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2,392,431

SAFETY RAZOR

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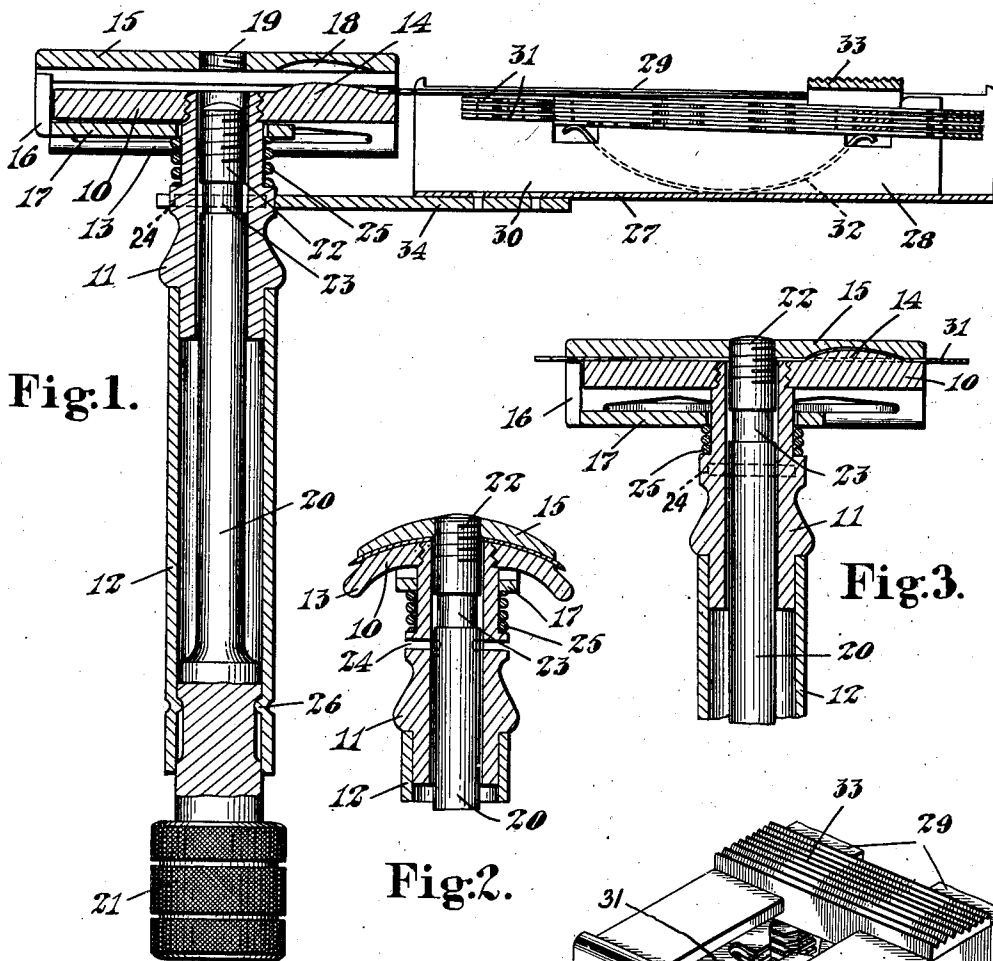


Fig. 1.

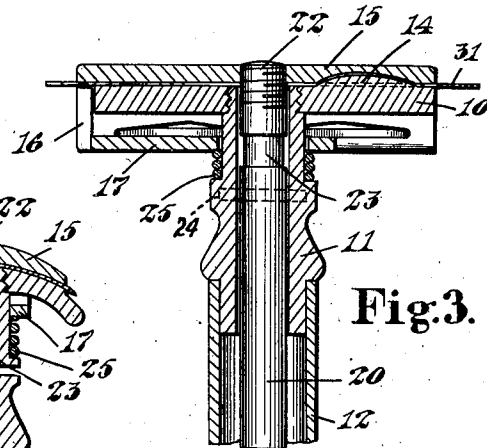


Fig. 3.

Fig. 2.

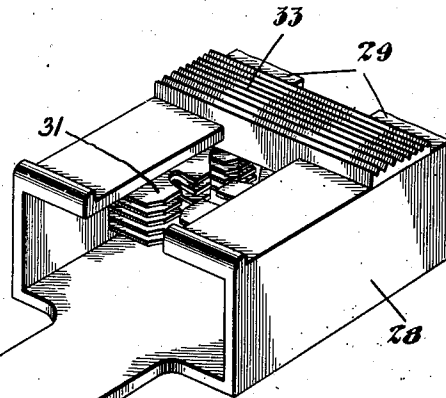


Fig. 5.

