Jan. 20, 1942. J. MUROS 2,270,543

MAGAZINE SAFETY RAZOR

Filed July 3, 1940 2 Sheets-Sheet 1

Fig. 1

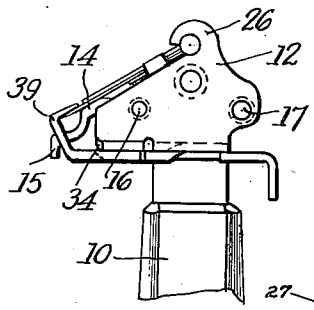


Fig. 2

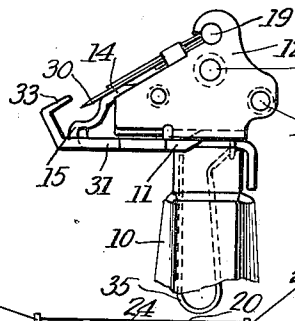


Fig. 3

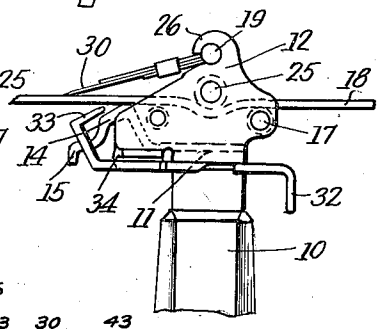


Fig. 4

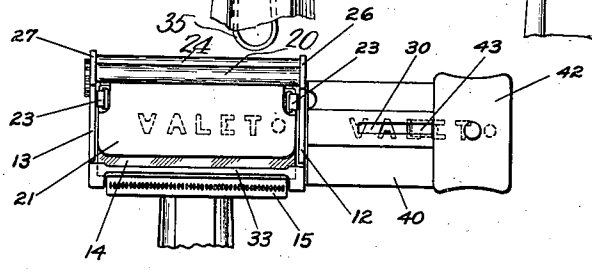


Fig. 5

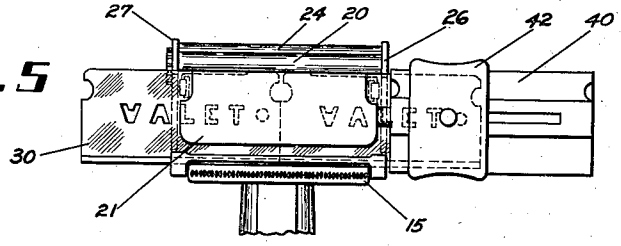


Fig. 6

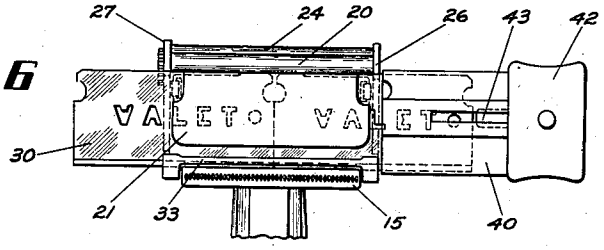
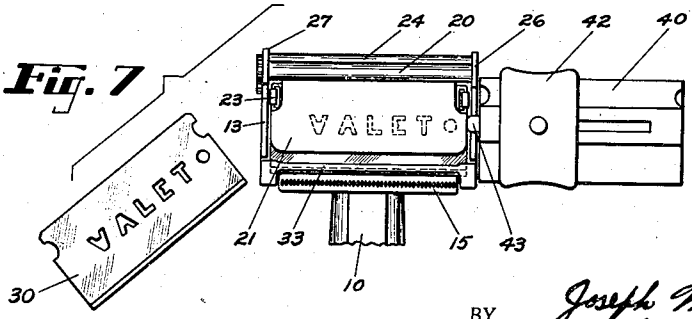


