

June 1, 1943.

G. MONNET

2,320,374

SAFETY RAZOR

Filed Dec. 2, 1941

3 Sheets-Sheet 1

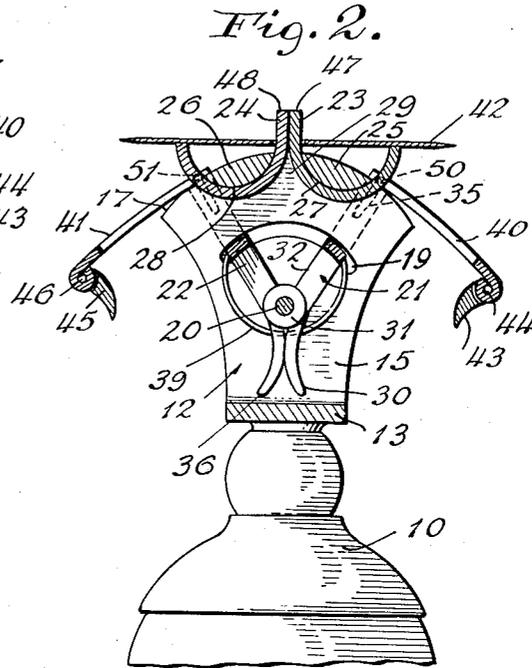
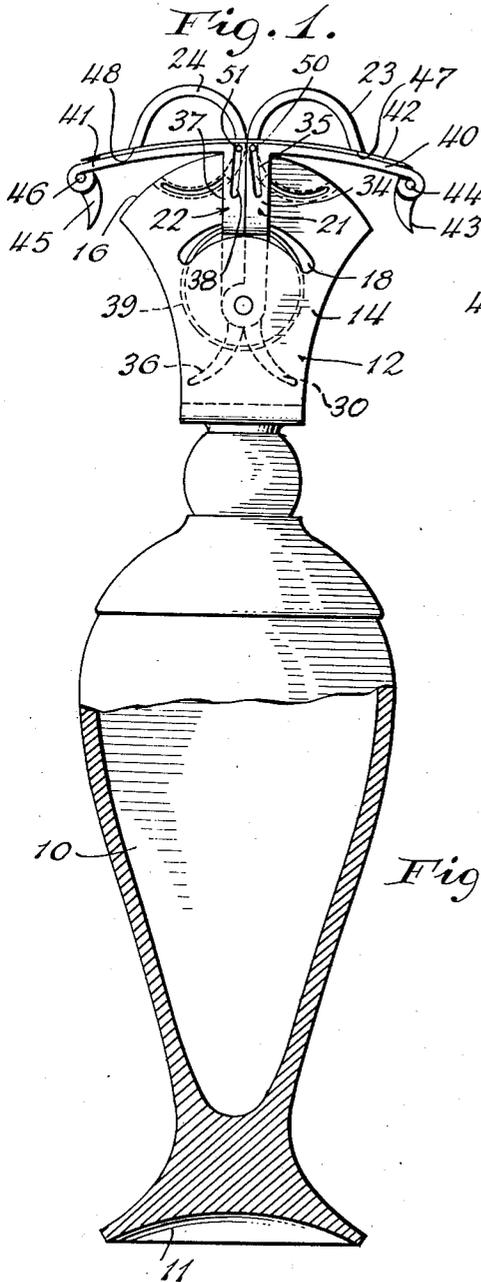
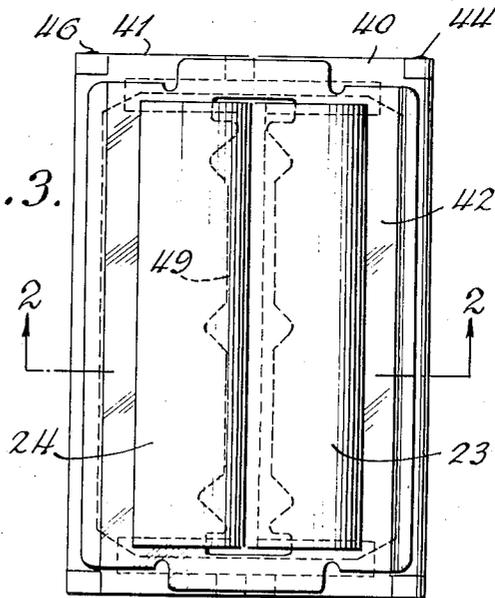


Fig. 3.



