Oct. 20, 1942. N. TESTI 2,299,416

SAFETY RAZOR

Filed Feb. 5, 1940

Fig. 1

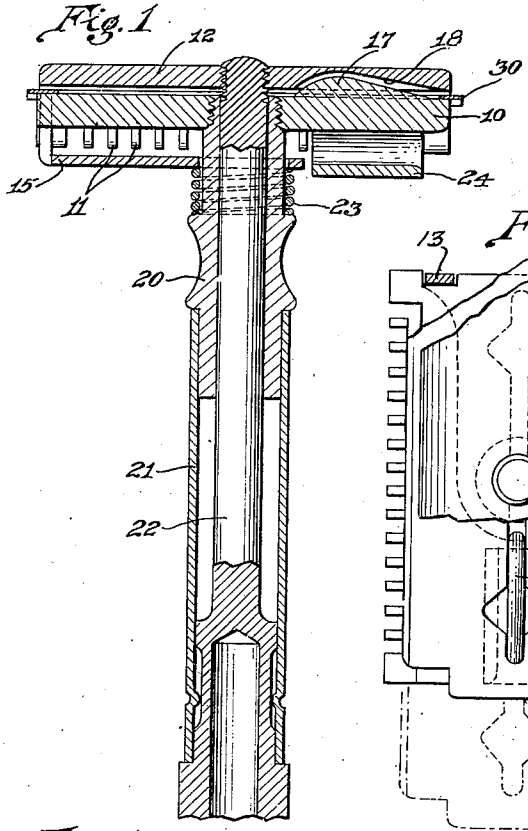


Fig. 2

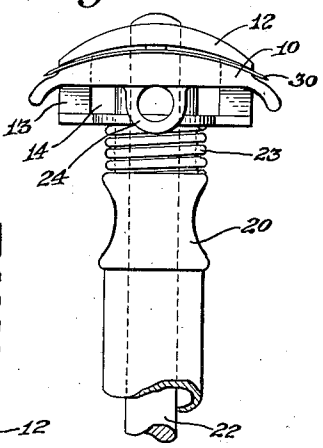


Fig. 3

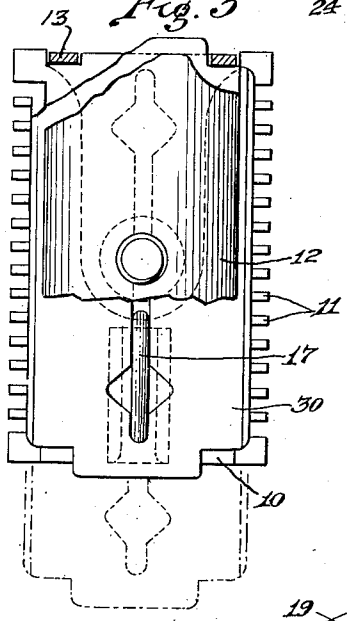


Fig. 4

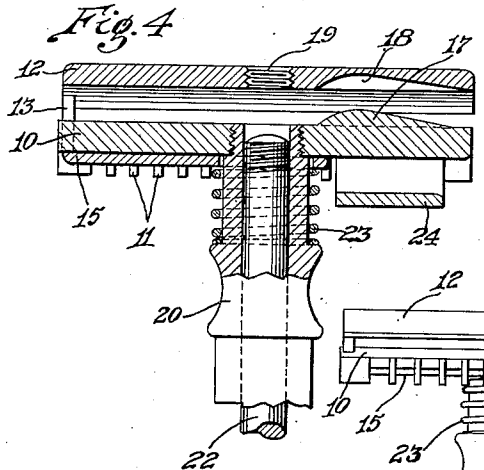
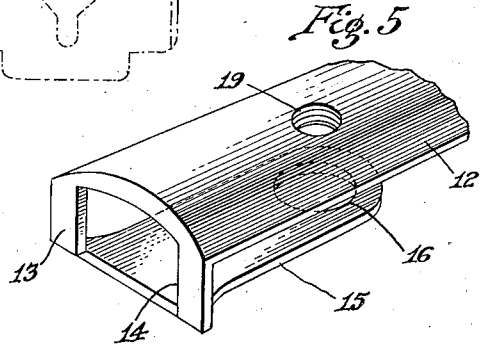


Fig. 5



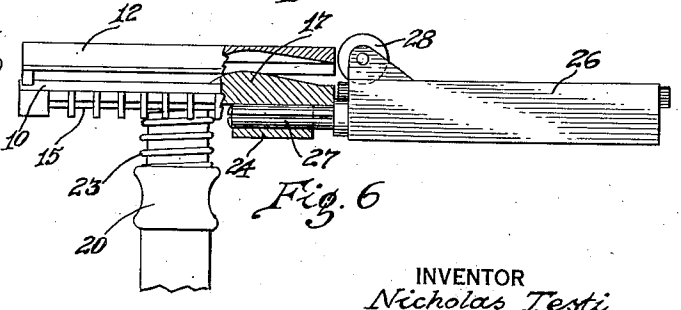


Fig. 6

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SAFETY RAZOR

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Application February 5, 1940, Serial No. 317,256

11 Claims. (Cl. 30—40)

This invention relates to safety razors of the type in which a thin flexible blade is clamped in position for shaving between two blade clamping members, such as a cap and a guard or blade support.

