July 21, 1936. J. G. WOLFE 2,048,419

SAFETY RAZOR

Filed Sept. 26, 1932

Fig. 1.

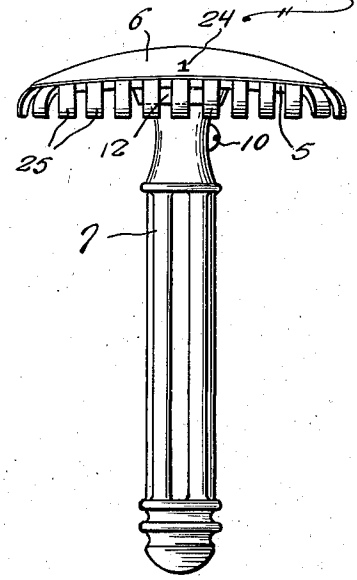


Fig. 2.

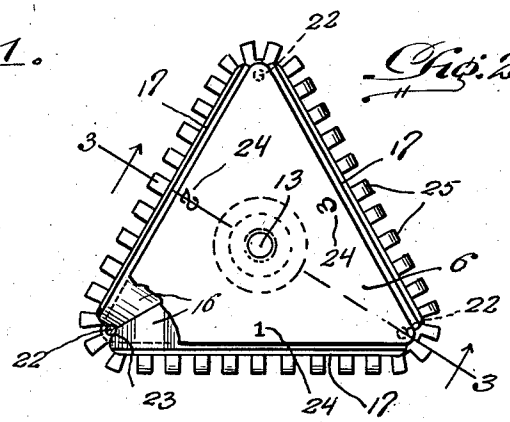


Fig. 4.

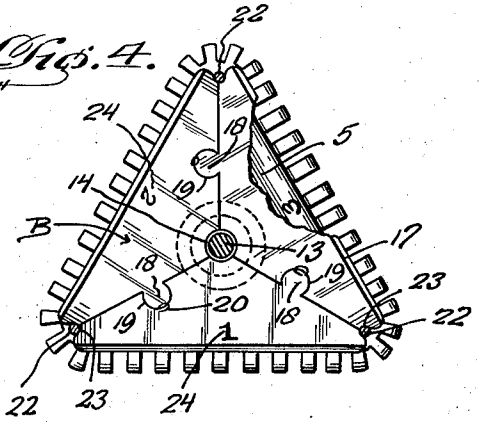


Fig. 3.

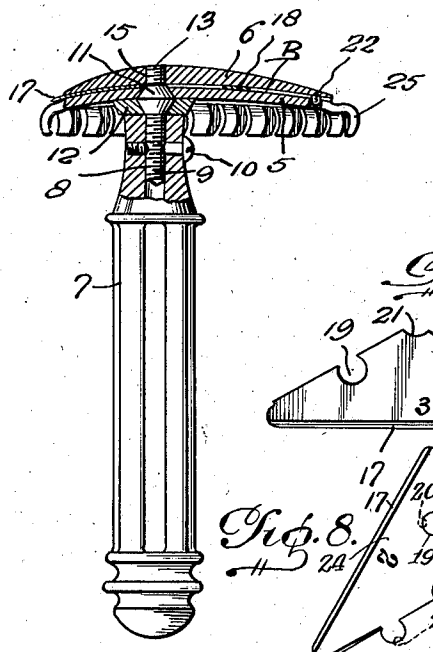


Fig. 6.

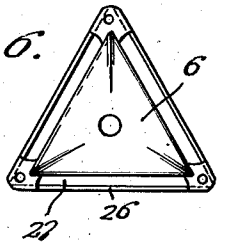


Fig. 5.

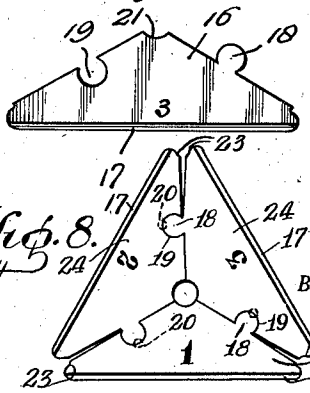


Fig. 7.

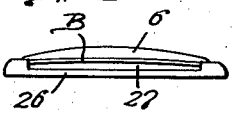


Fig. 8.

John G. Wolfe,
INVENTOR.

BY J. Stanley Bunch
ATTORNEY.

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UNITED STATES PATENT OFFICE

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SAFETY RAZOR

John G. Wolfe, Los Angeles, Calif., assignor to Triangle Safety Razor Company, Ltd., a corporation of Nevada

Application September 26, 1932, Serial No. 634,951

4 Claims. (Cl. 30—94)

This invention relates to improvements in safety razors of that type employing a blade having three cutting edges, and an object of the invention is to provide means for clamping the blade and flexing its cutting edge portions relative to each other to curve or arch said cutting edge portions as well as to properly tilt the same, so that all of the cutting edges will be curved or arched for properly shaving the numerous concave surfaces on the face.

