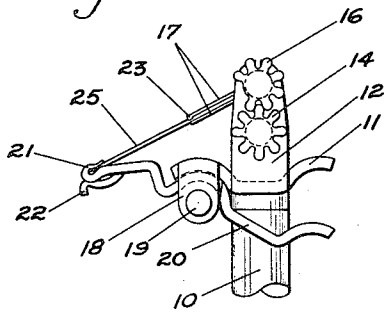
April 28, 1942. J. MUROS 2,281,201

MAGAZINE SAFETY RAZOR

Filed Nov. 3, 1939 2 Sheets-Sheet 1

Fig. 1



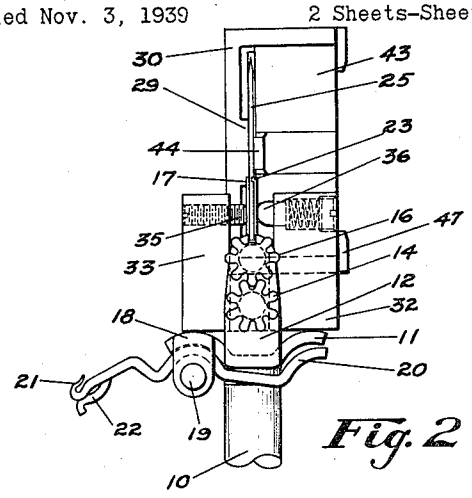


Fig. 2

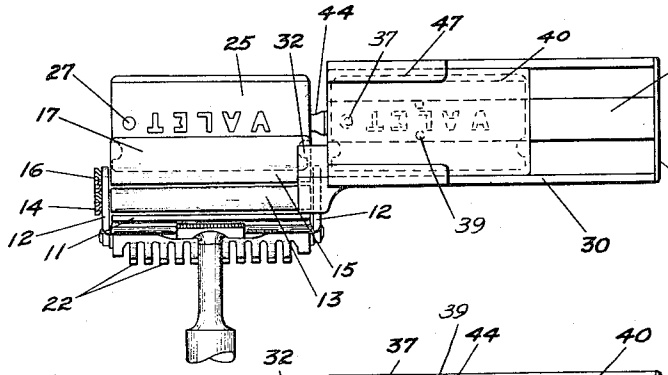


Fig. 3

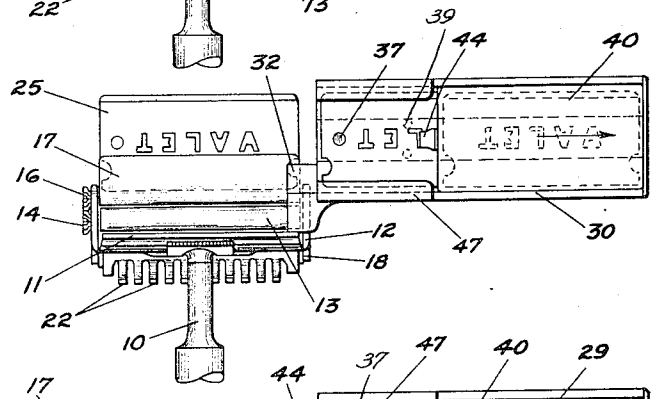


Fig. 4

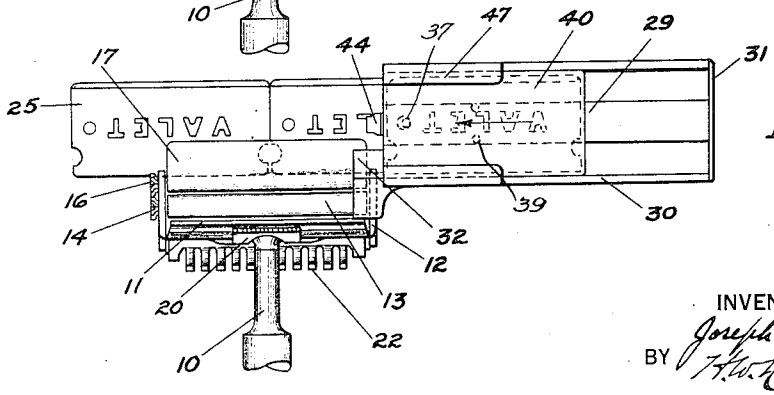


Fig. 5

INVENTOR
BY Joseph Muros.
F. W. Kenway.
ATTORNEY

April 28, 1942. J. MUROS 2,281,201

MAGAZINE SAFETY RAZOR

Filed Nov. 3, 1939 2 Sheets-Sheet 2

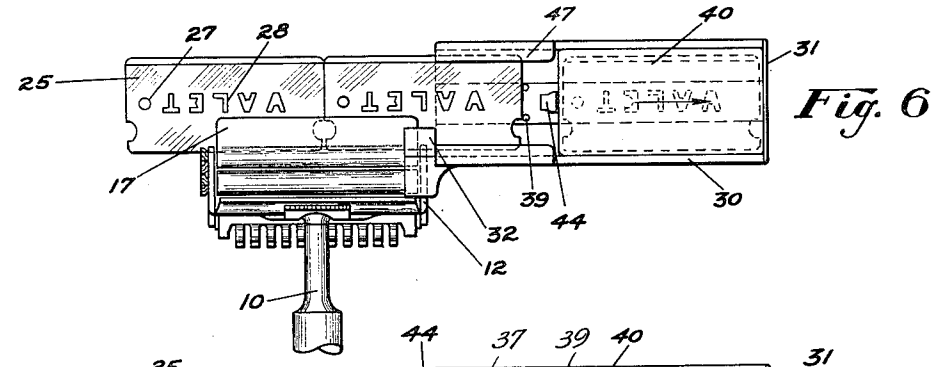


Fig. 6

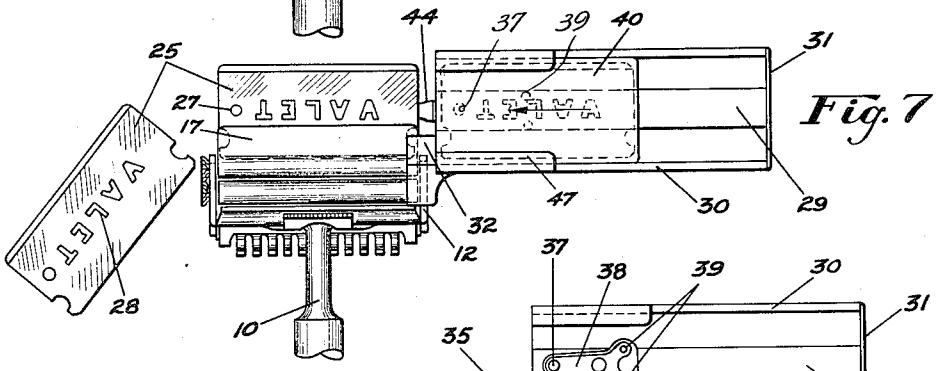


Fig. 7

Fig. 8

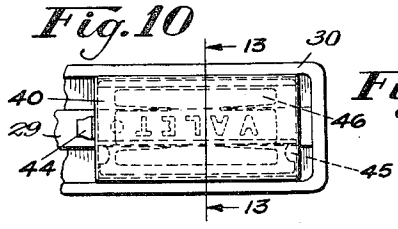


Fig. 10

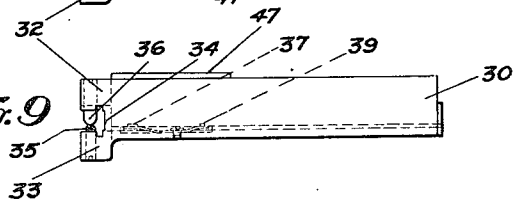


Fig. 9

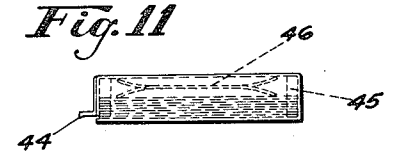


Fig. 11

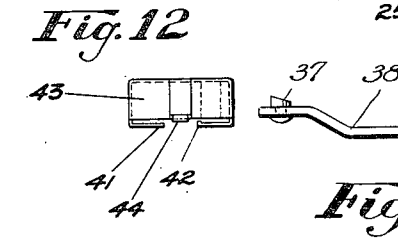
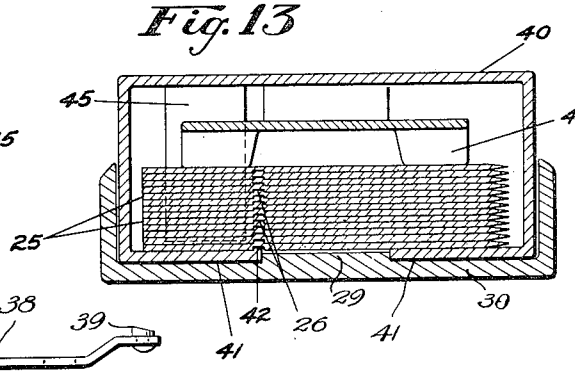


Fig. 12

Fig. 14

Fig. 13



INVENTOR
Joseph Muros.
BY
ATTORNEY

Patented Apr. 28, 1942 2,281,201

UNITED STATES PATENT OFFICE

2,281,201

MAGAZINE SAFETY RAZOR

Joseph Muros, Cambridge, Mass., assignor to Gillette Safety Razor Company, Boston, Mass., a corporation of Delaware

Application November 3, 1939, Serial No. 302,693

23 Claims. (Cl. 30—40)

This invention relates to safety razors of the type which is organized to receive fresh sharp blades one by one as delivered from a magazine source of supply. In one aspect the invention comprises a novel combination of safety razor and magazine in which the razor is organized to receive blades directly by endwise movement from the magazine whereupon the magazine may be removed, relinquishing the blade already