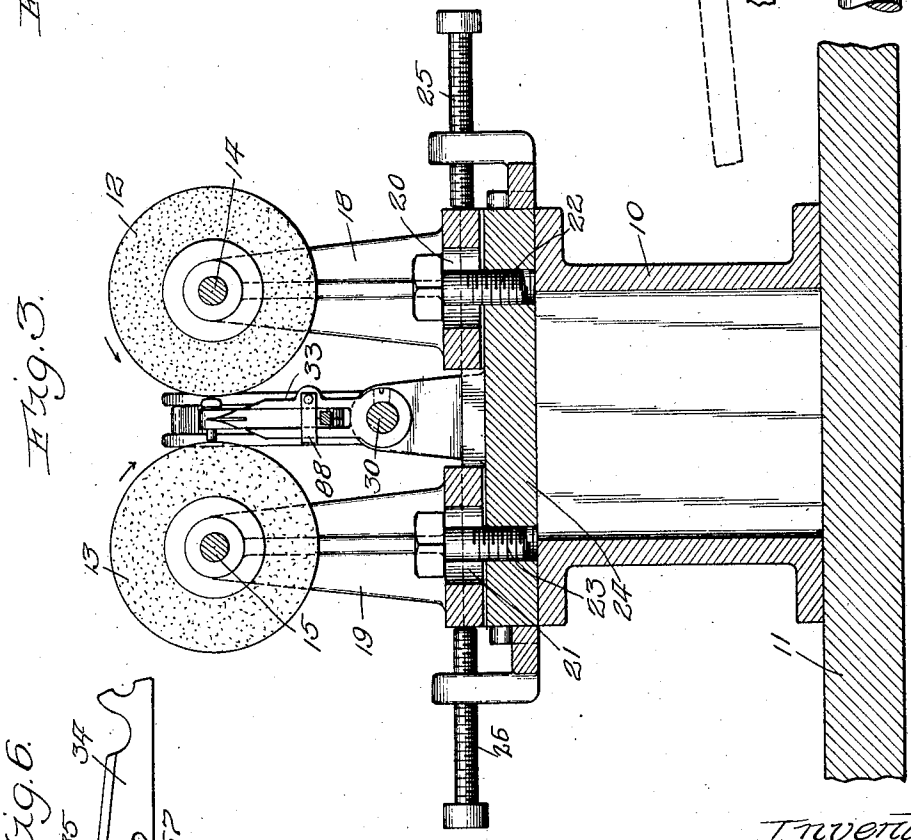


Fig. 3.

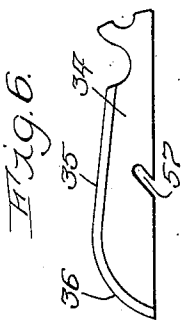


Fig. 6.

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UNITED STATES PATENT OFFICE.

HAROLD BRIX, OF CHICAGO, ILLINOIS, ASSIGNOR TO SHARP & SMITH, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

KNIFE-BLADE SHARPENER.

Application filed January 28, 1924. Serial No. 689,045.

To all whom it may concern:

Be it known that I, HAROLD BRIX, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Knife-Blade Sharpener, of which the following is a specification.

This invention relates to improvements in knife blade sharpeners, and more especially to a device adapted for sharpening thin flexible blades such as are used on detachable blade knives. Such blades frequently have the cutting edge curved at one end; and my improved sharpener is adapted to sharpen this curved part of the edge in addition to the straight part. By the use of my device a blade may be quickly and easily sharpened with great accuracy. Other features and advantages of my invention will appear more fully as I proceed with the specification.

In that form of device embodying the features of my invention shown in the accompanying drawings, Figure 1 is a view in side elevation, Fig. 2 is a top plan view, Fig. 3 is a view taken as indicated by the line 3 of Fig. 1, Fig. 4 is a fragmentary view similar to Fig. 3 showing the knife holder rocked to bring the cutting edge of a knife blade in contact with one of the emery-wheels, Fig. 5 is a view of the knife blade holder taken as indicated by the line 5 of Fig. 4, and Fig. 6 is a view of a detachable blade adapted to be sharpened on my improved knife blade sharpener.

