June 4, 1935. N. TESTI 2,004,087

SAFETY RAZOR

Filed July 27, 1934

Fig. 1

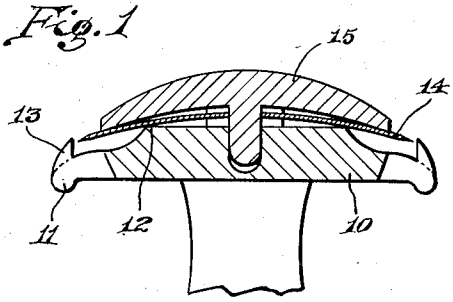


Fig. 2

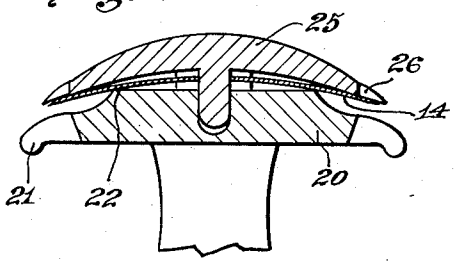


Fig. 3

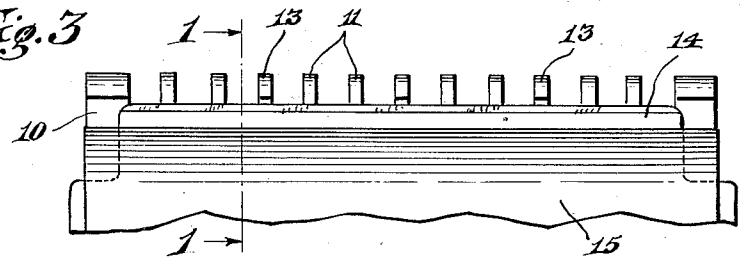


Fig. 4

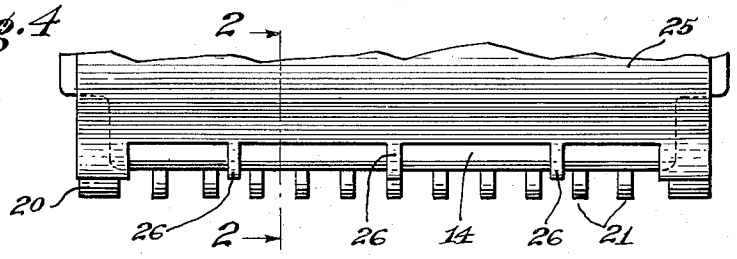


Fig. 5

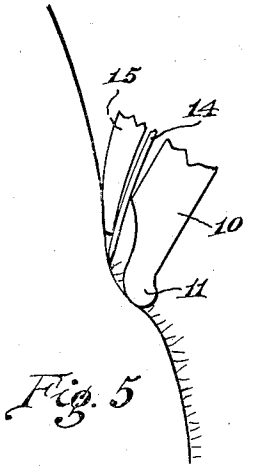


Fig. 6

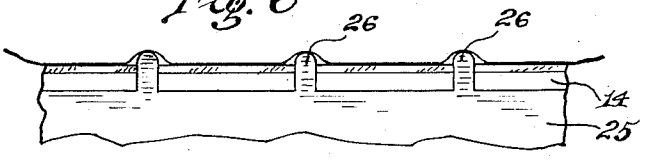
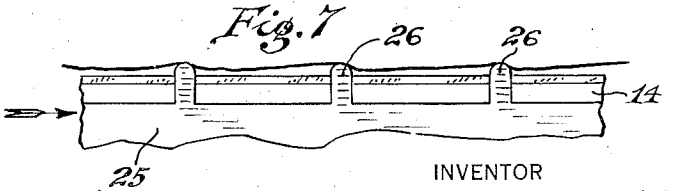


Fig. 7



INVENTOR
Nicholas Testi
BY
ATTORNEY

Patented June 4, 1935

2,004,087

UNITED STATES PATENT OFFICE

2,004,087

SAFETY RAZOR

Nicholas Testi, New York, N. Y., assignor to Gillette Safety Razor Company, Boston, Mass., a corporation of Delaware

