July 25, 1933. G. D. MARCY 1,919,794

SAFETY RAZOR

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Fig. 1.

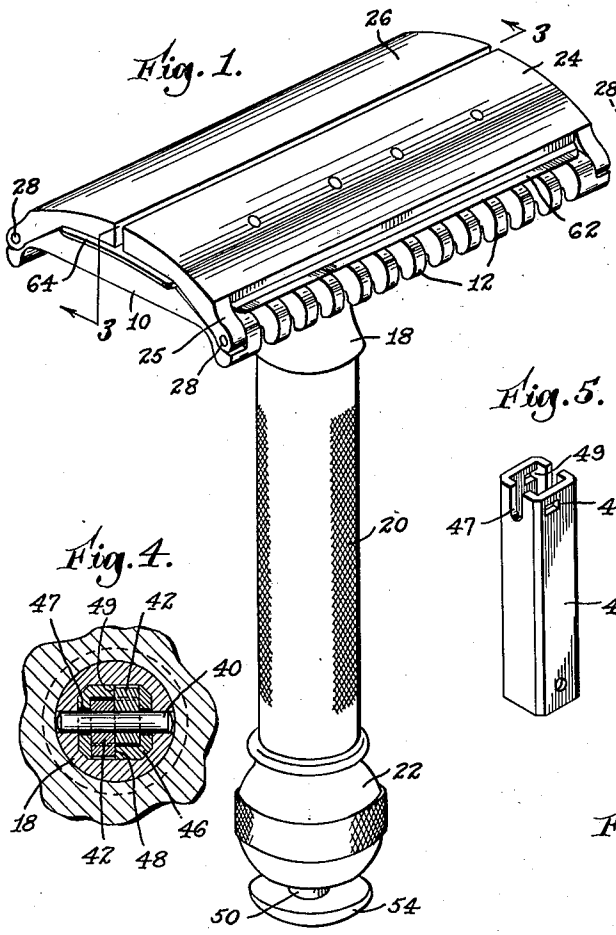


Fig. 4.

Fig. 5.

Fig. 2.

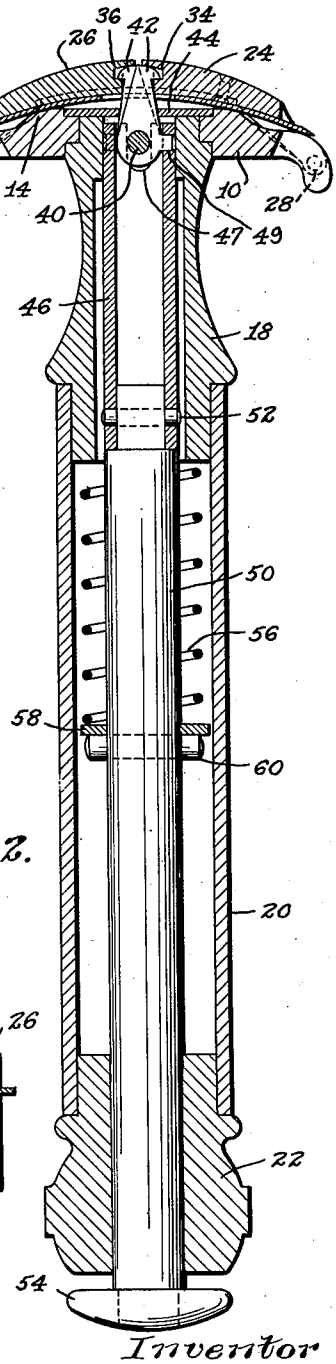
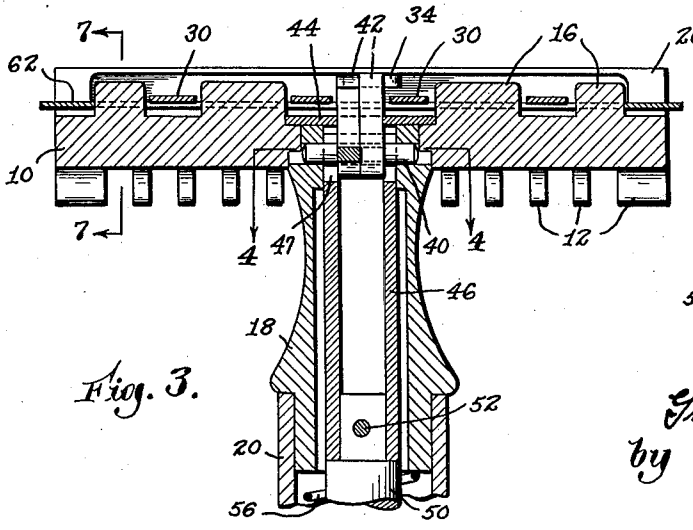


Fig. 3.



