June 30, 1964 E. MEYER 3,138,865

SAFETY RAZOR HAVING SKIN-STRETCHING AND GUIDING MEANS

Filed Aug. 11, 1961

FIG. 1

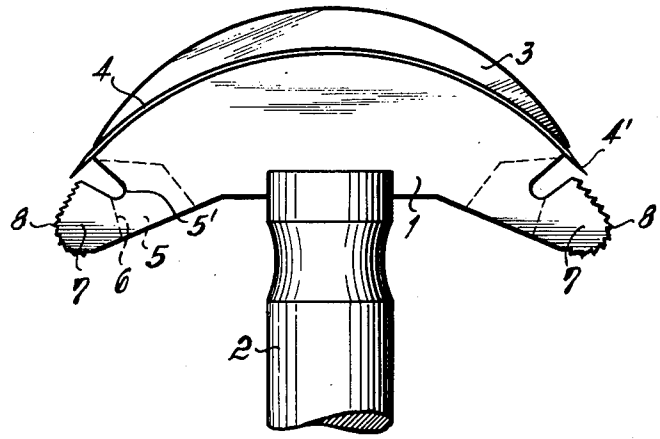


FIG. 2

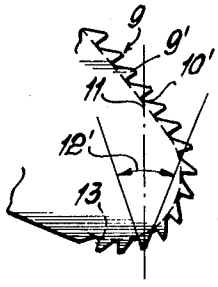


FIG. 3

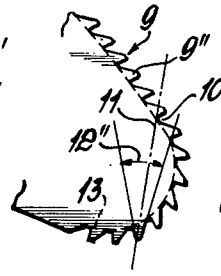


FIG. 4

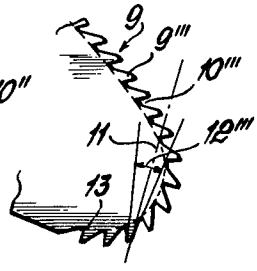


FIG. 5

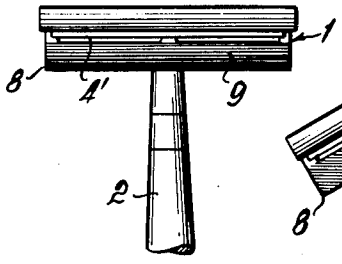


FIG. 6

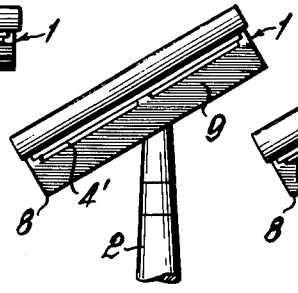
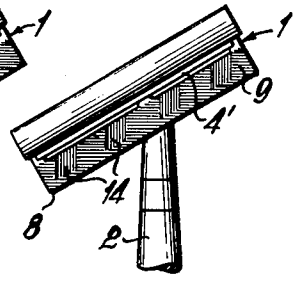


FIG. 7



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SAFETY RAZOR HAVING SKIN-STRETCHING AND GUIDING MEANS

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The present invention relates to a safety razor in which a razor blade is clamped between a bottom plate and a cover plate.

When shaving with a safety razor, the skin is usually tightened so as to raise up the hairs relative to the blade to permit them to be cut as closely as possible toward their roots, whereupon the remaining stubs will recede into the released skin. In order to attain this result, numerous designs of safety razors have already been proposed. Thus, for example, the comblike guard in front of the razor edge of earlier safety razors was replaced by a beaded friction bar which, however, was too smooth and exerted too little friction upon the skin. The same applies to those safety razors in which the friction bar is provided with a groove containing inserts of an elastic material. These elastic inserts also easily become porous and shrink and then become severed from their holding groove. It is also known to provide the friction bars of safety razors with recesses which are supposed to operate like suction cups. These recesses become, however, quickly filled with soap and are then entirely ineffective. In other known types of safety razors, the friction bars are provided with serrations which extend parallel to the edge of the razor blade and as seen in cross section, enclose an angle of about 90°, the bisector of which extends vertically to the base surface of the friction bar. The serrations are therefore too blunt, the grooves between them are too wide, and their surface extending in the shaving direction is too much inclined toward the razor edge to effect any satisfactory raising or straightening of the hairs to be cut.

It is an object of the present invention to provide a safety razor in which the friction bar produces a considerably improved skin-tightening and hair-raising effect so that the hairs will be cut more closely to the skin. This is attained according to the invention by providing the bottom plate of the razor with a friction bar of a curved shape as seen in cross section, which is divided into a plurality of serrations or teeth of an angle, the bisector of which is inclined away from the razor edge and toward the base of the friction bar so that the serrations have a shape similar to the teeth of a file or saw. The serrations may form a plurality of straight rows of teeth or series of individual teeth, scales, or the like which may be offset relative to each other. The longitudinal rows of teeth always extend transverse to the axis of the razor handle and therefore also transverse to the shaving direction of the razor. Thus, if the head of the razor extends at right angles to the axis of the handle, the serrations extend parallel to the edge of the razor blade and if it extends obliquely to the axis of the handle the serrations extend obliquely to the razor edge. In the latter case, the friction bars may be provided with additional serrations or grooves which extend in the shaving direction and exert a guiding effect.

