Feb. 17, 1948. W. STEINBACH 2,436,026

SAFETY RAZOR AND BLADE MAGAZINE THEREFOR

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Fig. 1,

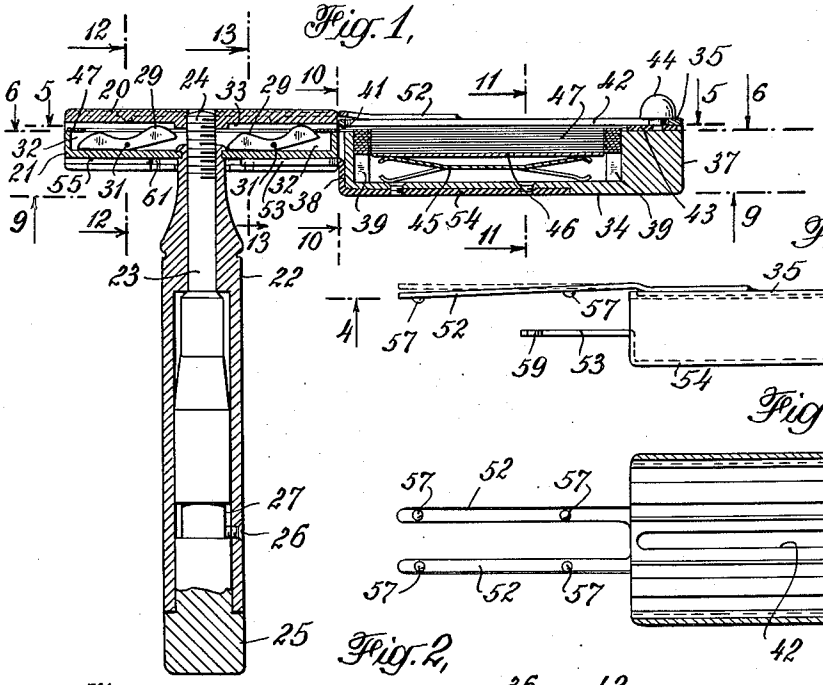


Fig. 3,

Fig. 4,

Fig. 2,

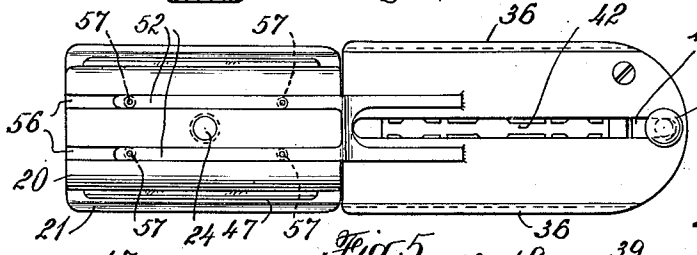


Fig. 7,

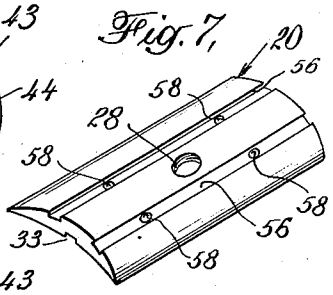


Fig. 5,

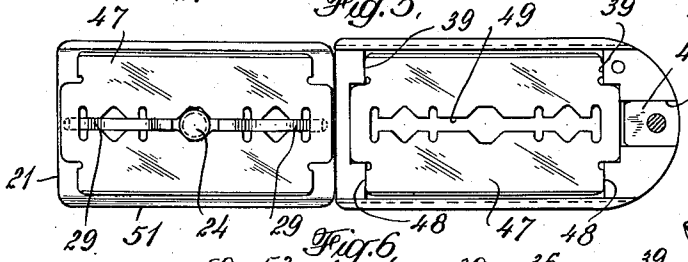


Fig. 8,

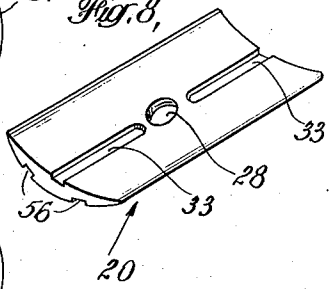
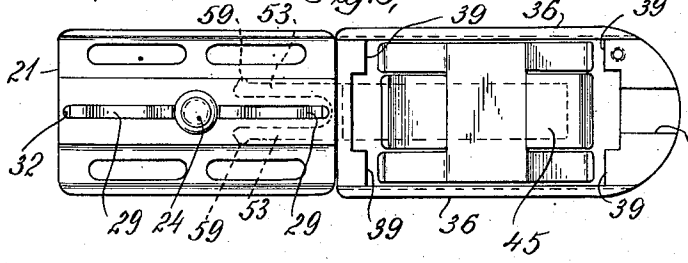


Fig. 6,



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SAFETY RAZOR AND BLADE MAGAZINE THEREFOR