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Fig. 6.

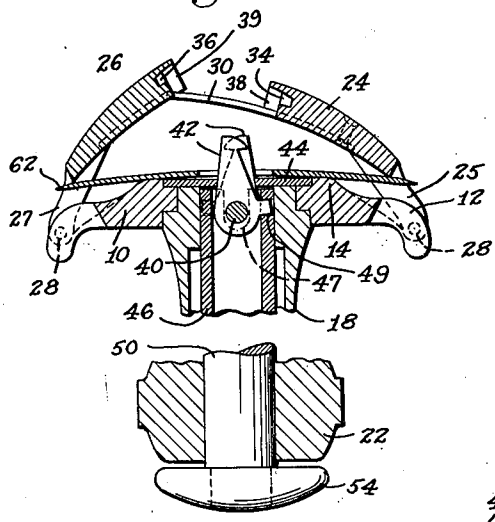


Fig. 7.

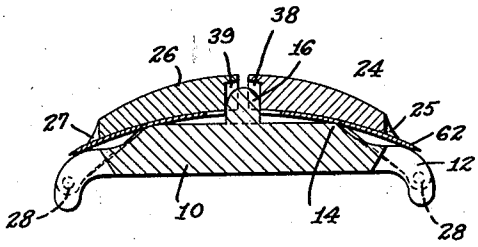


Fig. 8.

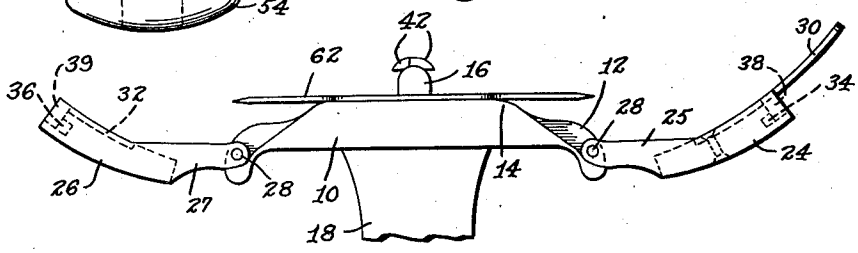
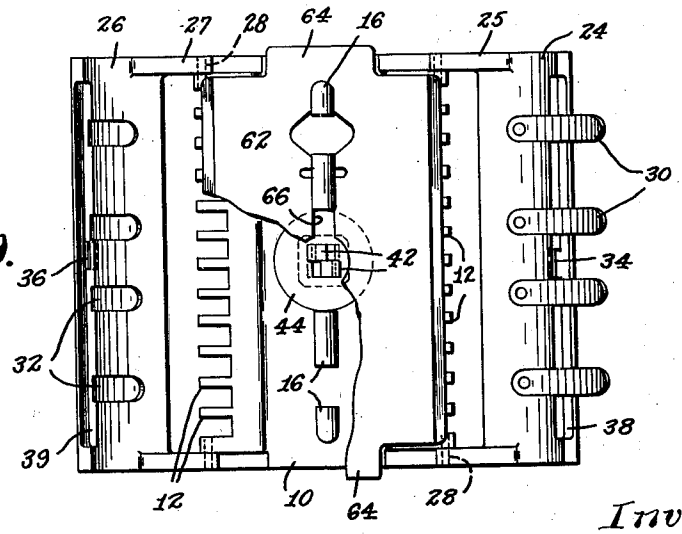


Fig. 9.



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SAFETY RAZOR

Application filed June 7, 1932. Serial No. 615,835.

