July 31, 1951 M. J. SHNITZLER 2,562,513

CONTAINER AND BLADE-HANDLING DEVICE

Filed Sept. 4, 1945 3 Sheets-Sheet 1

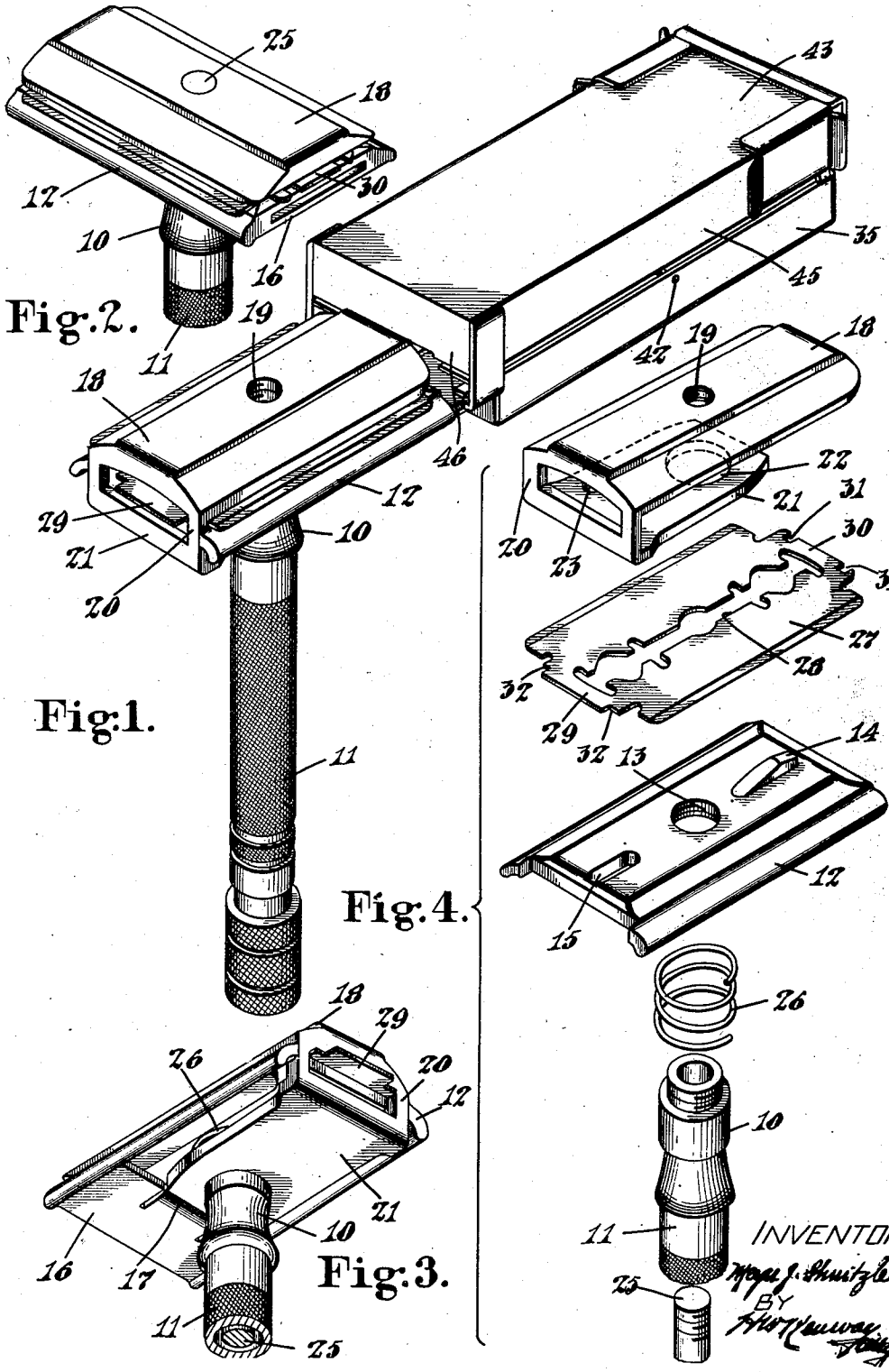


Fig. 2.

Fig. 1.

Fig. 4.

Fig. 3.

