March 26, 1935. E. A. MOODY 1,995,621

SAFETY RAZOR

Filed Feb. 14, 1934

Fig. 1.

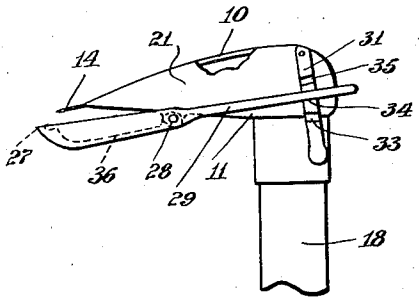


Fig. 2.

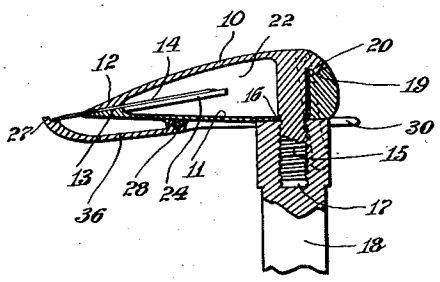


Fig. 3.

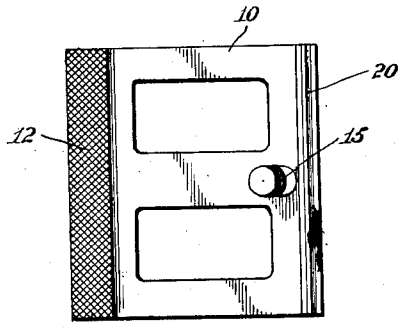


Fig. 4.

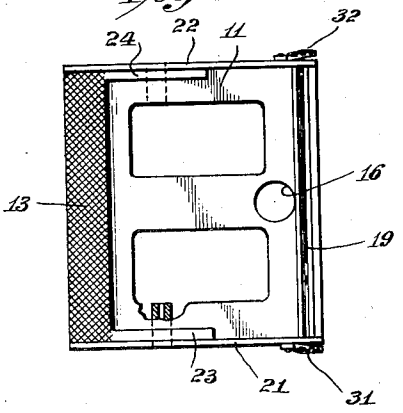


Fig. 5.

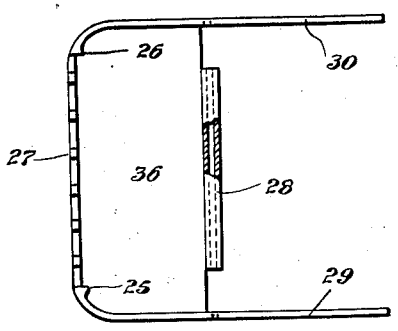
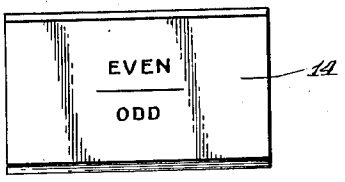


Fig. 6.



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Patented Mar. 26, 1935

1,995,621

UNITED STATES PATENT OFFICE

1,995,621

SAFETY RAZOR

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Application February 14, 1934, Serial No. 711,109

11 Claims. (Cl. 30—12)

The invention relates to safety razors, and more particularly to a safety razor of the type having a head formed of two separable members holding a blade between them and connected in a manner to facilitate the mounting of a blade in the head and its removal therefrom when it is desired to clean or hone a blade, or replace a dulled blade with a new one.

Prior to my invention, it has been a general practice to so construct the head that it will receive only a particular form of blade, the construction of both the head and the blade being such that when assembling these parts, the cutting edge of the blade, or one of such edges, when a double edged blade is used, is given a fixed unchangeable position in the head, except insofar as flexing of a thin blade toward or from the guard is resorted to for determining the closeness of a shave. No provision is made for the adjustment of a blade longitudinally of the teeth of the guard to compensate for any material lessening of its width arising from the frequent stropping and honing of the blade. Hence, after a blade has been used a few times, it must be entirely discarded since a narrowing of the blade results in such a positioning of its cutting edge in relation to the guard as to preclude its use for shaving purposes.