delivered to the razor and carrying away those blades remaining therein. In another aspect the invention consists in a novel magazine mechanism for safety razor blades adapted to be used in the combination described and for dispensing blades to the consumer.

The extreme thinness of safety razor blades and the fragile character of their shaving edges makes these blades difficult to handle and to locate ready for shaving in the razor without danger of cutting the user or of impairing the keen shaving edge of the blade by contact with the razor or the blade packing. As herein shown the magazine of my invention is shaped to contain a plurality of blades in a stack or pack, maintaining their cutting edges out of contact with all parts of the magazine and exposing only a portion of the outermost blade in the pack. The razor on its part is equipped with a blade carrier designed to receive a blade from the magazine in one position and to locate it properly in a different position for shaving when once the blade is delivered.

An important feature of my invention consists in a novel magazine holder arranged to be detachably connected to the razor when it is desired to replace a used blade in the razor or supply a new one thereto and to be disconnected and removed from the razor during the shaving operation. As herein shown the magazine holder and razor are equipped with co-operating and interfitting members which serve to connect the two positively against longitudinal separation or separation in the direction of magazine movement, but which leave the two free to be readily detached by relative transverse movement, that is to say, movement transverse to the direction of blade delivery.

I have found a particularly compact and convenient construction may be realized by arranging the delivery of blades from the magazine to the razor to be effected in two steps rather than a single step. In accordance with an important feature of my invention I utilize movement of the magazine itself in the magazine holder to eject successive blades by repeated movement, that is to say, the blade may be ejected halfway from the magazine in one movement thereof and fully ejected by a second similar movement of the magazine.

The construction of my magazine mechanism obviates the difficulty of jamming heretofore encountered in safety razors of the magazine type and insures against the delivery from the magazine of a blade until the previous blade has been fully ejected and introduced into the razor.

Another important feature of my invention consists in the combination of a safety razor having a movable blade carrier with a magazine holder having means for properly aligning the carrier of the razor with the path of the blade delivered from the magazine. For convenience my invention will be disclosed in connection with a razor having a pivotally mounted blade carrier movable into upright blade-receiving position. For use with such a razor the magazine holder has means for accurately positioning the blade carrier of the razor in upright position, but will be understood that the blade may be delivered to a carrier in any position where it is convenient to unclamp the blade from its fixed shaving position.