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CONTAINER AND BLADE-HANDLING DEVICE

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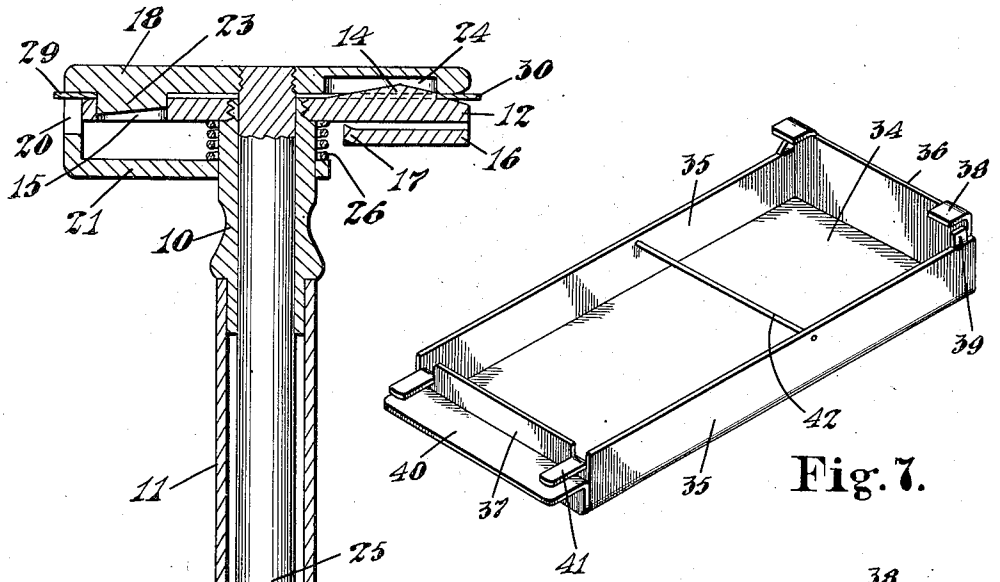


Fig. 5.

Fig. 7.

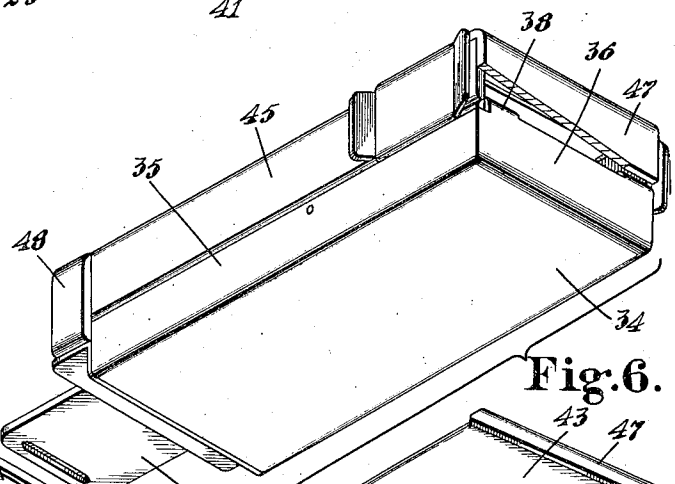


Fig. 6.