The invention consists in a novel razor of this general type organized and adapted to receive a blade presented endwise between the cap and guard members while the latter are separated to a limited extent for that purpose, that is to say, the cap and guard members are interconnected to permit limited separation for the presentation of the blade and for all practical purposes the razor thus functions as a one-piece razor having no loose parts to become lost or mislaid. At the same time it is so constructed and arranged that, when desired, it may be taken down and separated into component parts for thorough periodic cleaning or inspection. It is, moreover, organized so that blades may be supplied by hand or from a magazine according to the preference of the user.

The razor of my invention is herein shown as designed for use in connection with slotted blades shouldered at their ends to define wide unsharpened end portions, and while it is in no sense limited to the employment of such blades the invention includes features which are of importance particularly where it is desired to use blades of that design. For example, the razor has positive means for locating one end of such a blade by engagement with its unsharpened end portion, and a projecting rib for similarly locating the other end of the blade.

A novel feature of construction consists in a cap having a blade-engaging face and a connecting portion disposed substantially parallel to said face and spaced therefrom to embrace with clearance the blade-supporting member or guard.

Preferably and as herein shown this connecting portion is arranged loosely to engage part of the razor handle and if desired a spring may be employed which tends normally to separate the two blade-engaging members and thus afford a free passage for the presentation of a blade between them or the removal thereof.

To facilitate the employment of a blade magazine, where this is desired, the head of the razor may be provided with one element of interlocking means for positioning and holding a magazine in line with the passage between the blade clamping members when the latter are separated. When so located a new blade may be fed from the magazine directly into shaving position between the blade-clamping members and may be accurately retained in such position until released at the conclusion of the shaving operation.

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 of the razor in longitudinal section and on an enlarged scale;

Fig. 2 is a fragmentary view in side elevation;

Fig. 3 is a plan view of the razor head showing a portion of the cap member broken away;

Fig. 4 is a fragmentary sectional view corresponding to Fig. 1, but showing the cap and guard members in their separated relation;

Fig. 5 is a fragmentary view in perspective of the cap member; and

Fig. 6 is a view in front elevation, partly in section, showing the razor head with a blade magazine in operative relation thereto.

In the illustrated embodiment of the invention the razor head includes an elongated blade-supporting member 10 having an upwardly convex blade-supporting surface and adapted to serve as a guard by having teeth 11 arranged along both longitudinal edges. This guard member is stationary in the razor assembly and cooperates with an elongated cap member 12 having a downwardly concave blade-engaging face, corresponding in length to the guard member 10 and being slightly narrower in width so that it flexes the blade over the convex face of the guard member as is common in safety razors of this general type.

The cap member is provided at one end with a downwardly extending transverse wall 13 in which is formed a large opening 14. This opening corresponds in width to an end portion of the guard member 10 which is reduced by end recesses to fit the opening. The opening corresponds also to the projecting unsharpened end portions of the blades and serves positively to locate one end of the blade accurately in shaving position upon the guard as will be presently described. It also prevents relative rotation of the cap with respect to the guard member. The cap member is a rigid forked structure and has a lower inwardly extending flange 15 which is parallel to and spaced a substantial distance beneath the concave blade-engaging face of the cap. At its inner end the flange 15 is provided with a circular opening 16 of such diameter as to surround the razor handle with clearance thus retaining the cap at all times in the organization of the razor. The guard 10 is provided at one side of its blade-engaging face

with a narrow rounded longitudinal rib 17, and a slot 18 in the cap 12 supplies clearance for this rib. The cap itself is provided in its upper portion with a central threaded hole 19 designed to receive the end of a threaded spindle in the handle.