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Fig. 4.

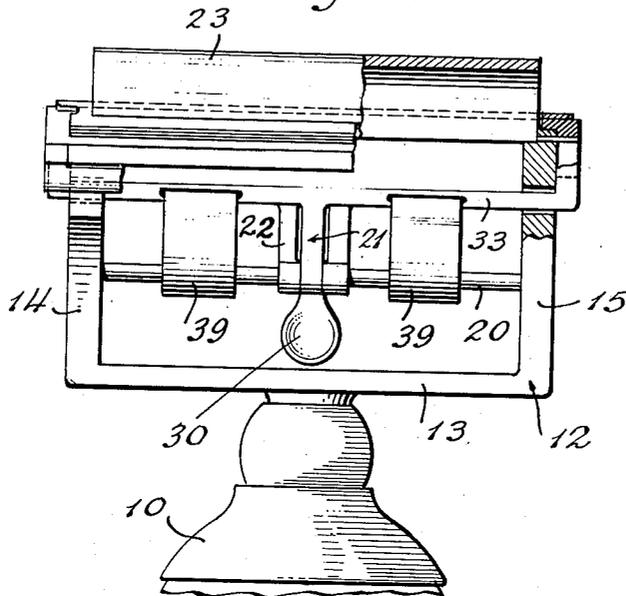


Fig. 5.

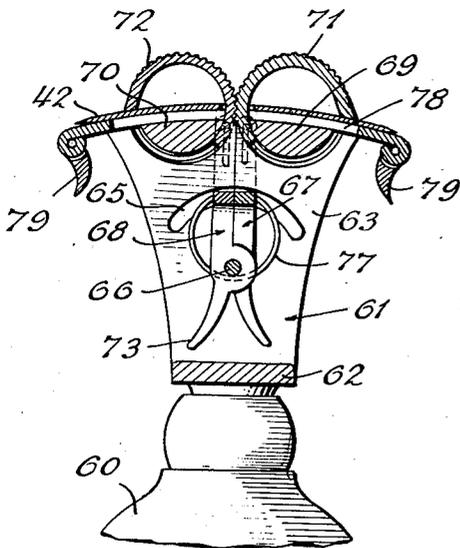
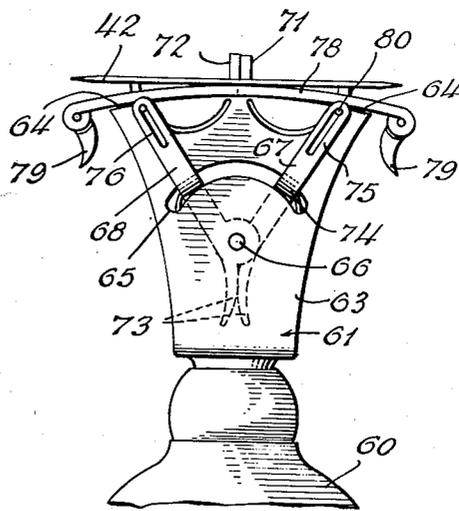


Fig. 6.