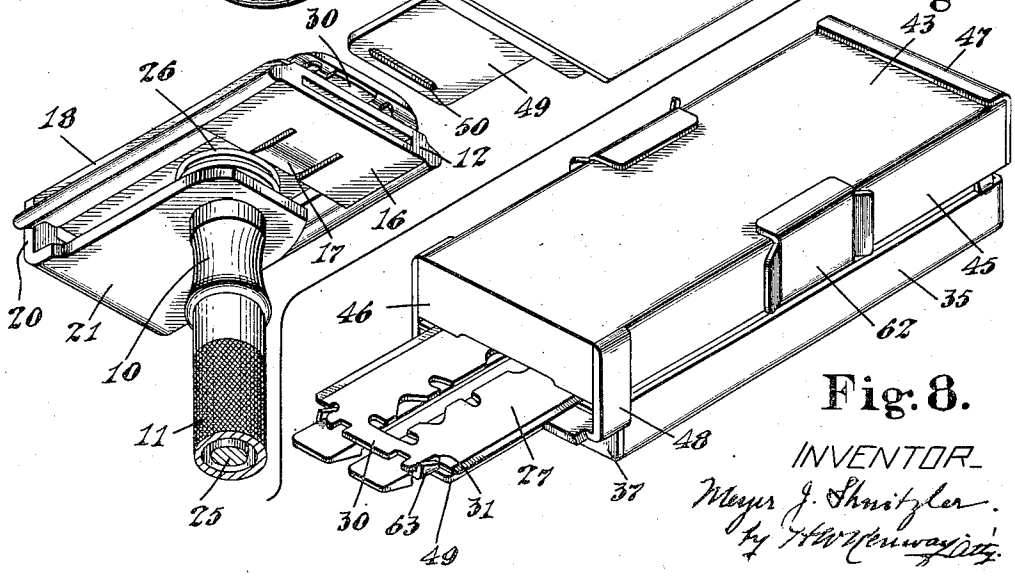


Fig. 8.

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CONTAINER AND BLADE-HANDLING DEVICE

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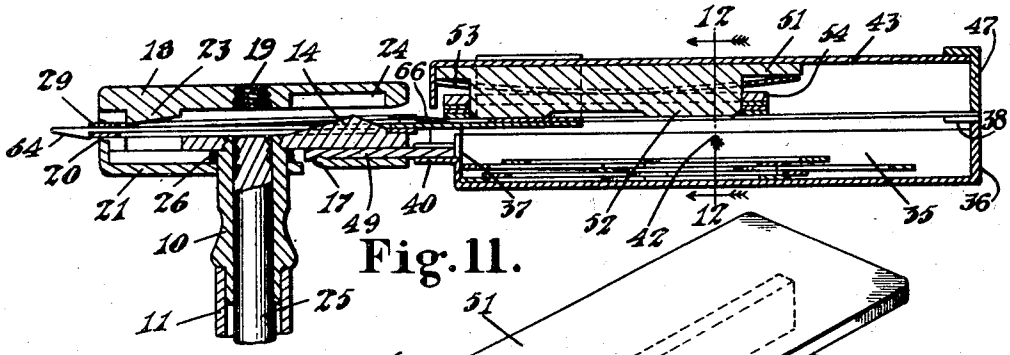


Fig. 11.

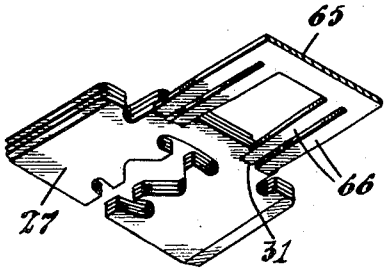


Fig. 10.

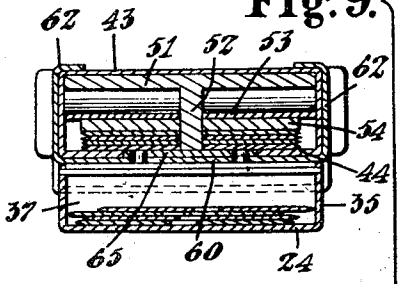
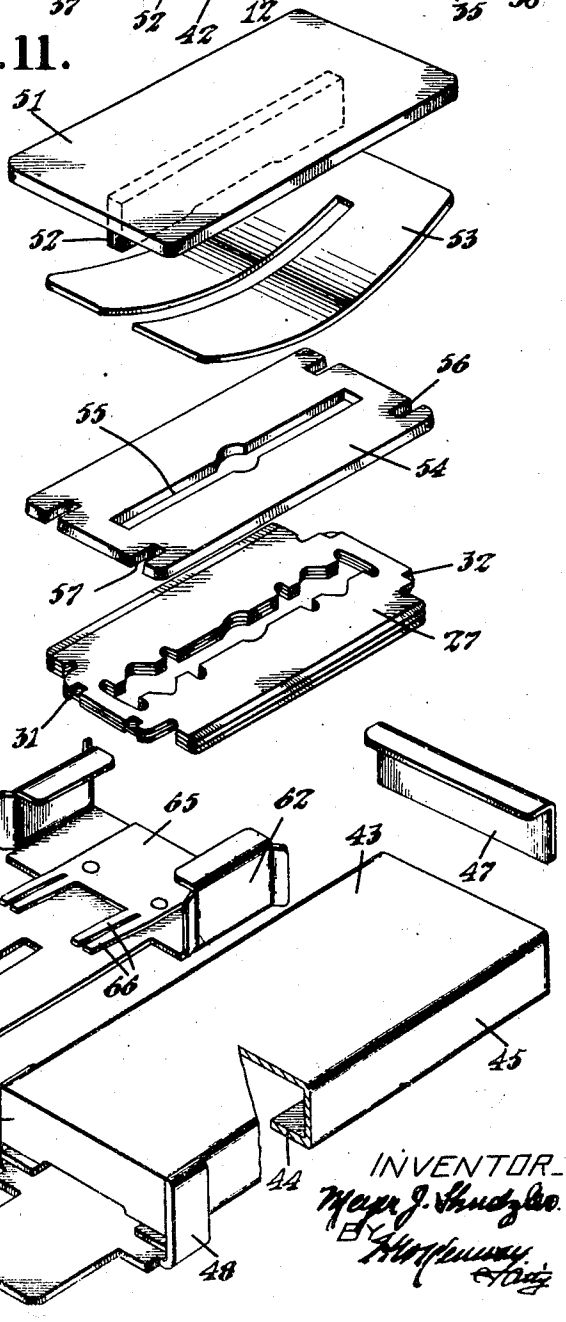


