Aug. 10, 1948. J. MUROS 2,446,715

MAGAZINE FOR SAFETY RAZOR BLADES

Filed Nov. 15, 1945 3 Sheets-Sheet 1

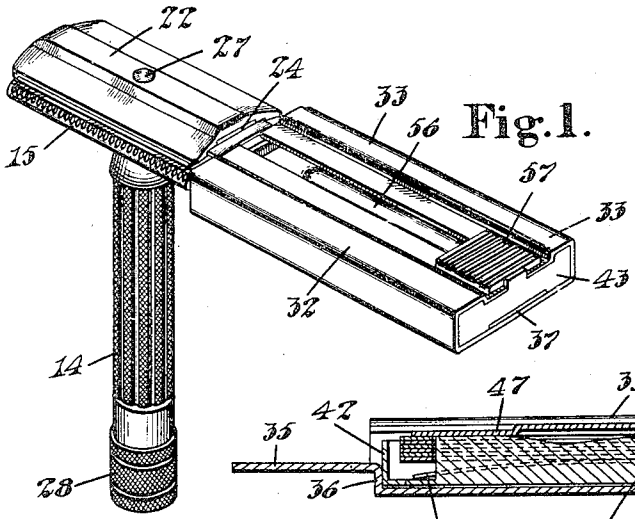


Fig. 1.

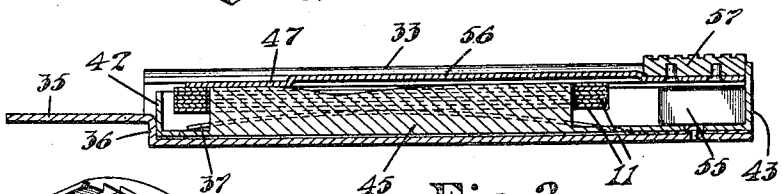
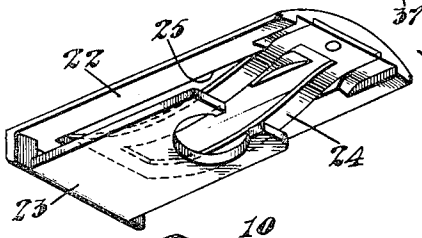
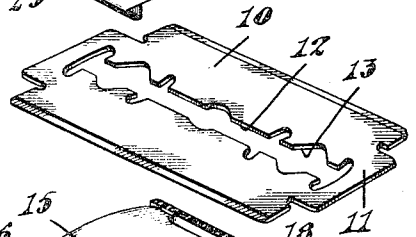


Fig. 3.





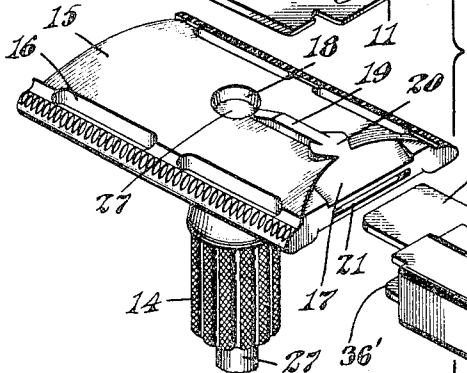


Fig. 2.

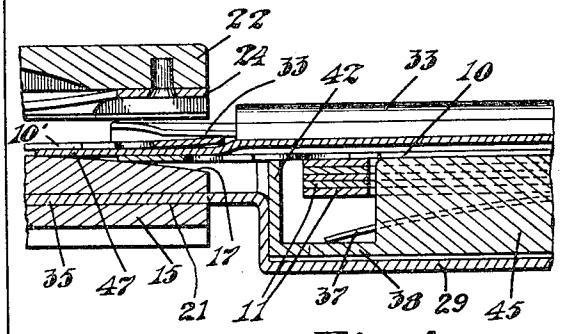
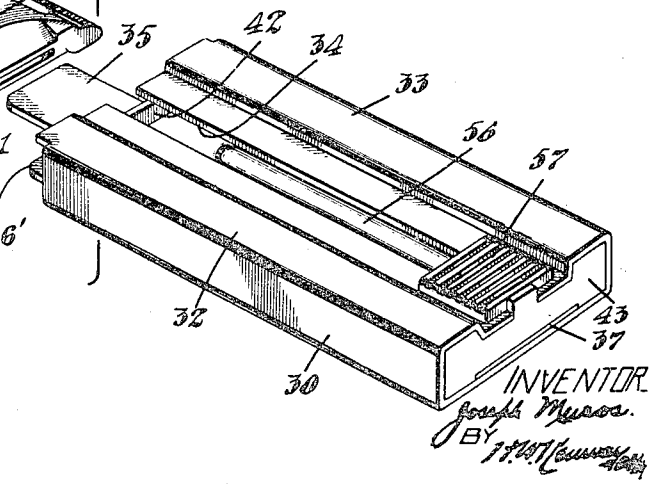


