Nov. 14, 1933. M. R. KONDOLF 1,935,452

RAZOR

Original Filed July 26, 1930

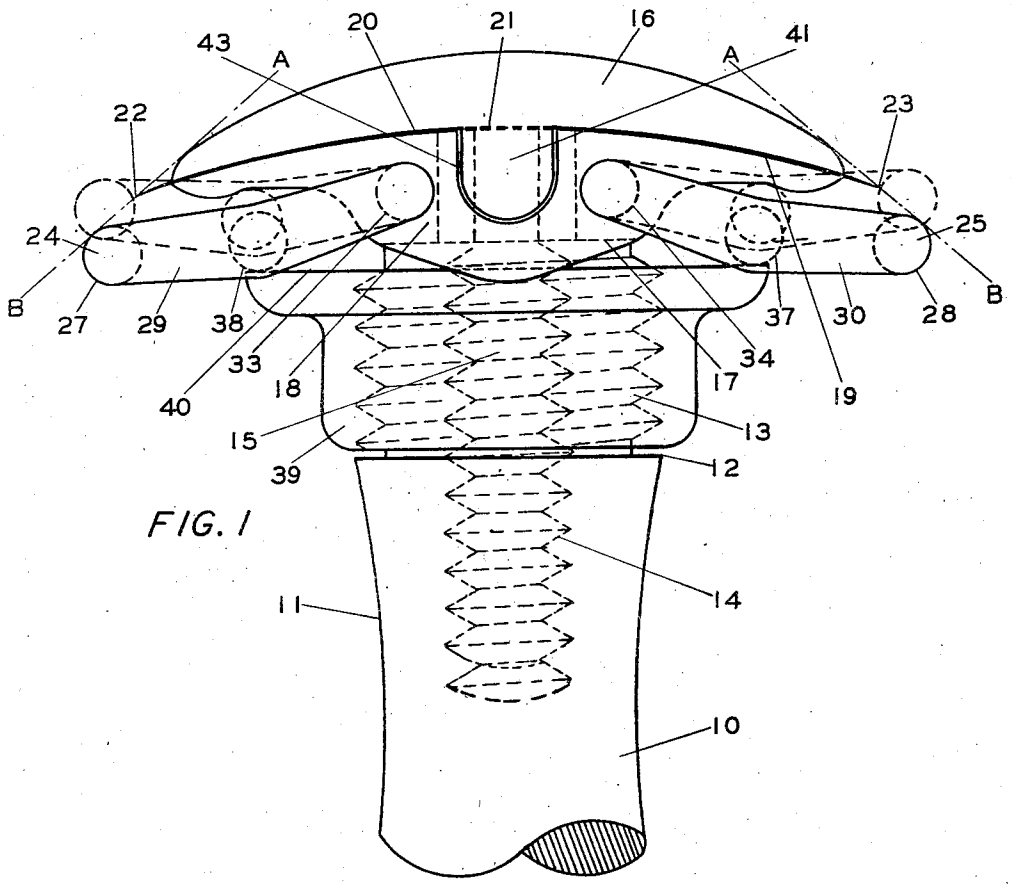


FIG. 1

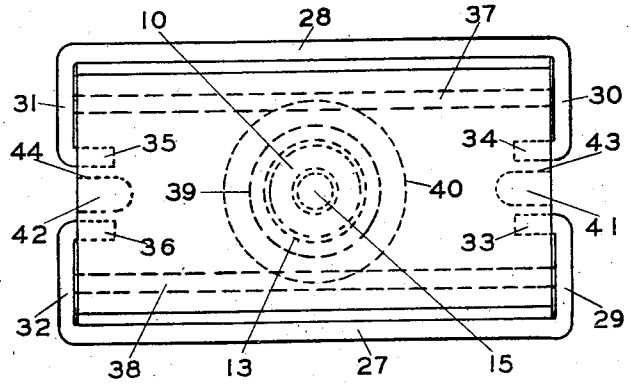


FIG. 2

INVENTOR

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Patented Nov. 14, 1933 1,935,452

UNITED STATES PATENT OFFICE

1,935,452

RAZOR

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Application July 26, 1930, Serial No. 470,831
Renewed December 31, 1932

9 Claims. (Cl. 30—12)

This invention relates to a razor which in combination with an improved guard avoids many of the faults of razors now in general use and possesses distinctive features which are of great advantage in themselves.