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 side view on an enlarged scale of the safety razor head;

Fig. 2 is a similar view of the razor head with the magazine operatively associated therewith;

Fig. 3 is a front view on a true-sized scale of the razor and magazine holder showing the magazine in position at the end of its ejecting movement;

Fig. 4 is a similar view showing the magazine at the beginning of its intermediate stroke;

Fig. 5 is a similar view showing the magazine in position at the end of its intermediate stroke;

Fig. 6 is a similar view showing the magazine in position at the end of its intermediate stroke;

Fig. 7 is a similar view showing the magazine again in position at the end of its ejecting stroke;

Fig. 8 is a view in front elevation of the magazine holder separate from the safety razor;

Fig. 9 is a corresponding view of the magazine holder from above;

Fig. 10 is a plan view showing the magazine in the magazine holder;

Fig. 11 is a view of the magazine alone as seen from one side;

Fig. 12 is a view of the magazine as seen from its delivery end;

Fig. 13 is a sectional view on the line 13—13 of Fig. 10 on a four times scale.

Fig. 14 is a view in elevation on a greatly enlarged scale of the spring and stop pins of the magazine holder.

The invention is herein disclosed in its application to the well-known AutoStrop type of safety razor shown, for example, in U. S. Letters Patent No. 1,639,335 and No. 1,709,070, granted on applications of Henry J. Gaisman to which reference may be had for a more detailed disclosure of the stropping mechanism, the latter being omitted from the drawings herein to avoid unnecessary confusion.

The razor as shown in Figs. 1–7 is designed to take a flat single-edged blade 25 of the type shown in Figs. 6 and 7, that is to say, a rectangular blade having curved recesses in its ends, a longitudinal groove 26 in one face and perforations in the shape of the letters of the word VALET. The razor comprises a handle 10 carrying at its upper end a sheet metal head 11 provided with upstanding arms or standards 12 at each side. Journaled between the arms 12 are the strop-engaging roller 13, having a small pinion 14 on its outer end, and a tubular sleeve 15 which is a part of the blade carrier and is provided at its outer end with a pinion 16 meshing with the pinion of the strop-engaging roll 13. The blade carrier comprises a pair of thin spring plates 17 which are attached to or formed integral with the sleeve 15. The plates 17 are at all times urged toward each other and are adapted to engage a blade inserted between them with firm frictional contact. The uppermost plate 17 as shown in Fig. 1 is provided with an inwardly projecting rib 23 in its free end and this rib is shaped to engage the corresponding longitudinal groove 26 provided for that purpose in one face of the blade 25.

In a blade carrier of the character above described blades may be inserted endwise between the plates 17. They are guided in a straight line path by co-operation of the rib 23 of the carrier with the groove 26 of the blade and the blade is at all times positively held against outward movement in the blade carrier. The blade is thus retained in the carrier during the blade-stropping operation when the blade would be otherwise free for outward movement.

The razor head 11 is provided with a pair of down-turned lugs 18 at either side and between these lugs is journaled a pivot 19 carrying a guard member 20 provided at its forward edge with guard teeth 22 and at each forward corner with a blade-engaging hook 21. The rear portion of the guard member 20 is slotted so that the handle 10 passes freely through it and is extended rearwardly so the operator may conveniently rock it up and down to clamp the blade 25 in shaving position as shown in Fig. 1 or to disengage the blade as shown in Fig. 2. During the shaving operation the guard is maintained in blade-clamping position as shown in Fig. 1 while for stropping or for the replacement of one blade for another the guard member is swung downwardly into position shown in Fig. 2, thus leaving the blade carrier free to be located in blade-ejecting position or to oscillate about the axis of the sleeve 15 in the stropping operation.