Fig. 4.



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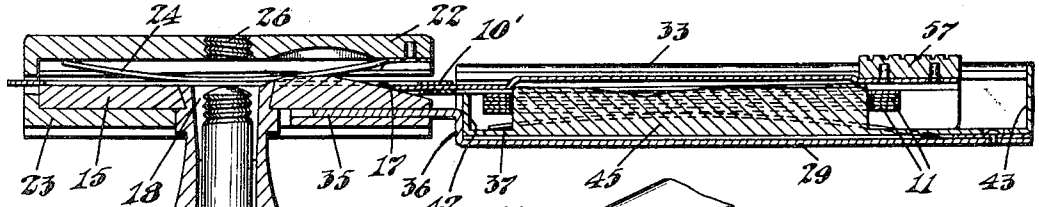


Fig.5.

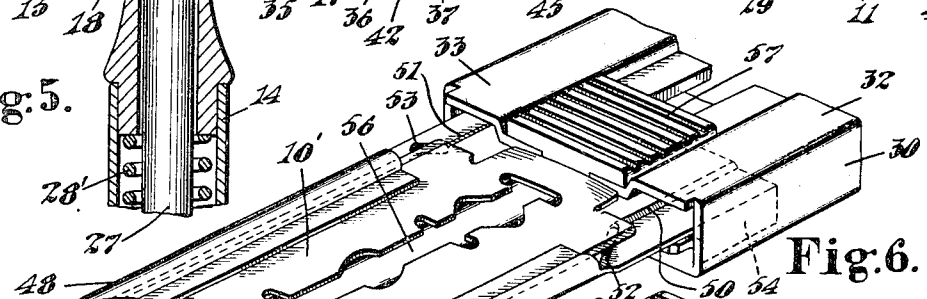


Fig.6.

