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SAFETY RAZOR WITH CONCAVE UPPER CAP FACE

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Fig. 1.

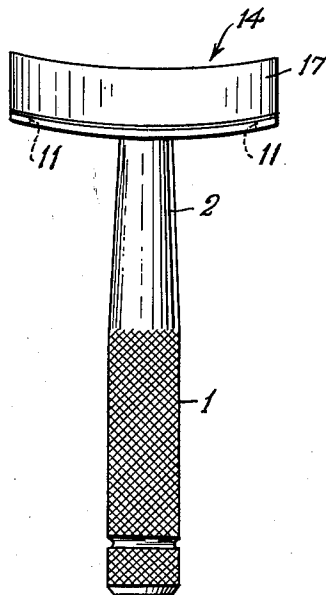


Fig. 2.

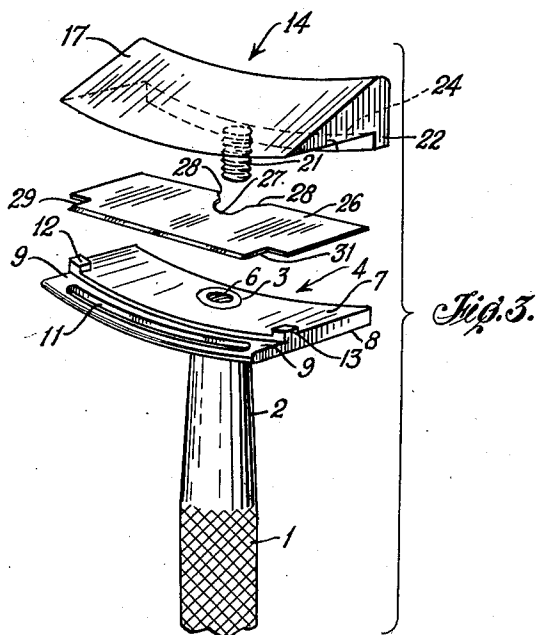
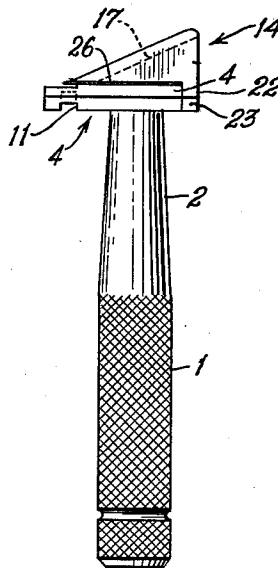


Fig. 4.

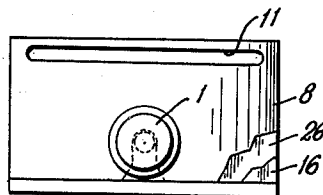
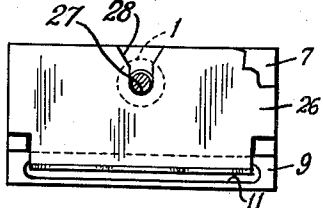


Fig. 5.



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SAFETY RAZOR WITH CONCAVE UPPER
CAP FACE

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6 Claims. (Cl. 30-49)

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This invention relates to a safety razor and is intended, in particular, to provide a razor which lends itself to favorable angle of application of a razor blade edge and which conforms to curvatures of the face or other body part.

In the prior art it has been known to provide hoe-type safety razors in which the blade housing has a generally wedge shape, tapering to the position of the exposed blade edge, and, further, blade housings have been provided which are generally arcuate in form, the curvature being either positive or negative with respect to the razor handle. By an arrangement which combines such structural characteristics, the present invention achieves a razor which blends the separate effects into a result which is more efficient than the results obtained separately in the prior art, and in which the optimum angle of presentation of the blade edge to the face of a user is at all times automatic by the mere expedient of applying the upper surface of the blade housing fully on the face of the user. The razor, furthermore, is adapted for secure locking of a blade, yet easy removal thereof without completely detaching the blade clamp.

It is therefore an object of the invention to provide a safety razor having an appreciable extent of upper surface adapted to fit the face of a user at all times during shaving strokes and to thus provide a constant attitude of the blade edge in use. Other objects are to provide a razor and blade combination in which the blade is easily insertable and removable without complete separation of the razor parts, and to provide an arrangement wherein debris and lather are easily and continuously removed without undue penetration into the razor assembly.

Other objects and advantages will be apparent to those skilled in the art from the description to follow and the drawings, in which:

Fig. 1 is a front elevational view of the assembled razor,

Fig. 2 is a side view of Fig. 1,

Fig. 3 is an exploded view, in perspective, of the three parts of the razor,

Fig. 4 is a bottom view of Fig. 1, and

Fig. 5 is a top view of Fig. 1 with the top blade-clamping element removed.

Referring to the drawings by characters of reference, there is shown a razor having a handle 1 with a tapering portion 2 peened or otherwise secured for rotation in an opening 3 in a lower blade holder or clamp element 4, in a manner so as not to protrude thereabove, and the

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portion 2 being internally threaded as at 6. The clamp element 4 has an upper, concave surface 7 and a lower, convex surface 8 which are mutually parallel and which are arcuate in form, or nearly so, being, preferably, cylindrical surfaces of right, circular form, with elements perpendicular to the axis of cylindrical handle 1. The front portion of the upper part of element 4 is rabbeted to provide a surface 9 at lower level than the surface 7 serving as a clearance for the underside of the blade edge whereby debris is collected in a limited zone and passes out through an elongate slot 11. The front corners of the surface 7 are provided with upright lugs or posts 12 and 13 of a height not greater than the thickness of blade employed, which posts serve to retain the blade in place, in coaction with the clamping elements.

