Nov. 14, 1950 J. SIMON ET AL 2,529,819

RAZOR BLADE MAGAZINE

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Fig. 1

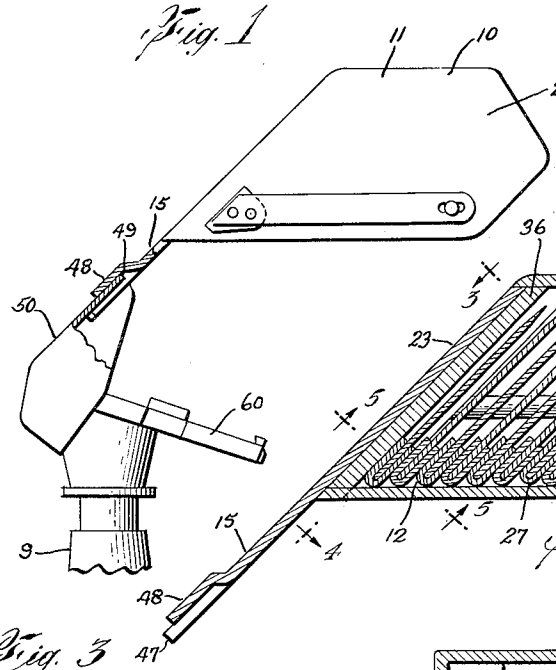
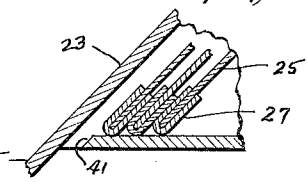


Fig. 6



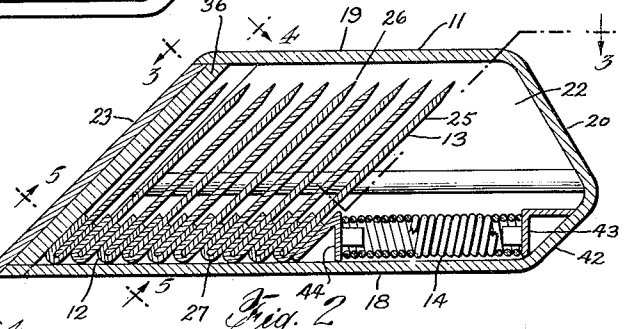


Fig. 2

Fig. 3

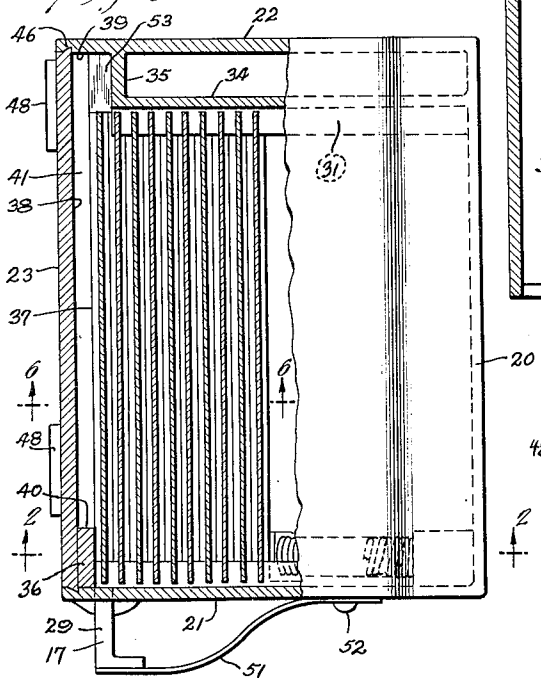
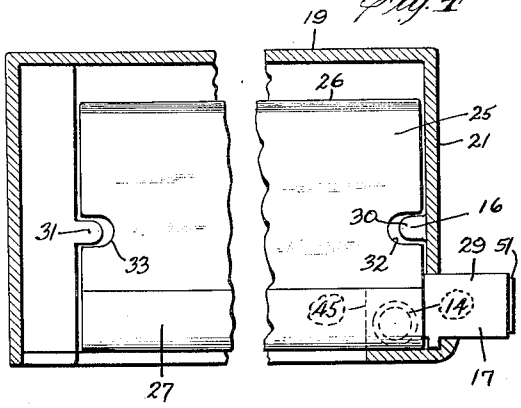


