July 19, 1938. W. H. HUENERGARDT 2,124,402

SAFETY RAZOR

Filed June 15, 1934

Fig. 1.

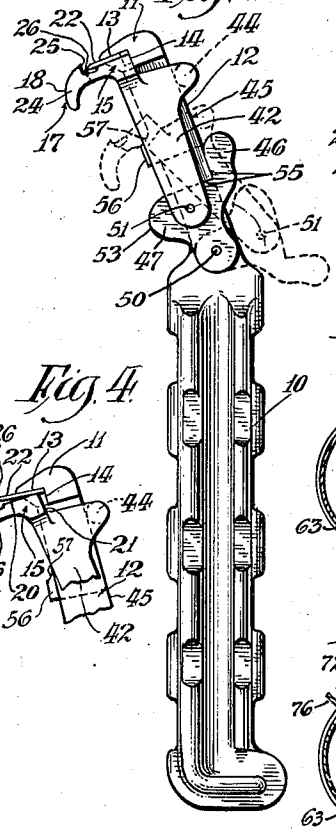


Fig. 2.

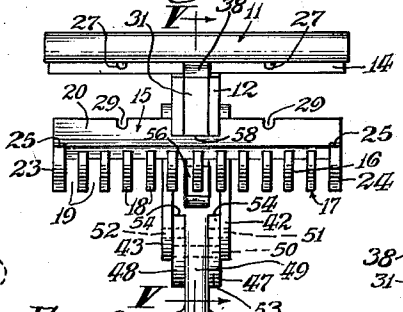


Fig. 8.

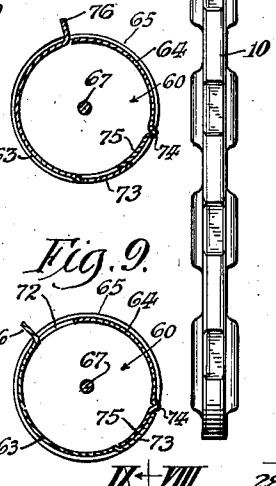


Fig. 5.

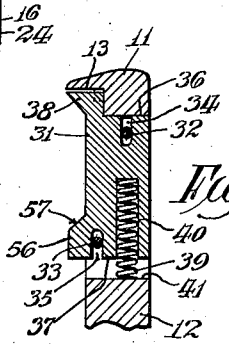


Fig. 4.

Fig. 7.

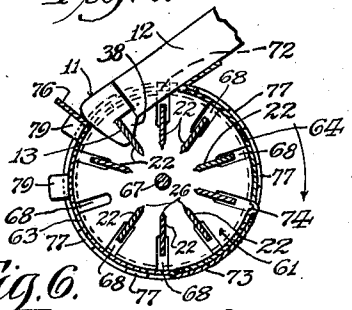


Fig. 9.

Fig. 6.

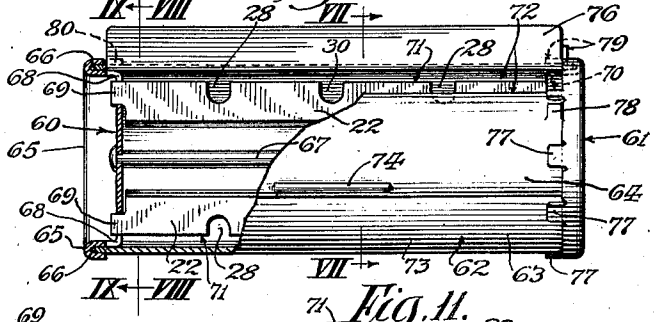


Fig. 3.

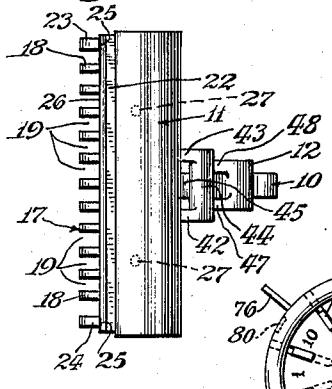


Fig. 11.

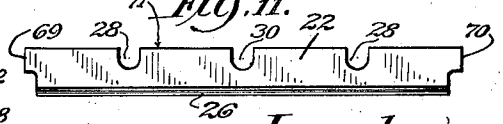
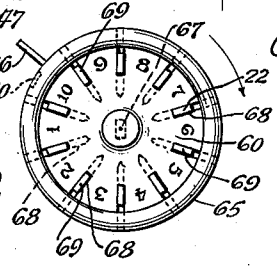


Fig. 10.