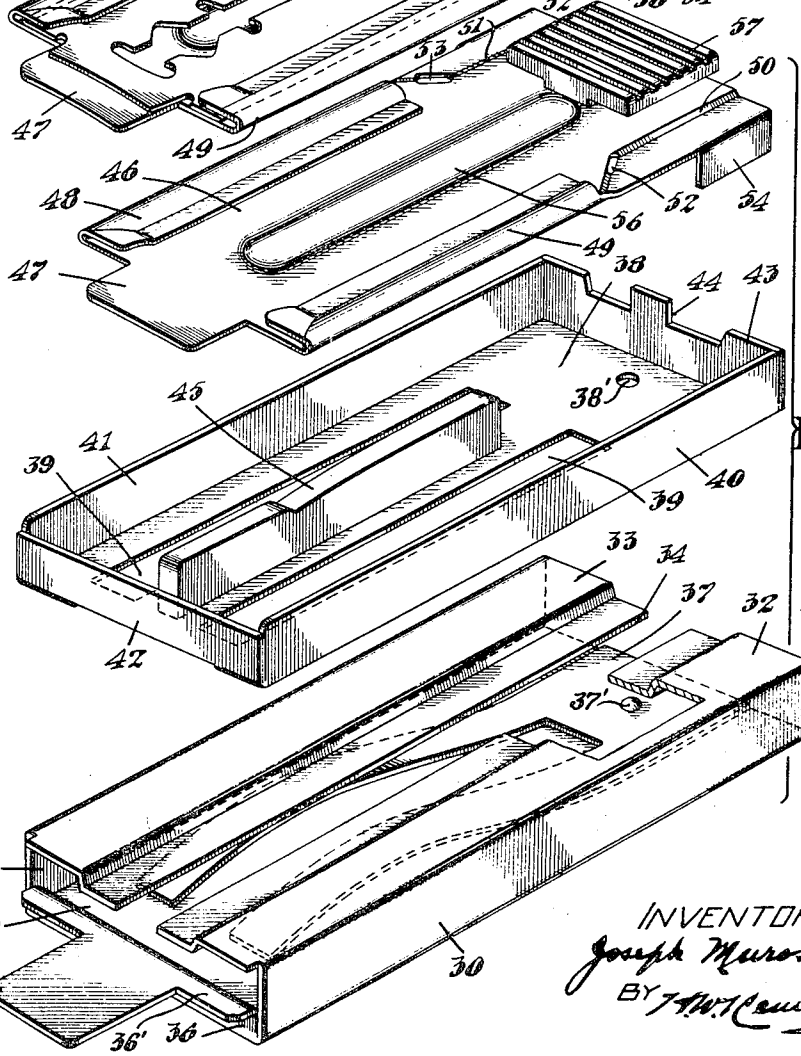


Fig.7.

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MAGAZINE FOR SAFETY RAZOR BLADES

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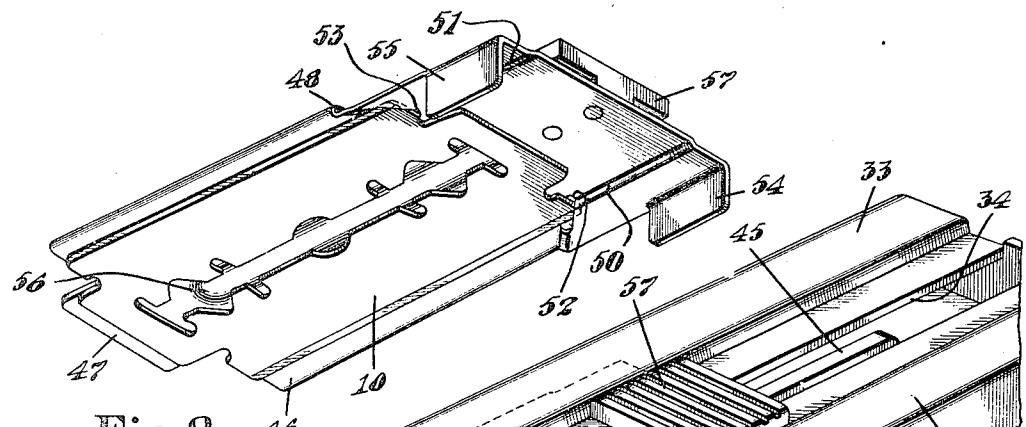


Fig.8.

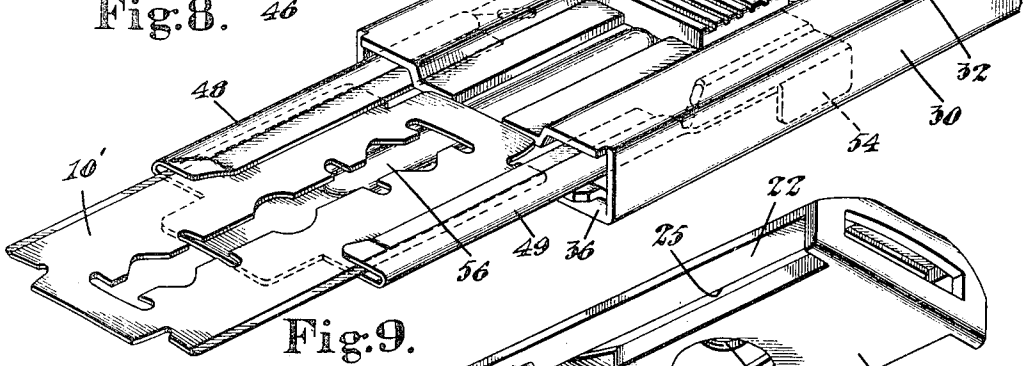


Fig.9.

Fig.10.