Even before a blade has been reduced in width to an extent to necessitate its being discarded, the setting of a blade to give a more or less close shave, varies with the width of the blade.

When flexure of a blade is relied upon to position its cutting edge in relation to the guard to determine the closeness of a shave, very thin blades must be used to secure the necessary degree of flexibility throughout the blade. Such blades wear rapidly from honing. The short life of a blade results in a necessity for frequent replacement of blades in a razor and necessitates sacrifice of the quality of the steel used in such blades and production methods permitting their production at a low cost.

A further characteristic of safety razors of this type immediately above referred to, is the tendency of lather to accumulate upon and drop from the under side of the guard upon the clothes or person of the user, particularly if the shaving is done with long strokes of the blade.

With the above conditions in mind, I have provided a safety razor wherein the head is so constructed as to ensure the cutting edge of the blade being positioned in the same relation to the guard at all times, irrespective of the width of the blade. In the razor of the invention, the closeness of the shave is determined by adjustment of the guard toward or from the edge of the blade, so that when stating that the cutting edge of the blade at all times is positioned in the same relation to the guard, I mean that with any particular setting of the guard the cutting edge of the blade will be the same at all times as to that setting of the guard.

To secure the above condition, the head is so formed that the blade may be adjusted toward the guard, as it is being mounted in the head in a manner to compensate for any lessening in the width of the blade from repeated honings.

This adjustability of the blade permits repeated honing over a long period of time, since wear resulting in a gradual lessening of the width of the blade, does not make it useless after it has been honed a few times, it being possible to reduce the width of the blade by fifty percent or more, before it can no longer be used in a razor, and must be discarded and replaced by a new blade.

Notwithstanding the length of time which the same blade may be used, and the life of a blade may be a number of years, the uniformity in the setting of the blade in the head ensures the same cutting action throughout its life as determined by the adjustment of the guard.

Because of the potential long life of each blade, and the adjustability of the guard to control the closeness of a shave, as distinguished from the flexing of the blade for this purpose, it is possible to make the blades of a high grade of steel and of any thickness which will facilitate tempering and grinding. This is possible where an initial low cost of the blade is a minor factor because of the long life of the blades.

Accurate setting of the blade in the head is made possible by utilizing the guard as a gauge for determining the extent of projection of the cutting edge of the blade from the edge of the plates of the head. This ensures an initial setting of the blade in a proper relation to the guard, subsequent adjustment of the guard being required before the razor can be used. Hence when the razor is not in use, the guard may be used to protect the cutting edge of the blade.

The construction of the guard is such that it will catch and accumulate lather as it is removed from the person in a manner to prevent its dropping from the razor upon one's person or clothes.

The various parts of the razor are so formed as to permit of their economical production and to facilitate the mounting of a blade in the head, its removal therefrom for cleansing or honing

and to permit accuracy in the adjustment of a blade to secure a desired setting of the cutting edge thereof.

The invention consists primarily in a safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, co-operating pivotal members adjacent the opposite edges of said plates, one of said plates having an opening therethrough, co-operating screw threaded members one of which is carried by one of said plates and passes through the opening in the other of said plates, and the other of which engages the other of said plates intermediate said clamping areas and said pivotal connections for positively imparting relative movement to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates whereby right line movement of a blade across said clamping areas is permitted, a guard and front gauge stops limiting the extent of projection of an edge of the blade beyond the edge of said plates; and in such other novel features of construction and combination of parts as are hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

Referring to the drawing,

Fig. 1 is a side view of the head and the adjacent portion of the handle of a safety razor embodying the invention;

Fig. 2 is a vertical section through Fig. 1;

Fig. 3 is a bottom plan view of the upper head plate;

Fig. 4 is a plan view of the lower head plate;

Fig. 5 is a plan view of the guard detached from the head, and

Fig. 6 is a view of a blade for use with a razor embodying the invention.