Fig. 4



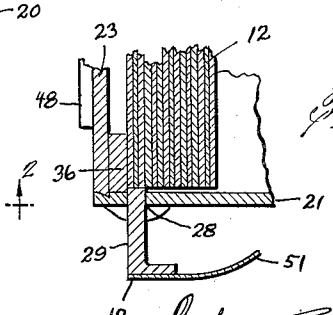


Fig. 5

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Fig. 7

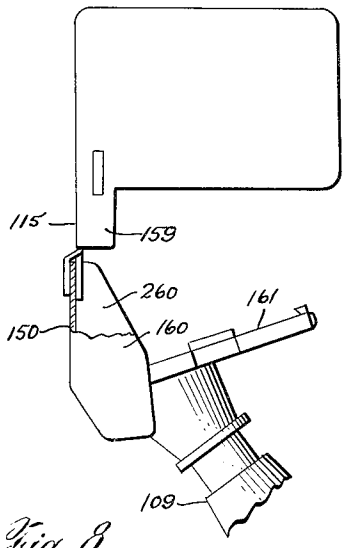


Fig. 9

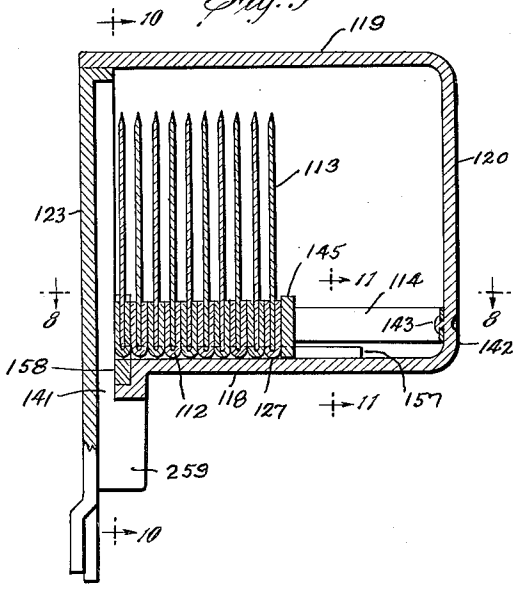


Fig. 8

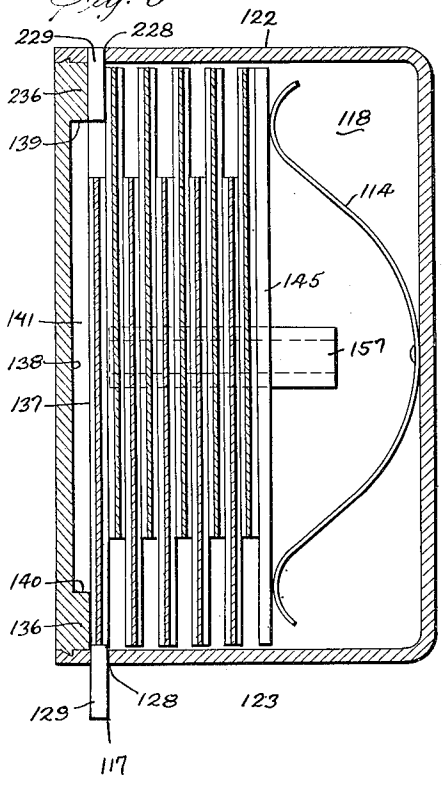


Fig. 10

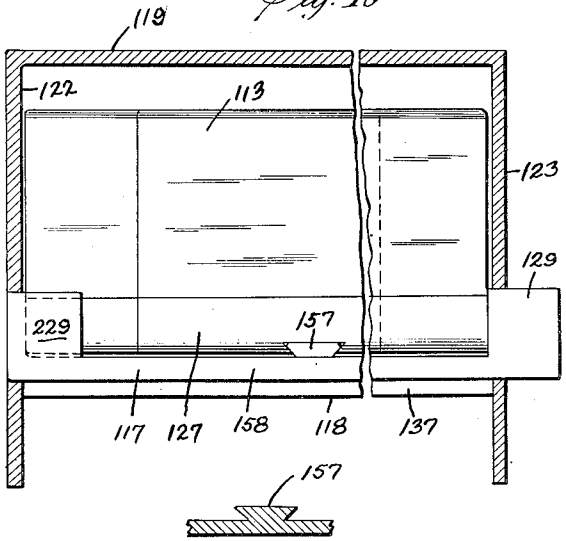


Fig. 11

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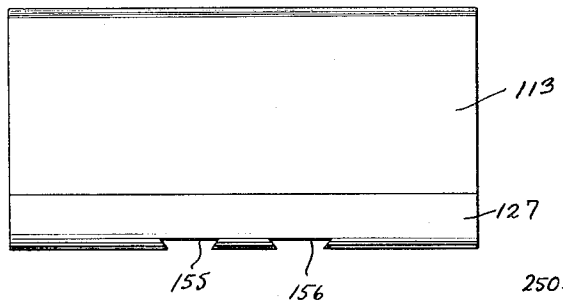
Richard S. Jemko

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Fig. 12.



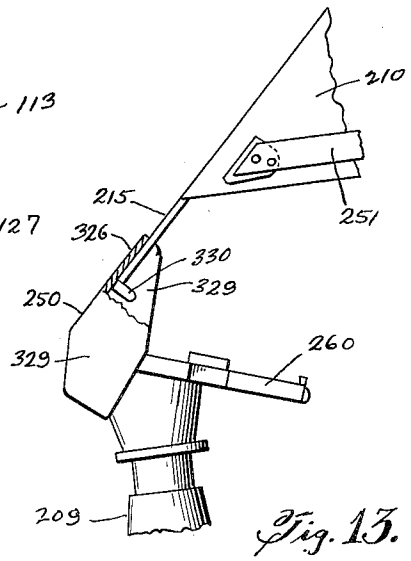


Fig. 13.

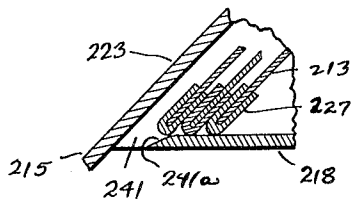


Fig. 14.

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2,529,819

RAZOR BLADE MAGAZINE

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Application June 9, 1945, Serial No. 598,442

4 Claims. (Cl. 206—16)

1

This invention relates generally to magazines and more particularly to magazines having a plurality of razor blades from which individual blades are consecutively feedable.

Among the objects of the present invention lies the provision of razor blade magazine construction which is adapted for use with razors of known construction and requiring no change in in such razors.

Another object herein lies in the provision of razor blade magazine constructions wherein the blades are arranged in stack relationship so that the cutting edges thereof are prevented from contacting each other.

Another object herein lies in the provision of razor blade magazines in which the stacked blades are substantially protected against outside contamination.

A further object herein lies in the provision of razor blade magazines which are simple in construction so that they may be manufactured in large quantities at low cost, whereby the magazine may be refilled if desired, but may be discarded after the contents thereof have been consumed.

