Aug. 21, 1928. 1,681,466

P. COOK

RAZOR

Filed July 22, 1925

Fig. 1.

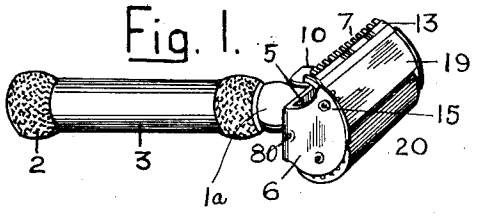


Fig. 2.

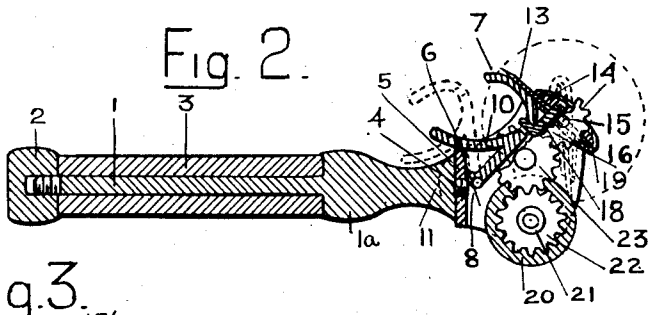


Fig. 3.

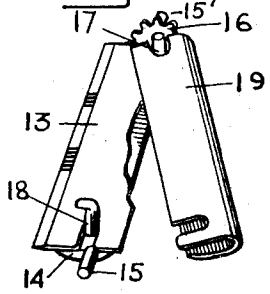


Fig. 4.

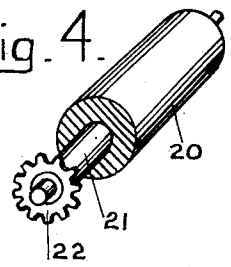


Fig. 5.

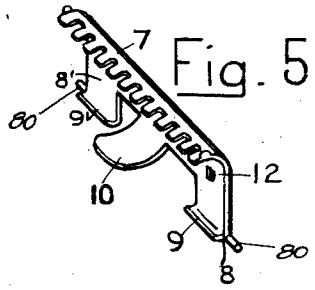
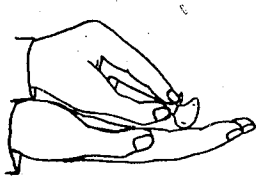


Fig. 6.



PAUL COOK.
INVENTOR

BY Richard J. Cook
ATTORNEY

Patented Aug. 21, 1928. 1,681,466

UNITED STATES PATENT OFFICE.

PAUL COOK, OF SEATTLE, WASHINGTON.

RAZOR.

Application filed July 22, 1925. Serial No. 45,212.

This invention relates to razors and more particularly to that class known as self-sharpening safety razors more particularly set forth and described in my co-pending application, Serial Number 736,866, filed September 10, 1924.

The principal object of the invention is to provide a razor that will be sharpened by rolling it back and forth over the hand, or any surface independent of and not an element of the device the sharpening being effected by means of an abrasive roller that is actuated by said rolling contact, thus dispensing with such instruments as cranks, hooks, strops and other sharpening accessories.

A further object of the invention is to provide a shaving instrument that is compact and simple in construction, that can be easily cleaned without removing the blade and that can be instantly converted from a shaving into a sharpening instrument.

Other objects of the invention reside in the details of construction which are set forth in the following specification and accompanying drawings, wherein—

Figure 1 is a perspective view of the razor embodying the present invention, showing the blade set in position for shaving.

Figure 2 is a central sectional view longitudinally through the handle, and transversely of the blade and guard but showing an end view of the sharpening roller and the gear train, parts of the gears being broken away for better illustration.

Figure 3 is a perspective view of the blade and blade holding elements shown partly assembled.

Figure 4 is a perspective view of the sharpening roller assembly; the roller being partly broken away.

Figure 5 is a perspective view of the blade guard.

Figure 6 is a view illustrating the method of sharpening the razor by rolling the device back and forth over the palm of the hand.

Referring more in detail to the drawings—

1 designates the shank portion of the handle that is formed at its inner end with a head portion 1^a, and 2 designates a cap that is threaded onto the outer end of the shank and serves as a means for retaining a cylindrical hone 3 clamped thereon between the cap and head. The head 1^a is provided with a flattened end surface from which projects a short threaded stem 4 whereby the handle is rigidly attached to the base 5 of a spring metal frame. The bar 5 is disposed transversely of the handle and has its opposite ends turned laterally to provide jaws 6 between which the blade, blade guard and sharpening roller is mounted as presently described.