I am aware that it is old to flex the cutting edge portions of triangular blades relative to each other to properly tilt such cutting edge portions. I am further aware of the fact that it is old to flex double-edge blades or blades with four edges in one direction to produce parallel opposed cutting edges which are curved or arched longitudinally to suit the concaved surfaces of the face. However, I am aware of no prior construction of safety razor of the type employing a blade having three cutting edges, in which all three of the cutting edges are longitudinally curved or arched as well as properly tilted relative to each other when flexed by clamping means. It is impractical to curve or arch more than two of the edges of a four edge blade due to the fact that buckling of the blade will result. In addition, the advantages of a blade having three cutting edges as distinguished from two cutting edges are well known, and it is my purpose, accordingly to gain the advantages of a curved or arched cutting edge in connection with the cutting edges of a three edge blade, such as has heretofore only been obtained in connection with blades having two or four cutting edges.

A further object of the present invention is to improve and simplify the manufacture of blades having three cutting edges.

Still another object of the invention is to provide an improved safety razor construction in which the separation and assemblage of the parts by the user can be very easily and quickly done, and which is of such an extremely simple nature as to insure low cost of manufacture.

Other objects and features of the invention will appear from the following description, when considered in connection with the accompanying drawing, in which:

Figure 1 is an elevational view of a safety razor constructed in accordance with the present invention.

Figure 2 is a top plan view thereof, partly broken away and in section.

Figure 3 is a view of the razor shown in Figure 1, partly in section on line 3—3 of Figure 2.

Figure 4 is a plan view with the cap plate removed and with the blade partly broken away.

Figure 5 is a plan view of one of the sections from which the blade is constructed.

Figure 6 is a plan view of a cap plate, blade and guard plate in assembled relation, the guard plate being of a modified construction.

Figure 7 is an edge elevation of the construction shown in Figure 6.

Figure 8 is a plan view of the blade in unflexed normal condition.

Referring in detail to the drawing, the present invention includes a guard plate 5 and a cap plate 6 for clamping a blade B therebetween. The razor further includes a handle 7 having a threaded axial opening 8 in one end for receiving a threaded stem 9 permanently attached to the guard plate 5. The stem 9 is held against accidental turning in handle 7 by means of a removable screw 10 threaded transversely of the handle 7 and extending through a transverse opening in the stem 9. The stem 9 forms part of a member having an enlarged intermediate portion 11 swiveled to the guard plate 5 for axial turning relative to the latter, the enlarged portion 11 being rotatably fitted in mating recesses of the guard plate 5 and a securing plate 12 welded or otherwise permanently secured to the under side of guard plate 5. Projecting upwardly from the intermediate enlarged portion 11 is a relatively short threaded stem 13 which passes through a central opening 14 in the blade B and is removably threaded into a threaded opening 15 in the cap plate 6. It will thus be seen that the member composed of stems 9 and 13 and enlarged portion 11 may be turned by turning handle 7 relative to guard plate 5, so as to thread the stem 13 out of cap plate 6, whereupon the cap plate 6 may be removed to permit removal or changing the position of blade B. A reversal of this operation will of course effect assemblage of the parts, and the screw 10 may be removed to permit detachment of the handle 7 from the stem 9 and guard plate 5 to permit storing of the razor in disassembled condition within a small space when not in use. It will be noted that the guard plate, the blade, and the cap plate are triangular in shape so as to provide three angularly disposed side marginal edges. As usual, the under surface of cap plate 6 is of general concave pyramidal form, while the upper surface of guard plate 5 is of general convex pyramidal form so that when the blade B is clamped between these plates, its cutting edge portions will be flexed relative to each other to properly tilt its cutting edges. How-

ever, according to one novel feature of the present invention, these opposed surfaces of the guard plate 5 and cap plate 6 have their marginal portions longitudinally curved or upwardly arched transversely of the planes of said plates so as to cause the cutting edges of the blade B to all be similarly curved or upwardly arched as shown in Figure 1 when the blade is clamped between and flexed by the guard plate 5 and cap plate 6. The cutting edges of the blade are thus longitudinally curved or upwardly arched to a slight extent so that any edge of the blade may be effectively employed for shaving the many concaved surfaces on the face.

As shown more clearly in Figures 4 and 5, the blade B is formed of three similar sections 16 of generally triangular form provided with one relatively long cutting edge 17 and two shorter unsharpened edges respectively provided with a central projection and a correspondingly shaped undercut recess 19. It will thus be seen that when the three blade sections are assembled with their unsharpened shorter edges adjacent with each other as shown in Figure 8, the projection 18 of each blade section will engage in the recess 19 in the adjacent edge of the adjoining blade section, whereby such blade sections are interlocked. The blade sections are permanently united in their assembled interlocked relation by spot welding the projection 18 of each blade to the adjoining blade as at 20, thus leaving the cutting edge portions of the blade sections free to flex relative to each other so that the cutting edges of the blade sections will be properly tilted when the blade is flexed by and clamped between the guard plate 5 and the cap plate 6. The construction is such that the adjacent edges of the blade sections will be brought into contact with each other when the blade is flexed and clamped between the plates 5 and 6. By forming the blade in this manner, manufacture is facilitated and cheapened, and production of high grade blades is made possible. The sections are more easily cut from a narrow strip of steel which may be evenly tempered before stamping or punching the blade sections therefrom. Moreover, the sections may be easily sharpened before assembling the same. It will be noted that each blade section is provided at the juncture of its shorter unsharpened edges with an arcuate notch 21, so that when the three blade sections are assembled, these notches cooperate to provide the circular central opening 14 in the blade through which the stem 13 passes. In order to prevent relative turning of the guard plate 5, blade B, and cap plate 6 when the blade is clamped between said plates 5 and 6, the cap plate 6 is provided on the under side of its corners with projecting lugs 22 adapted to enter corner notches 23 in the blade B and corner notches or depression similarly provided in the guard plate 5.