Another object herein lies in the provision of structure of the class described wherein the cutting edges of the blade are prevented from undesirably contacting the inside surfaces of the magazine.

Another object herein lies in the provision of structure, by the use of which, it is not necessary to touch the blade which is to be removed from the razor, or the new blade which is to be loaded therein.

These objects and other incidental ends and advantages will more fully appear in the progress of this disclosure and be pointed out in the appended claims.

In the drawings similar reference characters designate corresponding parts of each embodiment.

Figure 1 is a fragmentary side elevational view partially broken away showing a first embodiment of the invention in engagement with the cover element of the razor.

Figure 2 is an enlarged vertical sectional view of the magazine shown in Figure 1. The plane of this view is indicated at 2—2 on Figure 3.

Figure 3 is a view partly in section and partly in elevation as indicated by the dot-dash line 3—3 on Figure 2.

Figure 4 is a fragmentary sectional view as seen from the plane 4—4 on Figure 2.

Figure 5 is a fragmentary sectional view of the

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structure in the lower left-hand corner of Figure 3 and is taken generally from the plane 5—5 on Figure 2.

Figure 6 is an enlarged fragmentary vertical sectional view of the magazine of Figure 1. This figure is taken generally from the plane 6—6 on Figure 3.

Figure 7 is a fragmentary elevational view of a blade magazine showing a second embodiment of the invention and in which the magazine is in engagement with the cover element of a safety razor.