Fig. 7



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MAGAZINE SAFETY RAZOR

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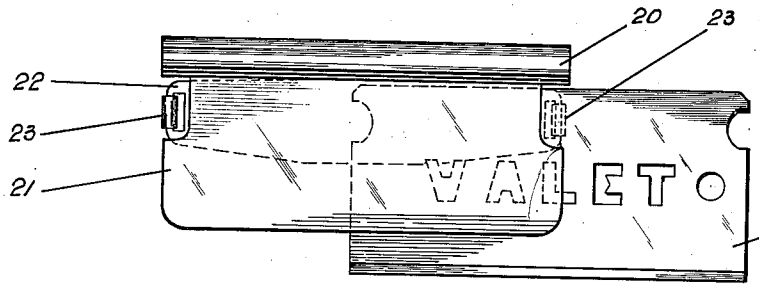


Fig. 8

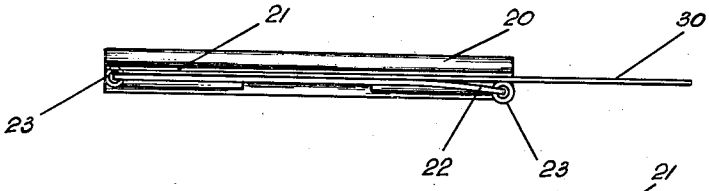


Fig. 9

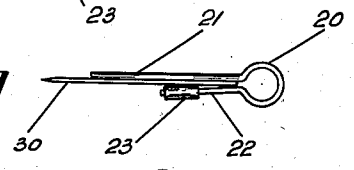


Fig. 10

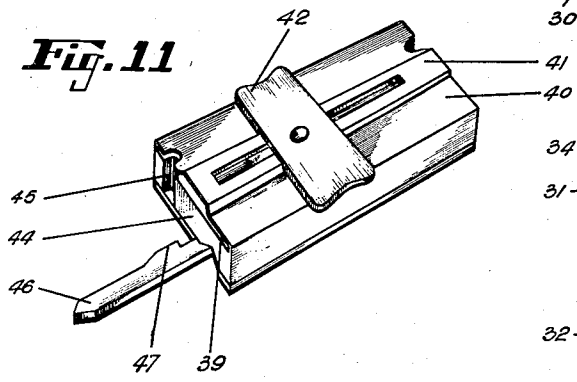


Fig. 11

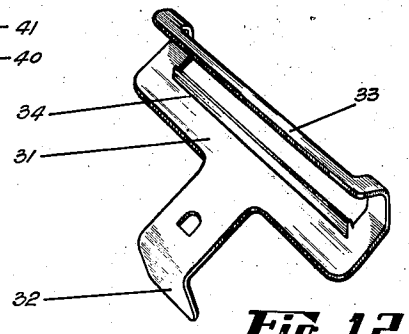


Fig. 12

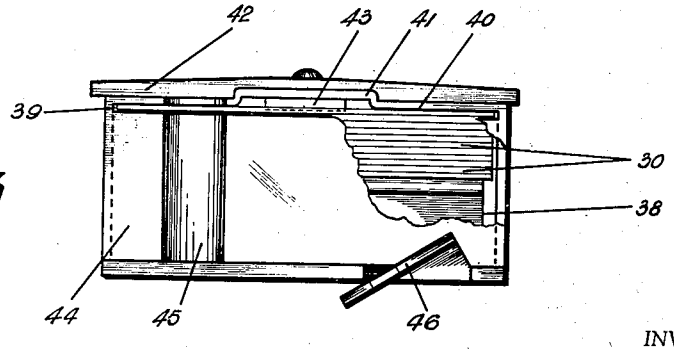


Fig. 13

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Patented Jan. 20, 1942

2,270,543

UNITED STATES PATENT OFFICE

2,270,543

MAGAZINE SAFETY RAZOR

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Application July 3, 1940, Serial No. 343,697

18 Claims. (Cl. 30—40)

This invention relates to safety razors of the type organized to receive fresh sharp blades one by one as delivered from a magazine source of supply. In one aspect the invention comprises a novel combination of safety razor and magazine in which the two are so organized that the razor receives blades substantially in shaving position directly by endwise movement from the magazine and preferably in a two-step movement. After being so supplied the magazine is detached and entirely removed from the razor for the shaving operation.

