July 7, 1964 J. WALDMAN 3,139,683

SAFETY RAZOR WITH FLUID DISTRIBUTING MANIFOLD

Filed April 2, 1963 3 Sheets-Sheet 1

FIG. 1

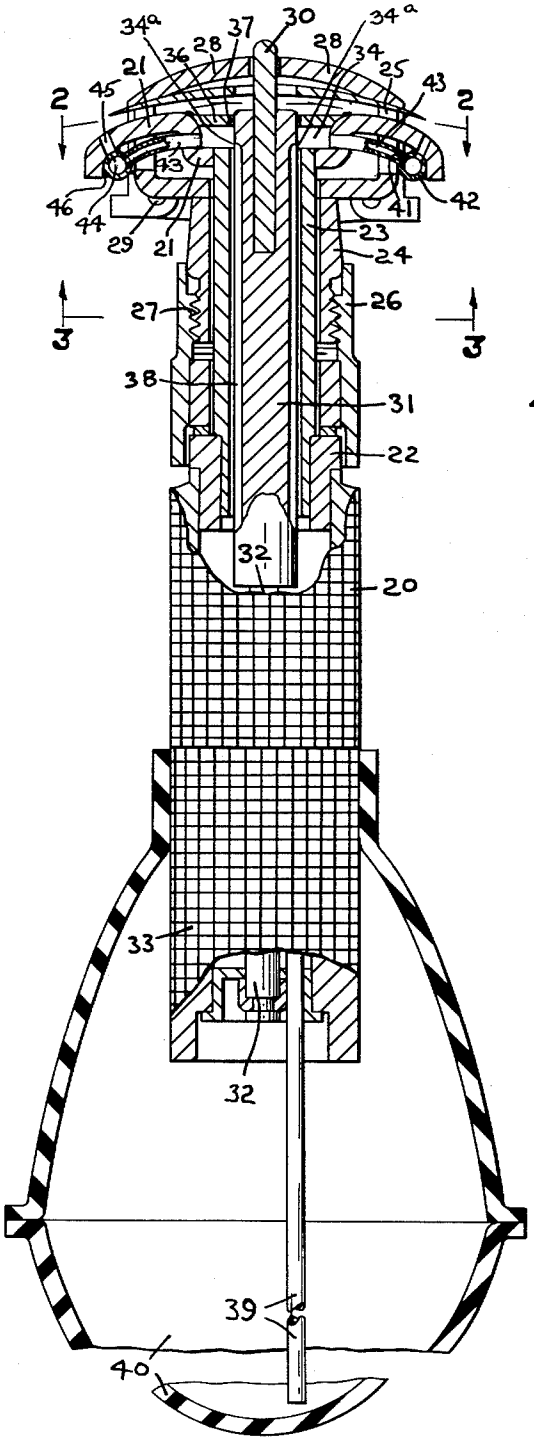
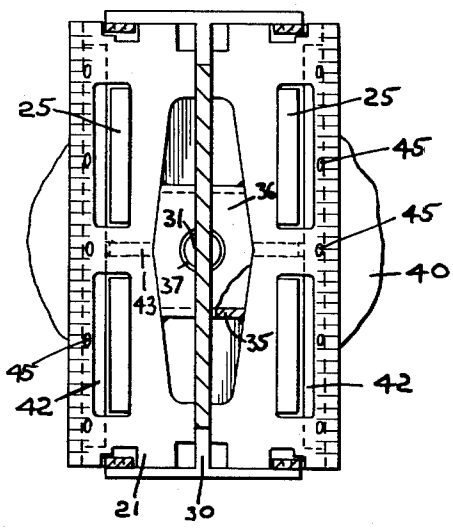


