June 18, 1940. T. C. SHEEHAN 2,204,827

RAZOR

Filed March 28, 1938

FIG. 1.

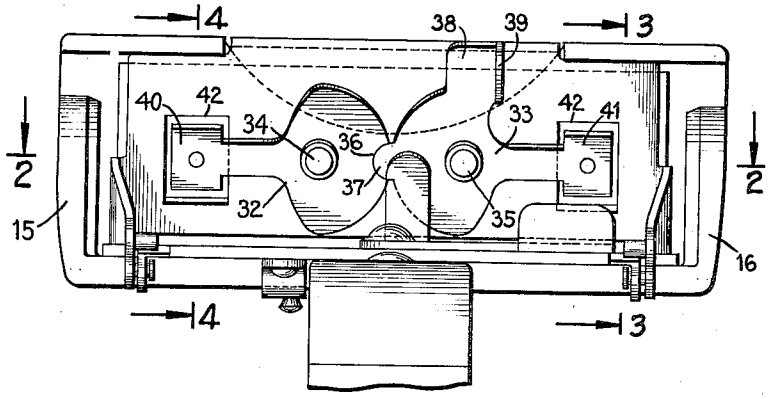


FIG. 2.

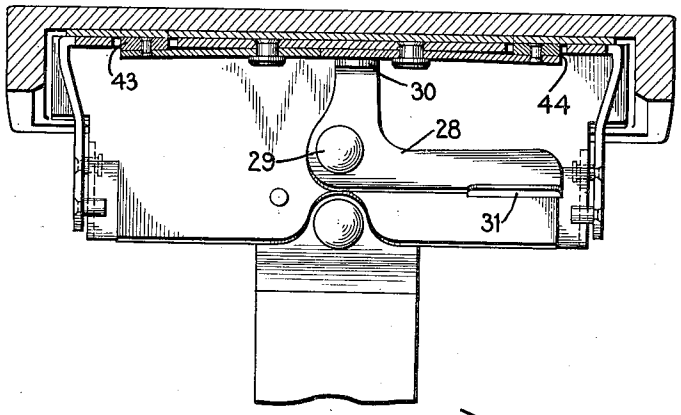


FIG. 3.

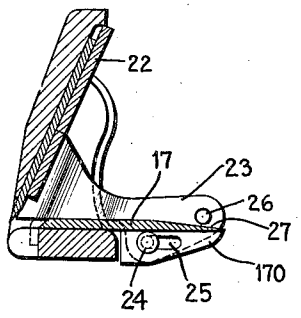


FIG. 4.

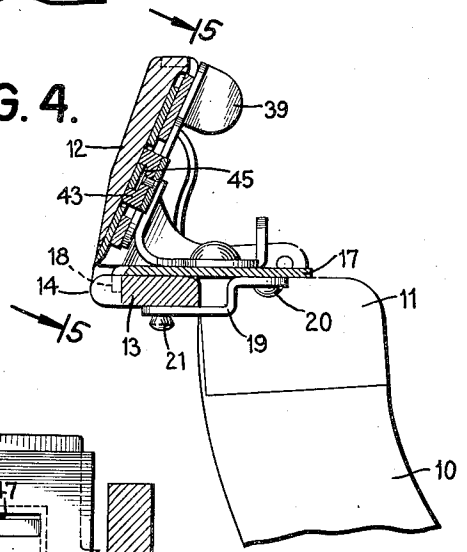
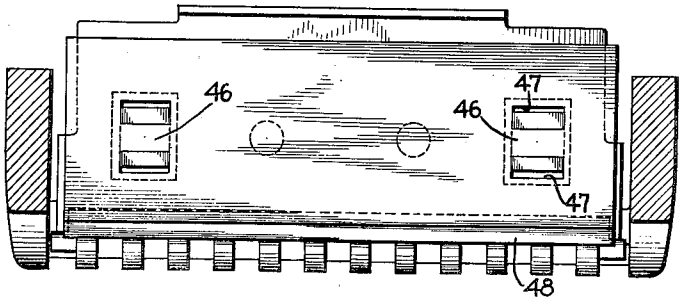


FIG. 5.