Application July 27, 1934, Serial No. 737,264

3 Claims. (Cl. 30—12)

This invention relates to safety razors of the type in which a thin sharp blade is clamped in position for shaving between two supporting and positioning members, such as a cap and guard, provided with guard elements to limit the edge exposure of the blade and to tension the skin of the user in advance of the blade edge. In such razors as heretofore constructed the degree of edge exposure of the blade has been of the utmost importance and great accuracy has been necessary in manufacturing both the blade and the razor in order to keep the edge exposure within the desired limits. If the edge exposure is too little the razor gives an unsatisfactory shave and causes discomfort to the user. If on the other hand, the edge exposure is too great the razor becomes dangerous and the user is likely to cut himself. It has been considered necessary heretofore to limit the edge exposure within a tolerance range of 0.004", the optimum exposure for most users being .002. In shaving with a razor so adjusted and otherwise satisfactory the user has heretofore been liable always to cut himself by accidentally moving the razor longitudinally or approximately so while in contact with his face. Even skilled users of long experience have been liable to meet with this mishap perhaps once or twice during a year and the experience is always extremely startling and unpleasant and causes the user to find fault with his razor or blade although, as a matter of fact, the accident is almost unavoidable if a safety razor of standard construction is moved in the manner indicated.

The present invention deals with this serious and long continued problem. Its general object is to provide an improved safety razor of novel construction in using which the face of the user is fully guarded when the razor is moved with an excessive longitudinal component or even when deliberately moved longitudinally in contact with the face. My invention is based upon the discovery that the desired safety results may be secured by providing the cutting edge of the blade with supplementary guard elements having effective faces disposed transversely to its cutting edge and presenting transverse surfaces which tend to tension the skin of the user in a direction generally parallel to the cutting edge of the blade when the razor is moved endwise. The sharp edge of the blade is thus prevented from sinking into the skin of the user and therefore it rides safely over the surface without gashing.

The supplementary guard elements may be more widely spaced than the guard teeth and may be carried either by the cap or by the guard and they may be so disposed as to divide or set-off the cutting edge of the blade into a series of individual relatively short sections each provided at its ends with guard elements extending transversely in advance of the cutting edge. The length of the blade sections and the location of the guard elements is of secondary importance, provided no long unguarded portions of the cutting edge are exposed in the razor when organized for shaving. The supplementary guard elements may be conveniently carried by the usual guard teeth of the guard member, and in that case certain guard teeth are selected and to each of these is added a protection which extends across the plane of the blade and beyond the cutting edge. If the supplementary guard elements are carried by the cap, they may extend outwardly and downwardly from the blade-flexing edges thereof, crossing the edge of the blade and presenting a series of transverse guard surfaces in advance thereof.

These and other features of my invention will be best understood and appreciated from the following description of two preferred embodiments thereof, selected for purposes of illustration and shown in the accompanying drawing, in which,—

Fig. 1 is a view in cross-section, on the line 1—1 of Fig. 3, showing a safety razor in which the supplementary guard elements are carried by the guard teeth;

Fig. 2 is a sectional view on the line 2—2 of Fig. 4, showing a safety razor in which the supplementary guard elements are formed on the cap;

Fig. 3 is a fragmentary plan view of the razor shown in Fig. 1;

Fig. 4 is a fragmentary plan view of the razor shown in Fig. 2;

Fig. 5 is a diagrammatic view illustrating the tensioning action of the guard upon the skin of the user in the normal shaving movement of the razor;

Fig. 6 is a fragmentary view illustrating the action of the razor of Fig. 4 upon the skin of the user in a straight line shaving stroke widthwise of the razor; and

Fig. 7 is a similar view illustrating the action of the supplementary guarding elements when the razor is moved with a pronounced longitudinal component..

In the safety razor illustrated in Figs. 1 and 3 the supplementary guarding elements are carried by the guard teeth. In this razor the guard 10 is of usual construction having spaced guard

teeth 11 arranged upon its longitudinal edges and being provided in its upper or blade-engaging face with parallel fulcrum shoulders 12 over which the flexible blade 14 is bent by the cap 15 when it is clamped in shaving position. The cap 15 has a lower or inner concave blade-engaging face cooperating with the face of the guard to impart a pronounced transverse curvature to the blade when the cap and guard are drawn together by the threaded engagement of the handle with a stem of the cap as will be well understood.

