Oct. 20, 1942. N. TESTI 2,299,436

BLADE DISPENSER

Filed March 21, 1940

Fig. 1

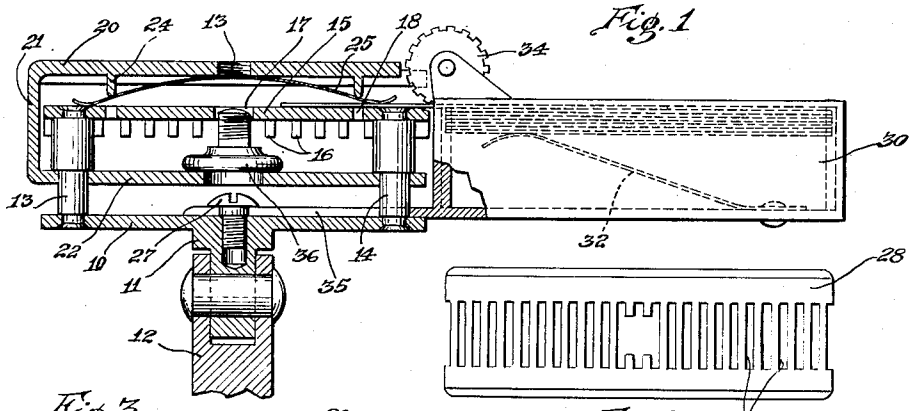


Fig. 2

Fig. 3

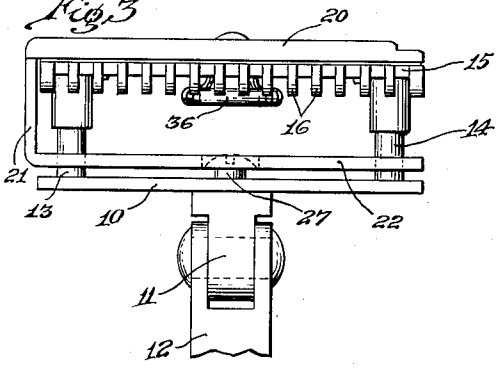


Fig. 4

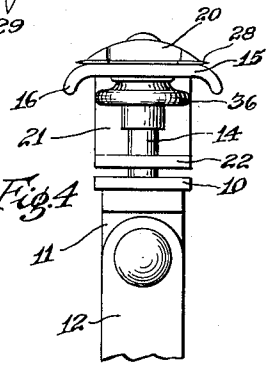


Fig. 5

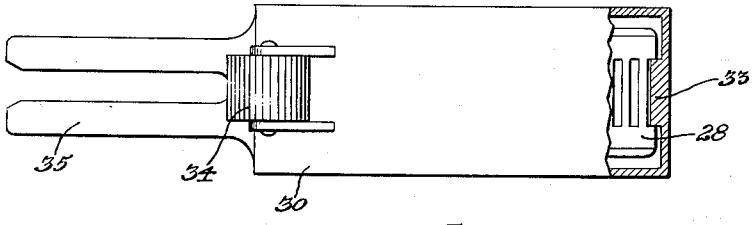
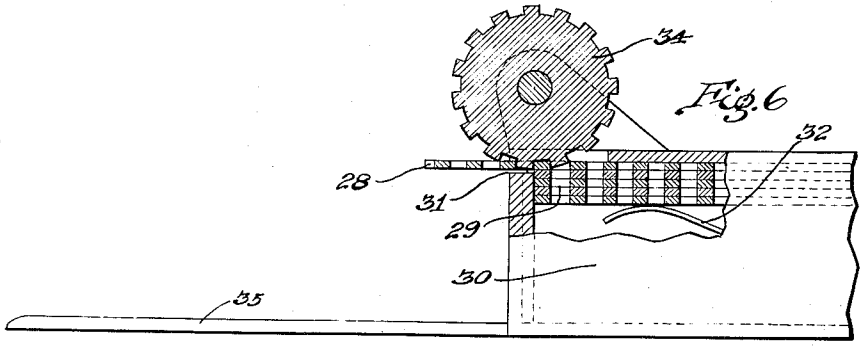


Fig. 6



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UNITED STATES PATENT OFFICE

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BLADE DISPENSER

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Application March 21, 1940, Serial No. 325,223