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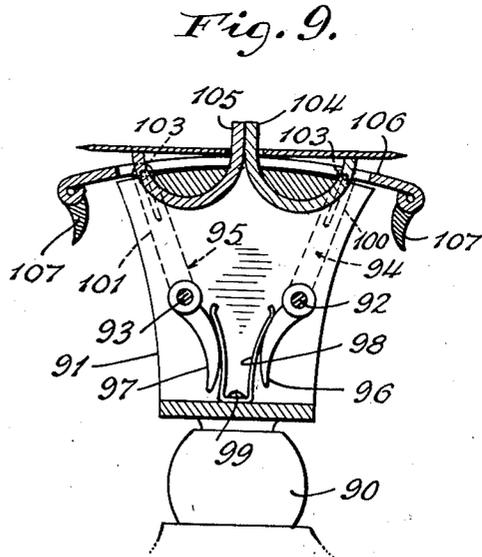
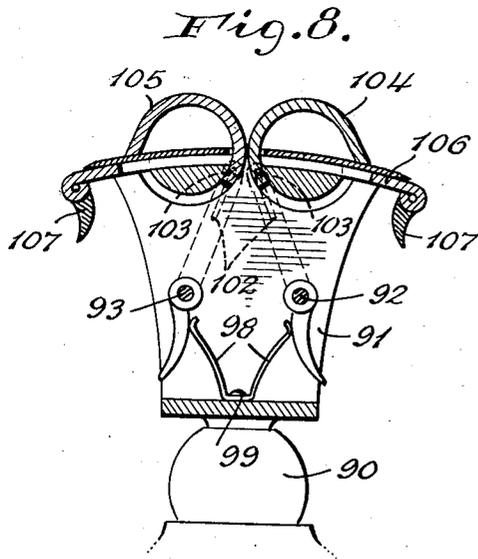
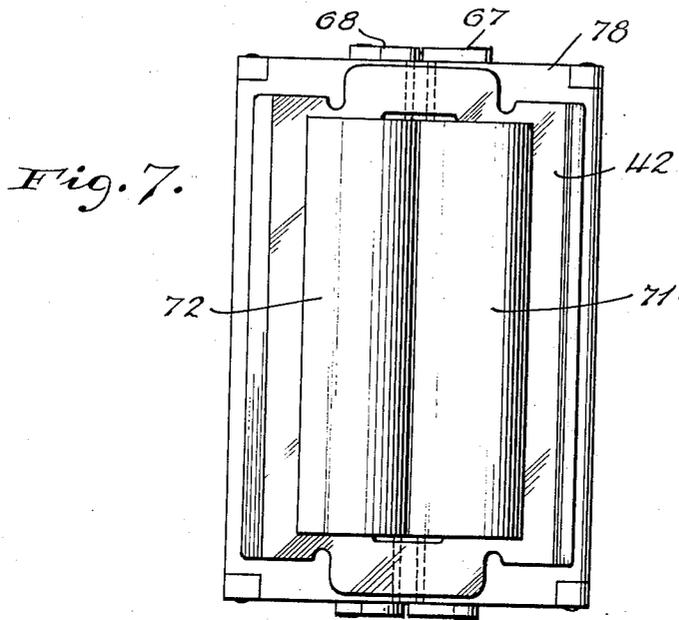
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,320,374

SAFETY RAZOR

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Application December 2, 1941, Serial No. 421,270

7 Claims. (Cl. 30—74.1)

This invention relates to safety razors, and refers more particularly to single-piece safety razors adapted to carry double-edge razor blades.

In my co-pending U. S. patent application Serial Number 149,050, now Patent No. 2,264,323, dated December 2, 1941, I have described a safety razor having two clamping members which may be moved through the central opening of a double-edge razor blade by the manipulation of the stem or handle portion of the razor to clamp this blade upon a resilient support which is carried by a frame element.

An object of the present invention is to improve and simplify the construction of a safety razor of this type.

Another object is to eliminate the necessity of manipulating the razor handle by utilizing a separate clamp for actuating the clamping members.

Other objects of the present invention will become apparent in the course of the following specification.

In accomplishing the objects of the present invention it was found desirable to provide a safety razor having two arcuate clamping members which are preferably connected with two levers by a pin-and-slot connection, the two levers being engaged by clamping means tending to maintain the arcuate clamping members in their operative blade-clamping positions. A compression of the clamping means will actuate the levers and cause them to withdraw the arcuate clamping members into their inoperative positions, thereby facilitating the removal of a razor blade and the mounting of a new blade upon the projecting ends of the clamping members.

The guard serving as a counter-support for the clamped blade may be fixedly attached to the frame guiding the arcuate clamping members, or the guard may be made of two parts connected to separate levers and movable therewith when the levers are swung outwardly to their inoperative positions by the compression of the clamping means.

The sharp edges of a razor blade mounted upon the razor may be covered by concave elongated covering elements which are pivotally mounted upon the corresponding edges of the guard.

The metal parts of the razor are of such light weight and the handle of the razor may be inflated and/or made of such light material that the razor will float when dropped in water. The handle is provided with one or more suction cups which make it possible to attach the razor conveniently to any horizontal, vertical or inclined surface. Thus the safety razor constructed in accordance with the principles of the present invention is particularly suitable for shaving while its user is taking a bath in a bath tub.