As herein shown, every third guard tooth is provided with an upwardly projecting supplementary guard element 13. The inner edge of each guard element 13 is substantially straight and is disposed so as just to clear the edge of the blade 14 with the proper allowance of tolerance. The outer surface of the guard element 13 is smoothly curved and shaped to present a skin tensioning guard face. Each guard element extends upwardly beyond the plane of the blade 14 and preferably outside or beyond the cutting edge by a distance of .008 to 0.016 inches.

Figs. 2 and 4 illustrate a safety razor in which the supplementary guard elements are carried by the cap instead of the guard. In this razor the guard 20 is provided with the usual guard teeth 21 and with fulcrum shoulders 22 over which the blade 14 is flexed by the cap 25. The cap 25 has an inner concave blade-engaging face and relatively thin blade-flexing edges. In this case tapering guard protections 26 are formed directly on the blade-flexing edges of the cap 25 and they extend forwardly beyond the sharp edge of the blade 14. In this case, as well as in the razor of Figs. 1 and 3, the blade edge is set-off or subdivided into four sections, each of which is bounded at both ends by one of the supplementary guard protections 13 or 26 or by a corner projection of the cap or guard.

Fig. 5 illustrates the usual action of a safety razor in tensioning the skin of the user's face in advance of the blade edge. It will be apparent that the guard teeth 11 as they are advanced in front of the cutting edge act to push the flesh ahead of them and tension the area behind them in which the shaving edge of the blade 14 is located. If the normal forward movement of this razor were to be arrested there would be no tensioning action behind the guard teeth 11 and consequently the sharp edge of the blade 14 would sink more or less into the flesh of the user. If, such a razor is now moved with a pronounced longitudinal component the face of the user is at once and seriously gashed, and the tendency toward this dangerous result is present whenever the razor movement includes an appreciable component in lengthwise direction.

Fig. 6 shows the relation of the razor of Figs. 2 and 4 to the flesh of the user in normal shaving movement, that is to say, in moving without excessive longitudinal component. In this case the cap and guard permits the edge of the blade 14 to reach the root of the hair as shown in Fig. 5 and beyond that point the supplementary guard elements 26 imbed themselves lightly in the face of the user, temporarily forming slight grooves or valleys when the razor is moved at an obtuse angle to the blade edge.

In Fig. 7 is illustrated the action of the same razor when moved with an excessive longitudinal component toward the right. In these circumstances the supplementary guard protections 26 act to tension the skin of the user in the general direction of the movement of the razor, that is to say, each supplementary guard element 26 in advancing throws up a slight ridge in the flesh, tensioning that behind it so that it is held substantially above the blade edge and for this reason the sharp edge of the blade is prevented from embedding itself in the skin of the user and the possibility of cutting is obviated.

It will be appreciated that the most advantageous and efficient stroke in shaving is that in which the blade is moved obliquely or at angle of 40° or 50° to the blade edge. In such movement, however, the longitudinal component is dangerously large and most users are satisfied to play safe and move the hazor at a much more obtuse angle, approaching a hoeing stroke. Razors constructed in accordance with my invention, however, facilitate the employment of an efficient oblique stroke with entire safety to the users for the reasons already explained.

While I have illustrated the guard elements of my invention as embodied in razors of the integral cap type I contemplate also their use in razors employing sectional caps.

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

1. A safety razor comprising a sharp blade, clamping members for positioning the blade and having regularly spaced portions extending beyond the blade edges and designed to tension the skin outwardly in advance of the blade edge, and a plurality of more widely spaced guarding elements setting off separate sections in the edge and acting to tension the skin in a direction substantially parallel to the cutting edge when the razor is moved in such direction.

2. A safety razor comprising a thin flexible blade having a shaving edge, a cap and a guard for shaping and clamping the blade, regularly spaced guard teeth on the guard, and guard elements disposed in more widely spaced relation on the edge of the cap, extending across the edge of the blade and acting to tension the skin and so safeguard the face of the user when the razor is moved with a pronounced longitudinal component.

3. A safety razor comprising a sharp blade, cap and guard members for holding and positioning the blade having regularly spaced guard teeth arranged to tension the skin outwardly from the blade edge in shaving movement at an obtuse angle to the edge thereof, and more widely spaced supplementary guarding means traversing the cutting edge and guarding the blade movement at an acute angle to the edge or in a direction coinciding therewith.

NICHOLAS TESTI.