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BLADE MAGAZINE

Filed April 19, 1944

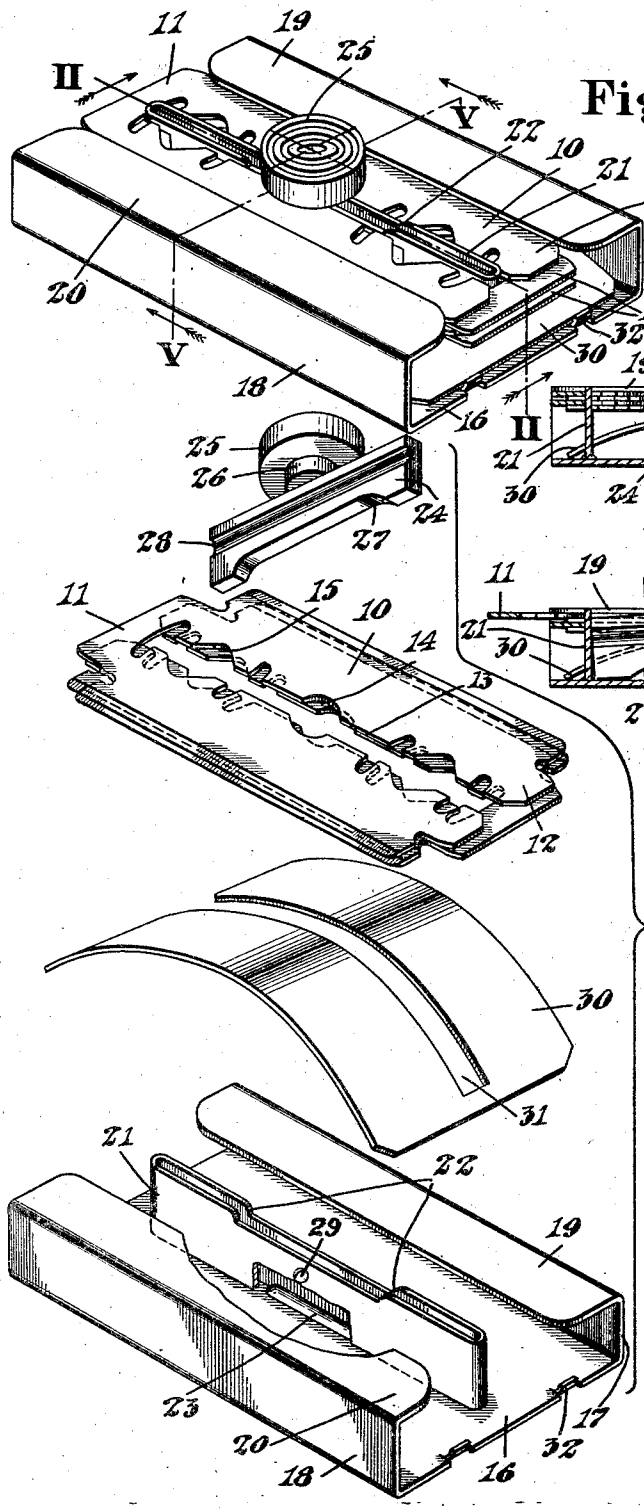


Fig.1.

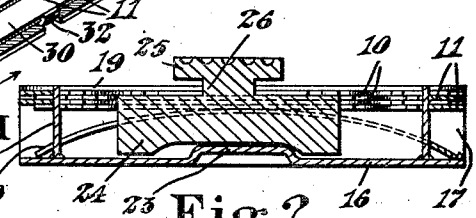


Fig.2.

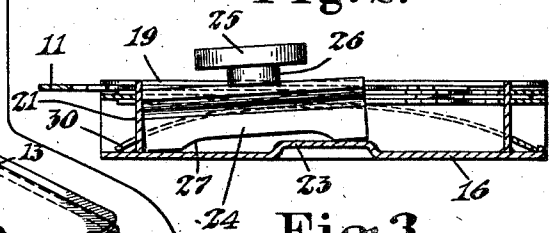


Fig.3.

Fig.4.

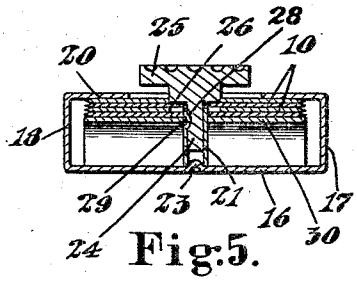


Fig.5.

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BLADE MAGAZINE

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Application April 19, 1944, Serial No. 531,727

13 Claims. (Cl. 206—16)

1

This invention consists in an improved magazine for containing thin flexible blades staggered in stacked formation and having means for separating the individual blades and feeding them successively from the stack for any purpose where it is desired to deal with blades, one at the time, as for example in supplying blades one by one to a safety razor.