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Fig. 9,

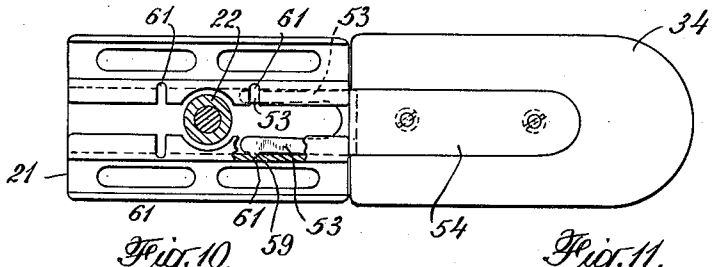


Fig. 10,

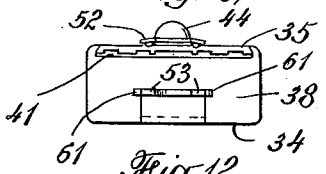


Fig. 11,

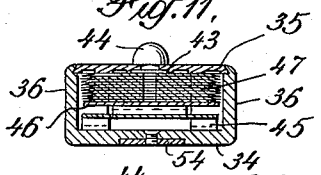


Fig. 12,

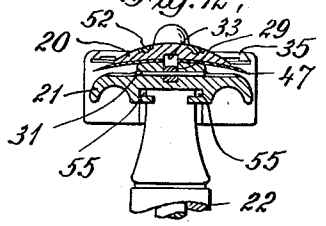


Fig. 13,

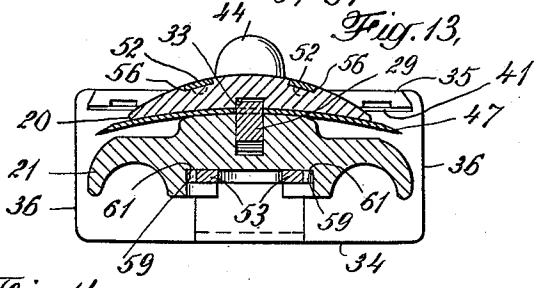


Fig. 14,

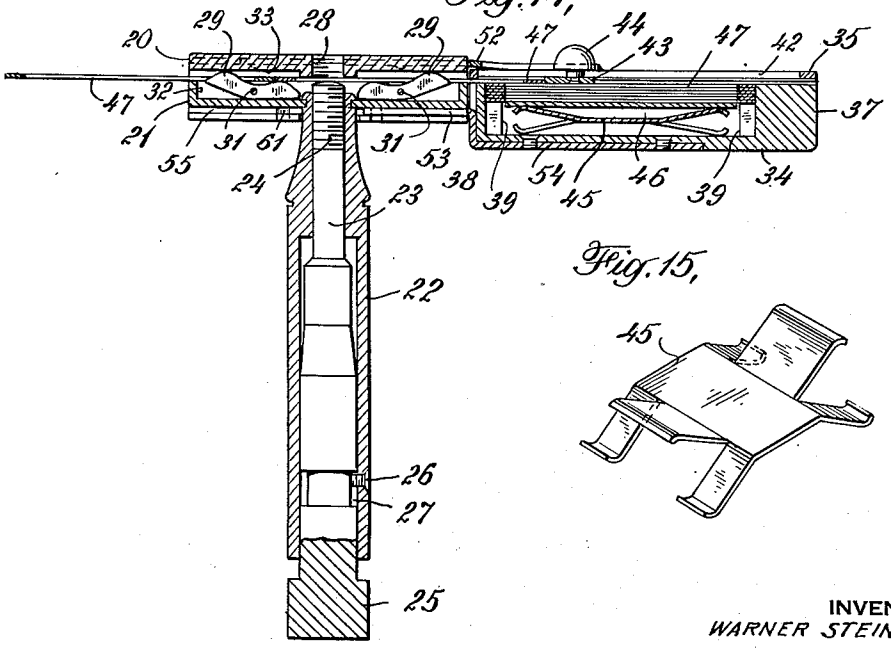


Fig. 15,

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UNITED STATES PATENT OFFICE

2,436,026

SAFETY RAZOR AND BLADE MAGAZINE THEREFOR

Warner Steinbach, Maplewood, N. J.

Application April 13, 1945, Serial No. 588,104

9 Claims. (Cl. 30—40)

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This invention relates to a magazine for double-edge safety razor blades, a razor therefor and means whereby the magazine can be mounted on the razor to inject a new blade while simultaneously ejecting a dull one. Magazines for double-edge blades have been proposed—I, myself, have invented such and have filed two applications for patents on them: Serial No. 571,260, now Patent No. 2,410,311, issued Oct. 29, 1946, and Serial No. 580,594—but those magazines—including my own—have been designed for mounting on a razor, which, despite various modifications to adapt it to magazine feed, has been conventional at bottom, being provided with a central, threaded stud or rod depending from the cap or outer clamping plate and engaging a threaded socket in the handle, and also with blade-locating pins or medial bar, likewise depending from the cap and extending through or into the guard plate. It is impossible to feed a conventional blade into position between the cap and guard plate of such a razor without a complete separation of the two, and as this is not feasible, it has been necessary to provide the blade with a medial slot slightly wider than the thickest stud, rod, pin or bar and left open at one end so that the blade can be fed into shaving