Like numerals refer to like parts throughout the several views.

In the embodiment of the invention shown in the drawing, the razor embodies a head comprised of opposed relatively movable plates 10 and 11, the former of which has an area 12 adjacent the front edge thereof and the latter of which has a corresponding clamping area 13 adjacent its edge and adapted to co-operate with the area 12 in firmly holding a blade 14 in the head. To develop the desired clamping of the blade between the plates, I provide the top plate 10 with a screw threaded stem 15 passing through an opening 16 in the bottom plate 11, and entering the screw threaded socket 17 of the handle 18. By turning the handle 18 relative movement is imparted to the plates 10 and 11.

The screw threaded stem 15 and opening 16 are adjacent the rear edge of the plates 10 and 11 or the edges opposite to those adjacent which the clamping areas 12 and 13 are formed. Also adjacent the rear edge of one of said plates, as 11, is a bearing groove 19 adapted to receive a knife edge bearing 20 upon the other plate. By this construction, a limited pivotal movement of the plates 10 and 11 results from the turning of the handle 18 so as to develop sufficient pressure of the clamping areas 12 and 13 upon the blade 14 to avoid possible slippage of the blade inwardly of the head. This is desirable because the said clamping areas solely are relied upon to maintain a proper setting of the blade in the head.

One of the plates, preferably the bottom plate 11, for convenience in mounting and setting the blade 14 in the head, has straight parallel guides 21 and 22 at opposite sides thereof. These guides are spaced apart a distance corresponding with the length of the blade 14, allowing sufficient clearance for a free sliding fit of the blade so as to permit it to have a right line movement toward the front of the head and across the clamping areas 12 and 13.

The top plate 10 fits between the guides 21 and 22, and if desired, may be recessed or hollowed out on its under side to limit its engagement with the blade 14 to its clamping area 12. The bottom plate 11 may also be recessed or hollowed out, if desired, the construction of both plates being such as to lighten the head. When a recessed bottom plate is used, I provide supports or rests 23 and 24 adjacent each guide 21 or 22 to support the blade 14 throughout a substantial part of its width.

The clamping areas 12 and 13 and the rests 23 and 24 locate the blade 14 on a plane inclined rearwardly from the front edge of the head plate.

To have the same cutting action at all times, it is essential that when mounting and setting the blade, its cutting edge shall be projected beyond the front edge of the plates 10 and 11 to the same extent with each adjustment of the blade, and that the cutting edge shall at all times have the same position in relation to the guard.

Front gauge stops 25 and 26 positioned forwardly of the front edge of the plates 10 and 11, limit the extent of projection of the cutting edge of the blade from the front edge of said plates, and in order that this cutting edge may also be accurately positioned in relation to the guard 27, said stops preferably are formed upon said guard.

The blade 14 is in the form of a parallelogram and the gauge stops 25 and 26 engage only the corners of the blade.

To permit the determination of the closeness of a shave, the guard 27 is pivotally mounted at 28 upon the bottom plate 11 so as to permit it to be moved from a position in front of the edge of the blade, to one a greater or less distance below said edge according to whether a rough or a close shave is desired. Said guard has rearwardly extended arms 29 and 30 at opposite sides thereof adapted to be engaged by yieldable lock arms 31 and 32 carried by the top plate 10 and provided with three slots 33, 34 and 35.

The guard 27 rearwardly of its teeth is depressed to provide a chamber 36 into which lather as it is removed by the blade passes and is accumulated. While some lather may pass beneath the guard, a sufficient quantity will enter the chamber 36 to minimize likelihood of any substantial quantity of the lather dropping from the head of the razor.

As shown in Fig. 6, a double edged blade may be used to avoid unnecessary honing, and when such a blade is used, I preferably stamp it along lines substantially centrally between the cutting edges with indicia such as "odd" and "even" so that the user when mounting the blade in the head may set the blade so as to use a different edge with each setting of the blade.