Fig. 12.

Fig. 9.



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2,562,513

CONTAINER AND BLADE-HANDLING DEVICE

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Application September 4, 1945, Serial No. 614,136

10 Claims. (Cl. 30—40)

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This invention consists in a new and improved container or blade handling device primarily intended for use in connection with safety razor blades but also useful in handling any thin fine-edged blades.

In one aspect, the invention comprises a container having a magazine compartment, a connected receiving compartment, and a feed slide movable between the two compartments and having means on one surface for advancing a blade from a blade stack in the magazine and means on its other face for retracting a used blade from a safety razor into the receiving compartment. To this end an important feature of the invention comprises a feed slide movable in operative relation to a stack of blades in the magazine and equipped on its upper face with spaced pairs of blade-pushing fingers for separating a single blade from the stack and carrying it bodily forward into position upon the blade seat of the razor, and having teeth or detents on its lower face for removing a used blade from the razor, retracting it when the feed slide is returned to its initial position and depositing it in the receiver.

In handling safety razor blades, which may be as thin as .004 inches, a great deal of difficulty has been experienced in separating a single blade at a time from the stack and ejecting it from a magazine without danger of jamming. The separating process of my invention is not dependent upon the thickness of the blades to be handled but, on the other hand, solves the problem of feeding double edge blades by providing pockets or recesses in the end of the blade stack into which the blade-feeding fingers readily find their way. When once entered in these pockets, the blade-feeding fingers cannot fail to engage the selected blade and only the selected blade. The desired results are achieved by providing an end notch or a pair of end notches which are located out of longitudinal alignment in the opposite ends of each blade, and then assembling the blades in alternate end-for-end relation so that the notch or notches of one blade are located opposite to the face of the next overlying or underlying blade. In this way, a pocket or pockets are formed at the end of each blade defined by the edges of the notch or notches and by a ceiling or floor provided by the face of the next adjacent blade. The feeding device is correspondingly provided with adjacent pairs of feeding fingers of the proper dimensions to fit readily into the pockets thus provided. As herein shown, one finger is so located as to enter a pocket

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in each blade and the other finger to engage frictionally the face of the blade. In feeding the next blade in the series, the finger which has previously entered the pocket now engages the face of the blade and the finger which previously engaged the face of the blade now enters the pocket of the second blade. It will be apparent, therefore, that the operative feeding finger or fingers in each case operate to gauge their feeding position directly from the flat face of the blade to be fed and then to make feeding engagement with the individual blade by entering a pocket provided for that purpose.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof selected for purposes of illustration and shown in the accompanying drawings in which:

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

Fig. 2 is a view in perspective of the razor head;

Fig. 3 is a similar view of the razor head seen from beneath;

Fig. 4 is a view in perspective of the parts of the razor and a blade in exploded relation;

Fig. 5 is a view of the razor in longitudinal section showing a blade clamped in shaving position;

Fig. 6 is a view in perspective of the razor head and container as seen from beneath and in the positions they occupy when about to be brought into operative relation;

Fig. 7 is a view in perspective of the lower portion of the container;

Fig. 8 is a view in perspective of the complete container showing a blade partially ejected from the magazine;

Fig. 9 is a view in perspective of the parts of the upper portion of the container and a stack of blades shown in exploded relation;

Fig. 10 is a fragmentary view showing the manner in which a blade is engaged for delivery by the feed slide of the magazine;

Fig. 11 is a view of the razor head and magazine in longitudinal section; and

Fig. 12 is a view of the container in cross-section.