The magazine holder as herein illustrated comprises an elongated channelled-shaped member 30 closed at one end by a plate 31 and having at its other end a pair of spaced blocks 32 and 33 in which is formed a vertical undercut guideway 34 shaped to slide upon the right-hand arm or standard 12 of the safety razor. The lower wall of the magazine holder is thickened and widened as best shown in Figs. 8 and 9 to provide the blocks 32 and 33 and to provide adequate length for the undercut guideway 34 so that it may receive substantially the whole length of the standard 12 of the safety razor, thus forming a positive connection therewith in a longitudinal direction so that in the ejecting movement of the magazine there is no possibility of separating the magazine holder and safety razor. On the other hand, the magazine holder may be operatively connected to the safety razor by relative movement in a downward vertical direction, with the parts held as represented in the drawings, and conveniently detached from the razor by upward movement in which the blocks 32 and 33 are moved upwardly or endwise in respect to the standard 12 of the razor.

The block 33 is provided with a stationary but adjustable gauge pin 35 which projects slightly into the guideway 34 and serves positively and accurately to determine the blade-receiving and ejecting position of the blade carrier by engaging the rearmost plate 17 thereof. Located in the block 32 is a co-operating spring plunger 36 which is arranged to engage the opposite face of the blade carrier, or of a blade therein, and hold the carrier yieldingly in contact with the end of the adjustable gauge pin 35. The gauge pin and plunger also co-operate to direct a blade ejected from the magazine in the guideway of the holder accurately into the blade carrier of the razor.

The side walls of the guideway in the magazine holder are provided at their inner ends with short overhanging flanges 47 for slidably retaining the magazine in the guideway. In the bed of the guideway 30 is provided a central longitudinal rib 29 and a stop pin 37 having a bevelled end adapted to enter the circular holding perforation 27 of a blade when the blade is moved endwise into registration with it. Also provided in the bed of the magazine holder is a spring 38 having a pair of branches in which are set stop pins 39. These are located near the opposite edges of the rib 29 and serve to engage and hold a blade in position and against retraction at the end of the intermediate stroke of the magazine, as suggested in Fig. 6 and as will be presently explained.

The magazine 40 herein shown is constructed of sheet metal in rectangular form. Its bottom wall comprises a pair of spaced flanges 41 and its end wall 43, which is disposed in advance in the carrier, is provided with an angular spring dog 44 shaped to engage a straight transverse perforation in the body of the blade, for example that provided by the upright portion 28 of the letter L cut into the body of the blade. The front wall of the magazine is provided on its inner face with a pair of guides 45 and shaped to fit into the end recess of the blades in the stack present in the magazine and maintain the sharp edges of the blades out of contact with the upper wall of the magazine. The magazine is also provided with a spring 46 tending at all times to push the stack of blades in the magazine downwardly so that the outermost blade of the stack is limited in its position by engagement with the spaced flanges 41 of the magazine.

The magazine holder is normally detached

from the safety razor as suggested in Fig. 1 and the latter is complete in itself and may be used with a stropping mechanism or without in accordance with the preference of the shaver. When it is desired to replace a used blade in the razor by a sharp blade from the magazine, the guard plate 20 is swung downwardly at its outer end, releasing the edge of the blade from the blade clamping hooks 21. As suggested in Fig. 2 the blade carrier is then moved into substantially vertical position and the magazine holder operatively connected to the razor by passing the inner end of the blade carrier into the space between the gauge pin 35 and the spring plunger 36 and then slipping the guideway 34 of the holder down upon the arm or standard 12 of the razor. This movement is arrested by contact of the bottom of the blocks 32 and 33 with the upper surface of the head 11, the blade carrier being meanwhile aligned with the outer surface of the rib 29 of the magazine holder.