The manner of use of a razor embodying the invention is substantially as follows:—

When a blade 14 is to be mounted in the head of the razor, the handle 18 is unscrewed from the stem 15 to an extent to permit the top plate 10 to be moved away from the bottom plate 11 sufficiently to allow a blade to be inserted between said plates. If desired the top plate 10 may be removed in its entirety from above the bottom plate 11 as when cleaning the parts after shaving.

The lock arms 31 and 32 are flexed sufficiently to release the guard arms 29 and 30 and permit the movement of the guard upwardly until its front gauge stops are positioned forwardly of and slightly above the plane of the clamping area 13. This position may be determined by engaging the arms 29 and 30 with the lowermost notches 33 of the lock arms.

A blade 14 is then dropped between the guides 21 and 22 until it engages the rests 23 and 24 and the clamping area 13. There being no obstruction in the plane of the blade, it may be moved freely along the rests and across the clamping area 13 until its forward corners engage the stops 25 and 26.

The top plate 10 is then drawn downwardly towards the bottom plate 11 by turning the handle 18 while its socket 17 is engaged with the screw threaded stem 15. After the knife edge bearing 20 engages the groove 19, the two plates will have a slight rocking movement so that the portions of the plates at the clamping areas 12 and 13 will be drawn together under sufficiently great pressure to ensure a firm grip upon the blade clamped between said plates adjacent said areas.

With the parts in this position, the teeth of the guard are positioned in front and in the plane of the cutting edge of the blade, so that neither this edge nor anyone handling the razor can be injured.

When it is desired to shave, the lock arms 31 and 32 are depressed to disengage the arms 29 and 30 from the notches 33 and the guard rocked about its pivot 28 until said arms 29 and 30 may be engaged with the notches 34 or 35 according to whether a rough or close shave is desired.

During shaving, lather will pass the teeth of the guard and between them and the blade 14 into the chamber 36 where it will accumulate. From time to time, the user should wash the entire head with warm water to remove accumulated lather from the chamber 36 and from the blade. Incidentally, subjecting the blade to warm water will improve its cutting edge temporarily.

While shaving, the blade 14 will be held between the head plates sufficiently firmly to prevent their displacement by resistance encountered while the razor is in use. If by accident the plates should not be tightened sufficiently to avoid such displacement of the blade, the side guides 21 and 22 will prevent skewing of the blade in a manner to cause a corner to be so advanced as to cut the face. These guides limit the movement of a blade to a right line movement whenever it is free to move.

The rests 23 and 24 prevent any tilting of the blade away from the guard 27 if there is any looseness of the blade while the razor is in use.

From the foregoing, it will be noted that no flexing of the blade is necessary to determine the closeness of a shave and that the blade lies flat at all times. Consequently, thinness of the blade is no desideratum. It will be noticed also that the blade is at no time under any restraint against movement across the clamping or gripping areas 12 and 13 except by the front gauge stops 25 and 26 when they are positioned to limit movement of the blade. Due to this condition, the blade is required to have a width merely sufficient to permit a necessary amount of projection of the cutting edge from the front edge of the plates, to afford an adequate area of engagement with the clamping areas 12 and 13 and to present a sufficient length of side edge to secure the necessary guiding action by the side guides 21 and 22. Hence a blade may be repeatedly honed without interference with its proper mounting and setting in the head, and without its width being so reduced as to necessitate the discarding of the blade. With a high grade of steel in the blade, enough wear to make a blade useless will require years of use even with frequent honing, provided a suitable hone is used. In fact, the life of a razor blade when used in a razor embodying the invention should approximate that of a razor having an ordinary straight hollow ground blade.

It is not my intention to limit the invention to the precise details of construction and combination of parts, it being apparent that such may be varied without departing from the spirit and scope of the invention.