The safety razor which has been selected to illustrate the present invention comprises a handle having a ferrule 10 and a barrel 11. The ferrule 10 is firmly secured at its upper end to the guard or blade-supporting member 12 and for this purpose is shouldered, threaded and

screwed into a threaded hole 13 disposed symmetrically in the guard. The upper or blade-supporting face of the guard, as shown in Fig. 4, is generally convex in transverse contour, having a blade seat bounded by fulcrum shoulders over which the blade is flexed when clamped in shaving position. Adjacent to one end of the blade seat projects a longitudinal rib 14, tapering in both directions and serving in the assembled razor to locate the blade. At its forward end, the guard 12 is provided with an underlying plate 16 which extends across beneath the guard from side to side and defines a wide shallow passage. The plate 16 is slotted at its inner edge to present a spring tongue or detent 17 having an upwardly extending lip centrally disposed at its free end, all as shown in Figs. 5 and 6. At its other end the guard is provided with a longitudinal slot 15 which supplies clearance for a rib on the cap to be referred to presently. The rear end of the guard is recessed and its longitudinal edges are curved outwardly and downwardly to serve as the guard elements of the combination.

A cap member 18 co-operates with the guard member 12. It is slightly narrower than the guard member and its lower or blade-engaging face is transversely concave and extends on both sides beyond the fulcrum shoulders of the guard member. It is provided centrally with a threaded hole 19 for the clamping spindle, which will be presently described, and has at its rear end spaced downwardly-extending arms 20 which are connected at their lower ends to and support an inwardly-extending connecting plate 21. This plate has a circular opening 22 located in line with the threaded hole 19 and of such size as to receive with clearance the ferrule 10 of the razor handle. The cap is also provided near its rear end with a downwardly projecting rib 23 which, as shown in Fig. 5, is received in the slot 15 of the guard when the cap and guard are drawn together. The lower face of the rib 23 is inclined downwardly and outwardly or to the left, as seen in Fig. 5. In its forward end the cap is provided with a longitudinal slot 24 which furnishes clearance for the rib 14 of the guard member under similar circumstances.

Within the tubular barrel of the handle is located a clamping spindle 25 threaded at its upper end for engagement with the threaded hole 19 of the cap and provided at its lower end with a knurled nut by which it may be readily manipulated. A coil spring 26 is interposed between the bottom of the guard 12 and the upper surface of the connecting plate 21. This tends at all times to urge the cap and guard yieldingly toward each other. It is compressed and held in substantially close wound condition when the clamping spindle 25 is rotated in a clockwise direction to the limit of its clamping movement.

The razor above described is designed for use with thin flexible double-edged blades of the general type shown in Figs. 4 and 9. Each blade 27 is sharpened at its opposite longitudinal edges and is provided with a longitudinal medial slot 28 which has a central circular enlargement of sufficient diameter to permit free passage of the clamping spindle 25. It is notched in each corner to present elongated unsharpened tongues 29 and 30, and these tongues are notched to provide in each a pair of differently spaced recesses. The notches 31 in the tongue 30 are spaced at a predetermined distance from each other and from the center line of the blade and the notches 32 in the tongue 29 are spaced a wider distance from each other and from the center line of the blade. In the stack the blades are arranged alternately end-for-end, as shown in Fig. 9, with the result that each pair of notches present in conjunction with the adjacent blade a pair of pockets in the end of the blade stack. In each case the bottom of the next overlying blade provides a ceiling for the pocket. Thus the notches make four vertical rows in the blade stack, or two pairs of vertical rows, and the notches are spaced at different distances in alternate blades thereby being staggered in adjacent blades. These blades may be supplied to the razor above described by hand but preferably automatically from the magazine constituting a part of the blade container which will now be described:

The blade container comprises two connected compartments in the illustrated device, the lower being a receiver for used blades and the upper being a magazine designed to contain a stack of new blades with means for feeding them, one by one, to the razor. As a part of the same operation, the used blade is withdrawn from the razor and deposited in the receiver.