INVENTOR
THOMAS C. SHEEHAN

BY H. C. Sheehan

ATTORNEY

Patented June 18, 1940 2,204,827

UNITED STATES PATENT OFFICE

2,204,827

RAZOR

Thomas C. Sheehan, Montclair, N. J., assignor to Durham Duplex Razor Company, Mystic, Conn., a corporation of New York

Application March 28, 1938, Serial No. 198,350

10 Claims. (Cl. 30—63)

This invention relates to improvements in razor construction and more particularly to the class known as safety razors. It relates also to an improved blade construction.

A primary object of the invention has been to provide an improved razor in which the removable blade is adjustably supported with respect to the guard structure so that its relation to the guard may be readily and simply varied. This enables the character of shave imparted by the razor to be modified at will to suit the individual or the particular occasion. Toward this end various features have been embodied in the razor to simplify its construction and the mode of applying, retaining and adjusting the blade. At the same time and toward the same end certain improvements have been made in the blade itself.

Other objects, features and advantages of the invention will appear from the detailed description of an illustratrive form of the invention which will now be given in conjunction with the accompanying drawing, in which all of the views are on an enlarged scale and in which:

Fig. 1 is a view in rear elevation of the back of the head of a razor embodying the invention.

Fig. 2 is a similarly enlarged view in section along the line 2—2 of Figure 1.

Fig. 3 is an enlarged transverse section along the line 3—3 of Figure 1.

Fig. 4 is an enlarged transverse section along the line 4—4 of Figure 1, and

Fig. 5 is a sectional view taken just beneath the front guard plate of the razor, as indicated by the line 5—5 in Figure 4.

The invention is shown as applied to a razor of the type disclosed in the Bigoney Patent No. 1,791,553 granted February 10, 1931, although it will be understood that it may be embodied in a variety of other forms of razors.

Referring now to the drawing, there is shown a portion of a handle 10 to which is secured, by means of a cap 11, a main head member which is in fixed relation to the handle and serves as a support for the blade-retaining and adjusting devices. This head member comprises a front guard plate 12, a bottom plate 13, having a comb-toothed edge 14, adjacent the lower end of plate 12, and a pair of end walls 15 and 16, all preferably formed as an integral unit.

In the illustrated construction, the blade-retaining and adjusting devices are carried by a frame that is completely separable from the main head. This is to enable the application of the improved devices to previously existing razors of the type disclosed in the aforementioned Bigoney patent. It will be understood, however, that in lieu of providing a separable frame the blade-retaining and adjusting devices may be mounted directly on the main head or otherwise permanently attached thereto.

The separable frame may comprise a base plate 17 whose forward portion is adapted to rest upon the bottom plate 13 of the main head. It may be secured in any convenient way to the main head. As illustrated, the plate 17 may be formed with a pair of downwardly extending projections or hooks 18, one adjacent each end of the plate at its forward edge, adapted to enter certain of the spaces in the comb-toothed edge 14. A retainer 19 may also be pivotally attached at 20 to the underside of the plate 17 and when swung into effective position, may engage the underside of the bottom plate 13. If desired, two or more of the pivoted retainers may be employed. The retainer may be readily swung into either locking or releasing position by the engagement of the thumb nail with a small downward projection 21 adjacent the free end of the retainer. In this way the separable frame may be quickly and easily applied to or removed from the main frame.

A blade supporting member or carrier 22 is preferably both pivotally and slidably mounted on the plate 17. For this purpose the member 22 is formed with a rearwardly extending arm 23 adjacent each end and each of these arms carries a pin 24 engaged in an elongated slot 25 provided in a downwardly extending portion 170 carried at each end of the plate 17. The ends of the pins 24 extending through the slots 25 are preferably peened or otherwise enlarged to prevent disengagement.