position, open end foremost, straddling all obstructions—and likewise be ejected closed end foremost. It has thus been necessary always to mount the magazine on that end of the razor head adjacent the open end of the dull blade so that the dull blade may be ejected in the proper direction; that is to say, closed end foremost.

It is the object of the present invention to provide means whereby a slotted double-edge blade of any standard make can be mounted in a magazine and fed from it, lengthwise, between the cap and guard plate of a double-edge razor while simultaneously ejecting a dull blade, it being a matter of indifference on which end of the razor head the magazine is mounted or in which direction the dull blade is moved for ejection.

I attain this object, generally speaking, by moving the threaded rod from the cap to the handle and providing the cap with a threaded socket or hole for receiving it. To disengage guard plate and handle from the cap the rod is unscrewed from its socket and may then be retracted into the handle, its upper end lying flush with or below the upper face of the guard plate and thus interposing no obstacle to blade movement along the guard plate. As substitute for the other blade-and-cap locating means—pins or medial bars depending from the cap—which

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would likewise prevent blade movement, I provide the guard plate with vertically yieldable medial guides which enter slots or other appropriate recesses in the under face of the cap. In order to hold the cap and guard plate in proper position to receive a new blade after the threaded rod has been unscrewed from the cap and retracted, I provide the magazine with resilient fingers which grasp the cap and guard plate and hold them so that the space between them is properly aligned with the blade discharge slot in the magazine during the blade injecting and ejecting operation.

