March 27, 1934. E. B. HOFF 1,952,253

SAFETY RAZOR AND STROPPER

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Fig. 1.

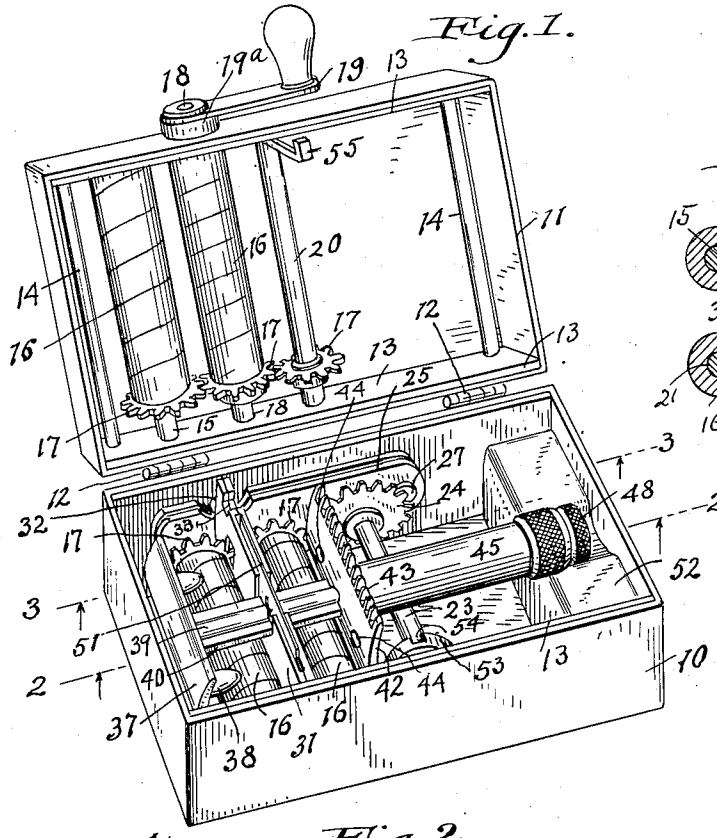


Fig. 6.

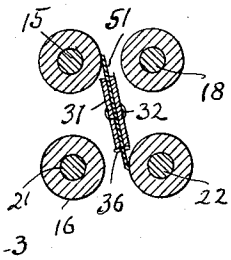


Fig. 2.

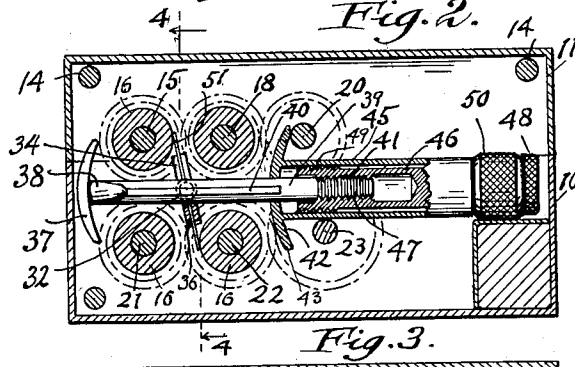


Fig. 4.

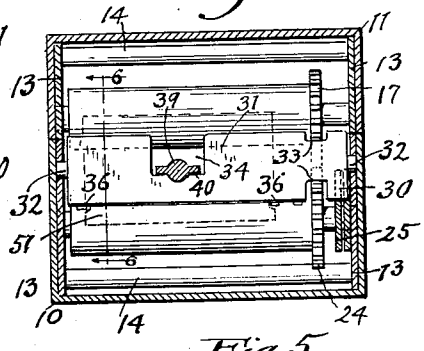


Fig. 3.

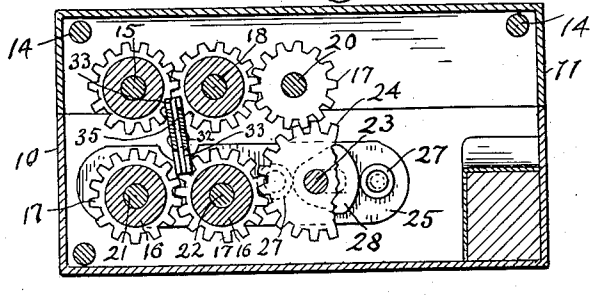
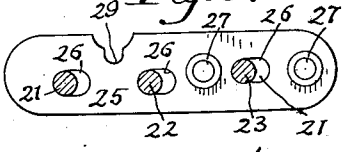


Fig. 5.