The blade 13, consisting of a flat piece of metal sharpened along one edge, is mounted removably on a flattened bar 14, hereinafter called the blade bar, provided with pivots 15—15′ at its ends by means of which it is mounted revolubly between the jaws of the frame. The blade is provided at its ends with notches adapted to receive therein short posts or studs 17 and 18 which are threaded into and project from the face at opposite ends of the blade bar and a clamping plate 19, consisting of a strip of metal folded longitudinally, receives the back of the blade and blade bar within it to hold them securely together. The clamp is notched also to receive the posts and its spring tension retains it in place.

The blade is retained in shaving position by means of a blade guard and locking plate 7, hereinafter referred to as the guard. This guard, as shown in Figure 5, consisting of a strip of metal provided at its opposite ends with arms 8 and 8′ and intermediate its ends with an arm or thumb piece 10 is pivotally supported within the jaws of the frame by means of pivots 80 that extend from the edges at the ends of the arms 8—8′. At its swinging edge, the guard plate is bent laterally and is provided with prongs of the conventional form which lie adjacent the cutting edge of the blade to act as a guard and to protect the face during shaving. At the ends of the pivot arms are laterally bent portions 9—9′ adapted to bear against the base bar 5 of the frame and to be moved to opposite sides of a dead center position with respect to the pivot points of the guard so as to serve as a means of yieldably retaining the guard locked against the blade or removed free therefrom.

The thumb piece 10 of the guard is curved toward the handle and bears downwardly against the edge of the base piece 5 of the frame. This serves as a catch by means of which the guard may be rotated on its pivots to advance it or withdraw it from contact with the blade holder assembly and

which serves also to supplement the portions 9—9′ of the guard plate as a means for retaining the guard and blade in shaving position and for holding the guard disengaged from the blade when sharpening is to be done.

The thumb catch moves in a circle about the axial line of the pivot points 80; it is yieldable and its curvature and its relation to the cross piece 5 of the frame is such that when the guard is drawn back to the dotted line position in Figure 2 the base portion of the arm locks over the frame piece to retain the guard free from and out of the path of travel of the blade in sharpening. Locking of the guard in shaving position is further provided by a laterally turned outer end 18′ on the post 18 which is adapted to lock within a slot 12 in the arm 8 of the guard, as shown in Figure 2.

The means contained within the razor for sharpening the blade comprises a cylindrical sharpening roller 20 mounted revolubly on a shaft 21 pivotally supported between the jaws of the frame in parallel relation to the axial line of the pivots of the blade carrier. This shaft is operatively connected with the blade bar 14 by means of a gear train comprising a gear 16 that is fixed about one of the pivots of the blade bar, a gear 22 that is fixed on one of the pivots of the shaft 21 and an intermediate gear 23 mounted revolubly on a stud fixed in one of the jaws of the frame. The sharpening roller preferably is made of leather, water proofed by the forcing into its pores an oily substance resulting from burning of crude rubber.

Assuming that the various parts are so constructed and assembled for shaving, as in Figures 1 and 2, operation of the device would be as follows:

For sharpening the blade within the razor, the guard 7 is released from holding contact with the blade holder by pressing down on the thumb catch 10, thus moving the guard to the dotted line position in Figure 2 to free the blade and its holder so that they may revolve. The guard is retained in this disengaged position by the pressure of the thumb piece against the frame piece 5.

When the carrier is thus freed from the guard the opposite sides of the cutting edge of the blade may be swung against the abrasive roller, as indicated by the line of travel of the dotted circle in Figure 2. The sharpening roller is then rotated by drawing it back and forth over the palm of the hand or any other smooth surface such as a book or table. The friction between the roller and the shaft upon with it rotates, causes the shaft to rotate with the roller and by means of the shaft gear 22 and the gears 16 and 23, the blade assembly is caused to rotate in the same direction as the roller until the blade edge comes in contact with the roller when the gears cease to rotate. The roller, however, continues to rotate so long as it is drawn over the surface and the friction between it and the shaft holds the blade against the revolving abrasive surface, the pressure increasing or diminishing with the pressure of the hand.

With a change of direction in which the roller is drawn the gears are reversed and the same operation takes place in reverse, thus sharpening the blade on the other side.

The blade may be pressed directly against the roller by the fingers if greater pressure is desired on the blade and the device rolled several times in the same direction, then reversed and rolled in a like manner in the opposite direction. The position of the blade on the roller when the device is drawn forward is indicated by dotted lines in Figure 2.

When used for shaving, the guard 7 is pressed forward by the thumb catch 10 and the blade assembly is rotated until the post 18 comes in contact with pronged edge of the guard, the bent over portion of the post passing through the slot 12 in the guard.

The spring tension of the thumb catch 10 holds the guard against the post which in turn presses the blade against the top of the guard. The shoulder on the post 12 prevents the blade assembly from being lifted off the guard and the bent over end 9—9′ of the pivot arms 8 also hold the guard in place when beyond center by pressing against the cross bar of the frame 5.