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UNITED STATES PATENT OFFICE

2,446,715

MAGAZINE FOR SAFETY RAZOR BLADES

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Application November 15, 1945, Serial No. 628,687

20 Claims. (Cl. 30—40)

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This invention relates to a new and improved magazine for safety razor blades and to a novel combination of a magazine and safety razor.

The general object of the invention is to provide a magazine, constructed and arranged to hold an ample supply of fresh safety razor blades, safely and without damage to their exceedingly keen, fine cutting edges, and being equipped with means for separating and feeding blades, one by one, from the blade stack, inserting the successive blades accurately into the safety razor, safely guarded from all possible contact with the fingers of the user, the magazine being provided also with means for extracting a used blade from the razor under the same conditions of safety.

Another important object of the invention is to provide a simple and compact magazine structure which may be manufactured on a commercial scale and operated with certainty and accuracy in carrying out its blade-inserting and extracting functions.

As herein shown, the improved magazine is well adapted to be charged or filled with a supply of fresh blades by the manufacturer and to safely contain and present the blades to the razor without the slightest impairment to their shaving edges. To this end, the magazine comprises an outer shell and an inner blade-carrying tray, in combination with a combined blade-feeding, inserting and extracting device. In assembling the device, the blade stack is placed into the tray portion of the magazine where it is accurately and positively held by a blade-locating rib. The tray is then inserted into the shell portion of the magazine and the complete unit locked, a combined feeding, inserting and extracting device acting, in addition to its other functions, as a cover or closure for the receptacle thus provided.

Many novel features of the invention are found in the combined blade-feeding, inserting and extracting device which is herein shown as, but is not necessarily, formed of sheet metal having a normal and slight transverse curvature and being provided with a pair of diverging slots, by which the uppermost blade of the blade stack is engaged at its rear corners and separated from those below it. This construction provides a two-point pick-up of the blade, with the result that any inaccuracy or slight distortion of the uppermost blade in the stack is overcome.

In the following description, the term "feeding device" will be used to designate the member which has the combined functions of blade separating, feeding, inserting and extracting.

The feeding device is provided with an extension or pilot that is capable of being deflected and is designed for co-operation with a blade-locating element of the razor, the latter causing the body portion of the feeding device to be raised as it emerges from the magazine and enters the safety razor. The device, moreover, is provided with projecting blade-engaging flanges which, during the blade-inserting operation and by reason of the said body portion being raised, are carried into abutting relation with the end of the magazine, so that, until the magazine has been separated from the razor and the feeding device has been permitted to resume its normal position, the latter cannot be retracted within the magazine and, consequently, cannot leave the used blade in the razor or improperly extract it with a portion of its cutting edges exposed.

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In one important aspect, the invention comprises a magazine constructed and arranged for handling safety razor blades of a well-known double-edged type; that is to say, blades having a longitudinal median slot and shoulders defining elongated unsharpened end portions of reduced width.

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:

Figure 1 is a view in perspective of the magazine in operative relation to a safety razor;

Fig. 2 is a view in perspective showing the parts of the razor head and a blade in exploded relation, and the assembled magazine;

Fig. 3 is a view of the magazine in longitudinal section and on an enlarged scale;

Fig. 4 is a fragmentary view in longitudinal section on a still larger scale, showing portions of the razor and magazine;

Fig. 5 is a view in longitudinal section of the magazine and razor in the relation shown in Fig. 1 but on a larger scale;

Fig. 6 is a view in perspective, on an enlarged scale, of one end of the magazine showing the feeding device in position at the end of its blade-feeding stroke;

Fig. 7 is a view in perspective, on an enlarged scale, showing the parts of the magazine in exploded relation;

Fig. 8 is a view in perspective showing the blade-feeding, inserting and retracting device on an enlarged scale as seen from beneath;

Fig. 9 is a view in perspective, on an enlarged scale, of the magazine showing the feeding device in partly retracted position; and

Fig. 10 is a view in perspective showing parts of the razor head in exploded relation and on an enlarged scale.