Inventor:
William H. Huenergardt,
By Harry C. Albritton.
Attorney.

Patented July 19, 1938 2,124,402

UNITED STATES PATENT OFFICE

2,124,402

SAFETY RAZOR

William H. Huenergardt, Chicago, Ill.

Application June 15, 1934, Serial No. 730,697

9 Claims. (Cl. 30—40)

This invention relates to razors and more particularly to safety razors, although certain features thereof may be employed with equal advantage for other purposes.

It contemplates more especially the provision of a novel razor that precludes the necessity for manual blade manipulation or handling with the fingers for placement and removal in the use thereof for shaving purposes.

Many types of razors have heretofore been employed for shaving purposes and they have been generally used for home shaving. It is true, nevertheless, that the use of razors in the home presents a problem of blade manipulation, handling, as well as the hazards accompanying the handling thereof with the fingers for placement and removal relative to the razor or holder utilized therewith for shaving purposes. This is especially true in connection with safety razors that have detachably associated razor blades of a hazardous nature so far as handling is concerned.

It is manifest, therefore, that the provision of a holder, blade, and container therefor that enables the transfer of blades from one to the other without the requirement for manual handling with the fingers in the use thereof, presents a rather important advantage which overcomes the hazards that are present in home shaving from a standpoint of manual handling with the fingers, blade manipulation for association with the holder, and eventual disposal of the blades that in and of itself is a serious and hazardous problem from a shaver's standpoint. Then, too, effective single hand manipulation of a razor for receiving a blade, removing the blade, and effecting the replacement of blades without the required handling with the fingers, solves a problem in home shaving that long existed and has evaded a solution in the provision of a simple, inexpensive, and efficient razor, blade, and blade container construction.

One object of the present invention is to provide an improved razor that is capable of single hand blade manipulation both in the use thereof as well as preparatory thereto.

Another object is to provide an improved razor blade holder that is capable of single hand manipulation for the retention and release of the blade to meet shaving requirements.

Still another object is to provide an improved razor that is capable of effecting the manipulation of a blade for retention and release so as to effect blade substitution without the manual handling with the fingers.

A further object is to provide an improved razor blade that has a width substantially less than one-half of its length so as to present an inexpensive as well as readily disposable blade.

Still a further object is to provide a substantially elongated razor blade that has a width substantially less than one-half of its length with a plurality of transverse regions of weakness for ready destruction and safe disposal.

A still further object is to provide an improved razor blade container that affords independent removal of the blades as well as provides for the disposal thereof responsive to manipulation of a razor in cooperation therewith.

Other objects and advantages will appear from the following description of an illustrated embodiment of the present invention.

In the drawing:

Figure 1 is a side view in elevation of a razor blade holder embodying features of the present invention, the dotted outline showing the blade holding parts in released position.

Figure 2 is a front view in elevation of the razor shown in Figure 1.

Figure 3 is a plan view of a razor showing a blade in operative position for shaving.

Figure 4 is a fragmentary side view in elevation of the razor cap and guard in conjunction with the blade preparatory to displacing the blade guard to its operative position.

Figure 5 is a sectional view taken substantially along line V—V of Figure 2.

Figure 6 is a front view in elevation of a razor blade container or magazine embodying features of the present invention, parts thereof being broken away to clarify the showing.

Figure 7 is a sectional view taken substantially along line VII—VII of Figure 6 with the razor shown in cooperation therewith to effect the removal or deposition of a blade relative thereto.

Figure 8 is a sectional view taken substantially along line VIII—VIII of Figure 6 with the container closure in its operative position for fully confining the blades therein.

Figure 9 is a sectional view taken substantially along line IX—IX of Figure 6 with the closure removed to present an opening through which the blades can be deposited or removed.

Figure 10 is an end view of the container shown in Figure 6.

Figure 11 is a plan view of a razor blade that is utilized in connection with the razor and container disclosed in Figures 1 and 6, respectively.