4 Claims. (Cl. 206—16)

This invention relates to safety razors. In one aspect it comprises a safety razor of novel construction in which the operation of presenting, clamping and removing the razor blade may be carried out with a high degree of accuracy and convenience on the part of the operator. In another aspect it consists in a safety razor blade of novel shape or structure, that is to say, one provided in effect with apertures forming rack teeth by which the blade may be accurately located in shaving position and mechanically fed into shaving position in the razor from a magazine without danger to the user or damage to keen edges of the blade. In other words the apertures have the double function of provision for moving and of locating the blade. In still another aspect it consists in a novel combination of safety razor and magazine wherein the supply of blades is carefully guarded until the time of presentation and wherein the presentation takes place by a positive blade-feeding movement of the rack and pinion type.

Skilled manufacturers have for some time been able to provide safety razor blades with shaving edges having an exceedingly fine degree of sharpness and high shaving quality but the problem of dispensing such blades to the user without impairing the blade edge is difficult on account of the delicacy of the structure in the blade. If the blade is scuffed upon its wrapping or against any part of the safety razor in being presented in shaving position it becomes damaged and the benefit of superior manufacturing care and skill is lost to the user. An object of the present invention is to provide a magazine receptacle in which a stack of blades may be packaged by the manufacturer, maintained with their fine edges securely guarded in storage and transportation and eventually delivered directly and accurately into shaving position in the safety razor without the necessity of being touched by the user or the danger of impairment by inadvertent contact with either the magazine or the razor itself.

I have discovered a solution of this problem and this consists in perforating the blade in a novel manner, as by a series of uniformly spaced slots, which in effect present rack teeth in the blade and by providing the blade magazine with a pinion feed roller so disposed that successive blades may be delivered from the magazine directly to the safety razor in rack and pinion feeding fashion. The slots providing the rack teeth may be utilized not only for feeding the blade but as blade-locating apertures in the safety razor and also as blade-locating and guiding means in the magazine by which contact of the blade edges and the magazine is positively prevented.

Other features of the invention relate more particularly to the construction of the safety razor itself whereby it is adapted to receive blades of the character described smoothly, without displacement, to hold them temporarily and yieldingly in place as presented, to locate them positively and hold them accurately and securely during the shaving operation. These desirable results may be secured from the safety razor having a head comprising a pair of spaced plates connected by intermediate studs and a cap member having an overlying blade-engaging portion connected to an underlying portion which is guided for movement upon said studs.

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 of the razor and blade magazine partly in longitudinal section and partly in front elevation;

Fig. 2 is a plan view of the blade;

Fig. 3 is a view of the razor in front elevation;

Fig. 4 is a corresponding view of the razor in end elevation;

Fig. 5 is a plan view of the blade magazine showing a portion of the casing broken away;

Fig. 6 is a fragmentary view of the magazine in front elevation partly in section;

The razor and magazine are illustrated in the drawing at approximately twice their actual size. The razor comprises a metallic head made up of a pair of spaced plates connected by intermediate studs and supported at the upper end of the razor handle. The base plate 10 is shown as formed integral with a downwardly extending stem 11 which is flattened and received in the forked upper end of the handle 12. As herein shown the stem 11 is pivotally connected to the handle 12 and may be angularly adjusted by the user and held frictionally in any angular position desired. A pair of shouldered studs 13 and 14 project upwardly from the base plate 10 and are riveted or otherwise connected at their upper ends to the stationary blade-supporting or guard plate 15 which provides the blade seat of the razor. This plate may be curved transversely or may be flat as shown and is provided along its longitudinal edges with downwardly curved guard teeth 16. The guard plate 15 is

provided with a centrally disposed aperture for the free passage of a clamping screw and with a pair of spaced transverse slots 18 for purposes to be presently described. It will be understood that the structure of the head thus far described is rigid and is intended to be permanently assembled once for all in manufacturing the razor.

