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2,549,130

SAFETY RAZOR

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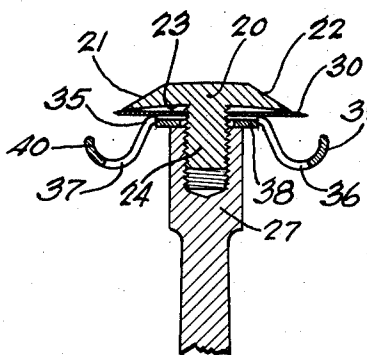


FIG. 1.

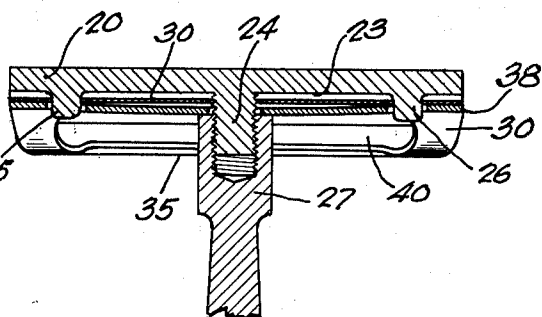


FIG. 2.

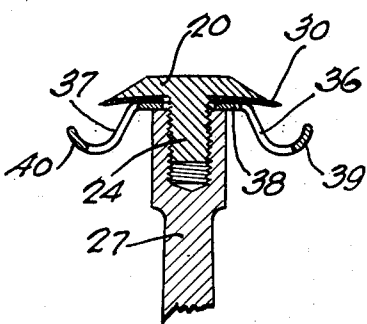


FIG. 3.

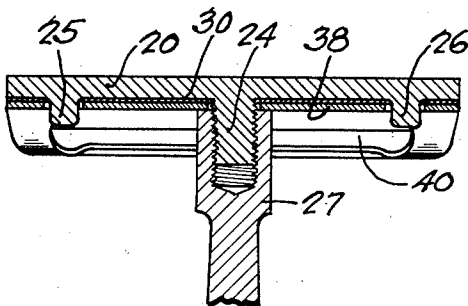


FIG. 4.

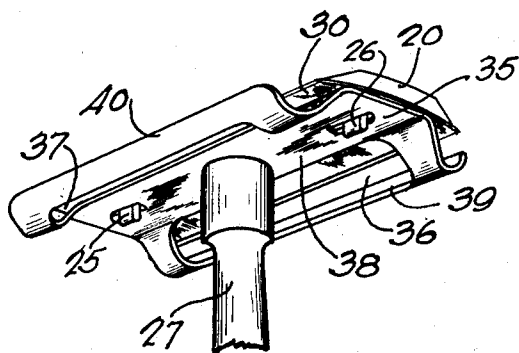


FIG. 5.

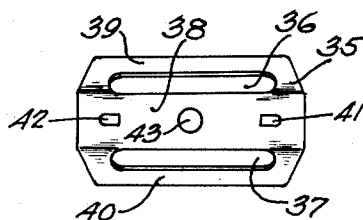


FIG. 6.

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# UNITED STATES PATENT OFFICE

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## SAFETY RAZOR

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4 Claims. (Cl. 30—52)

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This invention relates to safety razors of the type in which a comparatively thin, flexible blade is clamped between two cooperating members.

It is among the objects of the present invention to provide a safety razor in which the flexible blade is tensioned longitudinally as well as trans-  
5 versely to assure rigidity of the blades.

When, as in the ordinary safety razor, the thin blade is only flexed transversely, it is absolutely necessary to have perfect line contact of the two longitudinal edges of the two cooperating clamping members upon the blade to assure blade rigidity. In commercial production such per-  
10 fection is the exception rather than the rule and thus imperfect contact of the edges of the two cooperating members result in a separation space which permits the flexible blade to chatter or even distort during shaving, resulting in the possi-  
15 bility of uneven contact and consequent cutting of the user. However, if, according to the present invention, the blade is not only transversely biased but also longitudinally tensioned, the structural imperfections, as mentioned, will have no material effect, for the blade is constantly held,  
20 under tension, against chatter or distortion.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

Fig. 1 is an enlarged sectional view taken transversely of the razor at its center and showing the elements assembled but not clamped tightly together.