The structure selected for illustration comprises a handle member 10 which is elongated and of

any desired configuration to enable manual grasp and manipulation thereof in conjunction with a blade holder 11 which is integrally or otherwise connected thereto through the medium of an elongated shank 12 of substantially rectangular cross-section. As shown, the holder 11 comprises the top cap member and is of substantially rectangular configuration to provide an off-set blade engaging surface 13. The off-set blade engaging surface 13 defines a shoulder 14 that is adapted to confront a guard member 15 which has an extension 16 possessed of a curved edge 17 to present serrations 18 defined by transverse slots 19 at uniformly spaced intervals therealong.

In consequence thereof, the serrated edge 17 serves as a razor blade guard in a manner customary with safety razor operation for displacement along the skin to be shaved. The guard member 15 corresponds in configuration and is somewhat shorter than the cap member 11, but extends laterally therefrom so as to enable the confronting application thereto without obstructing the serrated edge 17 and its slots 19. In the present instance, the guard member 15 has a surface 20 confronting the blade sustaining surface 13 of the cap member 11 to serve as a complement thereof with the perpendicularly related surface 21 adjacent the cap 14 of the cap member 11, thereby defining perpendicularly related surfaces 13—14 and 20—21 on both the cap member 11 and guard member 15, respectively, so as to receive a blade 22 therebetween.

The blade 22 is retained against the end serrations 23 and 24 comprising a part of the serrated edge 17 of the guard 15. As shown, the end serrations 23 and 24 are provided with an elevated formation defining shoulders 25 that receive the blade shaving edge 26 thereagainst for positioning relative to studs 27 mounted for extension from the surface 13 of the cap member 11. The studs 27 afford registry with perforations 28 provided in the blade 22 in correspondingly spaced relation therewith so as to effect registry therebetween to preclude lateral movement. So that the studs 27 do not serve as an obstruction to the guard 15, the latter is provided with correspondingly shaped grooves 29 for freely receiving the studs 27 therein to allow the guard 15 to lie flush with and contact the surface of the blade 22 which is thus supported against the surface 13 of the cap or holder 11.

It is worthy of note that the apertures 28 that cooperate with the studs 27 on the cap 11, also serve to weaken the blade 22 along transverse regions so as to enable the ready destruction of the entire blade 22 into minute segments for convenient disposal with safety. To this end, the blade 22 may be provided with any number of additional apertures 30, in this instance one, disposed intermediate the apertures 28 so that the blade can be reduced to at least four segments for flushing disposal by placement in the lavatory constituting the customary bathroom facility. This is especially effective in conjunction with the elongated blade 22 which has a width substantially less than one-half of its length so as to render the segments comparatively minute, light, and readily disposable in the manner referred to supra. In the present embodiment, the blade 22 has a width that is approximately one-eighth of its length, and the provision of the perforations 28—30 weakens the already transversely delicate blade 22 so as to enable the destruction thereof into segments without any difficulty.

In order to hold the blade 22 in position against the flat surface 13 of the cap 11, a blade engaging member 31 is reciprocally mounted relative to the cap member 11. To this end, the shank 12 is furcated to receive the blade retaining member 31 therebetween for reciprocal guidance by means of pins 32 and 33 that bridge the furcations of the shank 12 to cooperate with slots 34 and 35 communicating with the edges 36 and 37, respectively, of the retaining member 31. The reciprocable member 31 is provided with a blade engaging projection 38 that confronts the flat surface 13 of the cap member 11 and constitutes a complement thereof to retain a blade 22 therebetween.

In order to urge the reciprocable member 31 with its blade engaging projection 38 to its normally operative position against the surface 13 of the cap member 11, a coiled spring 39 is confined in a vertical bore 40 provided in the member 31 to communicate with the bottom edge 37 thereof, the spring 39 being normally of a greater length than the bore 40 so as to engage the bottom surface 41 defined by the furcations of the shank 12, thereby normally displacing the reciprocable member 31 vertically upwardly or in the direction of the flat surface 13 of the cap member 11 so that the confronting complement 38 will be in engagement therewith to normally retain a blade 22 therebetween with its ground shaving edge 26 in exposed application to the serrated edge 17 to enable the effective use thereof for shaving purposes.

