Nov. 7, 1933. W. C. ROGERS 1,934,148

SAFETY RAZOR

Filed Oct. 16, 1930

Fig. 3.

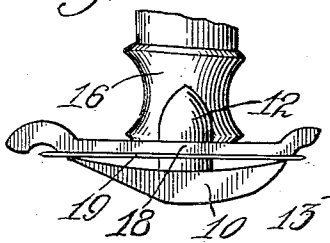


Fig. 1.

Fig. 4.

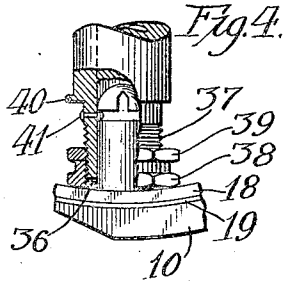
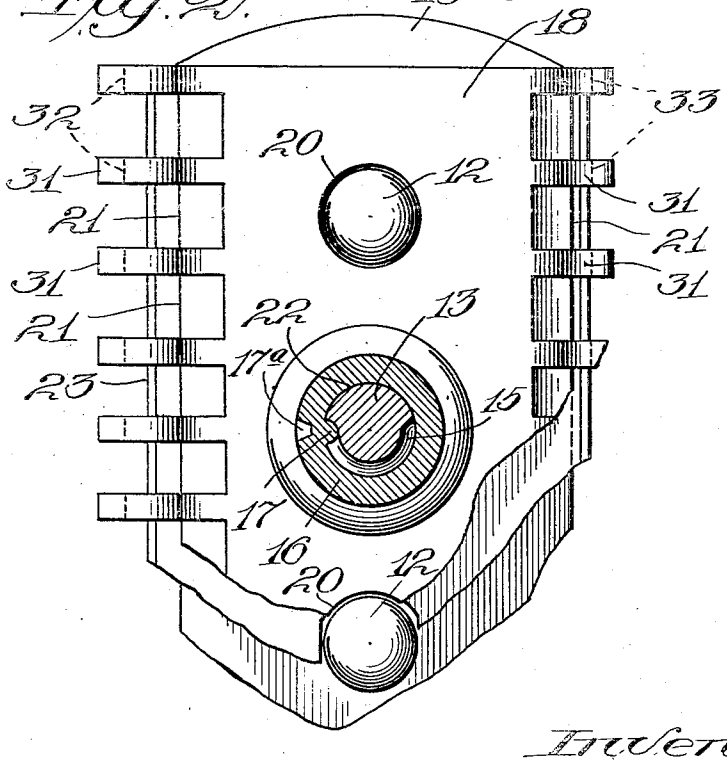


Fig. 2.



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SAFETY RAZOR

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2 Claims. (Cl. 30—12)

This invention relates to safety razors of the type in which a blade is flexed into position for shaving between the blade-contacting surfaces of the cap and guard of the holder.

In razors of the two-edged blade type attempts have been made to secure nice adjustment by flexing transversally a blade in a holder, a "flex positioning" attempted by screwing in or out the handle with respect to the cap.

When it is understood that such adjustment changes not only the distance between the blade edge and the line of contact of the guard with the skin, but also the inclination (by flexation) of the blade with respect to an imaginary reference plane tangent to the flesh contacting surfaces of the cap and guard, as well as altering by such in-and-out lineal movement the relative position of the said flesh contacting surfaces directly, awareness dawns on consciousness that, because it involves movements effective in terms of a thousandth part of an inch, such flex positioning is a delicate and very nice operation demanding the trained hand and eye of an expert. Very different effects result from very small vertical movements of the flexing means.

It is now proposed to flex the parts into a predetermined position, and, while retaining them in such position, by rotation of novel locking means, also make it possible to easily lock, release, return and relock the parts in identically the said position. This flexing of a blade in a holder into an easily repeatable position is the feature which characterizes this invention.

This invention is applicable to razors which vary widely as regards their general constitution but is preferably embodied in a razor having a two-edged blade and a guard for each blade edge. Such a razor is illustrated in the accompanying drawing, in which:

Figure 1 is an end elevation of the improved razor with a blade in position for use, with parts of the handle and guard cut away.

Figure 2 is a plan view of Figure 1, with parts of the handle and locking stud cut away.

Figure 3 shows a flat form of resilient guard and a blade unflexed.

Figure 4 shows how the end of the handle may be provided with an adjusting nut and a lock nut.