As a preliminary to describing the construction and operation of the magazine of my invention, one type of safety razor and safety razor blade adapted to be used in connection with the magazine will be described. The illustrated blade is of the well-known double-edged type, best shown in Fig. 2. It comprises a substantially rectangular body 10 of sheet steel which may be .003 to .007 inch in thickness and which is sharpened in both longitudinal edges. All four corners of the blade are shouldered or notched in such a manner as to provide elongated unsharpened end portions 11 of reduced width. The blade is also provided with a longitudinal medial slot 12, substantially as long as the cutting edges of the blade and provided with intermediate enlargements 13, designed to receive blade-locating studs of the razor.

The razor shown in the drawings is one of the type constructed and arranged to receive a blade of the character above described. It comprises a tubular handle 14, carrying a rectangular blade-supporting or guard member 15 having an upper convex blade-supporting face or blade seat. The side edge portions of the guard member are transversely scored and set off by longitudinal slots 16 from the body of the member. At one end, the guard member is provided with a beveled or inclined surface 17, to facilitate the presentation of a blade as will presently appear. The guard member has a central perforation 18 and between that perforation and the beveled end surface 17 is provided a short blade-locating rib 19, having its outer end shaped as a wide flat stud 20 of approximately diamond shape and of such size as to fit the intermediate enlargement 13 of the blade slot. That end of the guard member which has the inclined surface 17 may be provided with a transverse slot 21, for the reception of a magazine pilot arm hereinafter to be described. The function of this slot is best shown in Figs. 4 and 5.

The razor includes in its structure a cap member 22 which is detachably connected to the guard by an arm 23 extending from one end of the cap around and beneath one end of the guard and being forked to engage the upper end of the handle 14. The cap is provided with a slotted longitudinally disposed leaf spring 24 which, as shown in Fig. 2, is riveted to its inner or blade-engaging face. The inner or lower face of the cap is transversely concave and co-operates with the convex face of the guard member to impart the desired transverse curvature to the blade when the latter is clamped in shaving position. The spring 24 is normally bowed down from the inner face of the cap but is mounted in a recess 25, provided for that purpose in the face of the cap. In clamped position, the spring may be substantially enclosed in its recess. The cap has a centrally disposed threaded opening 26 for a clamping spindle.

The tubular handle 14 contains telescopically the threaded clamping spindle 27 provided at its lower end with a knurled finger piece 28. The perforation 18 of the guard member permits the passage of the spindle 27 with clearance. The handle contains a compression spring 28' which tends normally to depress the clamping spindle and move it below the blade seat whenever it is disengaged from the threaded opening 26 in the cap.

The razor itself is not herein claimed but forms the subject matter of applicant's U. S. Letters Patent No. 2,397,890, April 2, 1946.

The construction of the magazine will now be described and the manner of its co-operation with the razor will then be explained. The magazine is rectangular in shape and may be constructed of sheet metal or of plastic material. It may be designed to hold from five to twenty-five blades, or any desired number. It comprises a receptacle formed by an outer shell part and an inner tray part. The shell comprises a bottom 29, side walls 30, 31 and a top which is formed by inturned flanges 32 and 33. These flanges are shouldered to provide a longitudinal depression or channel in the top of the magazine containing an open slot 34. The front end of the shell is partly closed by a wall 36, terminating below the flanges 32 and 33 and thereby leaving an open slot above it. The wall 36 has a forwardly extending horizontal portion 36', and from this projects forward a pilot arm 35. This arm is shaped to enter the transverse slot 21 in the guard member and thus locates the blade magazine in proper alignment with the blade seat of the razor for delivering a blade thereto. The rear end of the magazine shell is open and unobstructed. A forked leaf spring 37 is attached by a rivet 37' to the bottom 29 of the shell and serves to lift the blade stack yieldingly and hold it against the top of the shell.