The magazine 40 containing a stack of ten or twelve blades 25, as shown in Fig. 13, is then placed in the guideway of the magazine holder and moved in its guideway into its forward position adjacent to the safety razor, in which position the spring dog 44 just touches the blade 25 already in the razor. Further movement of the magazine in this direction is positively arrested by its contact with the block 32 while its spaced flanges 41 straddle the rib 29 in the bottom of the magazine holder, bringing the face of the outermost blade in the stack into contact with the face of the rib 29. Assuming now that it is desired to replace the blade which occupies the blade carrier as in Fig. 3, the magazine is first moved toward the right, or away from the razor. In this operation the outermost or lower blade in the magazine is engaged by the stop pin 37 in the rib 29 of the magazine holder and is held stationary against retrograde movement, being drawn out of the exit end of the magazine while the latter completes its movement toward the right. In this movement the spring dog 44 is moved until it registers with the edge of the feeding perforation provided in the blade by the letter L, clicking across the other perforations. The blade is meanwhile positioned with its sharp edge out of contact with the wall of the magazine holder by its engagement with the stop pin 37 and by the engagement of the rib 42 of the magazine with the groove 26 in the face of the blade. Fig. 4 represents the various parts in their position at this point of the cycle.

The magazine 40 is now moved toward the left in what we may term its second or intermediate stroke and in this movement the new blade is advanced by the dog 44 from the stop pin 37 and inserted into the right end of the blade carrier. The stop pin 37 has a bevelled end surface permitting the blade to move forwardly or to the left but positively preventing it from moving to the right or in a retrograde manner. In this intermediate stroke of the magazine the new blade is carried half way into the blade carrier forcing the old blade ahead of it and half ejecting it from the blade carrier and being itself registered with the blade carrier by the gauge pin 35 in the holder. The parts are represented in Fig. 5 as located at this point in the cycle.

The magazine 40 is then moved again to the right as shown in Fig. 6 leaving the new blade inserted half-way into the blade carrier and held against retracting movement by the stop pins 39 of the spring 38. In this movement the dog 44 which formerly engaged the aperture provided by the letter L in the blade is moved to the right beyond the rearmost edge of the blade, clicking over the remaining perforations of the blade. The magazine is finally moved toward the left in its ejecting stroke. In this movement the dog 44 passes between the two stops 39 into contact with the rear edge of the new blade and forces it forwardly into shaving position in the carrier meanwhile completely ejecting the old blade as suggested in Fig. 7.

As before intimated the final position of the magazine in its ejecting stroke is positively limited by engagement of the magazine with a fixed block 32 of the holder and this is so located as to register the new blade accurately in the endwise position in the blade carrier. The magazine holder may now be disengaged from the razor by merely slipping it upwardly off the standard 12, the blade carrier may be swung downwardly into shaving position and the blade may then be clamped in that position by rocking the guard member 20 upwardly into the position shown in Fig. 1, whereupon the shaver may proceed, using the new blade which has been introduced into the razor without touching or dulling its keen shaving edge.

The magazine holder is, of course, detached from the razor before shaving. The magazine 40 is frictionally engaged by the walls of the guideway in the holder at all times. It is positively held in the guideway when it is advanced beneath the ribs 47 at the inner end of the guideway, but may be freely inserted in or removed from the guideway when it is positioned in the outer end thereof, as shown for example in Fig. 4. It is contemplated that the magazine may be used as a container in which the blades are packaged for distribution to the consumer.

It will be noted that the guideway in the holder 40 is in length substantially one and one-half times the width of the safety razor and that the stroke of the magazine itself in the guideway is in length about one-half the width of the razor, or one-half the length of a blade. The blade is drawn from the magazine and half uncovered by the initial movement of the magazine away from the razor, and is subsequently advanced toward and into the razor in two distinct movements. One advantage of this procedure is that the blade is partially retained and fully controlled in its position in the guideway by the magazine at all times until the blade is inserted in the blade carrier. It is not at any time left loosely in the guideway and has therefore no opportunity to become misplaced.

While my invention has been disclosed as embodied in magazine mechanism adapted for use with a stropping type of safety razor, it will be understood that the particular razor selected is for purposes of illustration only and that with appropriate modification of the mechanism it could be adapted for use with safety razors of certain non-stropping types. Although in the illustrated construction the blade is presented to the blade carrier of the razor while the latter occupies an upright position, revolved somewhat more than 90° from its normal shaving position, it would be within the scope of the invention to present the blade at any desired or convenient angle, for example, in the angular position determined by a blade carrier which is stationary or movable only slightly from its normal shaving position.