The extreme thinness of safety razor blades and the fragile character of their shaving edges makes these blades difficult to handle and to locate in the razor ready for shaving without danger of cutting the user or of impairing the keen shaving edge of the blade by contact with the razor or the blade packing. As herein shown the magazine of my invention is shaped to contain a plurality of blades in a stack or pack, maintaining their cutting edges out of contact with all parts of the magazine and exposing only a portion of the outermost blade in the pack. The razor on its part is equipped with a blade holder designed to receive a blade from the magazine substantially in shaving position and to clamp it automatically in such position when once the blade has been delivered.

An important feature of my invention consists in a safety razor having a blade holder mounted to swing therein, in combination with a blade-seat and a blade guard constructed and arranged to prevent withdrawal of a blade from the holder except while the blade is located substantially in contact with the blade-seat or substantially in shaving position. This feature permits my invention to be embodied in a razor of the Auto-Strop type that is to say, a razor having a blade holder which is rocked from side to side in a stropping operation. The blade guard above-mentioned positively prevents longitudinal displacement of the blade in the holder and obviates the resulting danger of cutting to the user or the strop.

Another feature of my invention consists in an improved clamping member spring-actuated and effective to clamp a blade in shaving position on the blade-seat. As herein shown the blade-seat is provided with a guard for determining the safe shaving exposure of the blade and the clamp is perforated so that the guard and the sharp edge of the blade may be passed entirely through it.

Another feature of the invention consists in the novel combination of a safety razor having a blade-seat and spring-actuated clamp, together with a magazine having means for releasing the clamp in the razor and for delivering blades thereto. The magazine is herein shown as provided with a projecting arm which not only locates the magazine in the proper blade-delivering relation to the razor but is also effective to retract the clamp against spring tension.

In another aspect my invention comprises an improved blade magazine adapted for use in the combination above discussed. The magazine of my invention as herein shown comprises a rectangular enclosure having an outlet opening in one end and a cover formed with a rib providing an internal channel leading to the opening and a feeding device including a dog movable in the channel. As herein shown the dog is effective to engage a blade first at an intermediate point and then at its rear edge so that the blade is advanced into shaving position by two separate and distinct steps. This is a feature contributing to the convenience of the operator and to the compactness of the design of the magazine.

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:

Figs. 1, 2 and 3 are views of the razor in end elevation, with the razor parts shown in different positions;

Figs. 4, 5, 6 and 7 are views of the razor and its associated magazine as seen from above and these figures illustrate the progressive positions of a blade in being inserted in and ejected from the razor;

Fig. 8 is a view of the blade holder of the razor, as seen from above, showing a partially inserted blade, all on an enlarged scale;

Fig. 9 is a similar edge view;

Fig. 10 is a similar view in end elevation;

Fig. 11 is a view in perspective of the magazine;

Fig. 12 is a view in perspective of the clamp member; and

Fig. 13 is a view in end elevation of the magazine with a portion of the end wall broken away to expose the blades contained therein.

The razor herein illustrated is one satisfactory and specific embodiment of the invention. It comprises a handle 10 from which projects a short square post merging at either side into a

flat bottom plate and this is formed integral with upstanding side plates 12 and 13 approximately triangular in contour. The side plates 12 and 13 at their upper edges slope downwardly and forwardly. Securely fastened between the forward ends of the side plates 12 and 13 is a sheet metal member presenting a forwardly inclined blade seat 14 and a downturned guard flange 15. The latter is separated from the blade seat by a longitudinal slot and is corrugated throughout its skin-engaging area. It will be understood that this member, which comprises the blade seat and guard is rigidly assembled once for all in the proper position, supported at its ends between the side plates 12 and 13.