Referring to Figure 1, the razor comprises a curved, cylindrical cap 10 made preferably of resilient metal and provided on the concave side and in a longitudinal line parallel to but not equidistant from the long straight edges 11, with the positioning pins 12, and at the center on the same side and preferably in a line with the pins 12, with the handle attaching and locking stud 13, which is provided near the free end with a longitudinal groove 14 and a lateral groove 15 by means of which together with the metal handle 16, which is provided with an interior lock-lug 17 near one end adapted to co-act with said grooves 14 and 15, the assembly of the cap 10, the guard 18 and the blade 19 is effected as in a well-known type of stock safety razor.

The curved, cylindrical guard 18 is made preferably of resilient metal and devised with a convex blade contacting surface of less curvature than that of the cap and with pin receiving seats 20 positioned so that when the pins 12 of the cap are inserted for assembly through the seats 20, the long edges 21 of the guard shall grip the blade parallel to and preferably opposite the long edges 11 of the cap. Between and preferably on a line with the seats 20 is also devised in the guard an aperture 22 for receiving the stud 13 of the cap. The widths of the seats 20 and aperture 22 exceed the diameters of the pins and stud, respectively, by a horizontal easement space sufficient to permit the free passage of the pins and stud therethrough.

The cutting edges 23 and 24 of the blade underlie the usual lather receiving grooves 25, and 26, and which grooves are devised with the arches 27 and 28 preferably of the same curvature but of greater length of arc at one side of the guard than at the other. The arches 27 and 28 terminate in the flesh contacting surfaces 29 and 30 of the teeth 31 in the straight (broken) lines 32 and 33, which lines parallel but are not equidistant each from its adjacent edge 21 of the guard.

Also, and as part of the advantageous combination, the surfaces 29 and 30 of the teeth and the flesh contacting surfaces 34 and 35 of the cap adjacent to the edges 11 (note traces *a*—*a* and *b*—*b* of the tangent planes to said surfaces), are devised to conform and co-operate with each other to present the hair at a different angle to the plane *x*—*x* of the blade at one side of the razor than at the other. The surface 34 is shown relatively flatter than the surface 35.

Obviously the relatively flat guard when placed over a thin resilient blade and clamped between the concave cap and the handle, serves to greatly reinforce the locking pressure conventionally developed by flexing the blade, and when a blade thinner than average is used, the vertical easement space 36 is appreciably developed between the blade and the cap but which space

does not interfere with or prevent the accurate repositioning of such blade in the manner described.

As said, the characteristic feature of this invention is the accurate repositioning of a blade for use in the holder made possible by the novel locking means, a preferred form of which is shown in the stud 13 of the cap 10 adapted to co-act with an interior lock-lug 17 of the handle 16. The free end of the stud 13 is preferably devised with two grooves, one a longitudinal groove 14 and the other an annular groove 15, of like cross-section and connected with each other at right angles as shown. The lock-lug is preferably formed by stamping a depression 17^a on the outside of the handle 16 and is integral with the handle, though the inner end of an adaptively placed rivet 41, Figure 4, or a screw may also serve the same purpose. In Figure 2 the upper portions of the handle 16 and the stud 13 above a plane 2—2 passed through the circle which includes the centers of the groove 15, are cut away, and the lower portions are shown with the lock-lug 17 in an abutted position against the inner left termination of the groove 15, which groove preferably extends an equal distance symmetrically to both sides of its junction with the groove 14. The preferred perpendicular relation of the groove 15 to the groove 14 and to the axis of the stud 13 is clearly shown in Figure 1, in which a portion of the handle is cut away for this purpose. It is to be noted that the lock-lug 17 abuts one of the inner ends of the groove 15.

The operation of the novel locking device is very simple. The cap, blade and guard are assembled loosely in the usual manner. Then the handle is engaged with the improved locking stud 13 and turned about the tip so that the depression 17^a in the handle is in line with the centers of the pins 12, when a downward pressure on the handle will force the lock-lug 17 down the groove 14 into contact with the groove 15, when a quarter turn of the handle, right or left, will abuttedly seat the lock-lug in an end of the groove 15. A reversal of this simple operation—turning the handle until the depression is in line with the pins—will quickly unlock the parts.

It is evident that the resiliency of the blade and the relative rigidity of the cap and guard serve to flex, lock, unlock and release the parts to and from an identically repeatable flexed position, and that the parts will remain locked in an abutted position due to the pressure from the flexed guard, blade and cap transmitted by the lock-lug 17 of the handle to the surface of the groove 15 of the cap. In the approved form, the groove 15 lies in a plane perpendicular to the axis of the locking stud 13, and the final flexed position remains unchanged while the lock-lug 17 is retained by the groove 15.