The blade herein selected in illustrating one

specific embodiment of the invention has perforations in the shape of the letters of the word VALET and a circular perforation 21, but it will be understood that the only perforations having a mechanical function in the combination described are the circular perforation 21, for receiving the pin 37, and the vertical portion of the letter L, for receiving the dog 44. It follows that any blade of suitable contour having these two properly spaced perforations would answer all the requirements of my invention.

The invention is herein shown as embodied in a safety razor in which the movable spring plates 17 constitute the blade carrier, but it may be equally well embodied in a safety razor having a stationary blade carrier or seat, or one in which the blade carrier comprises co-operating guard and cap members. Accordingly, the term "blade carrier" is used herein in a broad sense to mean any razor elements designed to carry or hold the blade in predetermined position in the safety razor. The term "flatwise," used herein to characterize the movement of the blade, means movement of the blade in its own plane.

It will be seen from the foregoing suggestions that many departures in proportion, arrangement and design of parts may be made from the illustrated construction, all within the scope of my invention as defined in the accompanying claims, viz.:

1. A safety razor having a blade carrier, in combination with a magazine holder having guides retaining a blade magazine movable back and forth in the holder to deliver a blade to the carrier, and interfitting parts on the razor and holder respectively for detachably and positively connecting the razor and holder against separation in the direction of magazine movement.

2. A safety razor having a blade carrier and a transversely extending arm, in combination with a holder having a longitudinal guideway for a magazine and a transverse guideway shaped to receive the arm of the razor and positively connect the razor and the holder against separation in a longitudinal direction.

3. A safety razor having a blade seat, in combination with a holder having a guideway for a blade magazine longitudinally movable therein, and means for positively connecting the razor and holder against displacement in longitudinal direction while at all times permitting disengagement by relative transverse movement.

4. Blade feeding mechanism for safety razors, comprising a magazine holder having therein razor-engaging elements and a guideway provided with a projecting longitudinal rib, and a blade magazine movable in the holder and having flanges spaced to fit said rib, and a spring to press blades in the magazine toward and into contact with said rib between the flanges of the magazine.

5. A safety razor having a blade carrier, in combination with a holder detachably connected to the razor, located at one side of the blade carrier and having a guideway therein, a blade stop in said guideway, and a magazine of blades movable in said guideway with respect to said blade stop.

6. A safety razor having a blade seat, in combination with a holder detachably connected to the razor and having a guideway therein, co-operating means in the razor and holder for registering the guideway with respect to the blade seat, and a magazine movable in said guideway to deliver a blade upon the blade seat while the guideway is so registered.

7. A safety razor having a pivotally mounted blade carrier therein, a holder detachably connected to the razor and provided with a magazine guideway and means as a part of the holder for registering the blade carrier of the razor with the guideway of the holder, and a magazine slidable in said guideway.

8. A safety razor having a blade carrier movable therein from shaving position to blade-receiving position, in combination with a magazine holder attached to the razor and having a guideway and a blade magazine movable therein for delivering blades in a predetermined angular position, and means as a part of the holder for registering the blade carrier of the razor with the guideway of the holder.

9. A safety razor having a swinging blade carrier and means for clamping said carrier with a blade in shaving position, in combination with a magazine holder attached to the razor and having guiding means, a magazine movable therein, and means for detachably connecting the razor and holder independently of said carrier clamping means.

10. A safety razor having a blade carrier, in combination with a magazine holder detachably connected thereto and having a guideway, a movable magazine therein, and co-operating stops for determining the position of the blade carrier, said stops being located on opposite sides of the path of blades supplied to the blade carrier by the magazine in said guideway.

11. A safety razor having a blade carrier, in combination with a magazine holder having a guideway, a magazine slidable in the guideway in a path limited to less than the length of said blade-carrier and having a blade-engaging dog, and stop in the guideway, whereby a single blade is delivered from the magazine to the blade carrier in two complete reciprocations of the magazine in said guideway.