The tray part of the magazine, as best shown in Fig. 7, comprises a bottom 38, having a pair of longitudinal slots 39 which permit passage with clearance of the two side portions of the spring 37. The tray has side walls 40 and 41 and a front end wall 42 which, in the assembled magazine, co-operates with the depressed portions of the flanges 32 and 33 of the shell to define a blade exit-slot. The rear wall 43 of the tray is provided with a pair of notches 44 to accommodate the depressed shouldered portions of the flanges 32 and 33 of the shell. The portion of the wall 43, between the notches 44, closes the rear end of the slot 34 in the shell and provides a positive stop for the feed slide, as will presently appear. Fast to the bottom 38 of the tray is a longitudinal blade-locating rib 45. This has the usual function of locating a stack of blades in the magazine, specifically in the tray part thereof, with the sharp edges of the blades maintained out of contact with the walls 40 and 41, the individual blades being free to move vertically upon the rib. If desired, the upper edge of the rib may be provided with a depression midway its length, to facilitate the blade-feeding operation. In the bottom 38 of the tray is formed a hole or depression 38', into which the rivet 37' on the magazine shell snaps, as the elements of the latter are assembled, preventing disengagement of said elements.

The combined blade feeding, inserting and extracting device of the magazine is best shown in Fig. 7. It comprises a body portion 46 of thin, sheet material, substantially rectangular in outline and having a definite transverse curvature, herein shown as being upwardly convex. At its forward end it is shouldered to provide a somewhat resilient or yielding pilot extension 47 shaped to overlie the reduced end portion of a blade. The body portion is provided at its longitudinal edges with inturned flanges 48 and 49, forming between the body portion 46 and themselves longitudinal channels to receive a used blade and retain it frictionally when the device

is retracted from the safety razor. The forward ends of the flanges 48 and 49 are flared and thus provide each channel with a wide mouth which will take care of any inaccuracies in the location of the used blade. At the rear end of the body portion 46 are formed longitudinal shoulders 50 and 51, which terminate in forwardly directed converging blade-engaging slots 52 and 53. The device may be also provided at its rear end with downturned stop flanges 54 and 55. These stop flanges are arranged to engage the front and rear walls 42 and 43 of the tray when the device is moved to the limit of its path and so positively determine its feeding stroke. The body portion of the feeding device is provided with a shallow central longitudinal rib 56, which imparts substantial stiffness to the body and acts to bow upwardly the used blade. A fingerpiece 57 is secured to the rear end of the feeding device and this is undercut so that its upper portion may ride above the depressed portions of the flanges 32 and 33 of the magazine shell, while the blade-feeding and inserting portions move in sliding contact with the inner faces of the said depressed portions. The rib 56 is deep and wide enough to accommodate with clearance the blade locating stud 20, so that the new or fresh blade inserted into the razor will be left undisturbed on the razor guard when the razor and magazine are separated after the insertion of a new blade.

In operation, after disengaging the spindle 27 from the cap of the razor to afford passage for the fresh blade, the magazine is brought into operative relation to the razor merely by inserting the pilot arm 35 in the slot 21 of the razor guard. The finger piece 57 is now advanced toward the left from its initial position as shown in Figs. 1, 3 and 5. In this movement, the pilot extension 47 of the feeding device engages and rides up the beveled end face 17 of the guard member of the razor, thus lifting the used blade 10' from the blade seat against the pressure of the spring 24 in the cap and slightly raising the forward end of the body portion of the feeding device. At the same time the converging blade-receiving slots 52 and 53 engage the rear corners of the fresh blade 10 which is uppermost in the blade stack, this blade being accurately positioned for engagement by the slots by being held yieldingly against the depressed portions of the flanges 32, 33 of the magazine shell. The fresh blade 10 is, in the further movement of the feeding device, advanced and its solid end passes upwardly over the face 17, the stud 20 and the rib 19 of the guard member since the upper surfaces of these latter elements merge smoothly into the beveled surface 17. As the feed slide is advanced, its body 46 passes completely under the used blade, lifting it out of engagement with the rib 19 and stud 20. The fresh blade meanwhile settles itself upon the blade seat with the rib 19 received in its slot 12 and the stud 20 fitting into one of the enlargements 13 of the blade slot. In the advancing movement of the feeding device, the flanges 48 and 49 pass beyond the ends of the flanges 32 and 33 of the magazine. When this happens, the body portion 46 of the device assumes, as a whole, a horizontal position and thus the rear ends of the flanges 48 and 49 are brought into abutting relation to the forward ends of the flanges 32 and 33 of the magazine. Accordingly, the feeding device cannot be retracted while the magazine remains in operative relation to the razor, as shown in Fig. 1. It can be withdrawn into the magazine only when

the entire magazine is separated from the razor.