In my prior Patent No. 2,330,252, September 28, 1943, I have disclosed a blade magazine in which safety razor blades are arranged in longitudinal staggered relation with their ends separated in the stack by a space equal to the thickness of an interposed blade and in that magazine advantage is taken of this spacing to facilitate feeding the blades. In one aspect the present invention consists in improvements on the magazine of my prior patent whereby it is possible to employ a shorter and more compact magazine and yet to handle the blades positively, uniformly and without danger of displacement or jamming. In the magazine of my prior patent the blades were fed by end engagement, that is to say, it was necessary to move the feed slide to engage the extreme end of a blade before the blade could be advanced from the magazine. On the other hand, a characteristic feature of the present invention consists in a magazine in which slotted blades with their slots having local enlargements are assembled in staggered relation with the enlargements overlapping each other and in which the feed slide is constructed and arranged to engage one blade after another by its slot enlargement and to advance the blade by movement in a relatively short path which may well be substantially less than the length of the blade. Further, the staggered relation of the blades and their slot enlargements permits positive separation of the blade selected to be fed from the magazine in respect to all other blades in the stack. This is because the blade-engaging portion of the feed slide may be shaped to fill the enlargement of the uppermost blade in the stack and since the corresponding enlargement in the second blade is displaced in one direction or the other from that of the uppermost blade the feed slide projection cannot enter the enlargement of the second blade but must engage the body of that blade and depress it from the feeding path.

Another feature of the present invention consists in a feed slide constructed and arranged to be automatically disengaged from the slot enlargement of a blade at the conclusion of the feeding stroke. Thus a blade may be separated from the stack and advanced to a position in which it projects from the magazine and is then released so that the user may freely remove it by hand. As herein shown, one way of accomplishing the desired result is to provide means for lifting the feed slide at the end of its stroke to free the engaged blade.

2

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 drawing in which:

Fig. 1 is a view in perspective on an enlarged scale of a complete magazine;

Fig. 2 is a view of the magazine in longitudinal section on the line II—II of Fig. 1;

Fig. 3 is a view similar to Fig. 2 except that the feed slide is shown in elevation and at one extremity of its feeding movement.

Fig. 4 is a view in perspective showing the parts of the magazine and blades in exploded relation; and

Fig. 5 is a view of the magazine in cross section on the line V—V of Fig. 1.

The invention is herein shown in its application to the handling of open-end double-edged slotted blades of the well-known "Gillette" type, although it will be understood that it is not limited to that or to any other specific type of blade but, with appropriate modification of detail, may be adapted to the handling of any thin, fine-edged blade.

The blades 10 herein shown are each provided in all four corners with reentrant notches defining a solid elongated unsharpened end portion 11 at one end and a similar but divided end portion 12 at the other end of the blade. Each blade is provided with a medial longitudinal slot 13 closed at one end and opening out through the divided end portion 12 of the blade. Midway between the ends of the blade the slot 13 has a circular enlargement or opening 14 which serves in the magazine as a part of the means by which the blade is fed and in the razor as a passage for the threaded stem of the cap. Each slot has moreover intermediate enlargements 15 of predetermined size and shape conforming to the contour of blade-locating projections found in the various safety razors for use in which the blades are adapted. In the magazine, as will presently appear, the blades are stacked in staggered relation, each being displaced longitudinally with respect to the next lower blade by a distance corresponding substantially to one-half the diameter of the circular enlargement 14.

The construction of the magazine will now be described in detail:

As shown in the drawing, it comprises an elongated enclosure of sheet material such as metal or plastic sheet, comprising a rectangular bottom 16, upstanding side walls 17 and 18, and inturned flanges 19 and 20, separated from each other at their inner edges by a substantial space and together forming the top of the enclosure. Projecting upwardly from the bottom 16 is a hol-

low rib 21 also made of sheet material and having spaced parallel walls and rounded ends. The rib 21 is of such a length that when the blades 10 are placed upon it with their solid ends arranged alternately against the opposite ends of the rib they will be relatively displaced in the manner illustrated in Fig. 4, that is to say, longitudinally by approximately one-half the diameter of the circular enlargement 14.

The hollow rib 21 serves as a guideway for the feed slide and its upper edge is shouldered at 22 to limit the longitudinal movement of the slide. An elongated inwardly projecting boss 23 is pressed into the bottom 16 of the magazine between the walls of the hollow rib 21 for the purpose of lifting and disengaging the feed slide from the blade at the end of its feeding movement.