The handle comprises an outer member having a shouldered head 20 which is reduced in diameter and threaded at its upper end to fit a threaded centrally disposed hole in the guard member 10 and this portion of the handle is of such diameter as to pass freely through the opening 16 in the flange 15 of the cap and thus acts as a guide therefor as well as a means of connection between the cap and the blade-supporting member as already stated. The outer portion of the handle includes also a cylindrical sleeve or barrel 21 which is pressed on to the head 20 or otherwise permanently secured thereto. The handle includes also an inner spindle 22 freely movable in the bore of the barrel and threaded at its upper end to fit the threaded hole 19 in the upper part of the cap. At its lower end the spindle 22 is enlarged to form a knurled head which projects beyond the lower end of the sleeve 21 and supplies convenient means for rotating the spindle to engage it with or disengage it from the cap member and to clamp the cap and guard members together with blade-flexing pressure. A helical compression spring 23 is disposed between a shoulder in the handle member 20 and the underface of the flange 15 and tends always to lift the cap member when permitted to do so by reverse rotation of the threaded clamping spindle 22.

While the razor herein disclosed is not limited to any particular type of blade it is herein shown as employing a double-edged blade 30 of the Gillette type, that is to say, a blade of thin flexible steel sharpened along both longitudinal edges and having shoulders which define elongated unsharpened end portions at both ends. The blade is also provided with a central longitudinal slot and this is enlarged between its end in diamond-shaped openings and provided at its center with a circular enlargement of sufficient diameter to receive the clamping spindle 22 with clearance.

In assembling the razor thus far described and forked parts of the cap member are located to embrace the guard member 10 and the upper end of the handle member 20 is passed through the opening 16 in the flange of the cap and fully screwed into the threaded opening in the guard 10. The cap and guard member are thus rigidly secured for the time being in an interconnected relation although the cap member is free to move up and down with respect to the guard member a distance equal to the spacing of the flange 15 below the bottom of the guard member 10. Fig. 4 illustrates the parts in this normal or open relation, the spring 23 holding the flange 15 against the bottom of the guard 10 and maintaining a clear passage between the co-operating convex and concave blade-engaging faces of the two members. In the position shown in Fig. 4 the blade 30 may be readily inserted endwise from the right-hand end, riding up upon the rib 17 in its progress and eventually setting itself upon the guard member 10 with its advancing end positively positioned by and between the walls of the opening 14 in the cap member and its other end positively positioned by the rib 17. When the blade has been thus seated the clamping spindle 22 is elevated and engaged with the threaded opening 19 of the cap. The clamping spindle may now be turned home and the cap drawn down against the compression of the spring 23 into blade-clamping position as suggested in Fig. 1. The degree of edge exposure may be regulated by the degree of clamping pressure exerted by the clamping spindle 22. It will be understood that the reduced end of the guard 10 moves freely in the opening 14 when the blade is released from flexing pressure.

I have described the razor of my invention as being supplied by hand with a single blade but it may be readily adapted to be supplied mechanically with blades from a magazine. To this end, the guard member 10 is shown as provided with an elongated perforated boss 24 projecting below its lower surface on the side left free by the flange 15. A rectangular magazine 26 of the general type disclosed in my co-pending application, Serial No. 310,804, filed December 23, 1939, now Patent No. 2,288,979, issued July 7, 1942, may be provided at one end with an elongated split stud 27 of such diameter that it may be forced frictionally into the bore of the boss 24 and thus serve to maintain the magazine 26 in blade-delivering position. The magazine herein shown is provided with a delivery slit and rotary blade-feeding wheel 28 and when the magazine has been once positioned as shown in Fig. 6 the user has only to separate the cap and guard members and rotate the feed wheel 28 in a clockwise direction whereupon the uppermost blade in the magazine will be advanced endwise between the separated cap and guard members and thus mechanically delivered in shaving position upon the guard member 10. The magazine may now be removed from its connection with the razor head and the clamping spindle 22 operated as already explained to move the cap and guard members into their blade-clamping position.

When the shaving operation has been completed, the spindle 22 is rotated reversely, permitting the blade-clamping members to be separated by the spring 23, and the used blade may be withdrawn by hand from the side of the head at which it had been previously presented, or the blade may be shaken out from between the blade-clamping members. As soon as the spindle 22 disengages the threaded hole 19 it drops down out of the space between the blade-clamping members and so frees the blade for removal by endwise movement.

While the razor of my invention is essentially a "one-piece" safety razor, in that all its parts are normally connected or interlocked, it will be understood that for purposes of thorough cleaning the outer handle member 20 may be released from its connection with the guard member 10 and when this is done the handle may be withdrawn and the cap and guard members separated. In the ordinary use of the razor, it is contemplated that the cap and guard members will be merely released by manipulation of the clamping spindle 22 to permit the presentation and removal of a blade and flushing of the razor. Under these conditions it will be observed there are no loose parts in the razor to become lost or misplaced.