Figure 8 is an enlarged horizontal sectional view of the magazine of Figure 7 and is taken on the plane 8—8 of Figure 9.

Figure 9 is an enlarged vertical sectional view of the magazine on Figure 7.

Figure 10 is a fragmentary vertical sectional view as seen from the plane 10—10 on Figure 9.

Figure 11 is a fragmentary vertical sectional view as seen from the plane 11—11 on Figure 9.

Figure 12 is an elevational view of the blade in the second embodiment of the invention.

Figure 13 is an enlarged fragmentary elevational view, corresponding generally to Figure 1, but showing a third embodiment of the invention.

Figure 14 is an enlarged fragmentary vertical sectional view of the magazine of Figure 13, the Figure 14 corresponding generally to Figure 6.

Turning now to the first embodiment of the invention illustrated in Figures 1 to 6, inclusive, the magazine is generally indicated by reference character 10. The magazine comprises generally, a casing 11, a stack 12 of razor blades 13, longitudinal pushing means 14, a razor connecting element 15, blade guiding means 16 and an ejector 17.

The casing 11 includes a bottom wall 18, a top wall 19, a rear wall 20, a right side wall 21, a left side wall 22 and a front wall 23. The bottom wall 18 and the top wall 19 are preferably parallel, and are spaced from each other a distance substantially greater than the effective height of the blades 13 depending upon the inclination thereof. The blades 13 are of uniform construction and each includes a body 25, a cutting edge 26 and a head 27. The head may be provided with a reenforcement, U-shaped in section, in a well known manner. The blades are stacked with the cutting edges 26 uppermost spaced from the lower surface of the top wall 19, while the heads 27 rest upon the upper surface of the bottom wall 18. The rear wall forms a support for the rear end of the longitudinal pushing means 14, but otherwise may have

any desired configuration, serving as it does, to connect the rear edges of the top and bottom walls.

The right side wall 21 is provided with an orifice 28 (see Figure 5), through which the finger 29 of the ejector 17 may be reciprocated.

The guiding means 16 includes a pair of oppositely disposed longitudinally arranged ribs 30 and 31 which are adapted to coact with correspondingly positioned indentations 32 and 33 in the blade bodies 25. These indentations 32 and 33 may be the well-known indentations on blades of this character, which, when in the razor 9 are used to urge the blade into engagement with the appropriate portions of the guard. The rib 30 may be integral with and extended inwardly from the inner surface of the wall 21. The rib 31 may be integral with and extended inwardly from the extension 34 which may be a false wall supported inwardly of the inner surface of the left side wall 22. The extension 34 may connect the upper and lower walls 19 and 18 respectively, and the wall portion 35 may act as a guide for a blade during its ejection as will more fully appear. The inner surfaces of the wall 21 and the extension 34 are parallel and are spaced a distance substantially equal to or greater than the total length of each of the blades 13. As will be apparent from a perusal of Figure 3, the portion of the wall 22 rearwardly of the guide 35 and the portion of the rear wall 20 outwardly of the extension 34 may be eliminated, since this eliminated portion merely furnishes a structural and visual symmetry. The rib 30 preferably extends forwardly from the rear wall 20 to abut at its forward end against the rear surface of the shoulder 36 disposed on the rear surface along the right vertical edge of the front wall 23. The rib 31 preferably extends from the rear wall 20 forwardly to terminate coterminously with the forward surface of the wall portion or guide 35. The bottom wall 18 has the forward edge 37 thereof spaced rearwardly from the inner surface 38 of the front wall 23, a distance substantially equal to or slightly greater than the thickness, of a head 27 of a blade 13. The inner surface 39 of the left side wall 22 is spaced from the inner surface 40 of the shoulder 36, a distance substantially equal to or slightly greater than the length of a blade 13 or the head thereof 27 which is of the same length. The edge 37, the inner surface 38 of the front wall 23, and the inner surface 39, and the inner surface 40 form the margin of the discharge opening 41 through which the blades are consecutively ejected.