Each arm 23 also carries a pin or projection 26 arranged to cooperate with a cam surface 27 provided on the plate 17 at each end and toward the rearward edge thereof. This arrangement is such that when the member 22 is to be shifted away from the position in which it clamps a blade against the guard plate 12, as will be explained more fully hereinafter, it is first compelled to slide rearwardly in substantially a rectilinear, bodily movement, the pins 24 sliding in the slots 25 and the pins 26 sliding along the cam surfaces 27. However, when the pins 26 reach the free ends of the surfaces 27, the member 22 is permitted to partake of a pivotal motion through an angle of somewhat more than 90°. This compound motion serves to carry the blade supporting surface of the member 22 either

in close proximity and parallel relation to the guard plate 12 or to a position in which it is fully exposed so that the blade may be readily changed. Moreover, the motion is such that the cutting edge of the blade is not brought against the guard plate 12 as it would be if there were simply a pivotal motion about a fixed pivot.

To retain the member 22 in its effective position for clamping a blade against the guard plate 12, a pivoted locking member 28 is provided. This member is pivotally secured at 29 to the plate 17 and is provided with an upstanding arm 30 adapted to engage and force the member 22 toward the guard plate 12 by a sort of camming action. The opposite arm of member 28 is formed with a small, upward projection 31 adapted to be engaged by the finger to rock the member manually about its pivot.

For the purpose of adjustably retaining a blade on the member 22, there is provided a pair of retainers 32 and 33 pivotally secured at 34 and 35, respectively, to the back of the member 22. The retainers are provided with intermeshing formations, such as an indentation 36 and a projection 37, by means of which the retainers are maintained in a definite relationship and may be shifted in unison. An extension 38 of the retainer 33 has a rearwardly projecting portion 39 adapted to be engaged by the thumb or finger of the user to rock the retainers about their pivots. Preferably, the retainers are formed of resilient material and are so arranged and constructed as to provide heads 40 and 41 at opposite sides of the pivots 34 and 35 and substantially along the line joining these pivots. Due to the resilience and shape of the retainers, the heads 40 and 41 have a certain springiness, tending to yieldingly resist a pressure away from the plane of the member 22. Opposite each of the heads 40 and 41 the member 22 is provided with an opening 42 through which blocks 43 and 44, secured to the respective heads, may project. The resilience of the retainers is preferably relied upon to cause the blocks normally to project through the openings 42 and resist movement away from these openings. Across the face of each of the blocks projecting through the opening is formed a groove 45 extending substantially along the line joining the pivots 34 and 35. These grooves are adapted to receive portions 46 on the detachable blades to be used in conjunction with the improved razor. Portions 46 are provided directly in the plane of the body of the blade and are formed by a series of openings 47 stamped or otherwise made through the blade. As will be seen, the portions of the blocks 43 and 44 on either side of the grooves 45 pass through the openings 47 when a blade is applied to the carrier 22.

In the production of the blades and razor, the portions 46 of the blades, which may be designated bars, should be accurately located and dimensioned particularly in the transverse direction. The openings 47, however, except for the parts bordered by the bars 46, need not be formed with any particular accuracy. Similarly the grooves 45 in the blocks should be accurately located and dimensioned but the outer dimensions of the blocks are not of particular importance.

The location of the bars 46 with respect to each other and to the edges of the blade and the location of the grooves 45 with respect to each other and to the main head of the razor are subject to considerable variation. However, a definite relation between the bars and grooves as a whole should be maintained so as to insure the proper presentation of the cutting edge 48 of the blade. This cutting edge should, of course, be maintained at all times in parallelism with the lower edge of the guard plate 12 and with the line formed by the series of comb teeth 14. This may be accomplished, for example, by locating each of the bars 46 at the same distance from the cutting edge and by locating the grooves 45 in the two blocks at the same distance from the lower edge of the plate 12 for any position of adjustment of the retainers. When this relationship is adopted, the blade may be applied to the carrier with either face up. Moreover, the blade may be formed with two longitudinal cutting edges and if the bars 46 are then located equal distances from the two edges, the blade may be used interchangeably with either edge in cutting position.