Inventor
Earl B. Hoff.
Kerr Hudson & Kent
attys.

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Fig. 7.

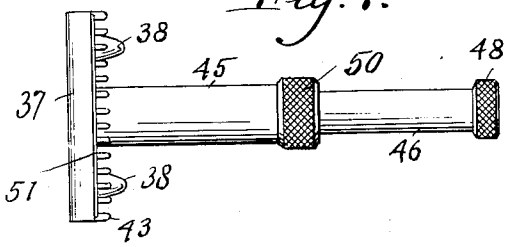


Fig. 8.

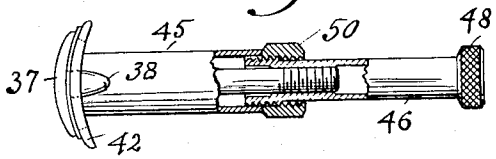


Fig. 9.

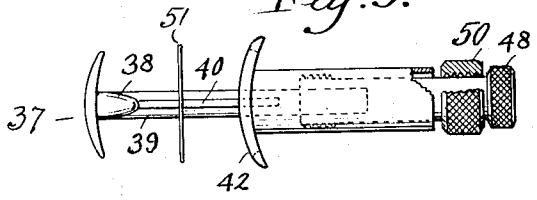
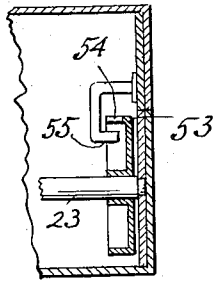


Fig. 10.



Inventor
Earl B. Hoff.
Kwis Hudson & Kent
attys.

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UNITED STATES PATENT OFFICE

1,952,253

SAFETY RAZOR AND STROPPER

Earl B. Hoff, Cleveland Heights, Ohio

Application June 13, 1930, Serial No. 460,994
Renewed April 30, 1932

4 Claims. (Cl. 30—12)

This invention relates to a safety razor stropping device.

An object of the invention is to provide the combination of a stropping device and a safety razor such that the razor during non-use may be stored in the device without disassembling the razor parts and when so stored actuation of the stropping elements of the device will sharpen the blade.

Another object of the invention is to provide the combination of a stropping device and a safety razor such that the container housing the stropping device serves as the container for the razor and within which the razor may be placed without removing the blade therefrom and in such manner that the blade is positioned properly for the stropping operation.

A further object is to provide the combination of a stropping device and a safety razor such that the blade holder of the stropping device receives and holds the razor blade in position for stropping while the blade is still in the razor.

A further object is to provide the combination of a stropping device and a safety razor having a blade of the double edge type such that the stropping device will strop the four sides of the double edge blade without removing the blade from the razor.

An additional object is to provide the combination of a stropping device and a safety razor such that the razor may be placed in the device in position for stropping without removing the blade from the razor and when so placed there will be room in the stropping device container for the spare blades and the stropping compound.

A still further object is to provide a stropping device which is so constructed that the razor blade contacts with different parts of the stropping elements at each oscillation of the blade, thereby preventing unequal wear of the stropping elements.

Additional objects and advantages will become apparent hereinafter as the detailed description of an embodiment of the invention proceeds.

An embodiment of the invention is illustrated in the accompanying drawings wherein:

Figure 1 is a perspective view of the stropping device, the parts of the container thereof being shown in open position while the razor is shown as arranged in the device in position for stropping;

Figure 2 is a vertical longitudinal sectional view through the stropping device with the razor arranged therein, such view being taken substantially on line 2—2 of Figure 1 looking in the direction of the arrows, the parts of the stropping device container being in the closed position;

Figure 3 is a vertical longitudinal sectional view similar to Figure 2, but taken on the line 3—3 of Figure 1 looking in the direction of the arrows;

Figure 4 is a transverse vertical sectional view taken substantially on line 4—4 of Figure 2 and looking in the direction of the arrows;