The side plates are held together by four transverse pins or shafts upon each of which is mounted a sleeve or roll. The two lower shafts 16 and 17 carry rolls upon which is guided the strop 18, a portion of which is shown in Fig. 3. Upon the uppermost shaft 19 is journalled a sleeve 20 carrying the blade holder which comprises a front plate 21, and a narrow spring back plate 22 having at each end a small roll 23 which acts as a yielding detent in co-operation with the notched blade as will be presently described. The front plate 21 is connected throughout its full length to the sleeve 20 whereas the back plate 22 is connected to the sleeve 20 only by a centrally disposed tongue so that both of its roll-carrying ends are free to spring toward or from the front plate. The sleeve 20 is provided at its left-end with a pinion meshing with the pinion upon the sleeve 24 freely rotatable upon the shaft 25 and arranged directly beneath the shaft 19. The side plate 12 is provided with a curved blade-retaining guard 26 and the side plate 13 has a corresponding curved guard 27 both concentric with the axis of the sleeve 20. These guards surround the sleeve 20 except in a limited gap adjoining the forward edge of the side plates. Accordingly, the razor is so organized that a blade can be removed from the holder or a new blade inserted in the holder only when the holder is positioned with a blade upon or near the blade seat where it registers with the gaps in the curved guards. Otherwise the guards 26 and 27 positively prevent a blade from being moved endwise into or out of the holder.

The razor and magazine herein shown are organized to handle a flat single-edged blade 30 herein shown as of the well-known "Valet" type. This blade has in each end near its back edge a curved locating notch. It is provided in its body portion with perforations shaped in accordance with the letters of the word "Valet."

After a blade has been presented to the holder it is held accurately in shaving position upon the blade seat 14 by a spring actuated clamp 31, best shown in Fig. 12. The body of the clamp has a down-turned finger piece 32 and spaced side arms carrying an upturned flange 33 supported in position above a wide longitudinal opening provided for the reception of the guard 15 and the edge portion of the blade 30. The clamp is also provided with an upturned transverse rib 34 which substantially stiffens it and by which it is moved. The clamp 31 as a whole is mounted for transverse movement from front to rear in a guideway provided between the post of the handle and the bottom plate of the head. Its body portion is provided with a downturned ear which engages one end of a U-shaped spring 35 housed in the handle 10 and acting normally to press the clamping member firmly inwardly or toward the right as seen in Figs. 1-3 so as to bring the clamping flange or bar portion 33 upon the upper surface of the blade just behind its shaving edge and just below the forward edge of the front plate 21. The clamping flange 33 thus holds the blade securely in place upon the blade-seat 14 and positively prevents swinging motion of the holder about the axis of the shaft 19. When, however, it is desired to release the blade the clamp 31 may be pressed forwardly through the medium of the finger piece 32 releasing the blade and clearing its cutting edge. The holder and blade may now be lifted from the position shown in Fig. 2 and swung freely upwardly, as for example, to co-operate with the strop 18 which, acting through the roll 25, is effective to swing the blade alternately back and forth through an arc of about 270° as the direction of the strop movement is reversed. During such swinging movement the blade is prevented from endwise displacement by the guards 26 and 27 already mentioned.

After the blade holder has been released by the clamp 31, and at all other times, the blade 30 which happens at that time to be in the holder is held frictionally against longitudinal movement and positively against transverse withdrawing movement from the holder by the two rolls 23 which are yieldingly held in locking position in the end notches of the blade. The rolls 23 positively prevent outward movement of the blade because their ends catch against the upper edge of the notches in the blade. They yieldingly prevent longitudinal movement of the blade although on account of their spring mounting they may be displaced when the blade is forcibly moved in endwise direction. When the blade has been released by the clamp 31 and the holder swung upwardly as shown in Fig. 3 the inward movement of the clamp is limited by engagement with a stop 11 which is formed as a part of the bottom plate of the head.