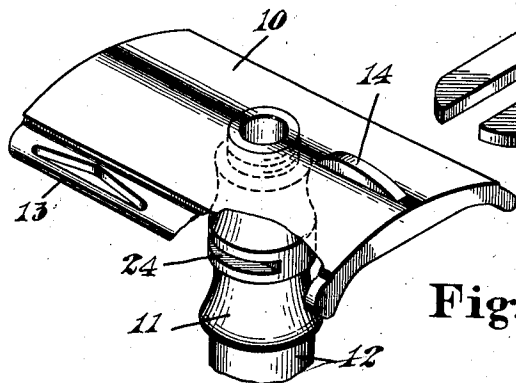


Fig. 4.

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2,392,431

SAFETY RAZOR

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6 Claims. (Cl. 30-40)

The present invention relates to safety razors of the type in which a thin flexible replaceable blade is clamped for shaving between cooperating cap and guard members connected to permit of only limited separation for the insertion of a blade, presented endwise between them.

In razors of this type, a clamping spindle passes through the space between the cap and guard members, being lowered when a blade is to be presented in shaving position and being elevated for threaded connection with the cap when the blade is to be clamped. It is important to insure that this spindle is in unobstructing or inoperative position when the blade is being presented and this is particularly the case when the blade is being fed mechanically from a magazine. If the spindle is allowed to obstruct the passage of the blade at this time the blade may be broken or deflected or the blade may be jammed in the magazine.

The primary object of the present invention is to provide means for holding or retaining the spindle in unobstructing position in the razor when a blade is to be presented in shaving position. Preferably this means is associated with a blade magazine and when employed in such association it has the additional function of preventing the magazine from being presented in blade-delivering position except when the spindle occupies a position clearing the blade passage.

The preferred construction for achieving the desired results comprises a shoulder in the spindle for co-operation with a locking member which may be moved into engagement with the shoulder of the spindle when the latter is to be locked in its unobstructing position and which may be removed after a blade has been fully inserted so as to free the spindle for its movement into clamping relation with the cap of the razor.

When the spindle-locking means is employed in association with a blade magazine it may take the form of a forked projection which interlocks or interconnects with the razor structure so as to locate the magazine properly for the presentation of the blade and thus fulfills two functions, that of properly locating the magazine for blade delivery and that of anchoring the clamping spindle in inoperative position.

The invention may be advantageously embodied in safety razors adapted to operate with either open-end or closed-end blades both of such blades being usually provided with a central aperture affording clearance for the passage of the spindle when the blade has been fully presented in shaving position.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawing in which:

Fig. 1 is a view in longitudinal section of the razor and magazine in operative relation;

Fig. 2 is a view of the razor head in cross section;

Fig. 3 is a view of the razor head in longitudinal section with its parts shown in blade-clamping position;

Fig. 4 is a view in perspective of the guard member and handle, a portion being broken out of the guard; and

Fig. 5 is a fragmentary view in perspective and on an enlarged scale of the magazine.

In the illustrated embodiment of the invention, the razor head includes a blade-supporting or guard member 10 which is rectangular in outline and has an upwardly convex blade-supporting surface as best shown in Figs. 2 and 4. The guard 10 is rigidly secured to the upper end of a handle 11 which includes in its structure a tubular barrel 12. The longitudinal edges of the guard member are turned down and its body apertured to set off guard bars 13 at each side of the guard. The guard is also provided with a medial blade-locating rib 14 which projects above the convex face of the guard and extends to its blade receiving end. The edge of the rib itself is curved to facilitate passage over it of the solid end of a blade.

Cooperating with the guard member is a cap member 15 having at one end spaced down-turned arms 16 integral with which is formed an inwardly extending flange 17. The flange 17 is apertured to fit with clearance upon the upper end of the handle 11, being movable freely thereon and limiting and guiding the cap in its movement with respect to the guard member. The cap is provided with a medial groove 18 in which the rib 14 is received with clearance when the cap and guard are clamped on an interposed blade. It is also provided with a centrally disposed threaded aperture 19 for connection with the clamping spindle 20 of the razor.

The clamping spindle 20 is received telescopically within the handle 11 and the barrel 12 thereof. It is provided at its lower end with a knurled head 21 and is threaded at its upper end 22 for connection with the cap 15. It is also provided below its threaded end with a constricted neck 23 providing a square shoulder in the spindle shaped for interlocking engagement with the retaining element to be described hereinafter. The handle 11 is provided in opposite sides with grooves 24 which open into the bore of the handle and so afford access to the spindle 20 therein.

A compression spring 25 surrounds the upper end of the handle 11, being supported at its lower end by a shoulder formed in the handle and bearing at its upper end against the retaining flange 17 of the cap member. The spring 25 tends at all times to lift the cap 15 and thus to separate

the blade-engaging faces of the cap and guard sufficiently to provide a passage between them for a blade presented endwise. The limiting position of separation is shown in Fig. 1 in which it will be noticed that the flange 17 is pressed against the bottom of the guard member 10. In this position of the parts, of course, the clamping spindle 20 is disconnected from the cap and when the razor is held in vertical position the spindle drops by its own weight so as to clear the blade passage, being arrested in its lowermost position by an internal rib 26 in the handle barrel 12 which engages a lower shoulder in the spindle.