This invention relates to safety razors of the type in which a flexible and resilient blade is clamped for shaving between the cap and guard members which shape the blade and supply external support therefor adjacent to its cutting edges. For the convenience of the user, it is important that the blade-positioning and blade-clamping operations should be such that they may be quickly carried out and that the cap and guard may be easily separated to permit the removal and replacement of blades without obstruction.

In one aspect, my invention consists in a safety razor having cap and guard members so constructed and arranged that these operations may be effected with an unusual degree of convenience and without disconnecting the parts of the razor, thus avoiding the annoyance of loose parts which may become misplaced or lost. With this end in view an important feature of my invention consists in a cap comprising co-operating sections pivotally mounted respectively at the longitudinal edges of the guard or of the blade-supporting member of the razor. In safety razors, wherein the guard has spaced fulcrum shoulders therein over which the blade is flexed, the co-operating cap sections may be pivotally mounted at the edge of the guard outside or beyond the fulcrum shoulders and arranged to be swung inwardly to superposed position above the guard wherein they act to flex the blade over the fulcrum shoulders. An important advantage of this arrangement is that the cap sections may thus be conveniently swung into an open position in which the blade-supporting face of the guard is fully exposed so that the blade may be removed or replaced without obstruction of any kind.

As herein shown, I propose to latch the pivotally-mounted cap sections in position to maintain the resilient blade under tension in a position of pronounced transverse curvature. Accordingly, when the cap sections are released and the resilient blade is permitted to spring into its normal flat condition, its reaction with the cap sections serves to throw them simultaneously and quickly into opened position. If the razor is held in inverted position when the cap sections are thus released the blade itself will drop out of the razor without requiring any attention on the part of the user. Both the ejected blade and the open razor may then be conveniently cleaned and the razor is left in the most convenient position for the reception of the blade.

My invention is herein shown as embodied in a safety razor in which the guard is provided with outwardly and downwardly-inclined guard teeth and in such a razor I prefer to mount the cap sections to swing about axes disposed within the contour of the guard teeth and preferably adjacent to their outer ends. To this end, the cap sections are provided with spaced arms by which the body of each cap section is located at a distance from its axis of movement so that in swinging the cap sections to and from blade-engaging position suitable clearance is provided between the sharpened cutting edges of the blade and the cap sections. Each cap section is, in effect, provided with an opening through which projects one edge of the blade when the blade is properly positioned on the guard with its edges overhanging the fulcrum shoulders. I have thus established a novel relationship between the blade and the cap sections, that is to say, a relationship in which the cap sections may be swung from an opened position, in which the flat blade is fully exposed upon the blade-supporting face of the guard, to a closed position in which the blade is flexed upon the guard by the action of the cap sections and in which each cutting edge of the blade extends through an opening in one of the cap sections provided by the arms above mentioned.

My invention also includes novel mechanism for locking the cap sections in closed or blade-flexing position arranged to be manually operated for releasing the cap sections. As herein shown, a locking device extends above the face of the guard, being normally held in position to engage the cap sections by yielding means within the handle

of the razor. Manually-operated means, such as a longitudinally movable spindle, having a button or operating head at the end of the handle, is provided for moving the locking device transversely into releasing position, and by merely depressing the head, the user may cause the cap sections to be unlocked so that they will fly into open position and permit removal of the blade from the razor.

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 drawings in which,

Fig. 1 is a view in perspective of the razor on an enlarged scale;

Fig. 2 is a view in cross section;

Fig. 3 is a view of the head of the razor in longitudinal section;

Fig. 4 is a fragmentary cross-sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a view in perspective of a part of the locking means for the cap sections;

Fig. 6 is a sectional view showing the cap sections unlocked and partially displaced;

Fig. 7 is a sectional view showing the cap sections in locked position;

Fig. 8 is a view in end elevation showing the cap sections fully displaced, and

Fig. 9 is a plan view showing the cap sections in the same position as in Fig. 8 but on a somewhat smaller scale.