Safety razors are almost universally used but it is a well known fact that many people cannot obtain a satisfactory shave by their use, or a shave which is comparable with that given by a skillful barber using a standard open blade razor.

Applicant contends that in the great majority of cases where difficulty is experienced, the trouble arises from improper setting of the guard of the razor used or vibration of the cutting edge, due to a non-rigid support. Applicant's invention provides a device which can be readily adjusted to compensate for the several factors affecting the shave, and therefore assures the user of a satisfactory result under all conditions.

Specific features of the invention relate to ease in cleaning and the ability to lock the guard in a position affording complete protection to the razor blade as well as to objects with which it might otherwise come in contact.

Fig. 1 is a greatly enlarged end-view of the razor head, and Fig. 2 is an enlarged plan view of the same.

Referring to Fig. 1, reference numeral 10 is the handle of the razor and may be of any desired length. The handle 10 consists in a lower portion 11 which terminates at the shoulder 12, and an upper portion which is externally threaded to form the stud 13. The handle 10 is centrally tapped at 14 to receive the threaded stud 15 which is fixed to the upper plate 16.

Contacting with the upper end 17 of the handle 10 is the lower plate 18. The lower plate 18 has a curved upper surface 19 which corresponds to the curved lower surface 20 of the upper plate 16.

In use the upper plate 16 is drawn down towards the lower plate 18 by the stud 15 which engages the tapped hole 14 in the handle 10. The downward pressure of the plate 16 serves to clamp the plate 18 against the end 17 of the handle 10. The blade 21 is held between and rigidly supported by the plates 16 and 18 and conforms to the transverse curvature of their curved surfaces 19 and 20. Thus the entire assembly is fixed or locked—or may be unlocked—by revolving the handle 10.

The upper plate 16 is provided with dowels 41 and 42 which engage the recesses 43 and 44 formed in the lower plate 18. These dowels also pass through the blade 21 and serve to align the same with the plates 16 and 18. A hole or opening is provided in the blade 21 and in the lower plate 18 to permit the passage of the stud 15.

The blade 21 may be of the flexible type commonly used, or it may be formed with a set curve. The cutting edges 22 and 23 of the blade project beyond the upper and lower plates 16 and 18.

Since the blade is used only in its position of maximum curve and when rigidly held or supported by the plates, the dowels 41 and 42 and the dowel apertures through the blade and in the lower plate can be accurately fitted one to the other. Because of this close fit the cutting edge of the blade is always held in a precise parallel position with the lower plate and with the movable guard described hereinafter.

Mounted on the lower plate 18 are the separate guards 24 and 25. These guards are substantially bail-shaped and consist of elongated guard members 27 and 28 disposed parallel to the cutting edges 22 and 23 of the blade 21 and side arms 29, 30, 31 and 32 which are attached to the stub shafts 33, 34, 35 and 36. The stub shafts are journalled in the lower plate 18, thus permitting swinging or pivotal movement of the guards around the shaft centers.

Fixed between the respective pairs of guard arms 29 and 32, and 30 and 31 are the struts 37 and 38. These guard struts are parallel with the guard members 27 and 28 and are fixed in relation thereto.

Mounted to revolve on the threaded stud 13, which is a part of the handle 10, is the adjusting nut 39 which carries a flange 40 at its upper end.

The guard struts 37 and 38 contact with the flange 40 of the adjusting nut 39, and when the nut 39 is revolved and travels up and down the threaded stud 13, the guard members are moved towards and away from the cutting edges 22 and 23 of the blade 21. In the extreme upper position, as shown by the broken lines in Fig. 1, the guards are positioned in front of the cutting edges of the blade and fully protect the same.

It is pointed out that applicant's structure permits the precise positioning of the guard in parallel position to the cutting edge at all times. This is a distinctive feature not possessed by ordinary razors of the Gillette type wherein variation in the position of the guard in relation to the cutting edge—to obtain a fine or coarse shave—is obtained by loosening or unclamping the plates. This loosening of the supporting plates gives a flexible rather than a rigid blade. In many of the Gillette type razors the loosening

of the clamping plates permits the cutting edge of the blade to move out of parallel with the guard—because the dowel apertures in the blade, when of sufficient size to permit clamping the blade rigidly (in a position of maximum curve) between the plates, must of necessity be larger than the dowels, when the plates are loosened and the blade less curved. This oversize aperture permits "play" or movement of the blade transversely of the dowels, when the plates are loosened.