In the safety razor herein shown the blade is adapted to be clamped in shaving position upon the upper or guard plate 15 of the head by a cap member comprising an overlying or top plate 20, an underlying portion comprising the plate 22, and a looped connecting neck 21 which extends around one end of the guard plate 15, that is to say, around the left-hand end of the guard plate as shown in Figs. 1 and 3. The overlying blade-engaging plate 20 is shaped to co-operate with the guard plate 15 in clamping the blade in shaving position and to this end it is provided with a pair of thin downwardly projecting transverse ribs 24 so disposed as to enter and substantially fill the transverse slots 18 of the guard plate. The overlying plate 20 is also provided with a central threaded aperture 23 which is arranged to receive the threaded end of a loose clamping screw 36 shown in disengaged position in Fig. 1 and in its engaged or clamping position in Figs. 3 and 4. The overlying plate 20 of the cap is centrally and longitudinally grooved to receive a curved leaf spring 25 and this spring is widely forked at its ends to clear the ribs 24 and curved upwardly at its ends so that a blade may be pushed beneath it upon the upper surface of the guard plate 15, as will be presently described. The lower or intermediate plate 22 of the cap member is perforated to slide freely upon and be guided by the fixed studs 13 and 14 and to be limited in its upward movement thereon by the shoulders of the studs. The spring 25 tends at all times to lift the cap member and maintain it in its open position as determined by the engagement of the underlying plate 22 with the shoulders of the studs.

The razor herein shown is designed to employ a thin, flat double-edged blade of the general contour shown in Fig. 2, although many variations in the shape and thickness of the blade may be made within the scope of my invention. The illustrated blade, however, is provided with a series of uniformly spaced transverse slots 29, the series extending from end to end of the blade and occupying an intermediate zone spaced within the bevelled edges of the blade. The slots 29 in effect transform the blade into a rack that may be moved positively and quickly in either direction by association with a co-operating pinion, as will appear hereinafter. It will be noted that the slots are arranged so that an open recess is formed by the endmost slot at each end of the blade and that the bridge or toothed portions between the two center slots are cut away to form openings of sufficient width to receive freely the threaded stem of the clamping screw 36.

The blade shown in Fig. 2 may be inserted endwise by hand from the right-hand end of the guard plate 15. It will be engaged and positively locked in shaving position by the ribs 24 when the cap member is pulled downwardly by rotation of the clamping screw 26. When presented to the safety razor it may be pushed yieldingly beneath curved end of the spring 25 and will be temporarily held thereby in position on the blade seat while the cap member occupies its raised or open position as shown in Fig. 1. When the clamping screw 36 is tightened the cap member is drawn down into the position shown in Fig. 3, the ribs 24 passing through the slots in the blade 28 which are located beneath them and entering the transverse slots 18 of the guard plate. The advancing movement of the blade is arrested, with slots in registration with the ribs 24, by contact of its end with the inner surface of the connecting neck 21 of the cap member.

At the option of the user the safety razor of my invention may be supplied with blades from a blade magazine of the character shown in Figs. 1, 5 and 6. This comprises a rectangular box or casing 30 forming an enclosure for containing a stack of ten or twelve blades 28. It is provided with an outlet slot 31 adjacent to its cover at the left-hand end and with an internal leaf-spring 32 which tends to hold the stack of blades always against the top of the magazine. The outlet slot is of sufficient width to permit the passage of a single blade but not wide enough to permit two blades to pass together, all as shown in Fig. 6. The upright end walls of the magazine are provided internally with wide shallow ribs 33 which fit the end recesses of the blades 28 holding the blades positively in alignment and out of contact with the side walls of the magazine while permitting free vertical movement thereof within the magazine. Above one end of the magazine projects a pair of ears and between these is journalled a toothed feed roll or pinion 34. An opening for the feed roll is provided in the cover of the magazine above the delivery or outlet slot 31, as shown in Fig. 6. The feed roll 34 and its teeth are so shaped that they mesh accurately with the teeth formed by the transverse slots 29 of the blade in rack and pinion position. Accordingly, when the feed roll 34 is rotated in a clockwise direction it positively advances the uppermost blade 28, ejects it through the delivery slot 31 and introduces it endwise upon the surface of the guard plate 15. Movement of the blade may continue until it is interrupted by contact of the blade with the inner side of the neck 21 which thus constitutes a blade stop for arresting the blade in shaving position beneath the blade-clamping plate 20 of the cap member.