FIG. 2



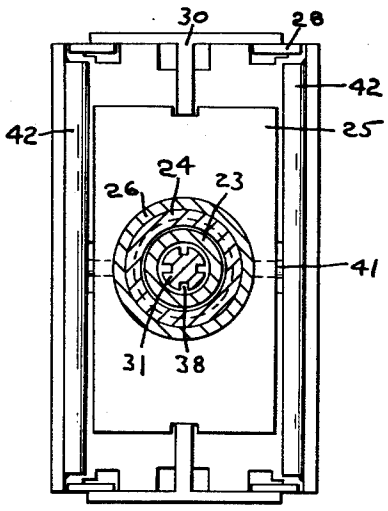


FIG. 3

INVENTOR.
JOSEPH WALDMAN
BY
Leon Edelson
ATTORNEY

July 7, 1964 J. WALDMAN 3,139,683

SAFETY RAZOR WITH FLUID DISTRIBUTING MANIFOLD

Filed April 2, 1963 3 Sheets-Sheet 2

FIG. 4

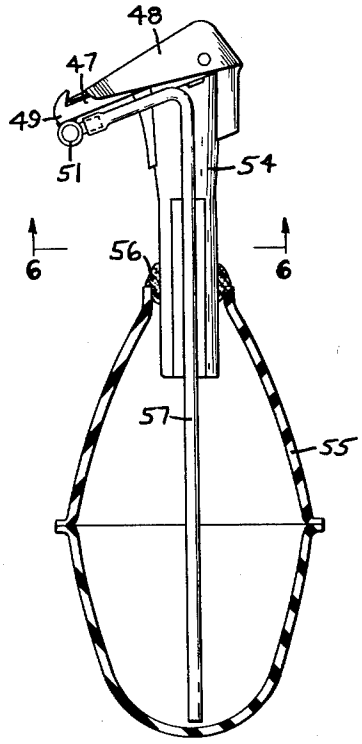


FIG. 5

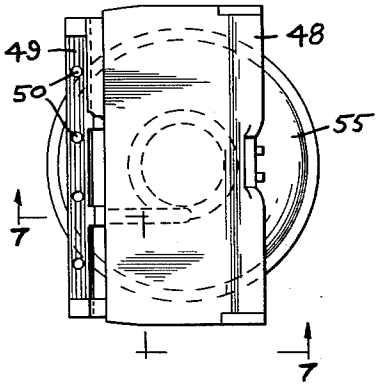


FIG. 6

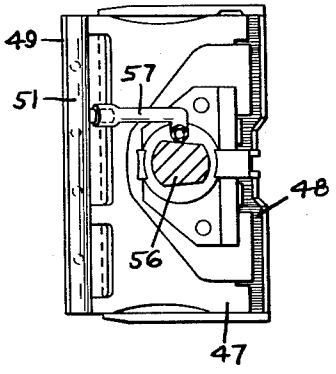
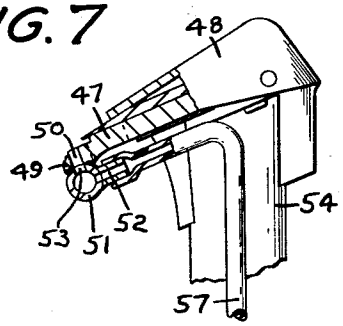