The new manner of dividing the friction surface into serrations has the advantage that the friction surface exerts a better gripping effect upon the surface of the skin and thereby tightens the same to a greater extent than this could be attained with similar safety razors of prior designs. Of still greater importance, however, is the fact that the serrations or teeth of the friction bar are shaped so as to grip underneath very inclined and thick

hairs and thereby raise or straighten them upwardly and guide them in this most suitable cutting position to the edge of the razor blade. The hairs of a beard are thus cut as closely as possible to their roots and their remainder will, when the tension upon the skin is released, pivot back toward the skin surface and recede into the hair root channels. Due to the general undercut shape of the friction surface, it is even possible to feel with the razor where hairs have been missed during a preceding shaving stroke. These hairs will then cause a certain resistance on the friction bar which can be felt by the hand holding the razor. It is thus easy to determine where an after-shave might be necessary. The new safety razor therefore insures a much cleaner and more perfect shave.

The aforementioned objects, features, and advantages of the present invention will become more clearly apparent from the following detailed description thereof which is to be read with reference to the accompanying drawings, in which—

FIGURE 1 shows an enlarged side view of the head of a safety razor according to the invention;

FIGURES 2 to 4 show further enlarged side views of friction bars according to the invention with serrations which are inclined at different degrees; while

FIGURES 5 to 7 show front views of three different safety razors with different arrangements of the serrations on the friction bars.

In the drawings, the safety razor according to the invention consists of a bottom plate 1 which is rigidly secured to the handle 2 and a cover plate 3 between which a razor blade 4 is clamped so as to be bent at an arc. At least at the opposite ends of each side of bottom plate 1, webs 5 are provided which integrally connect a so-called friction bar 7 to the bottom plate. This friction bar 7 is separated from the main body of cover plate 3 by a longitudinal aperture 6 through which the shaving soap and the hairs which are cut off by the razor edge 4' will be removed without reaching the surface of friction bar 7. For the same purpose, webs 5 are also provided underneath the razor edge 4' with slotlike recesses 5'. Each friction bar 7 has a curved outer friction surface 8 which is divided by a series of grooves 9 and it extends from a point closely adjacent to and slightly underneath the razor edge 4' to the lower side of bar 7.

According to the embodiments of the invention as illustrated in FIGURES 2 to 4, these separate grooves 9 in the friction surface 8 form intermediate serrations 9', 9'', and 9''' which have a substantially triangular cross section and are separated from each other by corresponding recesses 10', 10'', and 10'''. The bisector 11 of the angles 12', 12'', and 12''' which are enclosed by the lateral surfaces of the serrations 9', 9'', and 9''' is tapered away from the razor edge 4' and toward the root or base surface 13 of serrations 9. The serrations 9 have therefore the cross-sectional shape of teeth similar to those of a file or saw which are undercut at different degrees in the shaving direction in accordance with their different inclinations as shown, for example, in FIGURES 2 to 4. In place of the continuous straight serrations 9 it is also possible to provide them in the form of teeth, scales, or the like which are offset relative to each other and the term "serrations" as used herein and in the appended claims is intended to encompass such constructions. The pitch of the teeth is preferably made in accordance with the thickness of the hairs to be cut so as not to injure or irritate the skin. For the same purpose it may also be advisable slightly to chamfer the edges or points of the serrations. As illustrated in FIGURES 2 to 4, the angles which are enclosed by the serrations 9', 9'', and 9''' may be of different sizes and their bisectors may be more or less inclined so that in shaving a definite gripping or under-reaching effect will be exerted upon the hairs of

the beard so as to raise or straighten them up from the skin.