To insure a predetermined movement between the guard member 15 and the blade holder or cap 11 as well as to guide the confronting approach thereof, the guard member 15 is provided with furcations 42 and 43 that are properly spaced to receive the furcated shank 12 therebetween to guide the reciprocal movement of the guard member 15 relative to the cap member 11. So that the guard member 15 will not be separable from the cap member 11 beyond controlled movement relative thereto, a spacer rod 44 bridges the levers 42 and 43 to engage the inclined edge 45 of the shank 12 so as to guide the relative movement between the cap member 11 and guard 15 so that one serves as a complement of the other in blade engaging position. In order that the movement of the guard member 15 may be effected relative to the cap member 11 responsive to single hand manipulation, a bell-crank lever 46 has furcated arms 47 and 48 which receive the reduced extension 49 of the furcated shank 12 therebetween so as to be in substantial alignment with the furcations thereof and to be telescopically received by the lever furcations 42 and 43 of the guard member 15.

It is to be noted that the furcated lever arms 47 and 48 of the bell-crank lever 46 are pivotally mounted on the reduced portion 49 of the furcated shank 12 by means of a pin 50 which extends completely therethrough to serve as a pivotal mount therefor. The furcations 42 and 43 are, in turn, connected to the lever arms 47 and 48 by means of individual pins 51 and 52 which pivotally connect the extremities of the furcations 42 and 43 to arms 47 and 48 of the bell-crank lever 46, thereby rendering the guard member 15 responsive to the thumb manipulated action thereof. The arms 47 and 48 of the lever 46 are pronouncedly curved as at 53 to constitute a camming surface against the shoulders 54 defined by the reduced shank portion 49 in conjunction with its furcated shank 12 to impart the de-

sired movement to the guard 15 as well as to lock it in operative position to sustain the blade 22 against the cap surface 13 when the bell-crank lever 46 is displaced to its extreme counter-clockwise position (viewed from Figure 1) so as to engage the inclined edge 45 of the shank 12.

To this end, the camming edge 53 of the furcated lever 46 terminates in an angular edge 55 that constitutes a complement of the shoulders 54 defined by the furcated shank 12 in conjunction with the reduced portion 49 thereof so as to be locked in position thereagainst owing to the pivotal relation of the furcations 42—43 and lever arms 47—48 that have off-set pivots 50 and 51—52 to present a desirable toggle action. In order to release the blade 22 from its engaged position between the cap surface 13 and the retaining member 31, the latter is provided with a lateral extension 56 proximate to the lower edge 37 thereof to define an inclined surface 57 disposed in the path of the guard member 15 which recedes from the cap member 11 responsive to the thumb manipulation of the lever 46 in a clockwise direction (viewed from Figure 1). It will be apparent, therefore, that the substantially rectangular cutout 58 provided in the guard member 15 to receive the furcated shank 12 with its intermediate retaining member 31, will engage the inclined cam surface 57 of the lateral retaining member extension 56 so as to displace the blade engaging extension 38 thereof from operative blade engaging position.

In consequence thereof, the blade retaining member 31 is displaced from the cap member 11 against the urge of the spring 39 responsive to the thumb manipulation of the bell-crank lever 46 in a clockwise direction (dotted outline of Figure 1) so that the guard member 15 will engage the surface 57 and thus displace the retaining member 31 therewith to release the blade 22. Partial manual release of the bell-crank lever 46 will return the blade retaining member 31 to its operative blade engaging position owing to the spring 39 and the manipulation of the lever 46 is only operative so far as the blade retaining member 31 is concerned, in its extreme clockwise position (viewed from Figure 1) and only for a fractional movement thereof, thereby accomplishing the grasping of the blade 22 between the cap member 11 and the engaging projection 38 irrespective of the position of the guard member 15 relative to the cap member 11.

In order to retain the blades 22 in an orderly protected manner as well as to afford the utilization thereof without direct handling with the fingers, a novel container or magazine is provided therefor. The container comprises, in this instance, a cylindrical casing that includes disc-shaped end members 60 and 61 having an intermediate cylindrical member 62 comprising two complemental sections 63 and 64. As shown, the disc-shaped end members 60 and 61 are provided with circumferential or peripheral flanges 65 that define annular confronting grooves 66 in both end members 60 and 61 for receiving the edges of the casing sections 63 and 64 therein in order to comprise an enclosure.