FIG. 7



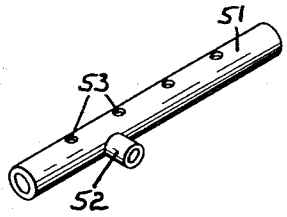


FIG. 8

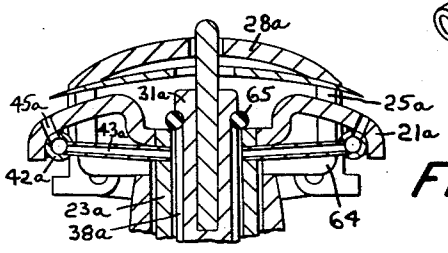


FIG. 14

INVENTOR.
JOSEPH WALDMAN
BY
ATTORNEY

July 7, 1964 J. WALDMAN 3,139,683

SAFETY RAZOR WITH FLUID DISTRIBUTING MANIFOLD

Filed April 2, 1963 3 Sheets-Sheet 3

FIG. 9

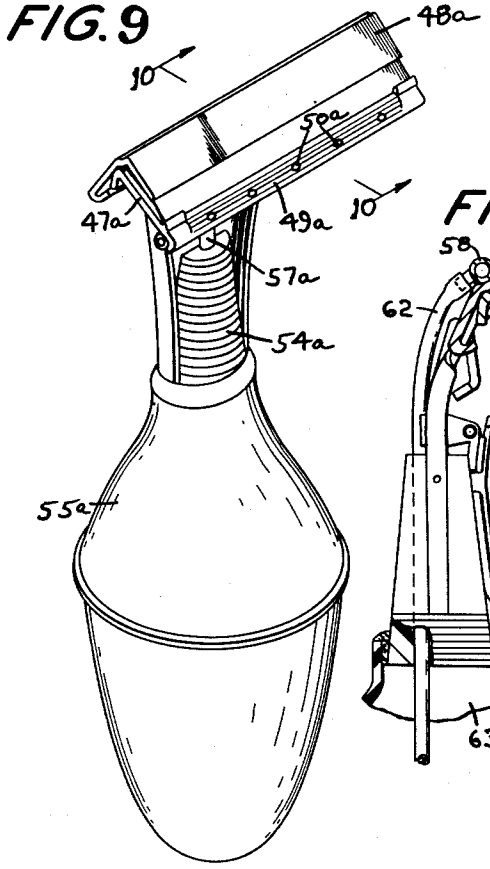


FIG. 13

FIG. 10

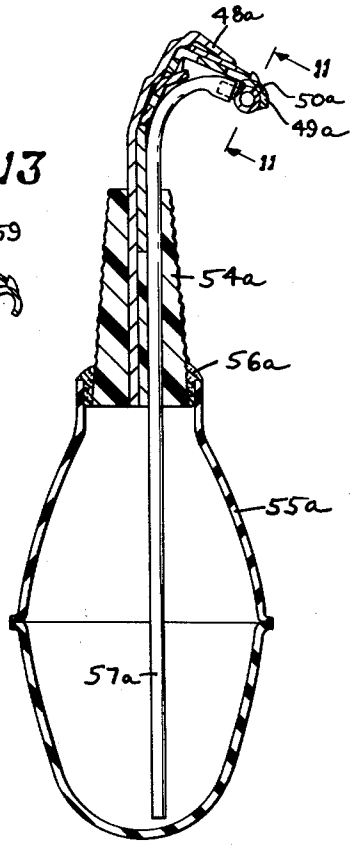
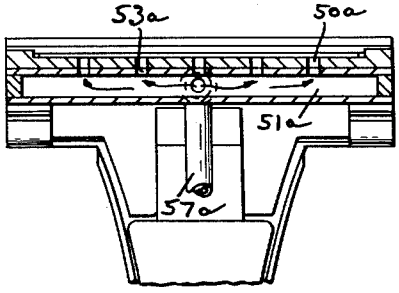


FIG. 11



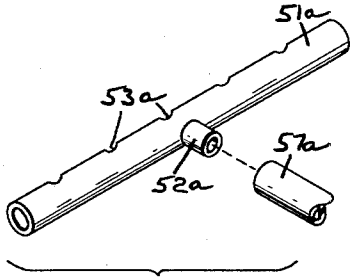


FIG. 12

INVENTOR.

BY JOSEPH WALDMAN

Leon Edelson

ATTORNEY

United States Patent Office 3,139,683 Patented July 7, 1964

3,139,683

SAFETY RAZOR WITH FLUID DISTRIBUTING MANIFOLD

Joseph Waldman, 404 Meadowbrook Lane, Erdenheim, Philadelphia, Pa.

Filed Apr. 2, 1963, Ser. No. 270,021
6 Claims. (Cl. 30—41)

This invention relates generally to safety razors, and more particularly relates to safety razors which incorporate thereinto means for the prevention of razor burn due to an inadequately moist condition of the skin over which the razor is then passing.