It is obvious that when the blade of a safety razor can rotate out of parallel with its guard, the function of the guard, as such, is removed.

As shown in Fig. 1 it will noted that the guards will assume their proper position when the razor is in use because pressure against the guard members 27 and 28 will cause the guard struts 37 and 38 to make contact with the flange 40 of the adjusting nut 39.

In Fig. 1 the guards 24 and 25 as shown in full lines are in the normal operating position. The broken lines represent the position of the guards when the same are in extreme upper position and the guard struts are positively locked between the flange of the adjusting nut and the lower plate of the razor.

The lines A—B each represent a plane through the cutting edge of the blade and tangential to the curved top surface of the upper plate of the razor. In use the razor is applied so that the skin surface is approximately along this plane. In operation on a skin of average firmness best results are obtained with each guard member positioned with its contacting surface in this same plane.

The normal pressure of the razor against the skin will force the skin into contact with the cutting edge and give a satisfactory shave.

If the skin is softer and more pliable the same setting of the razor will cause a greater bulge of skin between the guard and the cutting edge, and consequently a "closer" shave will result—sometimes to a degree where a portion of the skin is shaved off, resulting in a chafed skin.

The variation in skin firmness not only applies to different persons but also to the same individual, for example, the skin is generally softer around the mouth than in the cheeks. The contour of the skin surface being shaved also affects the "cut" of the razor.

By adjusting the guard of my improved razor it is possible to obtain any desired amount of "cut" to the blade and thus adapt the razor for use on skins of various degrees of firmness, without danger of chafing.

It has been found a matter of considerable manufacturing difficulty to obtain exact uniformity in the width of the double-edged blades and it is pointed out that with the ordinary construction of razors using this type of blade, if a blade is not of the correct width, a poor shave will result. If blade is too wide—even by such a small amount as 1/1000 part of an inch—the razor will cut too deeply, if blade is too narrow the blade will not give a satisfactory shave.

This becomes of additional importance when using a re-sharpened blade which obviously is apt to be undersized.

It has been suggested that the flexible blade type of razor can be set to cut deeper by clamping the blade rather loosely. This generally results in a poor alignment of the cutting edges and gives the blade a chance to chatter in cutting. Best results are obtained with a firmly held blade and correct guard adjustment.

The section of skin being shaved should be smooth and the cutting edge should sever the hair at its base where it offers the greatest resistance to the force required to cut—without pull being exerted on the hair. To obtain this result the razor guard should be adjusted to compensate for the texture of skin, the exact width of blade used and the pressure used in shaving.

In using my improved razor the blade is clamped firmly between the upper and lower plates by tightening the handle 10 on the stud 15. The adjusting nut 39 is run down until the lower end of the same makes contact with the shoulder 12. If the razor were used with this adjustment a very close shave would be obtained because the guard members 27 and 28 would be some distance away from the plane A—B, provided a blade of standard width were used. After a very little experience the user will ascertain how much the adjusting nut should be turned to raise the guard members into the desired shaving position. Obviously, when the razor is tried the adjustment can be varied at will. One of the features of my invention is the extreme ease and certainty with which adjustments can be instantly made to obtain just the right cut desired. Such adjustment may be made during the actual use of the razor.

The adjusting nut 39 may be graduated into ten or more parts appropriately marked and thus an approximately correct setting can be obtained before use of the razor.

The extreme ease of cleaning my improved razor is a marked feature. As will be noted the cutting edge is the closest point to the guard and, therefore, there is no tendency to clog the razor in use, since all shaving waste readily passes through the unobstructed channels between the cutting edges and the guards. A jet of water from a faucet can be easily applied to both sides of the blade edges and the entire exposed surface of the blade washed and wiped dry without loosening the handle, or removing the blade. It is pointed out that when the adjusting nut is run up and the guard is brought into the upper position, as shown by broken lines in Fig. 1, the razor blade is entirely protected and with the guard in this position the blade may be wiped dry with a towel without danger of cutting the towel or the user.