The sections 63 and 64 are movable in the annular confronting grooves 66 of the discs 60 and 61, and the aforesaid parts are maintained in assembled relation by means of a rod 67 extending axially therethrough to engage the end members 60 and 61, thereby maintaining the desired spaced relation thereof and affording circumferential displacement of the sections 63 and 64 relative to each other and to the end members 60 and 61. In order to support a plurality of blades 22 for confinement in the container, the end members 60 and 61 are provided with a plurality of radially directed or arranged slots 68, in this instance ten, that extend to the periphery of the discs 60 and 61 and terminate short of the axes thereof to support the blades 22 owing to the engagement of the end extensions 69 and 70 that protrude beyond the ground shaving edge 26 of the blade 22.

In consequence thereof, the blades 22 are supported with their blunt edge 71 proximate to the periphery of the container sections 63 and 64 that are so related and formed as to provide limited relative movement therebetween to define an opening 72. To this end, the casing section 63 is provided with an off-set portion 73 so as to be displaced laterally of the section 64 which is crimped as at 74 for a distance to limit the overlapping relation of the section 63 relative to the section 64 as at 75 commensurate with or a distance slightly greater than the opening 72 (Figure 9). As shown, the casing section 63 is provided with an outwardly directed flange 76 that enables the manipulation thereof for circular displacement relative to the casing section 64 as well as the end discs 60 and 61.

In order to index the position of the casing sections 63 and 64 relative to each other as well as to define the opening 72 in exact radial alignment with each blade 22 mounted in the slots 68 of the end discs 60 and 61, a plurality of lugs or trips 77 are provided on the end disc member 61 to extend in the longitudinal direction of the casing sections 63 and 64. The trips 77 correspond in number to the blade capacity of the container as defined by the radial slots 68, and these trips 77 extend in the path of the flange 76 for obstruction thereto and to permit limited movement between each successive trip 77 as such are bent out of the path of the flange 76. The trips 77 are stamped or otherwise shaped on the end disc member 61 for positioning substantially in accordance with the spacing of the razor blades 22 therein, these corresponding in number therewith so that the successive engagement thereof with the casing flange 76 will present a blade 22 substantially intermediate the opening 72. The trips 77 serve, therefore, to index the position of the next new blade 22 in the container. Then, too, each of the slots 68 may be numbered on the end surface of the disc 60 to provide indicia, in this instance from 1 to 10 which number the blades that remain therein, and each trip 77 is positioned so as to be obstructed by the flange 76 and a stop 78 provided on the casing sections 63 and 64, respectively. Consequently, the casing section 63 is capable of being displaced so that the flange 76 will engage a lug 77 in a direction to close the opening 72.

When the next blade 22 is desired for use in connection with the razor of the type described supra, the projection 74 on the casing section 64 will be manipulated so as to effect the displacement thereof in a direction corresponding with the previously displaced section 63 until the sections 63—64 are overlapped as at 73 to their limit, thereby again effecting a predetermined opening 72 to render accessible the succeeding blade 22 which will be in registry therewith. Of course, the casing section 63 cannot be displaced to close the opening 72 until the trip 77

in engagement therewith is bent upwardly as at 79 so as to permit the closure of the opening 72. Subsequent or a repeated intermittent movement of the section 64 in the same direction effects another opening 72 over the next succeeding blade 22. In this manner, the opening 72 is successively indexed for communication with succeeding blades 22. Thus, the casing sections 63 and 64 are intermittently displaced for distances corresponding with the opening 72 so as to successively communicate and effect registry with succeeding blades until the last has been used. When all the new blades have been used, the flange 76 on the section 63 will engage a stop or trip 80 provided on the disc 60. Then, too, the indicia 1 to 10 on the end surface of the disc 60 also indicates the number of blades that have been used when considered in conjunction with the position of the flange 72 disposed relative thereto.

Now, then, in order to transfer the blade or blades 22 from the container described supra to the razor without finger contact with the blades 22, the razor handle 10 is grasped by the attendant and the toggle lever 46 thumb manipulated to substantially assume its dotted line position as shown in Figure 1. With additional thumb force imparted to the lever 46 in a clockwise direction (viewed from Figure 1), the blade retaining member 31 releases its frictional engaging extension 38 from the used blade 22 therein so as to enable the removal thereof and/or its deposit in an unoccupied slot 68 provided in the container ends 60 and 61. Thereupon, the casing section 63 is displaced in a clockwise direction (viewed from Figure 9) to close the opening 72. A successive new blade is then rendered available by displacing the casing section 64 in a corresponding direction (clockwise as viewed from Figure 9) until the crimped projection 74 engages the other end of the section 63 to define another opening 72 above the successive blade 22.