The feed slide comprises a vertically disposed plate 24 fitting with clearance between the walls of the rib 21 and having an operating knob 25 connected to the upper edge of the plate 24 through the medium of a circular shank or stud 26 which is designed to fit into and substantially fill the circular enlargement 14 of the blade. Ordinarily the lower face of the shank 26 rides upon the walls of the rib 21 between the shoulders 22 and when centrally positioned as shown in Fig. 2 the lower edge of the plate 24 clears the projecting boss 23 in the bottom of the rib by reason of an elongated notch 27 which is provided in its lower edge. The plate 24 of the feed slide has a longitudinal groove 28 in one face and this cooperates with an inwardly projecting detent 29 in one wall of the rib. The detent 29 fits loosely into the groove 28, whereby the plate 24 may be shifted not only longitudinally on the said detent but may also be rocked thereon. Since the rib is constructed of resilient material the feed slide may be forced into position or forcibly removed from position by springing the detent 29 outwardly.

In the drawing, the magazine is shown as containing a stack of four blades only but it has capacity for ten or a dozen blades. Beneath the blade stack is provided a leaf spring 30 having a central open-end slot 31 providing clearance for the rib 21. The spring 30 may be inserted in the magazine after the blade stack has been placed in the magazine and then held in place by tongues 32 bent up in one end edge of the bottom 16. Movement of the spring in the other direction is prevented by engagement of the end of the rib 21 with the end of the slot 31 in the spring. The effect of the spring 30 is to hold the blade stack upwardly with the uppermost blade 10 engaged with the inner surface of the flanges 19 and 20 and in this position the upper surface of the uppermost blade is disposed slightly below the upper edges of the walls of the rib 21 in the higher end portions of the rib beyond the shoulders 22. However, in the area between the shoulders 22 the two uppermost blades are located somewhat above the level of the edges of the walls of the rib 21. Accordingly, the feed slide may be moved to an intermediate position in which the shank 26 registers with the circular enlargement 14 of the uppermost blade. When this relationship is established and a slight pressure exerted upon the button 25, the shank 26 passes through the enlargement of the uppermost blade and encounters the overlapped surface of the second blade in the stack as will be apparent from a consideration of the blades in Fig. 5. Pressure on the button 25 therefore causes the shank 26 to pass through the enlargement of the uppermost blade, to depress the second blade in the stack and finally to engage the edges of the walls of the rib 21 between the shoulders 22. Accordingly when the feed slide is advanced toward the left, as seen in Fig. 1, the uppermost blade is fed, solid end foremost, out of the magazine. The blade can not be fed in the opposite direction because its solid end engages the left-hand end of the rib 21. When the uppermost blade has been advanced sufficiently to afford the user convenient grasp, the rear end of the feed slide plate 24 encounters the upstanding boss 23 in the bottom 16 of the magazine and the feed slide is accordingly lifted as suggested in Fig. 3. When this occurs, the shank 26 is disengaged from the enlargement of the uppermost blade and the blade is left free to be withdrawn completely from the magazine by the user. This withdrawal by hand would be prevented if the shank 26 were not disengaged from the blade to permit it.

The spring 30 lifts the blade stack immediately to replace the ejected blade by the blade which up to that time has been second in the stack, with the result that the blade now uppermost has its solid end located at the right-hand end of the magazine enclosure. Accordingly, to eject the next blade from the magazine the feed slide must be moved toward the right, whereupon the shank 26 will enter the slot enlargement of this blade, when a position of registration is reached, and the blade will be fed out from the right-hand end of the magazine. By moving the feed slide alternately in the manner above described, the blades in the stack may be separated and ejected one by one from the magazine, first at one end and then at the other. It will be clear that each blade 10 is positively prevented from moving in one direction by the engagement of its solid end 11 against one end of the rib 21 and is held only frictionally against movement in the other direction, i. e., the direction in which it is eventually discharged from the magazine.

The top of the magazine is herein shown as formed by the spaced flanges 19 and 20, but a one-piece top slotted for the reception of the feed slide would serve as well. The movement of the feed slide is limited both by the shoulders 22 in the edge of the rib and by the space between the ends of the rib and the ends of the vertical plate 24. It will be noted that the amplitude of feed-slide movement is limited, so that practically none of the sharpened edge is exposed at the end of the feeding movement but that the elongated unsharpened end portion of the blade projects from the end of the magazine where it may be conveniently and safely grasped by the user.

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 blade magazine having walls forming an elongated enclosure, a stack of slotted open-end blades within the enclosure, the slots having a local enlargement therein, a rib in the enclosure engaged at opposite ends with one end only of alternate blades of the stack, each blade having its slot enlargement overlapping the surface of the next lower blade in the stack, and a feed slide having a portion shaped to enter and fill the slot enlargement of the uppermost blade.

2. A blade magazine including walls forming an enclosure having a bottom and spaced top flanges, a hollow rib projecting into the enclosure from the bottom and having end portions extending into the plane of said top flanges

and an intermediate portion terminating at a level below said plane, a stack of slotted open-end blades arranged alternately end-for-end on said rib, the slot of each blade being provided with an enlargement and a feed slide having a section fitting within said rib for guiding its movement and having another section adapted to ride upon the intermediate portion of the rib and thereby being seated in the slot enlargement of the uppermost blade of the stack.