I am aware of other devices such as that illustrated in United States Patent No. 1,220,837, in which the blade may be sharpened by drawing the instrument over a flexible strap threaded between rollers or other parts of the mechanism and without which the device could not function, but I am not aware of any device that operates by rolling contact with a surface entirely independent of the device and not an essential part of it.

It is to be understood that the present device may be used as a sharpener for various types of blades other than that of the present razor by removing the posts 17 and 18 from the blade bar 14. If it should be desired to use the device only for the purpose of sharpening blades and not for shaving, the guard 7 could be removed by springing the jaws of the frame apart.

Should it be desired to hone the blade, the shaft 21 is removed from the frame by springing the end plates outwardly and hone 3 is removed from the handle by unscrewing the cap 2. The roller 20 is then removed from the shaft and the hone, which is the same size as the roller, is placed thereon while the roller is placed on the handle. The shaft 21 is again mounted in the frame and the device operated as in ordinary sharpening.

While I have shown the preferred forms of construction, it is evident that these may be varied without departing from the principles upon which the device is constructed and I claim the rights to vary within such limitations.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent, is:

1. In a device of the class described, a frame, an abrasive roller mounted in the said frame, a blade pivotally supported in the frame, releasable means for normally retaining the blade in position for shaving, and means operable by moving the roller in opposite directions in rolling contact with a superficiary for actuating the blade to engage opposite sides of the cutting edge with the roller for sharpening.

2. In a razor of the class described, a frame, an abrasive roller mounted in the frame, a blade holder pivotally mounted in the frame, a blade mounted by said holder, a guard mounted in the frame and movable into position to engage the blade holder to retain the blade in proper relation to the guard for shaving, means operatively connecting the roller mounting and blade holder whereby movement of the roller back and forth in rolling contact with any surface will cause opposite sides of the blade to be brought into frictional contact with the roller for sharpening.

3. In a razor of the class described, a frame structure, an abrasive roller mounted in the frame, a blade mounted by the holder, a train of gears connecting the roller mounting and blade holder mounting whereby movement of the roller back and forth in rolling contact with the surface will effect reverse rotative movements of the blade holder to bring opposite edges of the blade into frictional contact with the roller for sharpening, and a blade guard mounted in the frame and movable into engagement with the blade holder to retain the blade in position for shaving.

4. In a razor of the class described, a frame structure, an abrasive roller mounted in the frame, a blade mounted by the holder, a train of gears connecting the roller mounting and blade holder mounting whereby movement of the roller back and forth in rolling contact with a surface will effect reverse rotative movements of the blade holder to bring opposite edges of the blade into frictional contact with the roller for sharpening, and a blade guard mounted in the frame and movable into engagement with the blade holder to retain the blade in position for shaving, and flanges formed on said blade guard engageable with the frame to yieldably retain it at different positions of adjustment.

5. In a razor of the class described, a frame, an abrasive roller mounted in the frame, a blade holder pivotally mounted in the frame, a blade removably mounted in the holder, means operatively connecting the roller mounting and blade holder mounting whereby movement of the roller in reverse directions, in rolling contact with a surface, will cause movement of the carrier to cause opposite sides of the blade to be brought into frictional contact with the roller for sharpening, and a blade guard pivotally mounted in the frame and movable to a position where it permits free rotative movement of the blade carrier and to another position against the carrier to retain the blade in shaving position and a yieldable thumb piece extended from said guard into engagement with the frame whereby the guard may be adjusted and whereby it is yieldably held at either position.

6. In a razor of the class described, a frame, an abrasive roller mounted in the said frame, a blade pivotally supported in the frame, releasable means for normally retaining the blade in position for shaving, and means operable by moving the roller in rolling contact with any surface to move and hold the blade in frictional contact with the roller for sharpening and whereby the frictional contact between the blade and roller is varied in accordance with pressure of the roller against the said surface.

7. A razor of the class described, comprising a frame having a handle, a blade holder pivotally mounted in the frame, a blade mounted in the holder, a blade guard pivotally mounted in the frame and movable from and against the blade carrier to retain the blade in shaving position, a shaft rotatably mounted in the frame parallel with the holder, an abrasive roller mounted on the shaft and rotatable thereon, a geared connection between the shaft and holder mounting whereby movement of the roller in opposite directions in rolling contact with a surface effects, through frictional contact between the roller and its shaft, reverse movements of the carrier to bring opposite edges of the blade into frictional contact with the roller for sharpening.

8. A device as in claim 6 wherein the handle comprises a shank with a cap threaded onto its end and a cylindrical hone held on said shank by said cap; said hone and abrasive roller being interchangeable.

Signed at Everett, Snohomish County, Washington, this 6th day of July, 1925.

PAUL COOK.