Having described the invention what I claim as new and desire to have protected by Letters Patent, is:—

1. A safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, co-operating pivotal members adjacent the opposite edges of said plates, one of said plates having an opening therethrough, co-operating screw threaded members one of which is carried by one of said plates and passes through the opening in the other of said plates, and the other of which engages the other of said plates intermediate said clamping areas and said pivotal connections for positively imparting relative movement to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates, whereby right line movement of a blade across said clamping areas is permitted, a guard, and front gauge stops limiting the extent of projection of an edge of the blade beyond the edge of said plates.

2. A safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, a knife edge pivotal bearing between said plates adjacent the opposite edges thereof, one of said plates having an opening therethrough, a screw threaded stem carried by the other of said plates and projecting through said opening, a handle having a screw threaded socket co-operating with said stem, whereby relative movement may be imparted to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates, whereby right line movement of a blade across said clamping areas is permitted, a guard, and front gauge stops limiting the extent of projection of an edge of the blade beyond the edge of said plates.

3. A safety razor embodying therein a head comprised of opposed, relatively movable top and bottom plates, each having a clamping area adjacent one edge thereof, co-operating pivotal members adjacent the opposite edges of said plates, one of said plates having an opening therethrough, co-operating screw threaded members one of which is carried by one of said plates and passes through the opening in the other of said plates, and the other of which engages the other of said plates intermediate said clamping areas and said pivotal connections for positively imparting relative movement to said plates to engage said clamping areas with a blade, said bottom plate having straight parallel guides at opposite sides thereof, and having rests projecting

inwardly of said plate from said guides adjacent said clamping area, whereby right line movement of a blade across said clamping areas is permitted, a guard, and front gauge stops limiting the extent of projection of an edge of the blade beyond the edge of said plates.

4. A safety razor embodying therein a head comprised of opposed, relatively movable top and bottom plates, each having a clamping area adjacent one edge thereof, a knife edge pivotal bearing between said plates adjacent the opposite edges thereof, one of said plates having an opening therethrough, a screw threaded stem carried by the other of said plates and projecting through said opening, a handle having a screw threaded socket co-operating with said stem, whereby relative movement may be imparted to said plates to engage said clamping areas with a blade, said bottom plate having straight parallel guides at opposite sides thereof, and having rests projecting inwardly of said plate from said guides adjacent said clamping area, whereby right line movement of a blade across said clamping areas is permitted, a guard, and front gauge stops limiting the extent of projection of an edge of the blade beyond the edge of said plates.

5. A safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, means imparting relative movement to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates, whereby right line movement of a blade across said clamping areas is permitted, a guard pivotally mounted upon one of said plates, and having teeth positioned forwardly of said plates, gauge stops at opposite sides of the guard adjacent its teeth, and means whereby the guard may be positioned with its teeth and said gauge stops in the plane of movement of a blade, or below said plane of movement to a variable extent to control the closeness of a shave.

6. A safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, means imparting relative movement to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates, whereby right line movement of a blade across said clamping areas is permitted, a guard pivotally mounted upon one of said plates, and having teeth positioned forwardly of said plates, gauge stops at opposite sides of the guard adjacent its teeth, said guard having rearwardly extending arms at the opposite sides thereof, and yieldable lock arms carried by one of said plates and engageable by said rearwardly extending arms, whereby the guard may be positioned with its teeth and said gauge stops in the plane of movement of a blade, or below said plane of movement to a variable extent to control the closeness of a shave.

7. A safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, co-operating pivotal members adjacent the opposite edges of said plates, one of said plates having an opening therethrough, co-operating screw threaded members one of which is carried by one of said plates and passes through the opening in the other of said plates, and the other of which engages the other of said plates intermediate said clamping areas and said pivotal connections for positively imparting relative movement to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates, whereby right line movement of a blade across said clamping areas is permitted, a guard having teeth positioned forwardly of said plates, and a depressed recessed portion below said plates and rearwardly of said teeth, whereby a chamber is provided for the accumulation of lather as it is removed from the person, and means whereby said guard may be adjusted toward or from said plates to a variable extent to control the closeness of a shave.