The upper clamp element, indicated generally by the numeral 14 is generally wedge-shaped and has a lower, convex, cylindrical surface 16 complementary in form to surface 7 of the lower clamp element. The upper surface 17 of the upper clamp element 14 is concavely cylindrical and the element as a whole may best be described as a segment of a toroid of wedge-shaped, cross-section, defined by a generating radius with origin on the axis of curvature of cylindrical surface 7 when the razor is in assembled condition. However, for the wedge angle and the radius considered, and the permissible tolerances, the member 14 may be roughly defined as bounded by two intersecting cylindrical surfaces, having their axes in a common plane but inclined one to the other.

It has been found that a radius of curvature of about seven inches is suitable for the cylindrical surfaces but, of course, this may be varied within limits without sacrifice to the efficiency of performance of the razor. The preferred wedge angle is about 20°, but this also may be varied somewhat.

The clamp element 14 has fixed to its underside a screw 21 engageable in the threaded opening 6 of the handle. Element 14 also has a dependent rear flange 22 which engages behind the rear edge of clamp element 4 and has a depth throughout equal to the thickness of the element 4, underside 23 of the flange and its line of intersection 24 having a curvature similar to that of surfaces 7 and 16. However, it is not essential that surface 8 and the underside of flange 22 be curved, and these may be plane if desired.

The blade 26 has a semicircular slot 27 in its rear edge to clear the screw 21 and permit the

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blade edge to abut flange 22, and the slot 27 is flared at 28 for ready positioning on the screw. The front corners of the blade are cut away as at 29, 31 for engagement behind lugs 12, 13, respectively.

The clamp elements 4, 14 are joined by inserting screw 21 into opening 6 and turning handle 1. When approach of the parts is such that flange 22 engages behind element 4, relative rotation of the clamp elements is prevented. The blade 26 may be slipped into position abutting flange 22 and with corner slots 29, 31 engaged behind posts 12, 13. Upon further rotation of the handle 1 the approach of the clamp elements 4, 14 deforms blade 26 into full contact with surfaces 7 and 16 and the assembly is ready for use. Removal of the blade may be effected by merely unscrewing the parts until the blade may be slipped over posts 12, 13 and so withdrawn.

In use, the wedge form of the upper element 14 provides a ready guide for a favorable attitude of the blade edge when the upper surface 17 of element 14 is retained in contact with the skin. Due to the cylindrical form of surface 17, together with the wedge shape, the contact with the skin at all times is spread over an area sufficient that the full extent, or at least a substantial extent, of the blade edge is in cutting engagement at all times. With wedge-shaped but plane top razors or with razors transversely curved in substantially a single cylindrical surface, that is, without the wedge form defined by two distinct, cylindrical surfaces, this result is not attained since the blade is, in general, effective only throughout a relatively small extent of its length, and clean and uniform shaving is accomplished only after unduly repetitious stroking, or else the constant optimum cutting angle is not automatically maintained.

Obviously, the particular manner of effecting closure of the blade-holding members is not material to the invention and can partake of various forms known in the art.

In general, while a preferred embodiment of the invention has been shown, the invention is not limited thereto, since changes in the size, shape, and arrangement of the various parts may be resorted to without, however, departing from the spirit or scope of the appended claims.

What is claimed is:

1. A safety razor of the type having a pair of blade-clamping members and a handle, one of said blade-clamping members having an upper, concave surface of cylindrical form with cylindrical elements generally transverse to the razor handle, and the other of said blade-clamping members having an under, convex surface of cylindrical form, complementary to the first-mentioned cylindrical surface, and having an upper, concave, cylindrical surface with its axis of curvature substantially co-planar with, but inclined with respect to, the axis of curvature of its said under surface.

2. A safety razor of the type having a pair of blade-clamping members and a handle, one of

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said blade-clamping members having an upper, concave surface of cylindrical form with cylindrical elements generally transverse to the razor handle, and the other of said blade-clamping members having an under, convex surface of cylindrical form, complementary to the first-mentioned cylindrical surface, and having an upper, concave, cylindrical surface with its axis of curvature substantially co-planar with, but inclined at an angle of about 20° with respect to, the axis of curvature of its said under surface.

3. A safety razor of the type having a pair of blade-clamping members and a handle, one of said blade-clamping members having an upper, concave surface of cylindrical form with cylindrical elements generally transverse to the razor handle, and the other of said blade-clamping members having an under, convex surface of cylindrical form, complementary to the first-mentioned cylindrical surface, and having an upper, concave, cylindrical surface with its axis of curvature substantially co-planar with, but inclined with respect to, the axis of curvature of its said under surface, said other of said blade-clamping members having a dependent flange on its rearward face engageable behind the rearward face of said one of said blade-clamping members.

4. In a razor as in claim 3, a stepped portion on the forward part of said one of said blade-clamping members, to provide a concave, cylindrical surface lower than its said upper concave surface, and a through slot extending lengthwise of said lower surface.

5. A safety razor of the type having a lower, blade-clamping member, an upper blade-clamping member and a handle generally transverse to said blade-clamping members, said lower member having an upper, concave surface of cylindrical form, and said upper member having an under, convex surface of cylindrical form complementary to the upper surface of the said lower member, and an upper, concave surface of cylindrical form intersecting its lower surface, the upper and lower surfaces of said upper member being so related that the cross-sectional form of the said upper member is substantially constant along its general path of curvature.

6. A safety razor of the type having a lower, blade-clamping member, an upper, blade-clamping member, and a handle generally transverse to said blade-clamping members, said lower member having an upper, concave surface of cylindrical form, and said upper member comprising, substantially, a toroidal segment of wedge-shaped cross-section defined by a generating radius with center substantially on the axis of curvature of the upper surface of said lower member, when the members are in nested assembly.

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No references cited.