Located at the rear of the bottom wall 18 and the lower portion 42 of the rear wall 20 is a stationary spring seat 43 which may have a pin engaging the rear convolutions of the spring 41. Disposed forwardly of the front end of the spring 14 is a pressure member 44. The member 44 may have a pin at the rear portion thereof adapted to engage within the forwardmost convolutions of the spring 14 and may have a front plate 45 disposed at an angle to correspond with the angle of the shoulder 36. The width of the plate 45 is preferably substantially equal to the width of the shoulder 36.

The front wall 23 is detachably engageable with the forward edges of the side walls 21 and 22. As shown in Figure 3 the front wall 23 has a pair of tongues 46 which are slidably engageable within the forward edges of the side walls 21 and 22. This tongue and groove arrangement permits the front wall to be removed for the purpose of replenishing the stack of blades within the magazine after it has been consumed. Where desired, the front wall may be permanently connected to the rest of the magazine by soldering or spot welding or may be semi-permanently attached by a well known tab and slot construction.

The razor connecting element 15 is preferably integral with the front wall 23, being a downward extension thereof. The lower edge 47 of the connecting element 15 may be provided with a plurality of offset guiding lips 48. Where the element 15 is composed of a resilient material, the lips 48 may be temporarily distorted to engage the forward edge 49 of the razor cover 50 and to thereby position the connecting element 15 and hence the magazine 10 with respect to the razor 9. As desired, the lips 48 may be permanently spaced from the body of the element 15, a distance substantially equal to the thickness of the top wall of the cover 50. The finger 29 is preferably maintained in the inactive position thereof (see Figure 5) by the spring 51 which constitutes a means for movably mounting said finger. The forward end of the spring 51 is connected to the outer end of the finger 29 while the rear end of the spring 51 is connected to the side wall 21. By reason of the radius between the finger 29 and the rivet 52 and the shape of the spring 51, the finger 29 may have substantially rectilinear movement through the orifice 28, rearwardly of the shoulder 36 and forwardly of the second blade (from the front wall) head in the stack.

The thickness of the finger 29 is preferably substantially equal to or slightly less than the thickness of the blade at the area where the finger engages the blade and/or the blade head. The lower edge of the finger may be provided with a projection which abuts against the there deformed inner surface of the outer wall and which prevents undesired outward movement of the finger (see Figure 4).

The operation of the first embodiment of the invention, as presently understood, is substantially as follows. With the front wall removed, a stack of blades is placed within the magazine in the positions shown in Figures 2 and 4. When the front wall 23 is put in place the spring 14 acting upon pressure member 44 forces the blades into parallelism with the front blade in contact with the rear surface of the shoulder 36. The blades are maintained in proper stacked relation by the ribs 30 and 31 and resting upon the bottom wall 18. The left end of the front blade is disengaged from the rib 31.

The magazine is now preferably associated with an open razor, such as the razor 9, by engaging the lower edge 47 with the cover 50 (see Figure 1). The magazine is positioned so as to lie above the razor whereby upon ejection of the blade from the magazine, it may fall upon the blade receiving seat or platform.

Pressure upon the outer surface of the spring 51 opposite the finger 29 inwardly of the device, causes the finger 29 to laterally displace the foremost blade 13, shifting the same over on to the portion 53 of the bottom wall 18. As soon as the right hand edge of the foremost blade 12 becomes aligned with the inner surface 40, manual pressure upon the spring 51 is released and the finger is withdrawn until its inner terminal is in alignment with the right end edge of the next succeeding blade. Now the pressure of the longitudinal pushing means upon the balance of

the blades in the stack forces the now released blade forwardly so that the same may drop through the opening 41 by the action of gravity onto the blade receiving portions of the razor 9. The whole stack of blades has shifted forward and the parts take new positions corresponding to the original position and the process of ejecting another blade may be repeated.

Turning now to the second embodiment of the invention illustrated in Figures 7 to 11 inclusive for the purpose of avoiding needless repetition parts corresponding to those of the first embodiment are given the same reference character with the addition of the prefix "1."

The principal differences occurring in the second embodiment include, the fact that the razor blades are stacked vertically, parallel to each other, and parallel to the front wall 123, and the blades are stacked in a staggered fashion.

In the second embodiment each of the blades are provided with a pair of wedge shaped indentations 155 and 156, one of which depending upon the particular position of the blade is engageable upon the key 157 projecting upwardly from the center of the bottom wall 118. By virtue of this construction the cutting edges of all except the forwardmost blade in the stack are prevented from moving upwardly to contact the inner surface of the top wall 119. The longitudinal pushing means 114 includes a spring which may be of the bowed shape shown in Figure 8.