Figure 5 is a detail view of certain parts of the stropping device and shows such parts partly in elevation and partly in section;

Figure 6 is a detail sectional view taken substantially on line 6—6 of Figure 4, looking in the direction of the arrows;

Figure 7 is a side view of the razor removed from the stropper with the parts in position for shaving;

Figure 8 is a similar view with the razor turned 90° from the position of Figure 7, and having parts in section;

Figure 9 is a view similar to Figure 8, but with the parts substantially in position for insertion in the stropper; and

Fgure 10 is a detail sectional view showing a portion of the stropper case and convenient means for preventing closure of the case unless the holder for the blade is in vertical position.

The container for the stropping mechanism of the device and for the safety razor when the latter is not being used or is in position for stropping comprises the substantially rectangular box part 10 to which is hinged the lid part 11 by means of the hinges 12. The part 10 is of such size that it will contain a portion of the stropping elements of the device and can receive the razor therein without removing the blade from the razor and with the parts of the razor properly arranged for the stropping operation. The part 10 is also preferably of sufficient size that, when the razor is arranged therein in the stropping position, room is provided for the spare blades and for a stropping compound.

The container may be formed in any suitable manner and preferably is formed from suitable sheet metal, although of course, it may be made from wood or any other material.

As shown in the embodiment disclosed herein, the longitudinal sides of parts 10 and 11 of the container are reenforced by plates 13, which plates in turn are interbraced by rods 14 extending transversely of the parts 10 and 11 at the opposite ends of the container.

A shaft 15 is rotatably journaled in the plates 13 of the part 11 so that the shaft extends transversely of the part 11 adjacent one end thereof. A roller 16 covered with suitable stropping material is fixed on the shaft 15 and extends from the outer longitudinal edge of the part 11 to a point inwardly of the hinged edge of such part, at which point a gear 17 is fixed on the shaft 15. A second shaft 18 is rotatably mounted in the plates 13 of the part 11 in parallel relation to the shaft 15, the shaft 18, however, passing through the outer longitudinal edge of the part 11 so as to have an outwardly extending end upon which is

fixedly arranged a collar 19a and also a handle 19. The handle 19 is preferably mounted on the shaft 18 and connected thereto by a suitable one-way clutch so that it will rotate freely in one direction but will be operatively connected with the shaft when rotated in the opposite direction. A roller 16 covered with suitable stropping material is arranged on the shaft 18, as is also a gear 17, in the same manner as the corresponding parts are arranged upon the shaft 15. A third shaft 20 is rotatably journaled in the part 11 and extends transversely of such part in parallel relation to the shafts 15 and 18, the shaft 20 also being provided with a gear 17 as are the shafts 15 and 18. It will be seen that when the handle 19 is rotated so as to rotate the shaft 18, the gear 17 on the shaft 18 being in mesh with the gears 17 on the shafts 15 and 20 causes rotation of said shafts 15 and 20 in opposite directions.

In the part 10 of the container there are arranged shafts 21, 22 and 23 in a manner similar to the shafts 15, 18 and 20 in the part 11 and adapted to lie respectively parallel to and below said shafts when the parts 10 and 11 are in the closed position. The shafts 21 and 22 are each provided with stropping rolls 16 and with gears 17 adjacent the hinged side of the container. The gears 17 on the shafts 21 and 22 intermesh so that said shafts will rotate together. The shaft 23 has a gear 24 fixed thereon in position to mesh with the gear 17 on the shaft 22, and when the parts 10 and 11 are closed, to mesh with the gear 17 on the shaft 20 carried by the part 11. The idler gear 24 is provided with a hunting tooth for a purpose later to be explained.

A plate 25 is oscillatably supported on the shafts 21, 22 and 23 between the gears 17 and 24 and the hinged side of the part 10. The plate 25 is provided with three elongated slots 26 through which the shafts extend and which allow the plate to have oscillating movement on the shafts and transversely thereof. On opposite sides of the opening 26 through which the shaft 23 extends the plate 25 is provided with roller abutments 27 which cooperate with a cam 28 fixed on the shaft 23 whereby, as the shaft 23 rotates, the plate 25 is alternately oscillated a distance in each direction substantially equal to the effective length of the slots 26. The plate 25 is further provided at its upper edge and midway between the slots 26 through which the shafts 21 and 22 project with a downwardly extending cutout portion 29 within which extends the part 30 of a blade holder 31 (see Fig. 4).