The receiver, as best shown in Fig. 7, is constructed of sheet metal and comprises a bottom 34, side walls 35, a rear wall 36 and a front wall 37, which is reduced in its height so as to leave a blade-receiving slot between it and the feed slide of the magazine. The rear wall of the receiver is provided with a pair of upstanding, forwardly or inwardly directed hooks 38 and upon the side walls 35, adjacent to the hooks, are formed upstanding lugs 39. To the front wall 37 of the receiver is secured an angle plate providing a forwardly extending shelf 40. The front wall 37 is provided at each end with a finger 41 which extends forwardly and parallel to the shelf 40. A cross-wire 42 extends between the sides 35 of the receiver, somewhat to the rear of mid-position.

The upper, or magazine compartment in the illustrated device, comprises a top 43, spaced bottom flanges 44, and side walls 45. The front end of the magazine is closed by a wall 46 arranged to leave a blade-exit opening beneath it; and the rear end of the magazine is closed by a detachable wall 47. At its front end the magazine is provided with a pair of downwardly extending arms 48 and these support a forwardly extending pilot plate 49 having a transverse slot in its under-surface just within its outer end. The pilot plate is spaced below the bottom of the magazine and has three functions. In the first place, it serves as a connecting means at one end between the magazine and the blade receiver, since it is shaped to fit between the shelf 40 and the arms 41 which project from the front wall of the receiver. In the second place, it serves to locate the combined magazine and receiver in operative position with respect to the razor head by entering the shallow passage formed between the under plate 16 and the guard member 12 of the razor. When the pilot plate 47 is fully inserted its transverse slot 50 is (see Fig. 6) brought into registration with the lip of the spring tongue 17 of the plate 16. By this connection, the magazine and receiver are aligned properly with the razor head and detachably locked against separation, the locking action being the third function of the pilot plate.

Within the magazine is provided a removable overhead plate 51 from the lower surface of which projects a longitudinal blade-locating rib 52. Next below this plate is located a downwardly convex leaf spring 53, slotted to receive the rib 52

with clearance. Beneath the spring 53 is a presser plate 54 provided with a longitudinal slot 55 to clear the rib 52 and provided in one end with notches 56 defining a wide intermediate tongue, and with notches 57 in the other end also defining an intermediate tongue. Finally below the pressure plate 54 is located the blade stack.

The feed slide, as best shown in Fig. 9, comprises a thin, elongated blade 60 provided in its forward end with a medial slot 61 and having at its rear end upstanding side flanges 62 which embrace the side walls of the magazine and are provided at both ends with wings to facilitate manipulation. The forks of the feed slide are reduced in width at their forward end and provided with short upstanding lugs 63, and with downwardly and rearwardly directed teeth 64. To the upper portion of the feed slide is secured a sheet metal plate 65, having forwardly extending spring fingers 66 arranged in pairs at either edge of the plate and bearing yielding against the lower face of the innermost blade in the stack.

Assuming that a used blade is clamped in the razor as shown in Fig. 5, and that it is now desired to replace this by a fresh blade; the clamping spindle 25 will first be retracted, thus permitting the blade 27 to assume a substantially flat condition in the razor. The pilot plate 49 of the magazine is now inserted in the recess provided for that purpose beneath the guard member 12 and when this operative relation has been established the lip of the spring finger 17 yieldingly locks the two elements together. The feed slide is now advanced, passing over the used blade on the blade seat of the razor without otherwise disturbing it. In this operation, a fresh blade is picked off the bottom of the blade stack in the magazine by the pair of spring fingers 66 which happens to register with the notches 31 or 32, according to which end of the lowermost blade is in advance. For example, as shown in Fig. 10, the outermost fingers slide on the lower face of the blade while the innermost fingers enter the pockets formed by the notches 31. The fresh blade is carried into the razor head upon the feed slide by the fingers that enter and find the bottoms or inner edges of the notches with which they happen to register and with its forward end shoulders engaged between the upstanding lugs 63 which thus prevent it from becoming misplaced or twisted during the feeding operation. The solid end of the advancing blade rides up and over the tapering surface of the rib 14 and is finally arrested in shaving position by engaging the arms 20 of the cap 18. This is the position of the various parts illustrated in Fig. 11 of the drawing. Now when the feed slide is retracted toward the right the rearwardly directed teeth 64 at its outer end engage the shoulders of the used blade beneath it and draw the blade rearwardly into the blade-receiving slot of the container. When the rear end of the blade reaches the cross-wire 42 the blade is deflected beneath the wire and when the feed slide has fully returned to its initial position the blade joins those which have been collected in the bottom of the receiver while the feed slide forms a partition between the two compartments. Meanwhile, the sharp fresh blade is held against retraction by the shoulder of the rib 23 of the cap and is therefore left behind by the feed slide. In the forward and rearward movement of the feed slide, the slot 61 provides clearance so that the forks of the slide may pass freely on