As herein shown, the blade-supporting member of the razor comprises the guard 10, this being provided with guard teeth 12 at its longitudinal side edges and with a pair of parallel channels forming fulcrum shoulders 14 which bound the blade-supporting face on the guard. Centrally-disposed in the blade-supporting face of the guard 10 is a blade-positioning rib 16 discontinuous in character and comprising spaced rib sections. The guard 10 is rigidly connected to the handle of the razor which comprises the hollow head 18 to the lower end of which is secured a barrel 20 and this in turn is closed by a plug 22 of ornamental contour.

The cap member of the razor comprises two cap sections 24 and 26 having concave, blade-shaping faces and being pivoted respectively at the outer edges of the guard 10 beyond the channels therein. The cap section 24 is provided at either end with transversely-extending arms 25 and the cap section 26 with corresponding arms 27. The arms of the cap sections are pivoted respectively to the outer or corner guard teeth at each end of the guard by pins 28. The endmost guard teeth are thicker than the intermediate teeth and each is slotted in its outer face, as shown in Fig. 8, to receive the arms 25 or 27 and shaped so as to provide a stop surface for limiting the outward swinging movement of the cap sections. It will be seen that the arms 25 and 27 space the body part of the cap sections 24 and 26 from the edge of the guard, or provide openings therein so that the cap sections may be swung throughout the range of their movement with adequate clearance for the sharpened edges of a blade positioned upon the guard. The cap sections are arranged to swing from the open, outwardly-extending position, shown in Fig. 8, to a closed position in which they are superposed upon the blade-receiving face of the guard and flex an interposed blade over the fulcrum shoulders 14 of the guard. The free edges of the pivoted cap sections 24 and 26 are parallel and are brought into engagement or into closely adjacent relation when the cap sections are swung into their closed position.

The cap section 24 is provided upon its curved, blade-engaging face with a series of curved spring fingers 30 which extend outwardly beyond the free edge of the cap section. The cap section 26 is correspondingly provided with a series of grooves or channels 32 adapted to receive the spring fingers 30 when the two cap sections are closed upon a blade. The cap section 24 is provided with an elongated groove 38 in its free edge and the cap section 26 with a similar groove 39. When the cap sections are closed, the grooves 38 and 39 form a channel for the reception of the blade-locating rib 16 of the guard. The cap section 24 is also provided at a point midway of its free edge with a locking recess 34, and the cap section 26 is provided with a similar locking recess 36 slightly offset in its position with respect to the recess 34.

The cap sections 24 and 26 are arranged to be automatically locked in closed position by mechanism which will now be described:

In the upper end of the head 18 is provided a transverse journal pin 40 upon which are mounted two locking dogs or hooks 42. These extend upwardly through an opening in the guard 10 to a position somewhat above the blade-receiving face of the guard and slightly higher than the top of the rib 16. The upper end of each dog 42 is curved and each is shaped to provide an outwardly-directed hook. Opposite to the journal pin 40 each dog 42 is provided with a short, outwardly-extending arm, the arms extending in opposite direction from the axis of the journal pin. In the blade-engaging face of the guard 10 is provided a washer 44 having a square hole, as shown in Fig. 9, which serves to limit the oscillatory movement of the dogs. Within the hollow head 18 is provided a square tube 46, shown in its entirety in Fig. 5. The tube 46 is provided with a transverse slot 47 at its upper end which provides clearances for the journal

pin 40. In one wall of the tube 46 is provided an opening 48 to receive the outwardly-directed arm of one of the dogs 42, and in the opposite face of the tube is provided another opening 49 offset with respect to the opening 48 and adapted to receive the outwardly-directed arm of the other dog 42. It will be apparent that longitudinal movement of the tube 46, with respect to the journal pin 40, will swing the dogs 42 simultaneously in opposite directions and equal amount.

At its lower end, the tube 46 is pinned to the upper end of a cylindrical shaft or plunger 50 by means of a cross-pin 52. The plunger extends downwardly through the plug 22 where it is provided with an operating button 54. The upper portion of the plunger 50 is encircled by a compression spring 56 which bears at its upper end against the lower face of the head 18 and at its lower end against a washer 58 positioned on the plunger by a transverse pin 60. The spring 56 normally moves the plunger 50 and the tube 46 downwardly and thus yieldingly swings the dogs 42 to the outer limit of their movement or until they are arrested by engagement with the walls of the square hole in the washer 44. On the other hand, when the tube 46 is elevated by pressing the button 54, the dogs 42 are swung inwardly from locking position, indicated in Fig. 9, to releasing position in which they are practically side by side, as shown in Fig. 6.