As is well known, shaving lathers are all fundamentally moisturizing substances containing oil solvents which permit the moisturizing agent to penetrate into the beard and soften the whiskers so that they may be readily cut through by the razor blade. The soaking action of the moisturizing agent requires a few minutes to properly operate, and then when shaving is actually begun the cutting operation itself requires several minutes. During this time interval, those parts of the beard which are not cut first begin to dry out due to evaporation of the moisturizing agent which results in some stiffening of the whiskers and drying or caking tendency of the shaving lather. These conditions cause a relatively high friction condition to occur between the razor structure and the skin when these areas are subsequently reached during the shaving operation. The razor structure according to the present invention overcomes this problem by incorporating means thereinto which enable the user to maintain the surface of the skin to be shaved in a moist condition by providing a lubricating film for the razor to glide over as each shaving stroke is made, this being a primary object of the invention.

Another object of this invention is to provide a novel razor structure which carries with it a supply of lubricant fluid together with means for applying the lubricant fluid to the skin immediately in front of the cutting edge of the razor during the process of shaving.

Still another object of this invention is to provide a novel razor structure as aforesaid wherein the means for applying the lubricant to the skin also is effective to clear the cutting edge of the razor of whiskers which have been previously cut and which may tend to interfere with the cutting action of the razor.

The foregoing and other objects of the invention will become clear from a reading of the following specification in conjunction with an examination of the appended drawings, wherein:

FIGURE 1 illustrates on an enlarged scale a longitudinal veiw, partly in central section, of a double edged razor structure of a type in widespread use today and which has been modified in accordance with the principles of the invention to carry out the purposes thereof;

FIGURE 2 is a horizontal sectional view through the razor structure of FIGURE 1 as would be seen when viewed along the line **2—2** thereof;

FIGURE 3 is a horizontal sectional view through the razor structure of FIGURE 1 taken below the shaving head and looking upward thereat as would be seen when viewed along the line **3—3** of FIGURE 1;

FIGURE 4 is a side view, partly in elevation and partly in section, of a modified construction of a razor of the single edge type which incorporates thereinto a structure according to the invention;

FIGURE 5 is a top plan view of the razor structure of FIGURE 4;

FIGURE 6 is a cross-sectional through the stem of the razor of FIGURE 4 looking upward toward the shaving head as would be seen when viewed along the line **6—6** of FIGURE 4;

FIGURE 7 is a vertical view partly in section and partly in elevation of the shaving head of the razor in FIGURE 4 as would be seen when viewed along the line **7—7** of FIGURE 5;

FIGURE 8 is an enlarged perspective view of the manifold structure which is incorporated into the razor structure of FIGURES 4 through 7;

FIGURE 9 illustrates in perspective view a further modified construction of a razor of the injector type which also incorporates thereinto the present invention;

FIGURE 10 is a vertical sectional view through the razor structure of FIGURE 9 as would be seen when viewed along the line **10—10** thereof;

FIGURE 11 is a longitudinal sectional view through the front edge of the razor structure of FIGURE 9 as would be seen when viewed along the line **11—11** of FIGURE 10;

FIGURE 12 is an enlarged perspective view of the manifold structure employed in the razor structure of FIGURES 9 through 11;

FIGURE 13 illustrates a different placement of the manifold structure of FIGURE 12 for use with a razor having a blade release mechanism of the type illustrated; and

FIGURE 14 illustrates a longitudinal central sectional view of a modified form of the double edged razor head shown in FIGURE 1.

In the several figures, like elements are denoted by like reference characters.

Considering first the showing of FIGURES 1, 2 and 3 it is observed that the double edged razor shown therein includes a main handle column **20** fixedly connected to the razor blade edge shaving guard platform **21** by means of the intervening hollow tubular connecting elements **22** and **23**, the handle column **20** being also hollow. Disposed about the upper end of the hollow tubular element **23** is another hollow tubular element **24** to which is fixedly secured at its upper end a razor blade support structure **25**, the tubular element **24** and blade support **25** being vertically shiftable within limits by means of the sleeve **26** surrounding the lower end of the tubular element **24** and coupled thereto by threads **27** which function to provide a jack screw action as desired to move the blade support structure **25** closer toward or away from the guard platform **21**.