Fig. 2 is an enlarged sectional view taken longitudinally of the razor at its center and showing the elements assembled as in Fig. 1.

Fig. 3 is a view similar to Fig. 1 the elements, however, being clamped tightly together.

Fig. 4 is a view similar to Fig. 2 with the elements clamped tightly together.

Fig. 5 is an enlarged perspective view of the assembled razor.

Fig. 6 is a bottom flat view of the guard element of the razor at actual size.

Referring to the drawings, the razor is shown consisting of a cap or head, a guard, a blade sandwiched and clamped between the head and guard and a clamping handle.

The head 20 is rectangularly shaped with its two longer edges beveled as at 21 and 22. The side of the head opposite the beveled side is transversely arcuated as at 23 and from the center of this arcuated side there extends a threaded stud 24. Two locating lugs 25 and 26  
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also extend from this side of the head. The stud 24 is adapted to be received by the interiorly threaded recess in the end of the handle 27.

The razor blade 30 as illustrated, is of any flexible, standard, two cutting edge type purchas-  
able on the open market.

The guard 35 is substantially rectangular in shape and, as shown in Fig. 6, has an elongated slot 36 adjacent to and parallel with its own longer edge and a similar slot 37, adjacent to and parallel with its opposite longer edge. The central platform portion 38 formed by the two slots is trans-  
versely flat but is slightly arcuated longitudinally between said slots so that, as shown in Figs. 1 and  
2, this portion of the guard is concaved relatively to the blade when the razor is assembled and before it is tightly clamped together. The central platform portions 38 beyond the ends of slots 36  
and 37 are substantially flat and, as shown in Figs. 1 and 2, engage the flat blade 30 when the razor is assembled.

The slotted sides of the guard are bent beneath the level of the central platform portion 38 each edge being gutter-shaped as shown in  
25 Figs. 1, 3 and 5. Thus the outer portion 39 of the guard 35, forms a guard rail the outer longer edge of which lies substantially in the plane of the beveled surface 22 of the head when the razor is tightly clamped together, the cutting  
30 edge of the razor blade clamped between the head and guard being spaced from the edge of guard 35 and extending slightly beyond this plane. Similarly, outer portion 40 of the guard, provides a guard rail the outer edge of which lies substantially in the plane of the beveled surface  
35 21 of the head and the adjacent cutting edge of blade 30 which likewise is spaced from guard 40 also extends slightly beyond this plane. The comparatively wide slots 36 and 37 are positioned  
40 beneath the respective cutting edges of the blade and thus provide a wide open space through which severed hair may readily pass without clogging the razor. The platform portion 38 of the guard is apertured as at 41, 42 and 43 to receive the lugs 25 and 26 and the screw stud 24 respectively.

The feature of this invention is the relative concaved curvature of the adjacent surfaces of the head 20 and the guard 35 when assembled.  
50 The surface 23 is concaved transversely or across its shorter dimension and the platform portion 38 of guard 35 is concaved longitudinally or for the greater portion of its longer dimension, the end portions of said platform, beyond the ends of the slots 36 and 37 in the guard being substantially flat as aforementioned.

To assemble the razor, the perforated, flexible blade is placed on the arcuated side of the head 20 so that the two longer sides of the blade rest upon the two opposite, longer edges of the head. The cutting edges of the blade will extend slightly beyond these two edges of the head respectively. Now the guard is placed on the head so that the two flat ends of the platform portion 38 of the guard rest upon the flat blade at its respective ends. The handle is then screwed upon the stud 24 and when the handle end engages the concave platform portion 38 of the guard the parts are held in what might be termed "contact assembly" as shown in Figs. 1 and 2.

Continuing to screw the handle 27 upon stud 24 causes the engaging flat portions of the guard platform 38 to flex the blade 30 transversely and finally warp said blade so that it will assume the curvature of the arcuated surface 23 of the head 20 as shown in Fig. 3.