The invention will appear more clearly from the following detailed description, when taken in connection with the accompanying drawings showing, by way of example, preferred embodiments of the inventive idea.

In the drawings:

Figure 1 shows in side elevation a safety razor constructed in accordance with the principles of the present invention, in its clamping position;

Figure 2 is a transverse section through the head of the safety razor, in its inoperative position;

Figure 3 is a top view of the safety razor;

Figure 4 shows the safety razor partly in front elevation and partly in section;

Figure 5 shows in transverse section the head of a safety razor of a somewhat different construction;

Figure 6 is a side elevation of the head of the razor illustrated in Figure 5;

Figure 7 is a top view of the razor shown in Figures 5 and 6;

Figure 8 illustrates a different razor head in its clamping position;

Figure 9 shows the razor head illustrated in Figure 8 in its inoperative position.

The safety razor shown in Figures 1 to 4 of the drawings comprises a handle 10 which may be hollow and/or filled with a light-weight fluid and which may be provided with a number of suction cups 11 (Fig. 1) for attaching the razor to any suitable surface, such as the edges of a bath tub.

The head of the razor includes a U-shaped frame 12 having a transverse piece 13 which is firmly connected to the handle 10 (Fig. 4) and two legs or frame posts 14 and 15 having convex top surfaces 16 and 17, respectively (Figs. 1 and 2). The frame post 14 is provided with an arcuate slot 18, while a similar slot 19 is formed in the frame post 15.

A rod 20 extends between the frame posts 14 and 15 and is used as a pivot rod for the levers 21 and 22 which actuate the clamping members 23 and 24, respectively. Two guide rods 25 and 26 also extend between the posts 14 and 15 and have top surfaces which constitute a continuation of the surfaces 16 and 17 of the posts 14 and 15. The lower arcuate surfaces 27 and 28 of the guide rods 25 and 26 constitute guides over which the clamping members 23 and 24 slide. The guide rods 25 and 26 are separated from each other by a space 29 through which the clamping members 23 and 24 extend.

The lever 21 which is similar in shape to the lever 22, has a downwardly extending finger-engaged portion 30, a sleeve 31 mounted on the rod 20, an intermediate portion 32, a transverse portion 33 extending through the slots 18 and 19, and upper posts 34 provided with slots

35. The lever 22 which is also mounted on the rod 20, has a similar downwardly extending finger-engaged portion 36 and upper posts 37 provided with slots 38.

Arcuate resilient clamps 39 have ends engaging the levers 21 and 22 and pressing them one against the other, so that the levers 21 and 22 are maintained by the clamps 39 in the operative position shown in Figure 1.

The lever 21 is connected to and movable along with a frame-like guard portion 40. A similar guard portion 41 is connected with the lever 22.

In the clamping position shown in Figure 1, the guard portions 40 and 41 form a substantially continuous blade-supporting surface; so that a blade 42 may be conveniently clamped between the guard portions 40 and 41 and the clamping members 23 and 24.

A concave elongated finger-protecting element 43 extends along the outer edge of the guard portion 40 and is pivoted at 44 thereon. The member 43 hangs downwardly in the inoperative position of the razor shown in Figure 2. However, after the clamps 39 have moved the parts to the operative clamping position shown in Figure 1, a sharp edge of the blade 42 may be conveniently covered by the member 43 which is swung upwardly about its pivots 44. The opposite sharp edge of the blade 42 may be covered by a similar finger-protecting element 45 which is pivoted at 46 to the outer edge of the guard portion 41.

The arcuate clamping members 23 and 24 are similar to each other in form and may be resilient either totally or in part. The members 23 and 24 which extend through the space 29 between the guides 25 and 26, have clamping edges 47 and 48, respectively. In the inoperative position shown in Figure 2, the clamping edges 47 and 48 are situated one next to the other, so that a blade 42 may be conveniently placed upon these edges which will extend through the central opening 49 of the blade. As soon as manual pressure upon the finger-engaging lever portions 30 and 35 is released, the pressure of the clamps 39 will move the levers 21 and 22 toward each other. The clamping member 23 is connected with the lever 21 by pins 50 which are integral with the member 23 and which extend through slots 35 provided in the posts 34 of the lever 21. Pins 51 which are integral with the clamping member 24, extend through slots 38 provided in the posts 37 of the lever 22. Thus a movement of the levers 21 and 22 toward each other will swing the clamping members 23 and 24 about the guides 25 and 26 and will move them through the control opening 49 of the blade 42 until the edges 47 and 48 of the clamping members will engage the blade 42 and press it firmly against the guard portions 40 and 41, thereby clamping the blade.