The razor of my invention has the additional advantage of safety in use because of the accurate and positive manner in which the blade is located in shaving position therein and because it is impossible to engage the cap member by the clamping spindle 22 unless the blade is properly located. The user is thus safe-guarded against under-

taking to shave with an improperly placed and therefore dangerous blade.

Having thus disclosed my invention and described a preferred embodiment thereof for illustrative purposes, but in no limiting sense, I claim as new and desire to secure by Letters Patent:

1. A safety razor having a head which includes a convex blade-supporting plate, and an oppositely disposed co-operating blade-clamping member having in a rigid structure an end wall with an opening to receive one end of said blade-supporting plate, a flange projecting inwardly from said wall beneath the blade-supporting plate and having sliding connection with the same, and a spring acting upon said flange and tending at all times to separate the clamping member from the supporting plate.

2. A safety razor having a head which includes a guard and a cap, the guard having a handle and the cap having as a rigid part of its structure an underlying spaced flange extending from one end only inwardly beneath the guard to connect with the handle, and a spring in the handle tending at all times to move the underlying flange of the cap into contact with the under face of the guard member and thereby separating the body of the cap from the guard to permit the presentation of a blade.

3. A safety razor having a head which includes a blade-supporting plate and a forked blade-clamping member which embraces the opposite faces of the blade-supporting plate with clearance, the upper portion thereof having a blade-engaging face and the lower portion thereof being provided with a guide opening, and a downwardly projecting guide on the blade-supporting plate extending below the blade-supporting plate and received in said opening.

4. A safety razor having a head which includes an elongated blade-supporting member provided with a longitudinal rib in its upper face adjacent to one end and at the same end an elongated socket projecting beneath its lower face, a co-operating blade-clamping member having an upper portion overlying the blade-supporting member and provided with a groove to receive the rib of the blade-supporting member, an end wall with a blade-locating opening therein and a rigid connecting portion underlying said blade-supporting member; in combination with a blade magazine having a projection shaped for engagement with said elongated socket whereby the magazine may be located for delivering to the razor head a blade guided by said rib into engagement with the blade-locating opening of the blade-clamping member.

5. A safety razor having a blade-supporting member, a handle projecting downwardly therefrom, and a two-part co-operating blade-clamping member having a blade-engaging portion disposed above said supporting member and a rigidly connected retaining portion located below said supporting member, the said retaining portion, when the blade-clamping member is released, having a sliding interlocking connection with the handle and thereby retaining in the razor said blade-clamping member of which it is a part.

6. A safety razor having a head which includes a convex blade-supporting plate and an oppositely disposed co-operating blade-clamping member having in a rigid structure an end wall with an opening to receive one end of the said blade-supporting plate and a flange projecting inwardly from said end wall beneath the blade-supporting plate, said flange having, when the blade-clamping member is released, a sliding interlocking connection with the razor head for retaining in the razor the blade-clamping member of which it is a part.

7. A safety razor having a head which includes a guard and cap substantially co-extensive in length, the guard having a handle and the cap having as a rigid part of its structure an underlying flange at one end extending inwardly beneath the guard, surrounding the handle and terminating short of the other end of the guard so leaving the latter end of the guard free and unobstructed.

8. A safety razor having a handle, a cap and a guard connected for limited separation, the cap having at one end only and as a rigid part of its structure an underlying flange perforated to slide upon the handle and being thus arranged to retain the cap movably connected in the razor, a spring tending to open the cap from the guard, a socket for a detachable blade magazine on that side of the guard left free by the flange of the cap, and blade-locating means at the inner end of the guard.

9. A safety razor having a blade-supporting member with a fixed blade-locating rib disposed on one-half only thereof while the other half presents a smooth surface for the presentation of a blade, and a relatively movable oppositely disposed blade-flexing member having an apertured downwardly extending wall at one end, the rib and said wall co-operating to locate a blade in shaving position on the blade-supporting member.

10. A safety razor having a guard with a handle, a forked cap provided with any underlying flange at one end as a rigid part of its structure, extending inwardly beneath one end of the guard and loosely connected to the handle for retaining the cap movably connected to the razor, and a magazine-supporting element at that end of said guard left free by the flange of the cap.

11. A safety razor having opposed cap and guard members and an interposed blade provided with an internal slot and external shoulders, connecting means holding the cap and guard members in spaced superposed relation, said means extending across one end of the razor, leaving the other end free and limiting the movement of separation of said members to provide a free blade-receiving passage between them, means adjacent the connected ends of said members for locating one end of the said interposed blade by external engagement with its shoulders, and means adjacent to the blade-receiving end of the razor for locating the other end of the blade by internal engagement with its slot.

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