8. A safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, means imparting relative movement to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates, whereby right line movement of a blade across said clamping areas is permitted, a guard pivotally mounted upon one of said plates, and having teeth positioned forwardly, and a depressed recessed portion below said plate and rearwardly of said plates whereby a chamber is provided for the accumulation of lather as it is removed from the person, gauge stops at opposite sides of the guard adjacent its teeth, said guard having rearwardly extending arms at the opposite sides thereof, and yieldable lock arms carried by one of said plates and engageable by said rearwardly extending arms, whereby the guard may be positioned with its teeth and said gauge stops in the plane of movement of a blade, or below said plane of movement to a variable extent to control the closeness of a shave.

9. A safety razor embodying therein a head comprised of opposed, relatively movable plates, each having a clamping area adjacent one edge thereof, a knife edge pivotal bearing between said plates adjacent the opposite edges thereof, one of said plates having an opening therethrough, a screw threaded stem carried by the other of said plates and projecting through said opening, a handle having a screw threaded socket co-operating with said stem, whereby relative movement may be imparted to said plates to engage said clamping areas with a blade, straight parallel guides at opposite sides of one of said plates, whereby right line movement of a blade across said clamping areas is permitted, a guard pivotally mounted upon one of said plates, and having teeth positioned forwardly of said plates, gauge stops at opposite sides of the guard adjacent its teeth, said guard having rearwardly extending arms at the opposite sides thereof, and yieldable lock arms carried by one of said plates and engageable by said rearwardly extending arms, whereby the guard may be positioned with its teeth and said gauge stops in the plane of movement of a blade, or below said plane of movement to a variable extent to control the closeness of a shave.

10. A safety razor embodying therein a head comprised of opposed, relatively movable top and bottom plates, each having a clamping area adjacent one edge thereof, a knife edge pivotal bearing between said plates adjacent the opposite edges thereof, one of said plates having an opening therethrough, a screw threaded stem carried by the other of said plates and projecting through said opening, a handle having a screw threaded socket co-operating with said stem, whereby relative movement may be imparted to

said plates to engage said clamping areas with a blade, said bottom plate having straight parallel guides at opposite sides thereof, and having rests projecting inwardly of said plate from said guides adjacent said clamping area, whereby right line movement of a blade across said clamping areas is permitted, a guard pivotally mounted upon one of said plates, and having teeth positioned forwardly of said plates, gauge stops at opposite sides of the guard adjacent its teeth, said guard having rearwardly extending arms at the opposite sides thereof, and yieldable lock arms carried by one of said plates and engageable by said rearwardly extending arms, whereby the guard may be positioned with its teeth and said gauge stops in the plane of movement of a blade, or below said plane of movement to a variable extent to control the closeness of a shave.

11. A safety razor embodying therein a head comprised of opposed, relatively movable top and bottom plates, each having a clamping area adjacent one edge thereof, a knife edge pivotal bearing between said plates adjacent the opposite edges thereof, one of said plates having an opening therethrough, a screw threaded stem carried by the other of said plates and projecting through said opening, a handle having a screw threaded socket co-operating with said stem, whereby relative movement may be imparted to said plates to engage said clamping areas with a blade, said bottom plate having straight parallel guides at opposite sides thereof, and having rests projecting inwardly of said plate from said guides adjacent said clamping area, whereby right line movement of a blade across said clamping areas is permitted, a guard pivotally mounted upon one of said plates, and having teeth positioned forwardly of said plates, and a depressed recessed portion below said plates and rearwardly of said teeth, whereby a chamber is provided for the accumulation of lather as it is removed from the person, gauge stops at opposite sides of the guard adjacent its teeth, said guard having rearwardly extending arms at the opposite sides thereof, and yieldable lock arms carried by one of said plates and engageable by said rearwardly extending arms, whereby the guard may be positioned with its teeth and said gauge stops in the plane of movement of a blade, or below said plane of movement to a variable extent to control the closeness of a shave.

ELTON A. MOODY.