The spring 114 may be secured in position by a rivet 143 which is integral with and extruded from the lower portion 142 of the rear wall 120. The rivet 143 may penetrate the orifice in the said spring thereat. The plate 145 has an indentation or lower edge slot which engages upon the key 157 and serves to distribute the pressure exerted by the forward ends of the spring 114 against the rear surface of the head 127 of the rearmost blade 113. This serves to advance the stack 112 as the foremost blade is fed therefrom. As best seen in Figure 8, the blades are alternately laterally displaced with respect to each other and the key 157.

The forward portions of the side walls 122 and 123 are provided with opposed orifices 128 and 228 within which the ejector 117 is slidably disposed. The ejector 117 is of generally U-shape and includes the blade end engaging fingers 129 and 229 joined by the connecting member 158. The thickness of the ejector 117 is preferably equal to or slightly less than the thickness of the head 127 of the blade 113 in the stack 112.

The front wall 123 has a pair of rearwardly extending shoulders 136 and 236. The inner surfaces 137, 138, 139, 140 form the margins of the discharge opening 141.

The side walls 122 and 123 are provided with the guide extensions 159 and 259 which serves to prevent lateral displacement of the blade being ejected after it has started to pass through the discharge opening 141 and before it has had a chance to be laterally guided by the portions 160 and 260 of the cover 150 of the razor 109.

As presently understood, the operation of the second embodiment of the invention is substantially as follows: assuming the parts to be in a position shown in Figures 7 and 8, manual pressure upon the finger 129 will shift the ejector 117 to the right of the magazine (upwardly as seen in Figure 8 and to the left as shown in Figure 10). When the inner edge of the finger 129 becomes aligned with the inner surface 140 of the shoulder 136, the inner surface of the finger 229 will become aligned with the inner surface of the left side wall 122. At this time the left and right ends of the foremost blade will become substantially aligned with the surfaces 139 and 140. The pressure of the pushing means 114 will advance the stack and thereby force the foremost blade into position above the opening 141, sufficient clearance being provded so that the foremost blade may drop down, under the action of gravity, to fall between the cover 150 and the blade seat or other blade receiving portions of the razor 109. As in connection with the first embodiment the connecting element 115 is of sufficient size so that after the blade falls through the opening 141 and the head of the blade engages the blade seat 161, the blade may rotate in a clockwise direction, with the parts arranged as in Figure 7, so that said blade may assume a normal position in substantial parallelism with the upper surface of the blade seat of the razor.

After the foremost blade has been discharged from the stack, the next blade in line is moved forwardly to rest upon the connecting member 158 and between the inner opposed surfaces of the fingers 129 and 229, whereupon the finger 229 being then disposed outwardly of the wall 122 may be pushed inwardly of the magazine to repeat in an opposite direction the steps just described.

As heretofore described after the stack of blades has been consumed, the same may be replaced by a removal and replacement of the front wall, or where desired, the magazine may be so inexpensively constructed so that the same may be discarded after the stack has been consumed. Obviously the number of blades in the stack may be varied and the pushing means altered to have sufficient range so that the last blade in the stack may be fed into the ejector.

While we have shown both the first and second embodiments of the invention as being loaded from the front of the magazine, by making the rear wall removable, the blades may be loaded from that end.

Turning now, the third embodiment of the invention is illustrated in Figures 13 and 14, wherein, for the purpose of avoiding needless repetition, parts corresponding to the first embodiment are given the same reference characters with the addition of the prefix "2".

In this third embodiment, the fingers 48 of the first embodiment are omitted with such loss of their function as follows. Thus the razor connecting element 215 is of a width adapted to fit between the sides of the cover 329, and of such length that when it abuts the blade shifting lugs 330 there is sufficient room for the blade to drop and turn, so that it may fall flat on the blade platform 260. In use the outer or forward surface of the razor connecting element 215 is manually maintained in contact with the inner surface of the cover top wall 326 during the ejecting or razor loading operation.