The magazine itself is provided with means for holding a stack of standard notched and slotted double-edge blades with their cutting edges out of contact with the side walls of the magazine. A spring urges the stack toward the top of the magazine with the topmost blade in alignment with a blade-discharge passage. A slide mounted for longitudinal movement in the top of the magazine engages the rear end of the topmost blade and, properly manipulated, discharges that blade from the magazine and into the blade-receiving space between the cap and guard-plate of the razor while simultaneously ejecting the dull blade from that space. During this operation the blade-clamping pressure has been relaxed, due to the retraction of the threaded rod, so that the dull blade is held but slightly flexed and under reduced tension. The yieldable medial guides in the guard plate enter the slots in the blades to guide and center them. They offer no obstacle to the passage of the blades because they are depressed by the solid end portions of the passing blades.

My invention will be more fully understood from a study of the accompanying drawings which illustrate a preferred embodiment of it, although no doubt other embodiments could be devised within its purview, and these too are embraced within my claims.

In these drawings,

Figure 1 is a vertical longitudinal section through the razor and magazine of my invention shown in blade-feeding relationship,

Figure 2 is a top plan view of the razor and magazine of Figure 1,

Figure 3 is a side view of the magazine detached from the razor,

Figure 4 is a view taken along line 4—4 of Figure 3, showing the underface of the top of the magazine,

Figure 5 is a view taken along line 5—5 of Figure 1, above the blades,

Figure 6 is a view taken along line 6—6 of Fig-

ure 1 below the blade in the razor and showing the magazine with the blades and pressure plate removed,

Figure 7 is a perspective view of the cap showing its top,

Figure 8 is a perspective view of the cap showing its underface,

Figure 9 is a view taken along line 9—9 of Figure 1 showing the bottom of the guard plate and the bottom of the magazine,

Figure 10 is a view taken along line 10—10 of Figure 1 showing the discharge end of the magazine,

Figure 11 is a transverse section taken along line 11—11 of Figure 1,

Figure 12 is a transverse section taken along line 12—12 of Figure 1,

Figure 13 is a transverse section on an enlarged scale taken along line 13—13 of Figure 1,

Figure 14 is a vertical longitudinal section through the razor and magazine of Figure 1, but showing the new blade partly fed into the space between the cap and the guard plate and a dull one partly ejected, and

Figure 15 is a perspective view of the spring which urges the stack of blades against the top of the magazine casing.

The razor illustrated in these drawings comprises an upper clamping plate or cap 20, a lower clamping plate or guard plate 21, and a handle 22 upon which the guard plate is permanently mounted. The handle is provided with a hollow bore within which is mounted a rod 23 having a threaded upper end 24 and terminating at its lower end in a fluted or knurled knob 25 which lies below the handle. The rod 23 is freely rotatable within the handle and is slidable longitudinally thereof within the limits set by a screw 26 mounted on the handle and extending within a wide annular groove 27 in the rod 23. Cap 20 is provided with a central threaded hole 28 which engages the threaded end 24 of the rod, as illustrated in Figure 1. In order to clamp and flex the blade between the cap and guard plate the threaded end 24 of the rod 23 is inserted within the hole 28 and turned by means of knob 25 to draw the cap toward the guard plate. To separate the cap and guard plate, the rod 23 is unscrewed. Although the clamping action is the same this arrangement of parts is the reverse of the one commonly found in razors of this type where the cap is provided with a depending threaded stud which engages a threaded socket in a rod rotatable within the handle.

Although the threaded end 24 of the rod 23 positions the blade centrally between the guard plates it cannot, of course, align the cutting edges of the blade with the edges of the clamping plates. In order to do this, I have provided the guard plate with two pivoted lugs or wigglers 29 pivoted on transverse pins 31 and lying within a medial slot 32 in the upper face of the guard plate. These wigglers are nicely balanced so that they will remain in equilibrium in any position. One end or the other, or both ends of each wiggler always project above the upper face of the guard plate and hence act as centering guides for a standard slotted blade. The under face of the cap is provided with recesses in the form of medial slots 33 into which the wigglers project when the parts are in shaving position and hold the cap in alignment parallel with the guard plate.