It will of course be understood that the blade sections are formed from relatively thin flexible steel as is usual in the art, and it will be noted that the blade sections are unconnected for a material distance inwardly from their corners so that flexing of said sections for both tilting and curving their cutting edges can be effected without danger of buckling the blade. In order to enable the blade to be reapplied in the same position, after the parts have been separated, as well as to enable the user to maintain a check on the edges of the blade as they are used, I suitably mark the corresponding edges of the blade and the cap plate by consecutive numbers as at 24.

In the construction of Figures 1 to 5 inclusive, the guard plate 5 has its edges curved and notched in the usual way to provide the guard fingers 25. However, as illustrated in Figures 6 and 7, the guard fingers 25 may be eliminated, and the corners of the guard plate may be connected by a narrow bar or strip 26 so as to define a slot 27 between each strip 26 and the adjacent edge of the guard plate. If the guard and its associated parts in this form of the invention are made slightly smaller than those of an ordinary safety razor, the device may be effectively used for trimming corns and callouses.

It will be seen that by reason of the curvature of all of the cutting edges, any one of them can be used to gain proper access to the many concaved surfaces of the face. The manner of constructing the blade facilitates manufacture thereof of uniformly high grade, as well as expeditiously and at a minimum cost. Further, the handle construction and means for connecting the guard and cap plates in clamping engagement with the blade is such as to facilitate manufacture cheaply and expeditiously, as well as to provide for durability and ease of separating and assembling the parts.

What I claim as new is:

1. A safety razor including a guard plate having a convex upper surface and provided with a central opening, a cap plate having a concave under surface and provided with a central threaded opening, a flexible blade between the guard plate and the cap plate, a member axially swivelled to the guard plate and having an upwardly projecting threaded stem passing through the blade and threaded into the central opening of the cap plate, said member having a depending stem, a handle having an axial opening in one end receiving said depending stem, means to secure the depending stem to the handle whereby said member may be rotated by the handle relative to the guard plate for threading the first-named threaded stem into or out of the cap plate, the swivelled connection of said member with the guard plate consisting of an intermediate enlargement on said member, and a securing plate permanently secured to the under side of the guard plate, said member extending through the securing plate and the guard plate, and said securing plate and guard plate having mating recesses in which the enlarged intermediate portion of said member is rotatably fitted.

2. A safety razor blade triangular in shape to provide three cutting edges and comprising three separate similar substantially triangular sections, each section having one cutting edge and two unsharpened edges respectively provided with a central projection and a correspondingly shaped under cut recess, said sections being arranged with their unsharpened edges in contact with each other and with the projection of each blade section engaged in the recess in the adjacent edge of the adjoining blade section so that the blade sections are interlocked, said blade sections being permanently connected at their interlocking projections and recesses and having their adjacent unsharpened edges normally spaced from each other from the interlocking projections and recesses outwardly to the corners of the blade, whereby the cutting edge portions of the blade sections are free to flex relative to each other.

3. A safety razor blade triangular in shape to provide three cutting edges and comprising three separate similar substantially triangular sections,

each section having one cutting edge and two unsharpened edges respectively provided with a substantially central projection and a correspondingly arranged and shaped undercut recess, said sections being arranged with their unsharpened edges adjacent each other and with the projection of each blade section engaged in the recess in the adjacent edge of the adjoining blade section so that the blade sections are interlocked, said blade sections having their adjacent unsharpened edges normally spaced from each other from the interlocking projections and recesses outwardly to the corners of the blade, whereby the cutting edge portions of the blade sections are free to flex relative to each other.

4. A safety razor blade triangular in shape to provide three cutting edges and comprising three separate similar substantially triangular sections, each section having one cutting edge and two unsharpened edges respectively provided with a substantially central projection and a correspondingly arranged and shaped undercut recess, said sections being arranged with their unsharpened edges adjacent each other and with the projection of each blade section engaged and permanently secured in the recess in the adjacent edge of the adjoining blade section so that the blade sections are permanently interlocked, said adjacent unsharpened edges of the blade sections being normally spaced from each other from said points of permanent connection outwardly to the corners of the blade, whereby the cutting edge portions of the blade sections are free to flex relative to each other, said sections being connected only at such points of permanent connection.

JOHN G. WOLFE.