The razor 10 is then held in the hand of the attendant who again depresses the toggle lever 46 to effect the separation of the retaining member 31 from the cap member 11 so as to receive the blade edge 71 therebetween with the perforations 28 in registry with the studs 27. Whereupon, the toggle lever 46 is released by the thumb so that the spring 39 will effect the grasp of the blade 22 for removal from the container with the cap 11 preparatory to shaving. The guard member 15 is then displaced with a continuing motion of the thumb so that the lever 46 will be moved in a counterclockwise direction (viewed from Figure 1) to assume its operative position. Succeeding blades 22 can thus be deposited and/or removed to or from the slots 68 in the container ends 60 and 61 until the entire container has been filled with used blades for disposal purposes. Of course, the old blades 22 need not be redeposited in the slot 68 of the container, but can be disposed by reducing such to segments in a manner described supra, and placed in a lavatory for safe disposal as previously suggested.

With the arrangement of parts above described, it will be apparent that a novel, simple, inexpensive and effective razor, razor blade, and container therefor, have been provided to render home shaving more convenient, inexpensive, and devoid of the usual hazards and concern that usually accompanies ordinary blade disposal. Various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages of the invention as defined in the appended claims.

I claim:

1. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member for receiving a razor blade therebetween, lever mounting means for effecting relative movement between said guard and cap members, and means for releasably holding a razor blade in a predetermined position between said members irrespective of their relative movement, said releasable blade holding means being responsive to said lever means.

2. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member for receiving a razor blade therebetween, lever mounting means for effecting relative movement between said guard and cap members, and spring impelled means for releasably holding a razor blade in a predetermined position between said guard and cap members responsive to said lever means irrespective of the relative movement between said guard and cap members.

3. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member for receiving a razor blade therebetween, lever mounting means for effecting relative movement between said guard and cap members, spring impelled means for releasably holding a razor blade in a predetermined position between said guard and cap members responsive to said lever means irrespective of the relative movement between said guard and cap members, and means interposed between said blade holding and lever means to enable the release and grasp of a razor blade responsive to the manual action of said lever means.

4. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member for receiving a razor blade therebetween, lever mounting means for effecting relative movement between said guard and cap members, and means reciprocable relative to one of said members for holding a razor blade in a predetermined position between said members irrespective of their relative movement.

5. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member for receiving a razor blade therebetween, lever mounting means for effecting relative movement between said guard and cap members, and spring impelled means reciprocable relative to said cap member for holding a razor blade in a predetermined position between said members irrespective of their relative movement.

6. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member for receiving a razor blade therebetween, lever mounting means having a toggle action for effecting relative movement between said guard and cap members, and spring impelled means reciprocable relative to said cap member for holding a razor blade in a predetermined position between said members irrespective of their relative movement.

7. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member

for receiving a razor blade therebetween, thumb operated lever mounting means having a toggle action for effecting relative movement between said guard and cap members, and spring impelled means reciprocable relative to said cap member for holding a razor blade in a predetermined position between said members irrespective of their relative movement.

8. In a razor, the combination with a handle, of a guard member associated with said handle, a cap member to confront said guard member for receiving a razor blade therebetween, thumb operated lever mounting means having a toggle action for effecting relative movement between said guard and cap members, spring impelled means reciprocable relative to said cap member for holding a razor blade in a predetermined position between said members irrespective of their relative movement, and complemental means on said confronting guard and cap members to guide their relative movement in effecting the grasp of the blade along substantially the entire length thereof.

9. A method of handling razor blades which consists in confining a plurality of blades in a container having an opening, then successively rendering said blades accessible for registry with said opening, inserting a razor in the opening of said container for operative connection with the blade that is accessible through said casing opening, then withdrawing the blade from said container with said razor which effects the grasp of said blade in operative shaving position, and then closing said opening for confinement of the remaining blades preparatory to indexing the successive blade for registry with the opening in said container to effect the repeated removal of blades therefrom to meet shaving requirements.

WILLIAM H. HUENERGARDT.