During the feeding stroke, the used blade enters the longitudinal channels between the inturned flanges 48 and 49 and the body portion 46 of the feeding device. These flanges and the body portion engage the blade frictionally and shield the cutting edges of the same. When the magazine with its projecting feeding device is withdrawn from the razor, the used blade is extracted from the razor, while the fresh blade, which has been advanced by its engagement with the slots 52 and 53 of the feeding device, remains behind upon the blade seat, being positively held in that position by engagement of the stud 20 with the enlargement 13 of the blade slot.

After the magazine is separated from the razor, the feed slide is free to be moved into the magazine. In this operation, the used blade 10', which is slightly bowed over the rib 56 by the flanges 48 and 49, abuts against the ends of the depressed portions of flanges 32 and 33. It is thus positively held against entering the magazine and is stripped from the feed slide in the continued inward movement thereof. When the slide reaches its initial position, the used blade 10' is entirely disengaged and may be dropped into any convenient receptacle.

It will be noted that the central rib 56 of the feeding, inserting and extracting device terminates at a point behind the forward ends of the blade-retaining flanges 48 and 49 and that its forward end is tapered or sloped. In meeting a used blade, therefore, the edges of the blade are first engaged by the flanges 48 and 49, and then the central rib 56 becomes effective to bow the blade upwardly into range of the depressed portions of the ribs 32 and 33 of the magazine. The ends of these flange portions, therefore, act as a stationary abutment and strip the used blade from the feeding device as suggested in Fig. 9.

The body portion 46 of the feeding and extracting device has been described as transversely curved but it will be understood that the same desirable results could be achieved if the body portion 46 were angular in shape or otherwise arranged so that the device presents a two-point pick-up for the blade. It will be noted that the body 46 of the blade feeding and extracting device is wider than the blades it handles and, consequently, the fresh sharp blade picked up at its corners by the slots 52 and 53 is completely and safely guarded during the feeding and inserting steps of the cycle.

Having thus disclosed my invention and described in detail illustrative embodiments thereof, I claim as new and desire to secure by Letters Patent:

1. A blade magazine comprising an elongated enclosure with a blade exit-opening at one end, means on said enclosure for fitting the same to a razor, means in said enclosure for locating therein a stack of sharp edged blades, a feed slide movable in said enclosure to advance by endwise movement through said exit-opening the uppermost blade of the stack into the razor, said slide including means for masking the cutting edges of the blade while being advanced into the razor, and means on said slide for detachably retaining thereon and withdrawing a used blade from the razor.

2. A blade magazine according to claim 1, said means for detachably retaining a used blade on said slide shielding the sharpened edges of the blade while held on said slide.

3. A blade magazine according to claim 1, in-

cluding means for stripping a used blade from said feed slide, while the latter is being retracted into the magazine.

4. A blade magazine comprising an elongated enclosure having a blade exit-opening at one end, means on said enclosure for fitting the same to a razor, a combined feed slide and blade extractor movable through said exit-opening into and out of said enclosure and serving to insert a new blade into the razor and withdraw the used blade therefrom, and an abutment on said enclosure located in the level of the used blade as the latter is being withdrawn from the razor, thereby stripping the used blade from said feed slide while the latter is being retracted into the magazine.

5. A blade magazine comprising an elongated enclosure having a blade exit-opening at one end, means on said enclosure for fitting the same to a razor, a combined feed slide and blade extractor movable through said exit opening into and out of said enclosure and serving to insert a new blade into the razor and withdraw the used blade therefrom, an abutment on said enclosure, and means on said feed slide for bowing the used blade thereon into the range of said abutment, whereby the used blade is stripped from said slide while the latter is retracted into the magazine.

6. In a blade magazine of the character described, including a combined blade-feeding and extracting device in the form of an oblong body having blade-retaining flanges at its longitudinal edges, and an intermediate longitudinal rib on said body arranged to bow a blade upwardly between said flanges.

7. In a blade magazine according to claim 6, said oblong body being transversely curved.

8. In a blade magazine, a combined blade-feeding and extracting device having a substantially rectangular body with marginal blade-retaining flanges, and a central rib projecting above the body of the device and having a tapered forward end disposed behind the forward ends of the said marginal flanges.