The magazine comprises a casing having a bottom 34, a top 35, side walls 36, rear walls 37 and front walls 38, the bottom, side, back and front walls constituting a unitary shell preferably of plastic. The inner corners of the casing are provided with vertical guide blocks 39 which, cooperating with the cut-out corners of a standard double-edge blade act to center the stacked blades and hold their cutting edges out of contact with the side walls of the casing. The two rear guide blocks extend to the top of the casing; the two front ones terminate at the lower edge of a horizontal blade-discharge passage 41, as deep as the thickness of a blade between the top edge of the front wall 38 and the top 35 of the casing. Slidably mounted within a longitudinal slot 42 in the top is a slide 43 provided with an external knob 44. Forward movement of this slide along the slot 42 serves to expel a blade in a manner to be described presently.

Supported upon the bottom of the magazine is a leaf spring 45, illustrated in detail in Figure 15. This spring is made from a sheet of spring metal from which three fingers are cut from its side portions, two being bent down and one being bent up as illustrated. This spring supports a pressure plate 46 which, in turn, supports a stack of blades 47. These blades, as illustrated in Figure 5, are conventional double-edge blades provided with notches 48 in their corners and each provided with a long medial slot 49.

The slide 43 when in its retracted position overlies the thick rear wall 37 of the casing and within a wide slot 51 provided for its reception. In this position the slide is to the rear of the topmost blade of the stack and so is in a position to discharge it. The forward edge of the slide 43 is straight and square and extends transversely of the casing, which is likewise true of the ends of the blades. Thus, when the forward edge of the slide engages the rear edge of the topmost blade to discharge it there is no tendency for the blade to cant. When the slide is moved to the left through manipulation of the knob 44, the topmost blade is disengaged from the stack and moved forward through the discharge passage 41, the lower blade being held back by the forward wall which terminates below the discharge passage. During the discharge movement, the topmost blade is centered with reference to the casing by the action of the slide as just described and so is moved directly from the magazine to the guiding wigglers of the razor with its cutting edges held out of contact with the side walls 36. The slide is so proportioned that it can follow the blade through the discharge passage 41 until the new blade is properly positioned in the razor, whereupon the slide is returned to its initial position at the rear of the magazine and held in readiness to discharge another blade. Meanwhile, the plate 46 under the pressure of the spring 45 has raised the whole stack by the thickness of one blade and another blade is now in position to be discharged.

I shall now describe the means for mounting the magazine upon the razor and conditioning the latter for the reception of the new blade. The magazine is provided with two pairs of fingers extending horizontally from its discharge end; the upper and longer pair 52 are mounted upon and extend from the top of the casing and the lower and shorter pair 53 extend from a point in the front wall below the fingers 52. As illustrated, the fingers 52 overlie and are welded to the metal top 35 of the casing and the fingers 53 constitute an integral part of a metal strip 54 secured to the bottom of the casing and bent as illustrated to bring the fingers 53 within the

proper distance below the fingers 52. The fingers 52 are resilient in order that they may grasp and hold the razor cap and guard plate between them and the fingers 53.

The lower face of the guard plate 21 is provided with guideways 55 designed to receive the fingers 53. The top of the cap 26 is provided with a pair of grooves designed to receive the fingers 52. Thus, the magazine can be mounted on the razor by thrusting the fingers 53 within the guideways 55, while the fingers 52 lie within the grooves 56, and being resilient act to grasp and hold the razor cap. However, in order to insure against accidental longitudinal displacement during the blade-feeding operation, I provide the lower face of each finger 52 with a pair of hemispherical buttons 57 which snap into corresponding depressions 58 lying within the grooves 56. Thus, when the magazine is thrust home, the buttons 57 snap into their proper depressions 58 and hold the parts against accidental displacement, although, of course, the pressure exerted by the fingers is not so great that the magazine cannot be readily removed by the shaver by the exertion of a slight purposeful pull. The fingers 53 are likewise provided with transverse projections 59 which snap into transverse notches 61 in the side walls of the guideways 55 for the same purpose.