As shown in the drawings, the device comprises a suitable pedestal or support 10 mounted in any convenient manner on a table or bench 11. Mounted on the base 10 are two emery-wheels 12 and 13 carried by shafts 14 and 15 respectively, which are rotatably supported in suitable bearings. The shafts 14 and 15 carry belt wheels 16 and 17, respectively, by means of which the emery-wheels 12 and 13 may be rotated in a well known manner. In operation, the emery-wheels 12 and 13 are preferably rotated in opposite directions as indicated by the arrows in Fig. 3. The bearings carrying the shafts 14 and 15 are formed on the upper ends of supports 18 and 19 which are provided with slots 20 and 21, respectively, at their bases, through which extend the cap screws 22 and 23 which are threaded into the top plate 24 of the base 10. The slots 20 and 21 permit sliding adjustment of the emery-wheels 12 and 13 toward and away from each other, and screws 25 and 26 are provided to assist in giving the emery-wheels the desired position. Tightening of the cap screws 22 and 23 holds the emery-wheels tightly in place when they are adjusted to the desired position.

Slidably and rockably mounted on the base 10 is a round shaft 30 which is arranged somewhat below the emery-wheels 12 and 13 and between them. The shaft 30 is carried by the journals 31 and 32. Between the journals 31 and 32, there is mounted on the shaft 30 a knife blade holder 33 which will be described more in detail hereinafter. The knife blade holder is adapted to hold a thin flexible blade such as is shown in Fig. 6. The blade I have indicated in general by 34. It will be seen that this blade has a portion of its cutting edge straight as indicated by 35 and a portion at one end curved as indicated by 36. When the blade is in position in the holder 33 and the holder itself is in its normal position as shown in Fig. 1, and as shown by the solid lines in Fig. 5, the straight part of the edge 35 is horizontal and at a height substantially equal to the axes of the two emery-wheels 12 and 13. The shaft 30 is adapted to be rocked in the journals 31 and 32 to bring the edge 35 in contact with the grinding surfaces of the two emery-wheels 12 and 13. As shown in Fig. 4, the shaft 30 is rocked to bring the cutting edge of the blade 34 into contact with the grinding periphery of the emery-wheel 13. The shaft 30 is provided with a handle 40 at one end and a handle 41 at the other. By means of these handles the shaft can be slid back and forth and rocked in order to sharpen both sides of the straight part of the edge 35 of the blade. At one end of the shaft 30 there is fastened a collar 42 with a depending arm 43 extending through a recess 44 in the extension 45 on the support 10. This arm 43 is adapted to engage the ends of two screws 46 and 47 as shown in order to limit the rocking of the shaft 30 as desired. The screws 46 and 47 are ordinarily adjusted outwardly far enough so as to permit the shaft 30 to be rocked sufficiently to bring the edge of a blade in the blade holder into contact with the emery-wheels 12 and 13 in order to sharpen the same on both sides of the edge.

I will now describe more in detail the blade holder 33. This holder comprises a collar 48 held in place by means of a set screw 49 and provided with two flat parallel plates 50 and 51 between which is pivotally supported another plate 52 on the pivot 53. The plate 52 is provided at its upper edge with a slot 54 in which the knife blade 34 is adapted to fit. There is provided a small pin 56 adapted to be engaged by the notch 57 on the knife blade and a pin 58 is inserted in the holder as shown after the knife blade 34 is in position. The pin 58 and the pin 56 hold the knife blade securely in position in the holder. The plate 52 is adapted to rock on the pivot 53. When the blade 34 is in position the curved edge 36 forms the arc of a circle having the pivot point 53 as its center. Hingedly attached to the lower edge of the plate 52 is a rod 60 extending parallel to the shaft 30 and provided with a collar 61 having an upwardly projecting arm 62. Pivotally supported at 63 on the under side of an extension 64 attached to the support 10 is a bell crank having an upwardly extending arm 65 provided with a loop 66 encircling the shafts 30 and rod 60. The bell crank is also provided with a horizontal arm 67 as shown. The arm 67 is adapted to be pulled downwardly in any suitable manner as by hand or by means of a suitable foot pedal and connections (not shown) to rock the bell crank. When the arm 67 is pulled downwardly, the loop 66 engages the arm 62 to pull the rod 60 to the left (as viewed in Figs. 1, 2 and 5). Moving the rod 60 to the left in this manner operates to rock the plate 52 in the blade holder from the position shown by the solid lines in Fig. 5 to the position shown by the broken lines in the same figure. The rod 60 is normally held in the position shown by the solid lines in Fig. 5 by means of a spiral spring 80 arranged between the collar 81 on the rod 60 and the arm 82 projecting upwardly from the collar 83 on the shaft 30. The bell crank is normally held in the position shown in Fig. 1 by means of the spiral spring 84. The handle 41 on one end of the shaft 30 is provided with a detent 86 adapted to engage the journal 31 to prevent sliding movement of the shaft 30 to the left except when such detent is released. The plate 52 of the knife holder is provided with a stop 88 as shown to limit the rocking movement thereof, and a screw 89 is provided for this stop 88 to bear against. Adjustment of the screw 89 permits rocking of the plate 52 to the desired point.