In Fig. 9 is shown a double-edged blade suitable for use in the illustrated razor. This blade 62 is of thin, flexible and resilient steel sharpened at opposite edges for shaving and provided at each corner with a reentrant recess which limits the length of the cutting edge and which collectively define elongated, centrally-disposed, unsharpened portions 64 at each end of the blade. The blade is also provided with an elongated slot 66 designed to fit accurately upon the blade-locating rib 16 of the guard and to position the blade with its cutting edges in the proper relation to the guard teeth. The reentrant recesses in the corners of the blades afford clearance space for the arms 25 and 27 of the pivoted cap sections, and when the razor is closed these unsharpened end portions 64 project slightly beyond the ends of the guard and the cap sections.

The manner of using the safety razor above described will be clear from the foregoing description but may be summarized for convenience as follows:

Assuming that the cap sections occupy their open or blade-exposing position, as shown in Fig. 8, it will be clear that the user may conveniently position the blade 62 upon the blade-supporting face of the guard which is fully exposed and entirely unobstructed. Having positioned the blade, the right-hand cap section 24 is first swung into position above the blade. In this operation, the spring fingers 30 reach partly across the blade and slightly deflect the edge thereof which is directed toward the cap section 26. The arms 25 pass upon either side of the blade in the reentrant recesses provided in the corners thereof and the body of the cap section is carried over the edge of the blade without touching it so that the edge of the blade projects outwardly beneath the cap section. As the cap section 24 is forced downwardly, its inner edge engages the upper curved face of the locking dog 42 which is located opposite to the recess 34 so that the dog is temporarily displaced and then allowed to snap into the locking recess. Having positioned the right-hand cap section 24, the left-hand cap section 26 is next swung upwardly to superposed position above the left-hand side of the blade 62. In this movement, the channels 32 receive the previously-positioned spring fingers 30 and the locking dog 42 is temporarily displaced in making locking engagement with the recess 36. The blade 62 is thus flexed into a position of pronounced transverse curvature, as shown in Figs. 2 and 7, and maintained under tension by the locked cap sections 24 and 26.

When it is desired to open the razor for the purpose of removing the used blade for cleaning or replacement, the user will merely depress the button 54, thereby elevating the tube 46 against the compression of the spring 56 and temporaily swinging the dogs 42 into their releasing position. The dogs are thus released from the locking recesses and the cap sections thus free to move. At this point, the resilient blade 62, which has been hitherto maintained under appreciable initial tension, springs into its normal flat condition, as shown in Fig. 8, and thus imparts to the two cap sections an impulse causing them to fly open into a position in which the blade is fully exposed. If during the releasing movement the razor is held in inverted position, the blade itself is, at the same time, discharged from the razor to the great convenience of the user. The razor may be rinsed and put away in this condition in readiness for the presentation of a new blade and further use when required.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A safety razor comprising a member having a blade-supporting face, and a cap for flexing a blade thereon consisting of sections pivotally mounted respectively at the longitudinal edges of said member outside its blade-supporting face.

2. A safety razor comprising a member having a blade-supporting face bounded by

shoulders, and a cap consisting of sections pivotally mounted at the outer edges of said member and adapted to fold toward each other over said blade-supporting face to flex a blade over said shoulders.

3. A safety razor comprising a guard having guard teeth at its longitudinal edges, and a cap consisting of sections independently pivoted to the guard on axes passing through the guard teeth and arranged to co-operate with the guard in shaping a flexible blade thereon.

4. A safety razor comprising a guard having spaced fulcrum shoulders therein, and co-operating cap sections pivotally mounted at one edge of the guard and having parallel free edges arranged substantially to meet when the sections are swung inwardly over the guard to flex a blade over its fulcrum shoulders.

5. A safety razor comprising a guard having longitudinally-extending channels defining fulcrum shoulders therein, a cap section pivotally mounted on the guard outside each channel and each having an opening therein located opposite to one of the channels when the cap section is folded upon the guard wherein to receive the edge of a blade flexed over said fulcrum shoulder by the section.