In a razor as illustrated in FIGURE 5, in which the entire razor head extends at right angles to the axis of the handle 2, the longitudinal rows of serrations or teeth 9', 9'', 9''' extends in the conventional manner in a direction parallel to the razor edge 4' and therefore transverse to the shaving direction. If the razor is provided with an obliquely inclined head and blade as illustrated in FIGURES 6 and 7, the rows of serrations 9 forming the friction surface 8 likewise extend transverse to the shaving direction and therefore at an oblique angle to the razor edge 4'. The friction surface 8 may in this case be provided with additional serrations or grooves 14, as shown in FIGURE 7, which cross the longitudinal serrations 9 and extend parallel to the axis of the handle 2. These serrations or grooves 14 may be provided for guiding the razor in the normal shaving direction so as to prevent it from sliding in the inclined direction of the razor edge 4' which might lead to cuts in the skin.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments, but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. In a safety razor having a handle and a head comprising a guard member adapted to support a razor blade and a cover member therefor, said members being adapted to clamp said razor blade therebetween, the improvement consisting essentially of an improved guard member having means for stretching the skin and raising the hair to be shaved and means for guiding the razor in the normal shaving direction, said guard member comprising a bottom plate, a friction bar, said friction bar being disposed in front of the edge of said razor blade with the upper surface thereof with respect to said blade being arranged immediately below the plane formed by an imaginary extension of said razor blade edge, and web means rigidly connecting said friction bar to said bottom plate, said friction bar forming said means for stretching said skin and raising said hair and having approximately triangular shaped longitudinal serrations in said upper surface forming teeth similar to those on a file or saw, said teeth having flanks averted from said imaginary plane and having a maximum angle of 90° relative to the base of said bar, said serrations extending approximately perpendicular to said normal shaving direction, said means for guiding the razor comprising additional serrations in said friction bar extending essentially parallel to said normal shaving direction.

2. In a safety razor having a handle and a head comprising a guard member adapted to support a razor blade and a cover member therefor, said members being adapted to clamp said razor blade therebetween, the improvement consisting essentially of an improved guard member having means for stretching the skin and raising the hair to be shaved, and means for guiding the razor in the normal shaving direction, said guard member comprising a bottom plate, a friction bar, said friction bar being separated from said bottom plate by a longitudinal aperture through which cut hairs are adapted to pass, said friction bar being disposed in front of the edge of said razor blade with the upper surface thereof with respect to said blade being arranged immediately below the plane formed by an imaginary extension of said razor blade edge, and web means rigidly connecting said friction bar to said bottom plate, said friction bar forming said means for stretching said skin and raising said hair and having approximately triangular shaped longitudinal serrations in said upper surface forming teeth similar to those on a file or saw, said teeth having flanks averted from said imaginary plane and having a maximum angle of 90° relative to the base of said bar, the plane bisecting the angle at the point of each said tooth extending obliquely and outwardly with respect to said razor blade edge, said serrations extending approximately parallel to each other and perpendicular to said normal shaving direction, said means for guiding the razor comprising additional serrations in said friction bar extending essentially parallel to said normal shaving direction.

3. A safety razor as defined in claim 2, wherein said head is secured to said handle at an angle to the axis thereof.

4. In a safety razor having a handle and a head comprising a guard member adapted to support a razor blade and a cover member therefor, said members being adapted to clamp said razor blade therebetween, the improvement consisting essentially of an improved guard member having means for stretching the skin and raising the hair to be shaved, said guard member comprising a bottom plate, a friction bar, said friction bar being separated from said bottom plate by a longitudinal aperture through which cut hairs are adapted to pass, said friction bar being disposed in front of the edge of said razor blade with the upper surface thereof with respect to said blade being arranged immediately below the plane formed by an imaginary extension of said razor blade edge, and web means rigidly connecting said friction bar to said bottom plate, said friction bar forming said means for stretching said skin and raising said hair and having approximately triangular shaped longitudinal continuous parallel teeth in said upper surface similar to those on a file or saw, said teeth having front and rear flanks, said front flanks facing in the normal direction of the shaving and being more steeply inclined than said rear flanks, and said teeth extending approximately perpendicular to the axis of said handle.

5. In a safety razor having a handle and a head comprising a guard member adapted to support a razor blade and a cover member thereof, said members being adapted to clamp said razor blade therebetween, the improvement consisting essentially of an improved guard member having means for stretching the skin and raising the hair to be shaved, and means for guiding the razor in the normal shaving direction, said guard member comprising a bottom plate, a friction bar, said friction bar being separated from said bottom plate by a longitudinal aperture through which cut hairs are adapted to pass, said friction bar being disposed in front of the edge of said razor blade with the upper surface thereof with respect to said blade being arranged immediately below the plane formed by an imaginary extension of said razor blade edge, and web means rigidly connecting said friction bar to said bottom plate, said web means including slot-like recesses underneath said razor blade edge, said friction bar forming said means for stretching said skin and raising said hair and having approximately triangular shaped longitudinal serrations in said upper surface forming teeth similar to those on a file or saw, said teeth having flanks averted from said imaginary plane and having a maximum angle of 90° relative to the base of said bar, the plane bisecting the angle at the point of each said tooth extending obliquely and outwardly with respect to said razor blade edge, said serrations extending approximately parallel to each other and perpendicular to said normal shaving direction, said means for guiding the razor comprising additional serrations in said friction bar extending essentially parallel to said normal shaving direction.

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