The operation of the razor is apparent from the above description. The clamps 39 normally hold the parts of the razor in the operative clamping position shown in Figure 1. In order to move these parts into the inoperative position shown in Figure 2, the user merely presses the finger-engaged lever portions 30 and 36 toward each other. The levers 21 and 22 then swing away from each other while being guided in the slots 18 and 19, and the guard portions 40 and 41 move along with the levers 21 and 22. Since the clamping members 23 and 24 are connected with the levers 21 and 22 by the pins 50

and 51, the levers will cause the clamping members to swing about the guides 25 and 26 and to withdraw through the central opening 49 of the blade 42 and the space 29 into the interior of the frame 12 until the clamping members reach the position shown in Figure 2.

Then the used razor blade may be conveniently removed and replaced by a new one.

As soon as manual pressure upon the lever portions 30 and 36 is released, the clamps 39 will move the razor parts back to the clamping position shown in Figure 1.

The safety razor shown in Figures 5 to 7 of the drawings has a handle 60 which is firmly connected with a U-shaped frame 61. The frame 61 has a transverse piece 62 and two frame posts 63 having concave top surfaces 64 and arcuate slots 65.

A pivot rod 66 is carried by the posts 63 and carries the levers 67 and 68. Two guide rods 69 and 70 also extend between the posts 63 and are used as guides for the clamping members 71 and 72.

The levers 67 and 68 are similar to each other in form and have finger-engaging portions 73, transverse portions 74 extending through the slots 65, and upper posts 75 provided with slots 76. The levers 67 and 68 are pressed against each other by arcuate resilient clamps 77.

In this construction, the guard or support 78 is made of one piece and is firmly connected to the frame posts 63 by screws or the like which are located substantially in the middle of the posts 63. The support 78 is curved and its radius is slightly greater than that of the curved surface 64 so that at the outer edges of the posts 63 the support 78 extends at a little distance from the surfaces 64. Due to this arrangement, the blade 42 is resiliently supported upon the razor.

Concave elongated finger-protecting elements 79 extend along two outer edges of the support 78 and are pivotally connected herewith. The members 79 are used to cover the sharp edges of the blade 42 when the razor is not being used.

The arcuate clamping members 71 and 72 are connected by pins 80 with the levers 67 and 68, respectively. The pins 80 are firmly connected with the clamping members and extend through the slots 76 of the levers 67 and 68.

This razor is operated in substantially the same manner as that previously described. However, in this construction the blade support or guard 78 does not participate in the movement of the levers 67 and 68, since it is firmly attached to the frame 61.

The safety razor shown in Figures 8 and 9 of the drawings has a handle 90 which is firmly connected with a U-shaped frame 91. The frame 91 carries two pivot rods 92 and 93. A lever 94 is mounted on the pivot rods 92, while a similar lever 95 is mounted on the pivot rod 93.

The lower ends 96 and 97 of the levers 94 and 95 are maintained away from each other by the prongs of a spring 98 which is connected at 99 to the frame 91. The upper ends 100 and 101 of the levers 94 and 95 are provided with slots 102 through which the pins 103 extend. The pins 103 are carried by the clamping members 104 and 105. A guard or blade support 106 is firmly connected to the frame 91 and carries finger-protecting elements 107.

The operation of this razor is similar to those previously described. In this construction, the

levers 94 and 95 swing outwardly about separate pivots when the spring 98 is compressed by manual pressure against the lever portions 96 and 97.

It is apparent that the specific illustrations shown above have been given by way of illustration and not by way of limitation, and that the structures above described are subject to wide variation and modification without departing from the scope or intent of the invention.