6. A safety razor having a guard provided at its edges with outwardly and downwardly inclined teeth, and cap sections each having arms pivotally connected to certain of said teeth adjacent to their outer ends and a body portion shaped to overlie a blade positioned upon the guard with its cutting edge projecting above the guard teeth and between said arms.

7. A safety razor comprising a member having a blade-supporting face, cap sections pivotally mounted at the edges of said member and adapted to fold into superposed position thereon to flex a resilient blade, and locking means acting upon the free edges of the cap sections when the latter are in such superposed position to maintain them in blade-flexing position.

8. A safety razor comprising a guard having a blade-supporting face and a handle, cap sections pivoted respectively at opposite edges of the guard and arranged to swing into superposed, blade-flexing position thereon, means for positioning a blade upon the guard, and locking means associated with the handle for maintaining the cap sections in blade-flexing position.

9. A safety razor comprising a guard having a blade-shaping face, a cap section pivoted at each outer edge of the guard and shaped to flex one edge of a blade upon the guard when folded back by hand above it, and a locking device projection above the face of the guard with which said cap sections are arranged to interlock when so folded.

10. A safety razor comprising a guard having a blade-shaping face with a centrally-disposed opening therein, a handle connected to the guard and having a bore registering with said opening, a spindle movable in the bore, a locking device extending through said opening and having operating connections with said handle, and cap sections pivoted respectively at opposite edges of the guard and arranged to be engaged by said locking means.

11. A safety razor comprising a guard having a flat blade-supporting face bounded by shoulders over which the edges of a resilient blade may be flexed, a cap section pivoted at one edge of the guard, arranged to swing into superposed position thereon to flex one edge of the blade over the adjacent shoulder and having projecting fingers extending across the blade to flex the other edge thereof over the remote shoulder, and a second cap section fitting over said fingers.

12. A safety razor comprising a member having an elongated blade-supporting face, means for positioning a flexible blade centrally thereon with its edges equally overhanging the edges of said face, guard teeth extending along the longitudinal edges of the guard below the plane of its face, and co-operating cap sections, each arranged to swing about an axis located within the contour of the guard teeth and each having spaced arms between which the guard teeth are embraced.

13. A safety razor comprising a guard member having a flat blade-supporting face bounded by longitudinal channels forming blade-flexing shoulders and having centrally-disposed blade-locating projections thereon, and a cap section pivoted at each side of the guard to swing about an axis located adjacent to the outer side of each channel, from an open position fully exposing the blade-supporting face of the guard to a closed position bridging the space between one of said blade-flexing shoulders and said blade-locating projections.

14. A safety razor comprising a guard having a locking device projecting from its blade-supporting face, cap sections pivoted at either edge of the guard and arranged to flex a resilient blade upon the guard and to be latched in closed position with the blade held under tension, and means for moving said device into releasing position, whereby the resilient blade may throw the cap sections into open position.

15. A safety razor, the combination with a guard having a blade-supporting face and cap sections pivotally mounted at its outer edges, of a blade having re-entrant recesses at each corner, the cap sections being connected to the guard by arms arranged to

swing in the clearance spaces afforded by said recesses.

16. A safety razor comprising a guard, a pair of oscillatory hooks projecting at all times from its blade-supporting face, cap sections pivoted to said guard at its opposite longitudinal edges, means for holding said hooks yieldingly in engaging position, and manual means for simultaneously moving them into releasing position.

17. A safety razor comprising a guard, cap sections pivoted at its outer edges, a pair of oscillatory hooks pivotally mounted below the blade-supporting face of the guard and projecting above the same, spring means tending to expand the hooks into engaging position, and manual means for contracting the hooks to disengage the cap sections.

18. A safety razor comprising a guard, cap sections pivotally mounted at the outer edges of the guard and having locking recesses in their free edges, a handle secured to the guard and having a spring-pressed spindle therein, and hook members movably mounted in the guard and connected to said spindle whereby they are yieldingly held in the locking recesses of the cap sections to maintain the latter in blade-flexing position, the said spindle being manually movable to disengage said hooks from the cap sections.

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