9. A blade magazine comprising an elongated enclosure having means therein for locating a stack of blades, a combined blade-feeding, inserting and extracting device comprising a thin rectangular body, means on said body for temporarily connecting a fresh blade from the stack to the under side thereof in such position that the edges of the blade are guarded by said body, and means for frictionally holding and shielding a used blade upon the upper side of said body.

10. A blade magazine comprising an elongated enclosure, a stack of blades located therein, and a feed slide movable in the enclosure, being transversely curved and having a pair of divergent blade-engaging slots near one end whereby a blade may be engaged by a two-point corner pick-up.

11. A blade magazine comprising an elongated enclosure, a stack of blades located therein, and a feed slide of sheet material having elongated shoulders along its rear side edges intersected by divergent blade-engaging slots.

12. A blade magazine comprising an elongated enclosure having a top including central downwardly flanged portions with ends presenting a fixed abutment, a combined blade-feeding and extracting device slidable in the enclosure and including marginal blade-retaining flanges and a central longitudinal rib disposed to bow a blade upwardly into range of the abutment thus presented.

13. A blade magazine comprising an elongated enclosure having a top including a pair of spaced and downwardly shouldered flanges, and a combined blade-feeding and inserting device slidable within the enclosure and having an upwardly projecting rib entering the space between said flanges when the device is disposed within said enclosure.

14. A blade magazine comprising an elongated enclosure having a top including a pair of downwardly shouldered flanges spaced apart to provide a longitudinal slot between them, and a combined blade-feeding and inserting device having a body of sheet material slidable inside and beneath said flanges, and a finger piece substantially filling the space provided between the shoulders of said flanges.

15. A magazine-razor combination in which the razor has a guard member with a socket and a blade seat merging into a downwardly sloping deflecting face; and the magazine has a pilot arm shaped to enter the said socket, a blade-engaging slide, and a yielding extension on said slide adapted to be deflected upwardly by contact with the deflecting face of said guard as said slide enters the razor.

16. A magazine-razor combination in which the razor has a blade-supporting member provided with a blade seat which merges into a deflecting face; and the magazine has guides, a blade-carrying slide equipped with blade-retaining flanges movable in said guides, a yielding extension on said slide adapted to be deflected by contact with the deflecting face of said razor when the magazine and razor are brought into operative relation, thereby shifting said flanges into abutting relation to said guides when the flanges have once passed out of the guides.

17. A magazine for safety razor blades having shoulders defining end portions of reduced width, said magazine comprising a receptacle for a stack of the said blades, and a feed slide mounted to reciprocate in said receptacle above the blade stack and having divergent forwardly directed slots in its inner end for engaging a blade in the receptacle by the shoulders at one end of the blade, the slide having at its outer end a tongue which overlies the reduced end portion of the blade, and side flanges that cover and protect the sharp edges of the blade while it is being advanced by the said slide.

18. A magazine for safety razor blades having a longitudinal slot and shoulders defining end portions of reduced width, said magazine comprising a receptacle having a blade locating rib for a stack of the said blades, and a feed slide movable in the receptacle above the blade stack and having an oblique forwardly directed slot in its inner end for engaging the uppermost blade of the stack by a shoulder at one end of the blade, the slide having at its outer end a reduced tongue projecting forwardly beyond the reduced end portion of the blade and acting as a pilot member when the blade is inserted in a safety razor.

19. A magazine for safety razor blades having a medial slot and shoulders defining end portions of reduced width, said magazine comprising a receptacle having a blade locating rib for a stack of the said blades, and a feed slide movable in the receptacle above the blade stack and having means near its inner end for engaging the uppermost blade of the stack by its shoulders and a pilot projection of reduced width at its outer end shaped to extend forwardly beyond

the reduced end portion of a blade advanced by the feed slide.

20. In a blade magazine, a combined blade-feeding and extracting device having a substantially rectangular body with marginal blade-engaging flanges on one face, a pilot extension of reduced width projecting from its outer end,

and forwardly directed convergent slots in its body near its inner end spaced to engage the shoulders of a blade having an elongated unsharpened end portion and to locate the said portion beneath the pilot extension of the said device.

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