12. A safety razor having an angularly movable blade carrier, means in the razor for clamping the carrier with a blade in shaving position, a magazine holder detachably connected to the razor, means in the holder for clamping the blade carrier in a different angular position to receive a blade, and means in the holder for delivering a blade to the carrier while so clamped in such blade-receiving position.

13. Feeding mechanism for a safety razor comprising a holder having a guideway, an apertured magazine movable in the guideway to and from the razor with a blade in sliding contact with a part of said guideway, a stop in the guideway for preventing retrograde movement of said blade, and means associated with the magazine for advancing the blade from said stop.

14. Feeding mechanism for a safety razor, comprising a holder having a guideway, an apertured magazine movable in the guideway with a blade in sliding contact therewith, and blade stops at two different positions in the length of the guideway for preventing retrograde movement of the blade during two successive strokes of the magazine.

15. Feeding mechanism for a safety razor, comprising a holder having a guideway, a blade magazine slidable in the guideway and having an exit end and an open longitudinal slot giving access to the outermost blade contained therein, spaced stops in the guideway for engaging said outermost blade at different points in its length,

and a blade-feeding member carried by the magazine.

16. In feeding mechanism for a safety razor, in combination with a holder having a guideway, an apertured blade magazine arranged for reciprocation in the guideway and containing a stack of perforated blades with the outermost blade exposed, a stop in the guideway for engaging a perforation in the blade to hold it at the exit end of the guideway, a second stop in the guideway for holding the blade in a half ejected position, and blade feeding means associated with the magazine for engaging a perforation of the blade in one stroke and the rear end of the blade in another stroke.

17. Blade-feeding mechanism for a safety razor comprising a holder having a guideway, a blade magazine movable in the guideway, means for holding a blade from the magazine at rest in the guideway when the magazine is moved away from the safety razor, and means for advancing said blade half its length in each of two successive movements of the magazine toward the razor.

18. Blade-feeding mechanism for a safety razor comprising a holder having a guideway about one and one-half times the length of the blade to be handled, and a blade magazine limited to movement in said guideway in strokes substantially one-half its own length.

19. Blade-feeding mechanism for a safety razor comprising a holder having a guideway with a longitudinal rib therein, and a blade magazine movable in said guideway and having a wall slotted to fit upon said rib.

20. A safety razor having supporting arms, a blade carrier journaled between said arms, and blade clamping means, in combination with a detachably connected holder having a guideway shaped to receive one of the supporting arms of the razor, a longitudinal magazine guideway having a rib and blade stops, and means for registering the blade carrier of the razor with the rib of the holder, a magazine movable in said latter guideway and having flanges spaced to fit said rib, and a feed device for advancing a blade in contact with said rib and inserting it into said blade carrier while the blade carrier is thus registered with said ribs.

21. A detachable magazine mechanism for a safety razor, containing a stack of blades supported with the outermost blade of the stack aligned longitudinally with a blade in the safety razor, said mechanism including blade feeding means limited to movement in a path less than the length of a blade in the stack and movable to engage and advance toward and into the razor the said outermost blade twice in two successive strokes, and a blade stop for holding said blade in mid position against retraction between said strokes.

22. Detachable magazine mechanism for a safety razor, containing a stack of unwrapped blades each with separate and spaced holding and feeding perforations therein, said mechanism including a guideway having a blade-holding stop shaped to enter said holding perforation and prevent retraction of a blade, and a movable feeding dog shaped to enter the feeding perforation of the blade and limited in its movement to a path for advancing the blade toward and into the razor by only one-half the length of the blade from a position determined by the said holding stop.

23. Magazine mechanism for a safety razor, containing a stack of unwrapped blades, each blade having a feeding perforation located substantially midway between its edges in the direction of feeding movement, said mechanism including means for guiding a blade flat-wise into the razor, and a movable feed dog shaped to enter the feeding perforation of the blade and limited in its stroke to a path for advancing the blade toward and into the razor from an initial position outside the razor by only one-half the distance to the final shaving position of the blade in the razor.

JOSEPH MUROS.