After the blade is flexed into contour with the head surface 23, continued screwing of the handle upon the stud 24 will flex the concaved platform portion 38, finally straightening it and bringing it into alignment longitudinally with the originally flat ends of the guard as shown in Figs. 3 and 4. In straightening, the concaved portion is slightly lengthened, and thus, in straightening the concaved portion of platform 38 moves the integral flat ends of the guard outwardly in opposite direction. These flat ends, being tightly pressed against the blade and while moving outwardly in opposite directions exert a substantial tensioning force upon the blade which rigidly holds it taut and perfectly straight even though imperfections in the blade contacting edges of the head or the guard exist and provide spaces at which the blade is not engaged.

Without longitudinally tensioning of the blade such imperfections will, as has been mentioned, permit the flexible blade to chatter or even distort during use which renders the shave unsatisfactory and painful. However, by longitudinally stressing the blade, it is held rigid under tension and cannot distort or chatter.

Thus the present invention provides a razor which cannot clog with mats of severed hair and in which the flexible blade is transversely biased and longitudinally stressed so that the blade is held constantly rigid and its cutting edges perfectly straight and immovable.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. A razor consisting of cooperating cap and resilient guard members between which a flexible razor blade is adapted to be clamped, the respective blade engaging surfaces of the comparatively rigid cap and resilient guard being concaved, the cap longitudinally straight and transversely concaved and the guard longitudinally concaved and transversely flat relatively to the engaged blade and operative, when said cap and guard are clamped together, transversely to flex the blade into engagement with the transversely concaved surface of the cap and to cause the longitudinally concaved guard to exert oppositely acting rubbing forces upon the blade to tension it longitudinally and hold it straight as the concaved guard is longitudinally flattened against the blade during said clamping; and means applicable to the cap and operative to engage the guard to clamp the cap and guard together.

2. A razor consisting of cooperating rigid cap and flexible guard members adapted to have a flexible blade sandwiched therebetween the surface of the cap engaging the blade being longitudinally flat and transversely arcuated and the central portion of the flexible guard engaging the blade being transversely flat and concavely bent longitudinally; and means attached to the cap and engaging the guard, said means being operative to urge the cap and guard members together to clamp the blade therebetween, the transversely arcuated cap and transversely flat guard flexing the blade transversely and the longitudinally concaved portion of the guard and longitudinally flat cap causing the guard to exert oppositely acting forces upon the blade to tension it longitudinally as the said concaved portion of the guard is straightened to conform to the flat cap, whereby the blade is held transversely bent and longitudinally straight between said cap and guard.

3. A razor consisting of a cooperating rigid cap and a flexible guard member between which a flexible razor blade is adapted to be sandwiched, the blade engaging surface of the rigid cap being arcuated across its narrower dimension and substantially flat longitudinally, the flexible guard having a central body portion provided with a guard rail spaced from and longitudinal with each of its longer sides, the body portion being normally concaved longitudinally and flat transversely relatively to the cap; and means operative to urge the cap and guard together with the blade therebetween causing the transversely arcuated cap and flat guard to flex the blade transversely and substantially assume the contour of the cap, also causing the longitudinally concaved body portion of the guard to be clamped and flattened longitudinally against the blade and thereby exert opposing rubbing forces thereon which tension the blade longitudinally to hold it straight.

4. A razor comprising in combination, a rigid, rectangularly shaped, longitudinally flat head, one side of which is transversely concaved with studs extending therefrom, one stud being threaded; a rectangular clamp, transversely flat and smaller than the head, apertured to fit over the studs on the head and longitudinally concaved relatively to said head; a flexible blade interposed between the head and clamp and wider than said head; and a clamping handle received by the threaded stud and operative to engage and exert a pressing force upon the clamp for flexing the blade transversely to conform substantially to the contour of the head and for flexing the guard longitudinally to conform to the longitudinally flat head whereby the guard exerts opposed rubbing pressure upon the blade to stress it longitudinally and hold it straight.

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