What is claimed is:

1. In a safety razor, a blade-supporting member, at least one arcuate clamping member adapted to extend through a central opening formed in a blade, a lever connected with said clamping member for moving it through said central opening of the blade from an inoperative position to a clamping position and vice versa, the blade being engaged by the clamping member and clamped thereby in said clamping position and being released by said clamping member when the latter is moved into said inoperative position, and resilient means connected with said lever and normally maintaining it in a position in which said clamping member is in its clamping position, said resilient means being adapted to be tensioned manually to move said lever to a position in which said clamping member is in its inoperative position.

2. In a safety razor, a blade-supporting member, at least one arcuate clamping member having an edge portion which extends above said blade-supporting member and is adapted to be inserted through the central opening of a blade in an inoperative position of said clamping member, a pin carried by said clamping member, a movable lever having a slot through which said pin extends, whereby said clamping member is moved by said lever, and resilient means pressing against said lever to maintain said lever in a position in which said clamping member is situated in said clamping position, the blade being pressed by said clamping member against said blade-supporting member in said clamping position.

3. In a safety razor adapted to carry a blade, a U-shaped frame having two posts, at least one rod extending between said posts, each of said posts having an arcuate slot formed therein and said posts extending parallel to each other, at least one guide extending between said posts and having a curved surface, a blade-supporting member situated above said frame in a clamping position, at least one arcuate clamping member adapted to extend through a central opening formed in said blade, a lever swingably mounted upon said rod and having portions slidable within said arcuate slots, means pivotally and slidably connecting said clamping member with said lever whereby said clamping member is movable along with said lever, and resilient means engaging said lever to move it from an inoperative position to said clamping position, said clamping member having a portion engaging the curved surface of said guide in said inoperative position, the blade being pressed by said clamping member against said blade-supporting member in said clamping position.

4. In a safety razor, a blade-supporting member, at least one arcuate clamping member adapted to extend through a central opening formed in a blade, a lever connected with said blade-supporting member and said clamping member and movable along with these members from an inoperative position to a clamping position, said blade-supporting member moving be-

low said blade and said clamping member moving through said central opening of the blade during said movement to press said blade against said blade-supporting member in said clamping position, and resilient means engaging said lever to maintain it in said clamping position.

5. In a safety razor adapted to carry a double-edge razor blade, a U-shaped frame having two posts, a rod extending between said posts, each of said posts having an arcuate slot formed therein and said posts extending parallel to each other, two arcuate clamping members engaging each other and adapted to extend through a central opening formed in said blade, two levers swingably mounted upon said rod and having portions slidable within respective ones of said arcuate slots, means constituting a pin-and-slot connection between each of said clamping members and a separate lever, a separate guard portion connected to each lever, said levers being movable along with said guard portions toward and away from each other, whereby said clamping members are moved from an inoperative position to a clamping position and vice versa, said clamping members pressing opposite sides of the razor blade against said guard portions in said clamping position, and at least one arcuate spring engaging said levers and pressing them toward each other to maintain them in said clamping position.

6. In a safety razor adapted to carry a double-edge razor blade, a U-shaped frame having two posts, a rod extending between said posts, each of said posts having an arcuate slot formed therein and said posts extending parallel to each other, two guides extending between said posts, two arcuate clamping members engaging each other and adapted to extend through a central opening formed in said blade, said clamping members being slidable over said guides, two levers swingably mounted upon said rod and having portions slidable within respective ones of said arcuate slots, means constituting a pin-and-slot connection between each of said clamping members and a separate lever, a frame-like blade-supporting member mounted upon said posts, said levers being movable toward and away from each other, whereby said clamping members are moved from an inoperative position to a clamping position and vice versa, said clamping members pressing opposite sides of the razor blade against said blade-supporting member in said clamping position, and an arcuate spring engaging said levers and pressing them toward each other to maintain them in said clamping position.

7. In a safety razor, adapted to carry a double-edge razor blade, a U-shaped frame having posts, two rods extending between said posts, two arcuate clamping members engaging each other and adapted to extend through a central opening formed in said blade, two levers swingably mounted upon respective ones of said rods, means constituting a pin-and-slot connection between each of said clamping members and a separate lever, a frame-like blade-supporting member mounted upon said posts, said levers being swingable to move said clamping members from an inoperative position to a clamping position and vice versa, said clamping members pressing opposite sides of the razor blade against said blade-supporting member in said clamping position, and a spring engaging the ends of said levers to maintain said levers in said clamping position.