The operation of the device can now be understood. The knife blade 34 is put in place in the knife holder and the pin 58 inserted to hold the same securely in position. The detent 86 is then released and the shaft 30 rocked to bring one side of the straight part of the edge 35 of the blade in contact with one of the emery-wheels. The shaft is then slid to the left (as viewed in Fig. 1) to sharpen this edge. The shaft is then rocked to the other side and the shaft slid back to sharpen the other side of the straight part of the edge. The detent 86 is then permitted to engage the journal 31 and prevent further sliding of the shaft 30. The shaft 30 is then again rocked to one side to bring one side of the cutting edge of the blade in contact with one of the emery-wheels, and the arm 67 is then pulled down. This moves the arm 66 into contact with the arm 62 to pull the rod 60 to cause a rocking of the plate 52 to rock the knife blade to cause the curved part of its cutting edge 36 to pass over the grinding surface of one of the emery-wheels, thus sharpening the curved part of the edge. The shaft 30 is then rocked to the other side and the arm 67 slowly released whereupon the spring 80 forces the rod 60 back to cause the plate 52 to rock back again, thus sharpening the other side of the curved part of the edge 36. In this manner, it will be noted that both sides of the straight part and both sides of the curved part of the cutting edge of the blade 34 may be sharpened.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as possible in view of the prior art.

What I claim as new, and desire to secure by Letters Patent, is:

1. A device of the character described comprising two abrasive wheels, means for supporting a knife blade between the abrasive wheels, means for rocking the knife blade to bring one side of its cutting edge into contact with the grinding surface of one abrasive wheel or the other side of its cutting edge into contact with the grinding surface of the other abrasive wheel, means for sliding the knife blade to draw the straight portion of its cutting edge across the grinding surface of either abrasive wheel while in contact therewith, and means for rocking the knife blade in order to draw the curved portion of its cutting edge across the grinding surface of either abrasive wheel while in contact therewith.

2. A device of the character described comprising two abrasive wheels lying in a plane with their grinding surfaces adjacent, a slidable and rockable shaft parallel to the axes of the abrasive wheels and arranged between and below the same, a knife blade holder supported on said shaft whereby a knife blade held in such holder may be

slid back and forth in a direction parallel to the axes of the abrasive wheels or rocked back and forth in the plane of the abrasive wheels, and means for rocking the knife blade in the holder in a plane substantially at right angles to the plane of the abrasive wheels.

3. A device of the character described comprising two abrasive wheels lying in a plane with their grinding surfaces adjacent, a slidable and rockable shaft parallel to the axes of the abrasive wheels and arranged between and below the same. a knife blade holder supported on said shaft whereby a knife blade held in such holder may be slid back and forth in a direction parallel to the axes of the abrasive wheels or rocked back and forth in the plane of the abrasive wheels, and means for rocking the knife blade in the holder in a plane substantially at right angles to the plane of the abrasive wheels, said means comprising a knife blade supporting plate pivotally mounted in the knife blade holder.

4. A device of the character described comprising two abrasive wheels lying in a plane with their grinding surfaces adjacent, slidable and rockable shaft parallel to the axes of the abrasive wheels and arranged between and below the same, a knife blade holder supported on said shaft whereby a knife blade held in such holder may be slid back and forth in a direction parallel to the axes of the abrasive wheels or rocked back and forth in the plane of the abrasive wheels, means for rocking the knife blade in the holder in a plane substantially at right angles to the plane of the abrasive wheels, a rod hingedly connected thereto, and means for pulling said rod to rock said blade.

5. A device of the character described comprising two abrasive wheels lying in a plane with their grinding surfaces adjacent, a slidable and rockable shaft parallel to the axes of the abrasive wheels and arranged between and below the same, a knife blade holder supported on said shaft whereby a knife blade held in such holder may be slid back and forth in a direction parallel to the axes of the abrasive wheels or rocked back and forth in the plane of the abrasive wheels, means for holding the slidable and rockable shaft to prevent the same from sliding, and means for rocking the knife blade in the holder in a plane substantially at right angles to the plane of the abrasive wheels.

In witness whereof, I have hereunto set my hand and seal this 9 day of January, A. D. 1924.

HAROLD BRIX. [L. S.]