On the other hand, should it be desired to compel use of a blade with a particular face up, as applied to the carrier, the bars 46 may be disposed at different distances from the cutting edge 48. By proper compensation in the location of the grooves 45, the cutting edge may be correctly presented when the blade is applied with a particular face up but incorrectly presented when the wrong face is up. Other purposes may be served by an unsymmetrical or non-uniform location of the bars 46 and grooves 45. For example, a definite type of blade, having a predetermined arrangement of the positioning bars, may be required for use with a definite type of razor, having the same predetermined relation between the grooves in the blocks.

Regardless of the arrangement adopted with respect to the location of the grooves 45 and bars 46, the cutting edge 48 may be shifted toward or from the comb teeth 14, as desired ,to effect a close or not so close shave. This adjustment is accomplished by simply rocking the retainers through the application of a slight thumb pressure to the projection 39 or retainer 33. The two retainers will be turned in unison to the desired extent, carrying the blocks 43 and 44 with their grooves 45 toward or from the comb teeth 14. The openings 42 through the member 22 are sufficiently large to permit shifting of the blocks through the desired range. It will be apparent that the angular adjustment of the retainers for varying the character of the shave need be only very slight. Accordingly, if the grooves 45 and bars 46 are formed with strictly straight sides, the grooves need be only a slight fraction wider than the bars. If desired, this clearance may be made even smaller by forming the sides of either the grooves or the bars with a slight crown or convexity so that only a line contact will be provided at each side of each bar.

To prevent accidental and unintentional adjustment of the retainer blocks, frictional means are made effective when the parts are in shaving position. Preferably there is sufficient frictional resistance to the adjustment of the retainers 32 and 33 at all times to avoid accidental movement. However, extra friction is preferably created when the razor is ready for use and this is brought about in the illustrated construction, by causing the upstanding arm 30 of the member 28 to bear directly against the retainer 33. Thus, the arm 30 accomplishes two functions; it not only locks the carrier 22 in place to retain the blade but it creates a pressure against the retainer 33 and thus extra friction, tending to prevent undesired displacement of this retainer.

It is believed that the operation of the improved razor will be clear from the foregoing detailed description but a brief explanation will now be given of the manner of changing and adjusting the blade. Assuming the parts to be in the effective positions indicated in the drawings, the member 28 may be swung clockwise (Figure 2) about its pivot 29 through nearly 180°. This will carry the arm 30 away from the back of the blade carrier and, in fact, completely out of the path of movement of the latter. By first sliding the carrier rearwardly, the pins 24 shifting in the slots 25, until the pins 26 clear the ends of the surfaces 27, the carrier may be swung about the axis of pins 24 through an angle of nearly 120°. The old blade may then be very readily removed and a new one applied in its place, care being taken to place the bars 46 of the blade in the grooves 45 of the blocks 43. Now the carrier may be brought back to its original position by first swinging it until the pins 26 are brought above the surfaces 27 and then sliding the carrier forwardly until the pins 24 are brought near the forward end of the slots 25. The blade is at this time engaged with the rear face of the plate 12. Should it be desired to adjust the blade, this may best be accomplished now. By engaging the projection 39 with the end of the thumb, the retainer 33 may be rocked slightly in a clockwise direction (Figure 1) to project the cutting edge 48 somewhat further beyond the lower edge of the plate 12 and closer to the comb teeth 14 to provide for a closer shave, or the opposite effect may be produced by a slight anti-clockwise rocking of the retainer 33. When the proper adjustment has been made, the locking member 28 may be swung in an anti-clockwise direction (Figure 2) to carry the arm 30 against the retainer 33, thus locking the retainer in place and holding the carrier with its blade firmly against the plate 12. As best shown in Figures 2 and 4, the retainers 32 and 33 are flexed slightly to bring the faces of the blocks 43 flush with the surface of the blade as the locking member is swung into place.