A new sharp blade may be inserted in the holder by hand while the clamp 31 is forwardly displaced and the used blade rests on its blade-seat as suggested in Fig. 2. It is advantageous, however, mechanically to supply blades for replacement from a magazine and a magazine of suitable construction for that purpose is herein shown. It is rectangular in outline and has a top plate 40 provided with a wide centrally disposed rib 41 providing an internal longitudinal channel. A feed slide 42 shaped to fit the rib 41 slides upon the top plate 40 and carries within the magazine a thin flexible blade-engaging dog 43 having a downturned edge arranged to engage the straight wall of the L-shaped aperture in the uppermost blade or the rear edge of the blade as the case may be. The front wall 44 of the magazine is provided with a transverse discharge slot 39 and an inwardly extending vertical corrugation 45. The latter and a correspondingly arranged corrugation in the rear wall of the magazine co-operate in locating a supply of blades within the magazine disposed in a vertical stack with their edges out of contact with the walls of the magazine. A leaf spring 38 tends at all times to press the blade stack upwardly.

Projecting forwardly from the bottom of the magazine is an elongated arm or finger 46 disposed obliquely as best shown in Fig. 13. The finger 46 is of such dimensions that it may be inserted in a guideway formed in the head of the razor above the body of the clamp 31, its opening being provided in the bottom edge of

the side plate 12. When the magazine is presented to the razor the finger 46 catches the upstanding flange 34 of the clamp and displaces the clamp forwardly. The final forward releasing movement of the clamp is effected when the cam 47 of the finger engages the stop 11 of the razor head. When the finger 46 is fully inserted the magazine is registered with its delivery opening 39 flush with the blade-seat of the razor and the clamp 31 forwardly displaced so that the blade is released and merely rests upon its seat. If now the feed slide 42 be advanced, the dog 43 engaging with the L-shaped aperture in the uppermost blade of the stack will advance the blade halfway into the holder in moving from the position shown in Fig. 4 to the position shown in Fig. 5. In this movement of the feed slide the new blade is forced under the right end roll 23 and the ejected blade is forced under the left end roll 23, both rolls being forwardly displaced and bowing the back plate 22 as suggested in Fig. 9. The feed slide 42 is now returned to its outer position as suggested in Fig. 6 while the two blades are maintained in position by the frictional engagement of the front and back plates of the blade holder. Finally when the feed slide is moved again toward the left the dog 43 will engage the rear edge of the uppermost blade and push it fully into shaving position upon the blade-seat of the razor and at the same time fully eject the used blade as shown in Fig. 7. Thus two full reciprocations of the feed slide 42 are required in order to advance a blade its own length or width from the magazine to the blade-seat of the razor.

It is believed that blades have not hitherto been delivered mechanically in a two-step manner from a magazine to a safety razor having a pivotally mounted blade holder except in accordance with my invention. The application of the invention is, of course, not limited to blades of the "Valet" type since practically any blade having a centrally or intermediately disposed perforation is adapted to be handled by mechanism within the terms of the accompanying claims.

Having thus disclosed my invention and described a specific embodiment thereof in an illustrative, but not in a limiting sense, I claim as new and desire to secure by Letters Patent:

1. A safety razor comprising a head having an open-ended blade holder mounted to swing therein, and a guard concentric with the axis of the holder and having a limited gap preventing endwise removal of blades from the holder except when the holder is angularly located in line with the gap.

2. A safety razor comprising a head having an open-ended blade holder mounted to swing therein, a blade-seat, and a guard extending adjacent to a portion only of the path of movement of the holder and in position to prevent withdrawal of a blade from the holder except while the blade is located substantially in contact with the blade-seat.

3. A safety razor comprising a head having a blade holder with opposed blade-engaging members, a blade having notches in its end edges, and spring pressed rolls mounted in one of its blade-engaging members and falling within said notches for retaining the blade in the holder.