The magazine 30 is provided with an arm or finger 35 projecting longitudinally from its left-hand end and forked to straddle the stud 14 and to pass beneath the head of a shouldered screw 27 which is set in the base plate 10 of the razor head opposite to the stem 11. By inserting the arm 35 in this manner as shown in Fig. 1 the magazine is accurately and positively registered with its delivery slot 31 substantially flush with the upper surface of the guard plate 15 so that a blade advancing endwise from the magazine will forceably displace the leaf spring 25 and slide smoothly into position upon the blade seat. When the blade has been once delivered it is held yieldingly in position and remains so located until the clamping screw 36 has been lifted to engage the overlying plate of the cap member and the latter draws it down into the blade clamping position shown in Fig. 3.

In the third place the feed pinion 34 is located at the extreme end of the magazine so that its teeth sweep toward and across the delivery slot 31. The blade is thus advanced positively by a pushing action in the rotation of the roll 34 until it passes completely out of the magazine since the rear end edge of the blade is a feeding edge against which the teeth of the roll act until well beyond the end wall of the magazine.

It will be understood that the magazine is to

be detached and removed from the safety razor after a new blade has been delivered therefrom and located in shaving position in the razor and either before or after the blade has been clamped by manipulating the clamping screw **36**. At the conclusion of the shaving operation the clamping screw **36** is reversely rotated releasing the cap member and permitting the spring **25** to elevate it until again arrested by the shoulders of the studs **13** and **14**. The blade may then be removed by hand from under the spring **25** by sliding it toward the right on the blade seat and out of the razor and is thus available for cleaning or if replacement is desired a new blade may be substituted.

The important structural feature of my invention consists in the design of the feed pinion **34** and its relation to the blades which it is to handle. In the first place, the teeth of the roll are of substantial width, corresponding in this respect substantially to the length of the transverse slots **29** in the blade. Consequently, the teeth of the roll feed the blade with extreme accuracy and positively prevent any lateral displacement thereof. All necessity for other or external blade-guiding means is accordingly obviated and the keen edges of the blade are safeguarded against all contacts. In the second place, the depth of the feeding teeth is made no greater than the thickness of the blade and, by this expedient, the feeding action of the roll is definitely limited to the single uppermost blade in the stack since the teeth cannot pass through this blade and engage an underlying blade.

It would be within the scope of my invention to curve the co-operating blade-clamping faces so that the blade would be flexed transversely when clamped instead of maintained in a flat condition as in the illustrated embodiment of the invention.

Having thus disclosed my invention and described a preferred embodiment thereof for purposes of illustration but not in any limiting sense, I claim as new and desire to secure by Letters Patent:

1. In a safety razor, a magazine having a stack of thin flat blades each provided with a series of perforations forming rack teeth, a discharge opening for the blades in the walls of the magazine, and a pinion feed roll located adjacent to the discharge opening for rotation across the same and having teeth no longer than the thickness of the perforated blades.

2. A blade magazine comprising an elongated enclosure having a delivery slot in one end adjacent to its upper wall, means for holding a stack of blades in the magazine with the blade edges out of contact with the side walls of the enclosure, said blades being each provided with a centrally disposed series of rack teeth of substantial transverse length and the magazine being provided with brackets supporting a toothed pinion in position to intermesh with the uppermost blade of the stack and eject it by a pushing action.

3. A blade magazine comprising an elongated enclosure having in one end a delivery slot of width to admit passage of a single blade only and an overhead opening above the slot, a toothed feed roll mounted on the magazine in such position that its teeth move in said opening toward and across the said delivery slot, the teeth being of length to engage one blade at a time, and a charge of blades contained in said enclosure and perforated to present teeth meshing with said toothed roll, the rear edge of one of said teeth constituting the rear edge of the blade, whereby one blade at a time may be pushed entirely out of the enclosure of the magazine.

4. A blade magazine comprising a covered enclosure having a delivery slot in one end opening through the cover, a stack of thin flat blades in the enclosure, each provided with a series of parallel transverse slots forming teeth of substantial width, and a feed roll having correspondingly shaped teeth also of substantial width mounted for rotation in position for its teeth to sweep into and outwardly across the delivery slot and traveling in a path engaging a single blade only of the stack, thus engaging and ejecting a blade by pushing action entirely from the magazine enclosure.

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