Positioned above the blade support structure **25** and effective to clamp a blade downward against the support structure are a pair of swingable covers **28** pivoted as at **29** for upward and outward swinging motion to allow a blade to be placed in the razor when the yoke **30** moves vertically upward, the swingable blade covers **28** moving inward and downward to clamp the razor blade against the blade support structure **25** when the yoke **30** moves vertically downward. The yoke **30** is perhaps best seen in the showing of FIGURES 2 and 3 and is centrally connected as best seen in FIGURE 1 to a shaft **31** extending vertically upward through the hollow handle **20** and hollow tubular element **23**. The shaft **31** is shiftable vertically upward and downward by means of a screw action between it and a shaft **32** extending thereinto and downward for connection to a rotary bottom section **33**, rotation of the bottom section **33** in one direction causing the blade cover **28** to open by upward movement of the yoke **30** and shaft **31**, with rotation in the opposite direction of the bottom section **33** causing clamping closure of the blade cover **28** by downward movement of the yoke **30** and shaft **31**.

As best seen in FIGURES 1 and 2 the upper end of the shaft **31** extends through a chamber **34** whose bottom is formed by the vertically downwardly offset portion of the guard platform **21** which connects to the hollow tubular element **23**, having side walls **35** and a top wall **36**. The

chamber top wall 36 is centrally circularly apertured to allow the shaft 31 to move vertically therethrough, a peripheral seal about the shaft 31 being maintained by an O-ring gasket 37 carried by the top wall 36. As best seen in FIGURES 1 and 3, the shaft 31 is vertically fluted as at 38 to provide a completely open through passage from the chamber 34 into the upper ends 34*a* of the flutes 38 and thence downward through said flutes to the interior of the hollow handle 20 and then on downward through the tube 39 to the interior of the hollow bulb 40 which is secured upon and rotatable with the rotary bottom section 33 of the razor.

The chamber 34 also connects at opposite sides to the inlets 41 of a pair of manifolds 42 by means of the tubes 43. The manifolds 42 extend longitudinally immediately beneath the down curved outer edges of the shaving guards 21 and are provided with a plurality of apertures 44 which register with correspondingly located apertures 45 extending through the edge of the blade guard platform 21 and opening to the upper surface thereof immediately in front of the cutting edge of the razor blade normally held by the razor. The manifolds 42 may be secured in any convenient manner, as for example by welding or soldering as shown at 46, and the ends of the manifolds are of course closed.

From the foregoing it is observed that the interior of the bulb 40 communicates with the outside atmosphere by a path which terminates at the blade guard apertures 45 so that the flexible bulb 40 may be filled with water or any other desired lubricant liquid by submerging the shaving head beneath the liquid level to insure that the apertures 45 are all below the liquid surface, then compressing the bulb 40 to express the air normally therein, and then releasing the bulb 40 so that the lubricant liquid will be drawn inward through the guard blade aperture 45 and ultimately downward into the confines of the bulb 40.

When now during the course of shaving it is found necessary or desirable to lubricate the surface of the skin about to be shaved, it is only necessary to squeeze the bulb 40 to cause the lubricant liquid contained therein to be expressed outward through the blade guard apertures 45 to lubricate the skin immediately in front of the cutting edge of the razor blade. Of course, the outward expressing of the lubricant fluid also tends to clear any shaved whiskers which may have lodged in front of the cutting edge of the blade to possibly interfere with the cutting action thereof. It should be further observed that the structure of the razor embodying the invention is such that the expression of the lubricant is readily accomplished without any need to change the normal shaving grip of the hand upon the razor, such expression of lubricant liquid in fact being readily effected just prior to, at the end of, or during a shaving stroke.