What has been said above in reference to handle screw flex positioning is clearly seen to apply to all positioning means based on movements on an inclined plane into a so-called clamped position as by screwing a handle in and out into a tighter or looser positioning of a blade between a cap and a guard. Only by rarest chance is the first amount of pressure imposed exactly the same for successive clampings. It follows that the resulting relative position of the parts is rarely the same. Only an expert can obtain hand-running two successive inclined-plane identical positionings of the parts. And when it is remembered that a safety razor is used once a day, with a lapse of twenty-four hours between adjustments, the chance that an amateur will accurately reposition his razor parts in a previously satisfactory setting is obviously remote. Flex positioning in time past has not been satisfactory because the parts were left unabuttedly in the air. The present novel method here invented is simple enough to require minimum manual skill for maximum satisfaction, and an expertly determined flexed and locked abutted position is attained in a fraction of the time usually consumed in conventional screw-flex positioning.

Blades of each make are of a uniform thickness up to the limit of mechanical skill. But whatever the make of blade, the vertical easement space developed among the cap, blade and guard as here described may be ingeniously eliminated or utilized as follows, by a simple adjusting means illustrated in Figure 4. The lower end of the handle is exteriorly screw threaded 37 to co-act with the interiorly screw threaded nut 38 and the interiorly screw threaded lock nut 39. After the usual assembly of the parts, the nut 38 is screwed down on the guard 18 until the blade 19 is forced into close contact with the cap 10, when the lock nut 39 is screwed down on top of the adjust nut 38 and the easement space is eliminated for the use of other blades of the selected make. And it is also obvious that one unskilled in flex-positioning will be enabled by the use of this easement space eliminating means to make intermediate adjustments affecting the flex-positioning of a selected make of blade over the length of the easement space taken parallel to the axis of the handle, and thus an amateur is enabled to flex and lock his pet blade in an accurately repeatable and satisfactory position, because of the basic novel rotary locking means here invented.

In Figure 4 is also illustrated a direction indicator 40, devised to lie above and in line with the lock lug rivet 41, here substituted for the punched-in lock-lug 17 of Figure 1.

It is evident that my invention in combination with stock holders and blades will produce improved results in shaving, and that these improved shaving results depend primarily upon the novelty of devising an easily operated repositioning-of-the-same-blade locking means, which will accurately, simply and quickly reprovide a selected and satisfactory angle of shave.

And it is also evident that the means described above as the grooves in the handle-receiving stud of the cap and as the lock-lug of the handle, respectively, may be varied as to form and position without departing from the spirit of my invention, as for instance, to increase the locking effect by devising a guard with a flat (Figure 3) or, even more so, with a concave (not shown) blade contacting surface, or by devising the upper lug contacting surface of the inner ends of the groove 15 with an upward inclination toward the free end of the stud 13.

The drawing is merely illustrative and is not intended to give exact dimensions.

The invention having been described, what is claimed as new and useful is:

1. A safety razor embodying a transversely arched cap, a flexible guard, a flexible blade disposed between the cap and guard, a handle, and assembling means embodying a cap carried stud entering a socket formed in the end of the

handle, said stud being formed with a peripheral groove lying in a plane at right angles to its axis and of a length substantially equal to half the circumference of the stud, said stud being formed with an axial groove in communication with the peripheral groove, the handle on the interior of the socket having a lug engageable with the peripheral groove for passage through the axial groove when the handle is slipped over the stud, the lower end of the handle constituting a shoulder abutting the guard and flexing the latter and the blade to an arc approaching that of the cap.

2. A safety razor embodying a transversely arched cap, a flexible guard, a flexible blade disposed between the cap and guard, a handle, and assembling means embodying a cap carried stud entering a socket formed in the end of the handle, said stud being formed with a peripheral groove lying in a plane at right angles to its axis and of a length substantially equal to half the circumference of the stud, said stud being formed with an axial groove in communication with the peripheral groove, the handle on the interior of the socket having a lug engageable with the peripheral groove for passage through the axial groove when the handle is slipped over the stud, the lower end of the handle being provided with a member adjustable axially of the handle to provide a shoulder abutting the guard and flexing the latter and the blade to an arc approaching that of the cap.

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