In order positively to prevent the clamping spindle 20 from obstructing the blade passage the provision of a retaining element is contemplated which is of such shape as to fit into the grooves 24 of the handle 11, engage the neck 23 of the spindle and by contact with the lower shoulder thereof hold the spindle against upward movement which might be imparted to the spindle either by tilting the razor as a whole or by inadvertent pressure on the part of the user. The spindle-retaining member may be advantageously associated with a magazine and is herein shown in such organization. The magazine comprises a bottom 27, side walls 28, and a top formed by spaced intumed flanges 29. Within the magazine is provided a notched blade-locating rib 30 by which the stack of slotted blades 31 may be retained in alternately staggered relation. The blades are normally pressed upwardly by a spring 32 and the uppermost blade may be fed out of the magazine by a feed slide 33 which is arranged to slide upon the top flanges 29 of the magazine. The magazine illustrated as part of the present invention is described and claimed in my prior Patent No. 2,330,252, dated September 28, 1943, to which reference may be had for further details of this construction.

As herein shown, the retaining element 34 is secured by rivets or otherwise to the bottom of the magazine, forming an extension thereof. At its forward end, it is forked as best shown in Fig. 5, to fit the grooves 24 of the handle and to interlock with the constricted neck 23 of the clamping spindle 20. It is so related to the magazine that it serves to locate it properly with respect to the razor for the delivery of successive blades thereto; that is to say, when the fork of the member 34 is properly engaged with the grooves 24 of the handle, the uppermost blade in the magazine is located just above the face of the guard member 10. Accordingly, when the feed slide 33 is advanced in the magazine toward the left, as shown in Fig. 1, the uppermost blade is advanced from the magazine into the passage between the cap and guard members of the razor. Its solid end will first be deflected upwardly and over the blade-locating rib 14 and then the blade slot will receive the rib and will positively control the path of the blade. Inward movement of the blade will continue until the shoulders of the blade bring up against the downturned arms 16 of the cap. Engagement of these arms therefore determines the proper longitudinal position of the blade in the razor head, and its transverse position is correspondingly and positively determined by the rib 14.

The magazine cannot be brought into proper blade-delivering position unless the clamping spindle 20 has been lowered so that it clears the blade passage and this brings its constricted neck 23 into registration with the grooves 24 of the handle. On the other hand, when the magazine

has once been properly presented the spindle is positively locked against movement and so the user is insured that the blade passage is clear and will not be obstructed in the blade-delivering operation. The safety of the user is thus insured in two respects: The magazine cannot be presented unless the razor is in proper condition to receive a blade and the feeding movement of the blade cannot be obstructed so long as this relation is maintained.

After a fresh blade has been delivered to the razor, the magazine may be removed and the clamping spindle thus released; thereupon the user may push the spindle upwardly and engage its threaded end 22 with the cap for the blade-clamping operation.

Having thus disclosed my invention and described in detail an illustrative embodiment thereof, I claim as new and desire to secure by Letters Patent:

1. A safety razor and magazine combination in which the safety razor comprises cooperating blade-clamping members and a threaded clamping spindle provided with a shoulder, and the magazine has a projecting member shaped to engage said shoulder and limit the movement of said spindle.

2. A safety razor and magazine combination in which the safety razor comprises cooperating blade-clamping members and a clamping spindle movable through one of said members into engagement with the other, and the magazine has means whereby it may be located in position for delivering blades to the razor and for locking the clamping spindle in inoperative position.

3. A safety razor and magazine combination in which the safety razor comprises cooperating blade-clamping members connected for limited separation and thus providing a blade passage, and a clamping member movable across the blade passage, and the magazine has means by which it may be located in position to deliver blades endwise into said blade passage, said means operating to lock the clamping member out of passage-obstructing position.

4. A safety razor and magazine combination in which the safety razor comprises cooperating blade-clamping members connected to provide a blade passage between them, and a clamping member movable across the blade passage, and the magazine has a projecting member fitting with the safety razor to determine the blade-delivering position of the magazine, said clamping member being shaped to prevent presentation of the magazine in blade-delivering position when the said member is obstructing the blade passage.

5. A safety razor having, in combination, cooperating cap and guard members, a hollow handle carrying the guard member, and a clamping spindle movable in the handle and through the guard for engagement with the cap, the spindle having a shoulder therein and the handle having an opening giving access to said shoulder whereby the spindle may be held in inoperative position.

6. A safety razor having, in combination, a tubular handle carrying a guard member, a cooperating cap, and a threaded spindle movable in the handle to make threaded engagement with the cap, the handle having an opening exposing a portion of the spindle, and the spindle being shaped for engagement with a forked member whereby it may be anchored to the handle.

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