The blade holder is pivotally mounted between the side walls of the part 10 of the container on trunnions 32 arranged in openings formed in the plates 13. The blade holder 31 is cut out as indicated at 33 on its upper and lower edges and adjacent the hinged side of the container in order to provide a clearance for the gears 17 arranged on the shafts 15, 18, 21 and 22. The blade holder 31 is further provided intermediate its ends with a downwardly extending recess or opening 34 through which a portion of the razor extends, as will later be made apparent. The blade holder 31 is preferably formed of two similar plate-like portions suitably secured together so as to provide a space 35 through which the razor blade may extend in order to have the opposite edges of the blade exposed at each longitudinal edge of the blade holder, the lower edge of the blade holder may be provided with lugs 36 to prevent the blade from passing entirely through the blade holder, as will be explained hereinafter. It should be understood, however, that when the stropping device is used in combination with the razor now to be described the lugs 36 on the blade holder are unnecessary since the portion of the razor that cooperates with the recess 34 of the blade holder maintains the blade in the proper position and prevents it from passing through the blade holder.

The razor with which the stropping device is particularly adapted to function and which is to be stored in the container comprises an outer guard member 37 suitably curved transversely of its length and provided on its inner side and along the longitudinal middle line thereof with a pair of spaced projections 38 adapted to pass through openings in the razor blade as is well understood in the art. The outer guard 37 is further provided on its inner side and at the center thereof with a rearwardly extending shaft 39 provided for a portion of its length with outwardly extending diametrically opposed splines 40, the rear end of the shaft 39 beyond the splines 40 being threaded as indicated at 41.

The inner guard member 42 is similar in shape to the outer guard member 37 and is provided along its longitudinal edges with outwardly extending guard means such as the teeth 43. The inner guard member 42 has a central opening corresponding to the configuration of the shaft 39 and splines 40 and through which such shaft and splines extend so that the inner guard member may be moved toward the outer guard member 37 to clamp a razor blade in between. The inner guard member 42 is provided with openings 44 through which the projections 38 on the outer guard member extend when the two guard members are brought together in clamping position.

A tube 45 is formed on the inner guard member 42 and extends from the center of the rear side of the guard member 42 as clearly shown in Figures 1 and 2. The diameter of the tube is such that the shaft 39 and splines 40 may be slidably received therein.

A handle member 46 is provided with a threaded bore 47 whereby the handle may be attached to the threaded end 41 of the shaft 39 in such position that the tube 45 may be moved or slid over the shaft 39 and the handle 46. The outer end of the handle 46 is provided with a knurled head 48 while the inner end of the handle 46 is externally threaded at 49 to receive a knurled nut 50.

It will be seen that when a blade is arranged on the shaft 39 it may be moved into engagement with the outer guard member 37, it being understood that the blade shown herein at 51 is provided with an opening through which the shaft 39 and splines 40 may extend and also with openings through which the projections 38 may pass. The inner guard member and tube are positioned upon the shaft 39 after which the handle 46 is threadedly connected with shaft 39. In order to hold the inner guard member 42 in position to clamp the blade between it and the outer guard member the knurled nut 50 is screwed down upon the threaded end 49 of the handle, the inner end of the nut engaging the adjacent end of the tube 45 and forcing the inner guard member into clamping engagement with the outer guard member.

When it is desired to place the razor in the container during non-use and in position for stropping, it is merely necessary to unscrew the

nut 50, thus allowing the tube 45 and inner guard member 42 to be moved reawardly on the shaft 39 to separate substantially the two guard members and to expose the blade, it being noted that the length of the razor is not increased by this arrangement.

The razor may now be bodily placed in the container with the blade in the blade holder and the outer and inner guard members on opposite sides of the stropping rollers. The shape of the shaft 39 is such, it will be noted, to hold the blade against rotation, thus facilitating the insertion of the blade into the blade holder, while the positioning of the shaft 39 in the recess 34 of the blade holder further facilitates the placing of the razor in the container and maintains the parts in their proper operative positions. When the razor is thus positioned in the stropper, it is supported by the outer end of the handle resting in a groove of a shelf 52 extending across one end of the portion 10 of the case, and by the shaft 39 resting on the base of the groove 34 of the blade holder, as shown in Fig. 4.