I shall now describe the steps employed in feeding a new blade to the razor and ejecting an old one. The magazine is mounted upon either end of the head of the razor as just described, the parts then occupying the position illustrated in Figure 1. The threaded end 24 of the rod 23 being screwed into the aperture 28 of the cap and extending through the central hole in the blade, it is, of course, impossible either to feed a new blade into position or to eject the old one. As soon as the magazine is mounted upon the razor, the first step is to unscrew the rod 23 from the cap by manipulation of the knob 25 and then to retract the rod until its upper end lies flush with or below the upper face of the guard plate, as shown in Figure 14. The dull blade is now held in position only by the wigglers and by the reduced tension imposed by the resiliency of the fingers 52. The slide 43 is now pushed to the left, feeding the topmost blade in the magazine into the space between the cap and guard plate of the razor. The new blade engages the adjacent end of the dull blade and moves the latter forward. As the closed ends of the blades engage the near end, if previously raised, of each wiggler, that end is depressed and the far end raised, the spacing between the ends of each wiggler being such that the rising far end cannot engage the solid metal but passes upwardly into the slot of the outgoing dull blade. When the closed ends of the blade next engage the raised far end of the wiggler previously encountered, that end is depressed and the near end raised, passing upwardly into the slot of the incoming sharp blade which is then in position to receive it. When the slide 43 has reached the limit of its travel, the old blade will have been ejected and the new one moved into proper position in the razor. Thereupon the knob 25 is manipulated to return the threaded end 24 to the threaded hole 28 and securely flex and clamp the new blade in shaving position. The magazine is then removed from the razor and the slide 43 moved to its inoperative position at the right-hand end of the magazine.

I claim:

1. The combination of a double-edge safety razor and a removable blade-feeding magazine therefor; the razor comprising a guard plate, a handle mounted thereon, a cap, a threaded rod rotatably and retractably mounted within the handle and a correspondingly threaded socket in the cap for receiving the threaded rod; the magazine comprising a casing for a stack of notched and slotted double-edge blades, a blade discharge passage at one end of the casing, fingers extending from the discharge end of the casing and designed to grasp and hold the cap and guard plate after retraction of the threaded rod from engagement with the cap, with the dull blade in the razor in alignment with the discharge passage of the magazine, and means for discharging a single blade from the casing and feeding it between cap and guard plate while ejecting the dull blade.

2. The combination of a double-edge safety razor and a removable blade-feeding magazine therefor; the razor comprising a guard plate, a handle mounted thereon, a cap, a threaded rod rotatably and retractably mounted within the handle, a correspondingly threaded socket in the cap for receiving the threaded rod, and yieldable medial guides on the razor; the magazine comprising a casing for a stack of notched and slotted double-edge blades, a blade discharge passage at one end of the casing, resilient fingers extending from the discharge end of the casing and designed to grasp and hold the cap and guard plate after retraction of the threaded rod from engagement with the cap, with the dull blade in the razor in alignment with the discharge passage of the magazine, and means for discharging a single blade from the casing and feeding it between cap and guard plate while ejecting the dull blade.

3. The combination of a double-edge safety razor and a removable blade-feeding magazine therefor; the razor comprising a guard plate, a handle mounted thereon, a cap having medial recesses in its underface, a threaded rod rotatably and retractably mounted within the handle, a correspondingly threaded socket in the cap for receiving the threaded rod and yieldable medial guides on the guard plate designed to enter the recesses in the underface of the cap; the magazine comprising a casing for a stack of notched and slotted double-edge blades, a blade discharge passage at one end of the casing, resilient fingers extending from the discharge end of the casing and designed to grasp and hold the cap and guard plate after retraction of the threaded rod from engagement with the cap, with the dull blade in the razor in alignment with the discharge passage of the magazine, and means for discharging a single blade from the casing and feeding it between cap and guard plate while ejecting the dull blade.