Attention is called to the difficulty of properly cleaning many razors now generally used. The ordinary razor has the lower plate extended out to form the guard, and in order to permit the passage of some of the soap and hair which accumulates in shaving, the lower plate is slotted at right angles to the blade edge. Each of the partitions or walls between the slots serves as a hook to catch waste material, and since there is no outlet for this material, it rapidly packs up under the blade and after a few shaving strokes interferes with the proper operation of the razor. It is impractical to wash and dry this type of razor without unclamping the blade, and generally it is necessary to take the entire razor apart to properly dry the same. There is no way of protecting the cutting edge from damage—or from doing damage—other than by removing the blade and putting it into another receptacle.

Though I have shown in the drawing and described a preferred form of my improved razor it is obvious that detailed changes can be made without departing from the spirit of the invention.

I claim:

1. A razor comprising a blade; a handle; an upper plate and a lower plate to rigidly support said blade and maintain said blade in fixed relation to said handle; a separate guard member held parallel in all positions to the cutting edge of said blade and adjustable relative to said blade from shaving position to a position in front of the cutting edge of said blade to protect the same when not in use.

2. The combination in a razor, of a blade and means to support said blade and a guard comprising a member parallel with the cutting edge of said blade and spaced therefrom, side arms supporting said guard member and rotatably attached to said blade supporting means, and a cross strut between said side arms contacting with an adjusting nut whereby said guard member may be adjusted relative to said blade and locked in front of the cutting edge of said blade to fully protect the same when not in use.

3. A razor comprising a blade; a handle; a blade support to maintain said blade in fixed relation to said handle; a separate guard member held parallel in all positions to the cutting edge of said blade and adjustable relative to said blade to provide variations in the shave to be obtained from said razor and means to lock said guard member in front of said cutting edge to protect the same when not in use.

4. The combination in a razor, of a blade, means to support said blade, and a separate guard member held parallel in all positions to the cutting edge of said blade by means of arms attached to the blade supporting means; said guard member being adjustable relative to said blade to provide variations in the shave to be obtained from said razor and means to lock said guard member in front of said cutting edge to protect the same when not in use.

5. A razor comprising a blade; a handle; an upper plate and a lower plate to rigidly support said blade and maintain said blade in fixed relation to said handle; a separate guard member held parallel in all positions to the cutting edge of said blade and spaced therefrom to provide an unobstructed channel for the passage of shaving waste; said guard member being adjustable from shaving position to a position in front of the cutting edge of said blade to protect the same when not in use.

6. A razor comprising a blade; a handle; an upper plate and a lower plate to rigidly support said blade and maintain said blade in fixed relation to said handle; a separate guard member held parallel in all positions to the cutting edge of said blade and adjustable relative to said blade from shaving position to a position in front of the cutting edge of said blade to protect the same when not in use and provide access to both sides of said blade adjacent to its cutting edge.

7. A safety razor comprising oppositely-disposed blade-clamping members adapted to flex and hold a thin blade between them, a bail-shaped guard having side arms pivotally connected to one of said members and an outer portion arranged to swing toward or from the cutting edge of the flexed blade, a strut extending between the side arms of the guard, and adjusting means acting on the strut for controlling the position of the outer portion of the guard.

8. A safety razor comprising oppositely-disposed blade-clamping members adapted to flex a thin blade between them, a bail-shaped guard having side arms pivotally connected to the ends of one of said members, a cross bar, and a relatively narrow outer portion arranged to swing toward or from the cutting edge of the flexed blade while leaving a free and unobstructed channel beneath the blade, and rotary adjusting means acting on the guard through said cross-bar for controlling the position of the latter with respect to said cutting edge.

9. A safety razor comprising oppositely-disposed blade-clamping members having curved faces adapted to flex between them a thin flexible blade, a guard member having side arms pivotally connected to the ends of one of said blade-clamping members, an intermediate bar, and an outer bar arranged to swing toward or from the edge of the flexed blade while leaving the under surface of the blade free and clear, and rotary adjusting means bearing directly upon said intermediate bar for adjustably positioning the guard.

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