3. A blade magazine including a flanged top, a hollow blade-locating rib terminating within the ends of the flanged top, a stack of open-end slotted blades arranged alternately end-for-end on said rib, the slots of the blades having an enlargement therein, and a feed slide having a portion fitting within said rib and limiting its stroke to a length less than the length of the rib and a portion outside the rib shaped to fit the slot enlargement of a blade.

4. A blade magazine comprising walls forming an enclosure, including a top with an elongated opening therein, a rib located symmetrically below said opening and having an intermediate portion lower than its end portions, a stack of open-end slotted blades disposed alternately end-for-end on said rib, the slots in the blades having enlargements therein alternately overlapping one another, yielding means for supporting said stack with the uppermost blade thereof in a plane above the intermediate portion of the rib, and a feed slide having a portion movable through and completely fitting the slot enlargement of the said uppermost blade and into sliding engagement with the intermediate portion of said rib.

5. A blade magazine comprising walls forming an enclosure, means in the enclosure for holding a stack of open-end slotted blades having slot enlargements therein and disposed alternately end-for-end with the enlargements of alternate blades overlapping, and a feed slide guided for movement in a path shorter than the length of said blades and having an enlargement-fitting projection by which it engages and feeds a blade.

6. A rectangular blade magazine having open ends and an intermediate rib, a stack of open-end slotted blades disposed alternately end-for-end upon said rib, each slot having a local enlargement, each blade being held by friction only against outward movement from the direction of its open end, and feeding means including an enlargement-fitting projection.

7. A blade magazine having walls forming an elongated enclosure, a stack of slotted blades therein, said blades being arranged in staggered relation with the slots of adjacent blades displaced longitudinally in respect to each other, each slot having an enlargement of pre-determined size and shape overlapping the surface of the next lower blade in the stack, and a feed slide having a portion shaped to enter and fill the enlargement of the uppermost blade and to engage and depress the next underlying blade.

8. A blade magazine having walls forming an open-end enclosure, a blade-locating member therein, a plurality of slotted blades, each having a similar local enlargement in its slot, said blades being removably stacked on the locating member with their local enlargements in alternate partial longitudinal registration only and with a portion of each next subjacent blade lying within the outline of the next superimposed enlargement, means co-operating with the locating member for frictionally retaining the blades in such stacked formation, and a movable feed slide having a portion shaped to fit into the local enlargement of the uppermost blade in the stack.

9. A blade magazine including an elongated enclosure having a yielding support and blade locating means therein, a stack of blades, said blades having slots with local enlargements and being arranged upon the locating means above the support with their local enlargements in successively offset relation with respect to each other, and a movable feed slide having a portion shaped to fit into the local enlargement of one blade and to engage the surface of the blade next below it and depress said lower blade and those below it against said yielding support.

10. A blade magazine having walls forming an elongated enclosure, blade locating means therein, a stack of blades having slots with local enlargements of predetermined size and shape, said blades being successively arranged on the locating means with their enlargements alternately staggered in lengthwise direction, and a feed slide guided for movement longitudinally in said enclosure and having a projection shaped to fit into blade feeding engagement with the enlargement of one blade only and depressing and sliding engagement with the surface of the next lower blade.

11. A blade magazine having walls forming an open-end enclosure, a stack of slotted blades therein, each slot having a similar local enlargement therein and the blades being arranged in staggered relation with the slots and enlargements in partial longitudinal registration only, means including a locating member and a yielding member co-operating to retain the blades removably in such formation, a feed slide reciprocably movable into seriatim registration with the local enlargements for delivery of a blade into a position for removal from the stack, and means effective during the movement of the feed slide in either direction of its travel positively to disengage the feed slide from registration with the enlargement upon delivery of the blade.

12. A blade magazine having enclosing walls, a blade locating member and a yielding blade support therein, a stack of slotted blades, each slot having a local enlargement therein and the blades composing the stack being mounted on the member and support in alternate staggered relation so that each slot enlargement is removably retained in stepped, offset relation to the next, a feed slide having a projection corresponding in size and shape to the enlargement, guideways for directing said slide in a feeding path wherein its said projection occupies the enlargement of the uppermost blade of the stack, and means for deflecting said slide upwardly causing it to release the blade at the end of the feeding stroke.

13. A safety razor blade magazine comprising an elongated casing having an exit opening at one end, a longitudinally disposed blade-locating rib within the casing having an elevated end portion, and a feed slide mounted on the rib and guided thereby in a longitudinal path in the casing, and means within said casing for lifting the slide as it approaches the end of its path as determined by the said elevated end portion of the rib.

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