4. The combination of a double-edge safety razor and a removable blade-feeding magazine therefor; the razor comprising a guard plate, a handle mounted thereon, a cap, a threaded rod rotatably and retractably mounted within the handle, a correspondingly threaded socket in the cap for receiving the threaded rod, guideways on the underface of the guard plate and grooves in the upper face of the cap; the magazine comprising a casing for a stack of notched and slotted double-edge blades, a blade discharge passage at one end of the casing, fingers extending from the discharge end of the casing and designed to enter the guideways and the grooves

to grasp and hold the cap and guard plate after retraction of the threaded rod from engagement with the cap, with the dull blade in the razor in alignment with the discharge passage of the magazine, and means for discharging a single blade from the casing and feeding it between cap and guard plate while ejecting the dull blade.

5. The combination of a double-edge safety razor and a removable blade-feeding magazine therefor; the razor comprising a guard plate, a handle mounted thereon, a cap, a threaded rod rotatably and retractably mounted within the handle, a correspondingly threaded socket in the cap for receiving the threaded rod, guideways on the underface of the guard plate and grooves in the upper face of the cap; the magazine comprising a casing for a stack of notched and slotted double-edge blades, a blade discharge passage at one end of the casing, fingers extending from the discharge end of the casing and designed to enter the guideways and the grooves to grasp and hold the cap and guard plate after retraction of the threaded rod from engagement with the cap, with the dull blade in the razor in alignment with the discharge passage of the magazine, projections on the fingers designed to snap into corresponding depressions in the razor, and means for discharging a single blade from the casing and feeding it between cap and guard plate while ejecting the dull blade.

6. A blade magazine for a double-edge safety razor having a blade-clamping cap and guard plate, comprising a casing for a stack of double-edge blades each having a longitudinal medial slot, closed at its ends, and corner notches, a blade-discharge passage at one end of the casing, fingers extending from the discharge end of the casing designed to hold and grasp between them the cap and guard plate of the razor, and means for discharging blades from the magazine one by one.

7. A blade magazine for a double-edge safety razor having a blade-clamping cap and guard plate, comprising a casing for a stack of double-edge blades each having a longitudinal medial slot, closed at its ends, and corner notches, a blade-discharge passage at one end of the casing, resilient fingers extending from the discharge end of the casing one designed to engage the lower face of the guard plate, the other the upper face of the cap, and means for discharging blades from the magazine one by one.

8. A blade magazine for a double-edge safety razor having a blade-clamping cap and guard plate, comprising a casing for a stack of double-edge blades each having a longitudinal medial slot, closed at its ends, and corner notches, vertical guides at the inner corners of the casing to engage the notches in the blade and center them in the casing, a blade-discharge passage at one end of the casing, spaced resilient fingers extending from the discharge end of the casing designed to hold and grasp between them the cap and guard plate of the razor, and a slide mounted in the top of the casing having a square end designed to engage the rear end of the topmost blade and discharge it from the casing through the discharge passage.

9. A blade magazine for a double-edge safety razor having a blade-clamping cap and guard plate, comprising a casing for a stack of double-edge blades each having a longitudinal medial slot, closed at its ends, and corner notches, vertical guides at the inner corners of the casing to engage the notches in the blade and center them in the casing, a blade-discharge passage at one end of the casing, spaced resilient fingers extending from the discharge end of the casing designed to hold and grasp between them the cap and guard plate of the razor, spring means for holding the stack of blades against the top of the casing with the topmost blade in alignment with the discharge passage and a slide mounted in the top of the casing having a square end designed to engage the rear end of the topmost blade and discharge it from the casing through the discharge passage.

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