both sides of the rib 14 and the rib 23. When the feed slide has been fully retracted, the container may be forcibly separated from the razor, the detent 17 being sprung out of the slot 50 in the pilot plate. Finally, the spindle 25 is pushed upwardly and screwed into the threaded hole 19 of the cap; the blade is thus clamped in position and the razor ready for shaving.

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

1. A combined magazine and receiver for safety razor blades, comprising adjacent magazine and receiving compartments, and a feed slide movable between the two compartments and having at its inner end blade-pushing fingers and at its outer end blade-retracting teeth.

2. A combined blade magazine and receiver for safety razor blades, comprising a magazine enclosure having a bottom formed by spaced inturned flanges, a feed slide movable in the space between said flanges and having projecting blade-engaging fingers on its upper face, a blade-receiving enclosure located beneath the magazine enclosure and having its top closed by the said feed slide, and blade-engaging projections on the lower face of the slide.

3. A blade receiver comprising walls forming an enclosure with a blade receiving slot therein, a feed slide movable adjacent to said slot and having means for engaging a blade outside said enclosure and retracting it into said enclosure, and means within the enclosure for deflecting a blade away from the feed slide.

4. A blade magazine comprising walls forming an enclosure with a blade-exit slot in one end thereof, and a feed slide movable in the enclosure and including in its structure an elongated plate having a medial slot opening through its outer end whereby the plate may straddle the blade receiving rib of a razor, blade-engaging projections at its outer end for retracting a used blade from the razor, and blade-pushing fingers at its inner end disposed out of line with said medial slot.

5. A combined magazine and receiver for safety razor blades, comprising a magazine compartment having a blade-exit slot in one end, an underlying blade-receiving compartment having a blade-receiving slot in its corresponding end, and a feed slide movable between the two compartments and having blade-pushing and blade-retracting means upon its opposite faces respectively.

6. A blade containing and dispensing device including a housing having positioning means engageable with the head of a safety razor for operatively positioning said housing with respect to the razor head, said housing including a compartment for used blades, a magazine compartment holding a supply of new blades, and a reciprocable blade-feeding member having a blade-engaging portion arranged in one stroke of the member to engage and withdraw a used blade from the razor head and move it into said used-blade compartment, and another blade-engaging portion arranged in the opposite stroke of the member to engage and feed a new blade from the magazine compartment into the said razor head.

7. A combined blade magazine and receiver for safety razor blades, comprising walls forming a rectangular enclosure providing upper and lower compartments, and a feed slide movable in a path

between the two compartments and having blade-engaging fingers on one face and blade-engaging projections on the other face, the said slide serving in one position as a partition between the two compartments.

8. A combined blade magazine and receiver for safety razor blades, having walls forming an elongated enclosure comprising upper and lower compartments, a stack of blades in one compartment spring pressed inwardly therein, and a feed slide mounted to reciprocate in a path between the two compartments and having oppositely directed blade-engaging elements upon its opposite faces for moving blades respectively into and out of the compartments.

9. A container for safety-razor blades, including a generally rectangular casing having a blade passage opening and a reciprocable blade-sliding member having a substantially flat undersurface adapted snugly to overlie the body of a blade, said blade-sliding member being longer than said blade and being forked at one end to provide a pair of spaced arms the tips of which extend beyond the said blade, the tip regions of said arms having downwardly extending projections abuttable against an edge of said blade during return

movement of said reciprocable member, thereby to move said blade therewith through said blade passage opening into said casing.

10. In a rectangular-shaped container for safety-razor blades, a reciprocable blade-sliding member of substantially elongated U-shaped form closed at the end corresponding to the base of the U and open at its other end and having in the vicinity of said closed end a blade-driving portion abuttable against an end edge of a blade for pushing said blade out from the container on its forward stroke, and provided at its other open end with a pair of blade-retracting projections engageable with the end edge of a blade for pushing that blade into said container in its return movement.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,999,129	Minnelli	Apr. 23, 1935
2,436,026	Steinbach	Feb. 17, 1948