The remaining figures illustrate the same principle of the invention as applied to other forms of razors, the structures being generally simpler because of the generally simpler structures of the razors themselves, although the principle in all cases remains the same. With this in mind, attention should now be directed toward the showings of FIGURES 4 through 8. The single edged razor structure includes a blade support 47 above which is disposed a blade cover clamp 48 and at the forward edge of which is a blade edge guard 49 having apertures 50 formed therethrough at spaced apart points along the length thereof. Secured beneath the underside of the blade edge guard 49 is a manifold 51 having an inlet 52 and a plurality of outlet apertures 53 which latter are aligned in continuation with the blade edge guard apertures 50. Extending downward from the blade holding head is a handle 54 to the lower end of which is secured a bulb 55 as by means of a cement layer 56, a tube 57 extending from the inside of the bulb upward along the handle 54 and turning forward for connection at its forward end to the manifold inlet 52. The operation of this razor structure, insofar as the lubricating fluid system is concerned is precisely the same as that previously described in connection with the embodiment of FIGURES 1 through 3.

Turning now to FIGURES 9 through 12 which illustrate the injector type of razor structure, there will be seen a structure and organization similar to that just described in connection with the showing of FIGURES 4 through 8, the corresponding structural elements of FIGURES 4 through 8 being designated in the showings of FIGURES 9 through 12 by the addition of the suffix letter small "*a*." Thus, it is observed that the injector type razor includes a blade support structure 47*a*, blade cover clamp 48*a*, blade edge guard 49*a* having formed therethrough the apertures 50*a* and immediately beneath which is secured a manifold 51*a* having an inlet 52*a* and outlet apertures 53*a* which latter are in alignment with the blade edge apertures 50*a*. Extending downward from the blade holding head is the handle 54*a* terminating at its lower end in a bulb 55*a* cemented thereto as by means of the cement 56*a*, and a tube 57*a* extending upward from the interior of the bulb through the handle 54*a* to a connection point at its forward end with the manifold inlet 52*a*. The major differences between the showing of FIGURES 4 through 8 and the showing of FIGURES 9 through 12 is that in the former case the tube 57 is disposed externally to the handle 54 whereas in the latter case the tube 57*a* runs upward through the handle 54*a*.

The embodiment of FIGURE 13 is somewhat different from the aforedescribed embodiments of FIGURES 1 through 12 in that the discharge manifold 58 overlies the upper edge of the blade cover clamp 59 with the manifold apertures 60 oriented to discharge liquid downward over the upper face of the cover clamp 59 toward the cutting edge of the blade normally held by the razor. This difference in positioning is required by the fact that the mechanism designated generally as 61, for opening and closing the blade cover clamp 59 is so positioned as to prevent the manifold supply tube 62 which leads from the bulb 63 from being positioned in the manner of the previously described structures.

FIGURE 14 illustrates a modification of the double edged razor structure head of FIGURE 1 which avoids the necessity for constructing the chamber 34 formed by the chamber side walls 35 and top wall 36 seen in FIGURE 1. In FIGURE 14 the lower horizontally extending portion of the blade support structure 25*a* is centrally cut away at opposite sides as at 64 to provide clear paths from the manifolds 42*a* to the hollow tubular portion 23*a* of the handle structure within which the vertically shiftable shaft 31*a*, fluted as at 38*a*, is disposed. Hollow tubes 43*a* extend from the inlet openings of the manifolds 42*a* through the hollow tubular portion 23*a* to the space formed between said tubular portion and the shaft flutes 38*a*. Disposed about the upper end of shaft 31*a* in a circumferentially extending recess located at the top of the flutes 38*a* is an O-ring gasket 65 which seals the upper end of the space within the sleeve 23*a* when the shaft 31*a* is moved downward to close the blade covers 28*a*, the gasket being compressed between the shaft 31*a* and sleeve 23*a*. With the gasket so compressed, lubricant fluid may be pumped upward through the flute spaces, outward through the tubes 43*a* and into the manifolds 42*a* for discharge through its outlet openings in registry with the blade guard apertures 45*a*.

Having now described my invention in connection with particularly illustrated embodiments thereof, it will be appreciated that variations and modifications of the same may now occur from time to time to those persons normally skilled in the art without departing from the essential scope or spirit of my invention, and accordingly it is intended to claim the same broadly as well as specifically as indicated by the appended claims.