The part 11 of the container may now be closed and the razor blade positioned between the stropping rollers 16 of the parts 10 and 11 of the container. In order that the blade holder will be in the proper position for the blade to pass between the rollers 16 of the part 11 when it is swung shut, it is proposed to mount a flanged disc 53 on the shaft 23 and to provide the flange of the disc with a notch 54 that will register with a lug 55 arranged on the part 11 of the container only when the blade holder is in the vertical position.

The parts 10 and 11 having been closed and the razor being in the position above described, it will be seen that rotation of the handle 19 in the proper direction will effect rotation of all the stropping rollers 16 through the gear train previously referred to. The cooperation between the cam 28 on the shaft 23 and the abutments 27 on the plate 25 causes oscillation of the plate as already described, with the result that the blade holder is oscillated by the engagement of the part 20 thereof with the notch 29 of the plate 25 to alternately bring the different sides of the double edge blade 51 into engagement with the rollers 16.

In this connection, it should be remembered that the idler gear 24 is provided with an odd number of teeth with the result that the same surfaces of the rollers 16 are not presented to the blade each time they contact, thereby eliminating or reducing the wear on the rollers.

In the appended claims, the construction of the stropper and razor in their cooperative relationship are claimed but the razor per se is claimed in a companion application filed by me of even date herewith.

Although a preferred embodiment of the invention has been described herein, it should be understood that the invention is susceptible of various modifications and adaptations within the scope of the appended claims.

Having thus described my invention I claim:

1. The combination with a razor having an outer guard member, an inner guard member, a handle, one of said members having a shaft secured to said handle and upon which the other guard member is movable to separate the members or to bring the same together in blade clamping relationship, and a blade slidably arranged on said shaft, of a stropping device comprising a container having a pair of movable stropping elements therein, a blade holder arranged between said elements, said elements being arranged with respect to the ends of the container to provide a space between each of said ends and the said elements, whereby the outer and inner guard members of the razor may be separated and the razor bodily placed in the container with the blade in the blade holder and the said members on opposite sides of the stropping elements.

2. The combination with a razor having an outer guard member, an inner guard member, a handle, one of said members having a shaft secured to said handle and upon which the other guard member is movable to separate the members or to bring the same together in blade clamping relationship, and a blade slidably arranged on said shaft, of a stropping device comprising a container having a pair of movable stropping elements therein, a blade holder arranged between said elements and provided with means adapted to co-operate with said shaft, said elements being arranged with respect to the ends of the container to provide a space between each of said ends and the said elements, whereby the outer and inner guard members of the razor may be separated and the razor bodily placed in the container with the blade in the blade holder and the said members on opposite sides of the stropping elements.

3. The combination with a razor having an outer guard member, an inner guard member, a handle, one of said members having a shaft secured to said handle and upon which the other guard member is movable to separate the members or to bring the same together in blade clamping relationship, and a blade arranged on said shaft, of a stropping device comprising a container, a cover for said container, movable stropping elements in said container and in said cover, a blade holder arranged between said elements, said elements being arranged with respect to the ends of the container and the cover to provide spaces between each end of the container and cover and the stropping elements, whereby the outer and inner guard members of the razor may be separated and the razor bodily placed in the container with the blade in the blade holder and the guard members on opposite sides of the stropping elements.

4. In combination, a safety razor having inner and outer guard members, one of said members having a shaft extending therefrom upon which the other member is movable to separate the guard members, a handle secured to the end of said shaft, a razor blade on said shaft intermediate said guard members, cooperating means on said shaft and blade limiting rotative movement of the blade relative to the shaft but permitting oscillating movement thereof axially of the shaft, and a stropping device comprising a container, stropping elements in said container, an oscillatible blade holder intermediate said elements, said elements being arranged with respect to the ends of said container to provide a space on each side of said elements, whereby when said guard members are separated the razor may be placed bodily and assembled in said container with the blade in the blade holder and the guard members on opposite sides of said elements.

EARL B. HOFF.