It should be observed that in the improved razor the comb-teeth 14 serve three different functions. In the first place they constitute a guard to prevent the blade from cutting into the skin and flesh. Secondly, by virtue of the adjustability of the cutting edge of the blade toward and from the comb-teeth, they provide a gauge of the length of the hair left in shaving. The more closely the cutting edge approaches the comb-teeth the closer will be the shave. In the third place the comb-teeth may be pressed firmly against the face, as the razor is drawn across the surface to be shaved and they can then serve to smooth out and stretch the skin in advance of the cutting edge. The adjustability of the blade enables an appropriate pressure to be applied for this purpose without danger of cutting.

While an illustrative form of the invention has been described in considerable detail, it will be understood that numerous changes may be made without departing from the spirit and scope of the invention. For example, while the means disclosed for retaining the blade on the adjustable retainer has been found to be particularly simple and effective, other arrangements may be employed in lieu thereof. The main head of the razor may be simplified in various respects if the blade carrier is provided as a permanent part of the razor in lieu of being an adaptor for existing razors.

It should be understood that the terms and expressions used herein are terms of description and not of limitation.

What I claim is:

1. A razor comprising a main head including a guard plate, a blade carrier mounted on said head for both pivotal and sliding movement, means providing a pair of projections adjacent each end of said carrier for retaining a blade on said carrier, and lever means for locking said carrier in place on said head while retaining a blade against said guard plate.

2. A razor comprising a main head, a blade carrier mounted on said head for both pivotal and sliding movement, means for retaining a blade on said carrier, means for adjustably supporting said retaining means, and means for locking said carrier in place on said head.

3. A razor comprising a main head, a blade carrier mounted on said head for both pivotal and sliding movement, means for retaining a blade on said carrier, means for resiliently and adjustably supporting said retaining means, and means for locking said carrier in place on said head.

4. A razor comprising a main head, including a guard plate, a blade carrier mounted on said head by pin and slot connection for both pivotal and sliding movement, means for retaining said carrier against said guard plate, and additional pin and cam means compelling a sliding movement prior to pivotal movement of said carrier away from said guard plate.

5. A razor comprising a main head including a guard plate, a frame detachably connected with said head, a blade clamping member shiftably mounted on said frame, and means on said frame for retaining said member in a position for clamping a blade against said guard plate.

6. A razor comprising a main head including a guard plate, a frame detachably connected with said head, a blade clamping member slidably and pivotally mounted on said frame, and means on said frame for retaining said member in a position for clamping a blade against said guard plate.

7. A razor comprising a main head including a guard plate, a frame detachably connected with said head, a blade clamping member shiftably mounted on said frame, means on said member for adjustably retaining a blade, and means on said frame for retaining said member in a position for clamping a blade against said guard plate.

8. A razor comprising a main head having a guard member and a clamping member, a pair of interconnected, pivoted elements carried by one of said members, said elements being formed of resilient material, means carried by said elements arranged to extend through and retain a blade, said means engaging the other of said members and causing said elements to flex when said clamping member is in blade clamping position, and means for simultaneously rocking said elements about their pivots.

9. A razor comprising a main head having a guard member, a blade clamping member shiftably mounted on said head and arranged to clamp a blade against said guard member, adjustable means on one of said members for variably positioning a blade, and locking means on said head for holding said clamping member in blade clamping position and simultaneously retaining said adjustable means in a selected position.

10. A razor comprising a main head having a

guard member, a clamping member shiftable on said head to and from a position adjacent said guard member for clamping a blade therebetween, means on one of said members for retaining a blade, said means including grooved elements each providing projections at either side of the groove, and a detachable blade adapted to be retained by said elements, said blade having a plurality of openings for freely receiving said projections, the portions between said openings fitting snugly in the grooves in said elements.

THOMAS C. SHEEHAN.