Also in the third embodiment, the rear marginal edge of the discharge opening 241 is angularly disposed with respect to the plane of the blade about to be discharged, and angularly disposed with respect to the horizontal, so that when the finger 17 moves the blade to a position directly rearwardly of the actual opening 241, it will rest upon the angular surface 241*a* and will advance under the action of gravity into and down through the opening 241. This action occurs before the finger 17 is retracted by

the spring 51. Thus the blade drops immediately upon the finger moving the blade edge to the wall or point 40 (Fig. 3), and not after the stack has advanced upon retraction of the finger, as described in connection with the first embodiment.

It may thus be seen that we have provided novel and useful razor blade magazine and razor blade constructions. We wish it to be understood that we do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

We claim:

1. Razor blade magazine construction for use with a stack of blades, said stack having a central longitudinal stack axis which extends through all of the blades in the stack, each of said blades being movable axially with respect to said stack axis in a first direction, in a second direction parallel to the cutting edge thereof, and in a third direction which is substantially in the plane of the blade and at an angle with respect to said second direction, said construction comprising; a casing within which the stack of blades is contained having a discharge opening, said opening having a central opening axis which is substantially perpendicular to the portion of the casing wherein said opening is located; each blade lying in a plane substantially perpendicular to said portion of the casing; means to urge the blades in said first direction simultaneously in the general direction of said opening and said stack axis, said opening axis being askew with respect to said stack axis; and ejector means for shifting a blade from said stack in said second direction so that the central axis of said blade which is substantially perpendicular to the principal planar surfaces thereof may take a position wherein said blade axis intersects said opening axis; said first mentioned means acting to move said last mentioned blade into alignment with said discharge opening; whereby the blade aligned with the discharge opening may pass outwardly from the casing therethrough.

2. In a razor blade magazine, a casing having a discharge opening which has a central opening axis substantially perpendicular to the portion of the casing wherein said opening is located; a stack of razor blades, each blade lying in a plane substantially perpendicular to said portion of the casing; said stack having a central longitudinal stack axis extending through all of the blades in the stack, each of said blades being movable axially of said stack axis in a first direction, in a second direction parallel to the cutting edge thereof and in a third direction which is substantially in the plane of the blade and at an angle with respect to said second direction; said stack being disposed within said casing; said opening axis being askew with respect to said stack axis so that said axes do not intersect; first means to shift said stack in said first direction in the general direction of said opening and said stack axis simultaneously; and ejector means to shift a blade in said second direction toward said opening whereby the central axis of said blade which is substantially perpendicular to the principal planar surfaces thereof may take a position wherein said blade axis substantially intersects

said opening axis; said first mentioned means acting to move said last mentioned blade into alignment with said discharge opening; whereby the blade aligned with the discharge opening may pass outwardly from the casing therethrough.

3. Razor blade magazine construction for use with a stack of blades comprising a casing within which the stack of blades is contained, said casing having a bottom wall with a discharge opening therein each blade lying in a plane substantially perpendicular to said wall; said discharge opening being of sufficient size for the passage therethrough of a single blade from said stack with said blade moving substantially in the plane of its principal planar surfaces; said stack resting on said bottom wall with another portion of said casing laterally positioning the stack with respect to said discharge opening; first means acting to move said stack in the general direction of said opening whereby a portion of one of the blades in the stack may overlie said opening and another portion of said last mentioned blade may rest upon the bottom wall bordering said opening, and second ejector means to laterally displace said last mentioned blade to momentarily position said blade above said opening; whereby the last mentioned blade may pass downwardly and outwardly through said discharge opening.

4. A razor blade magazine comprising: a casing having a bottom wall with a discharge opening therein which is of sufficient size for passage therethrough of a single blade from a stack with said blade moving substantially in the plane of its principal planar surfaces; a stack of blades superposing said bottom wall each of said blades lying in a plane substantially perpendicular to said bottom wall; and means associated with said casing for laterally positioning said stack with said discharge opening; second means acting to urge said stack in the general direction of said opening whereby a portion of said blade in the stack nearest said opening may be moved to a position overlying said opening, and another portion of said last-mentioned blade is supported by the border of said opening; and third ejector means to laterally displace said last-mentioned blade and shift the same to position it in alignment with said opening; whereby the last-mentioned blade may pass through said discharge opening and out of the magazine casing.

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RICHARD S. TEMKO.

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