4. A safety razor comprising a head having a blade holder with opposed blade-engaging members, a blade with notches in its ends, one of said members being yielding and carrying spaced rolls arranged to fit into the notches of the blade.

5. A safety razor comprising a head having a blade holder mounted for pivotal movement therein and comprising a sleeve having a wide front plate attached thereto and a narrow back plate having its ends unattached to the sleeve, and rolls mounted in the free ends of the back plate.

6. A safety razor comprising a head having a downwardly and outwardly inclined blade seat terminating in a guard, and a clamp movably mounted in the razor head and having an opening to receive said guard and a bar shaped to engage a blade upon the blade-seat above the guard.

7. A safety razor comprising a head having a pivoted blade holder, a stationary blade-seat supported at its ends in the head, and a spring actuated clamp movable edgewise toward and from the blade-seat and shaped to receive its outer edge and engage a blade resting on its face.

8. A safety razor comprising a head having a forwardly sloping blade-seat with a guard located beyond its outer edge, in combination with a clamp having a blade-engaging portion overlying a blade on said blade-seat and an elongated opening through which passes the guard.

9. A safety razor comprising a head having a stationary blade-seat, and a spring-actuated clamp movable toward and from the blade-seat, having an overlying blade-engaging portion and an underlying body portion provided with a rib by which the clamp may be released in opposition to its spring.

10. A safety razor comprising a head having a pivotally mounted blade holder, a blade-seat located in position to support a blade in the holder, a guard projecting forwardly from the blade-seat, and a clamping member having a body portion movable beneath the blade-seat, upstanding arms spaced to embrace the guard and a bar portion carried by said arms in position to move in above the guard and engage a blade supported on the blade-seat.

11. A safety razor having a pivotally mounted blade holder, a blade-seat in position to support a blade in the holder, and a clamp for holding a blade in shaving position on the blade-seat, in combination with a magazine having means for releasing the clamp and means for delivering a blade to the holder while positioned on the blade-seat.

12. A safety razor having a pivotally mounted blade holder, a blade-seat for supporting a blade projecting from the holder, a blade retaining guard having a gap adjacent to the blade-seat, and a blade clamp, in combination with a magazine having means for releasing the clamp and for aligning the magazine opposite to the gap in said retaining guard.

13. A safety razor having a movable blade holder, a blade-seat for supporting a blade in shaving position in the razor, and a spring-actuated clamp for a blade so supported, in combination with a magazine having a projecting arm shaped to enter the razor and to displace the blade clamp, and blade-feeding device movable in the magazine.

14. A safety razor having a movable blade holder, a blade-seat, and a spring-actuated clamp for a blade on the blade-seat, in combination with a magazine having a registering arm and a feeding device movable in the magazine and having a dog adapted to engage the uppermost blade

first at an intermediate point and then at its rear end in successive strokes.

15. A blade magazine comprising an elongated enclosure containing a stack of blades each having a centrally disposed perforation, a cover having an internal channel, and a blade-feeding device movable back and forth upon the cover and provided with a dog having a down-turned end shaped to engage in the perforation of the uppermost blade of the stack in one stroke and the rear edge of the same blade in its next succeeding stroke.

16. A blade magazine comprising a rectangular enclosure having an outlet slot in one end, a cover having a rib providing an internal channel leading to said slot, and a feeding device including a dog movable in said channel.

17. A blade magazine comprising a rectangular enclosure having a discharge opening in one end, opposed inwardly extending corrugations in both end walls for locating a blade stack, and a spring for moving the stack, while guided by said corrugations, to keep a blade thereof in alignment with said discharge opening.

18. A safety razor having a blade holder including a blade-seat and a clamp for a blade on the blade-seat, in combination with a magazine registering with the blade-seat, and a feeding device movable in respect to the magazine and having a dog adapted to engage the outermost blade in the magazine, first at an intermediate point and then at its rear edge in successive strokes for advancing a blade from the magazine in a two-step manner.

JOSEPH MUROS.