What is claimed as new and useful is:

1. In a safety razor of the type having a head assembly including a blade support, a blade edge guard having a forward edge underlying and projecting forward of

the position of the cutting edge of the blade to be used, a blade cover clamp for clamping the blade against the said blade support, and a handle secured to and extending downward from the said head assembly, the combination comprising, a fluid distributor manifold secured to said razor head assembly immediately beneath the said blade edge guard and having an inlet and a plurality of spaced apart outlets, a resiliently compressible and expandible hollow bulb fluid reservoir carried by the lower end of the handle and acting as an extension thereof, said blade edge guard being apertured therethrough from the under surface to the upper surface thereof to form a plurality of spaced apart openings aligned with and acting as continuations of said manifold apertures, and conduit means extending from within said bulb to the inlet of said manifold, said bulb being compressible by hand squeezing action of the shaver without altering hand position from that normally employed during the shaving process to cause fluid stored therein to flow to said manifold and outward therethrough through the said plurality of manifold outlets onto the skin being shaved in front of the cutting edge of the razor blade along substantially the entire blade length.

2. In a safety razor of the type having a head assembly including a blade support, a blade edge guard having a forward edge underlying and projecting forward of the position of the cutting edge of the blade to be used, a blade cover clamp for clamping the blade against the said blade support, and a handle secured to and extending downward from the said head assembly, the combination comprising, a fluid distributor manifold secured to said razor head assembly immediately beneath the said blade edge guard and having an inlet and a plurality of spaced apart outlets, said blade edge guard being apertured therethrough from the under surface to the upper surface thereof to form a plurality of spaced apart openings aligned with and acting as continuations of said manifold apertures, a fluid reservoir associated with and constituting part of said handle, and conduit means extending from within said fluid reservoir to the inlet of said manifold, said reservoir being operative to express fluid therefrom by hand action of the shaver without altering hand position from that normally employed during the shaving process to cause fluid stored therein to flow to said manifold and outward therethrough through the said plurality of manifold outlets onto the skin being shaved in front of the cutting edge of the razor blade along substantially the entire blade length.

3. The safety razor as set forth in claim 1 wherein said conduit means extends upward from said bulb through the interior of said handle.

4. A safety razor as defined in claim 1 wherein the handle comprises a hollow outer tube having a blade support at its upper end, an inner tube concentrically disposed interiorly of said outer tube and supporting at its upper end said blade edge guard and a vertically shiftable shaft and yoke assembly for clamping and unclamping the razor blade against said blade support, said shaft being disposed concentrically within said inner tube with space therebetween for passage of said fluid upwardly to said head assembly, and wherein sealing means are provided for confining the flow of said fluid from said passage solely and directly to said manifold.

5. A safety razor as defined in claim 4 wherein said sealing means comprises a plate carried by said guard in embracing relation to said shaft to form a chamber intervening said passage and the conduit means extending to said manifold.

6. A safety razor as defined in claim 4 wherein said sealing means comprises a compressible sealing ring carried by said shaft for sealing off the upper end of said fluid passage when the blade is operative clamped in position.

References Cited in the file of this patent

UNITED STATES PATENTS

1,335,840	Kaylor	Apr. 6, 1920
1,556,269	Warming	Oct. 6, 1925
1,899,841	Acken	Feb. 28, 1933
2,327,192	Keene	Aug. 17, 1943
2,392,975	Cooney	Jan. 15, 1946
2,595,247	Greene	May 6, 1952
2,686,361	Resnick et al.	Aug. 17, 1954
2,743,732	Lovasz	May 1, 1956
2,747,273	Olsson	May 29, 1956
2,790,234	Goldstein	Apr. 30, 1957

FOREIGN PATENTS

696,192	France	Oct. 13, 1930
974,390	France	Sept. 27, 1950
1,217,259	France	Dec. 7, 1959
561,160	Italy	Apr. 16, 1957
80,039	Norway	Aug. 31, 1953