Feb. 14, 1933. J. MUROS 1,897,707

SAFETY RAZOR

Filed May 12, 1931

Fig. 1

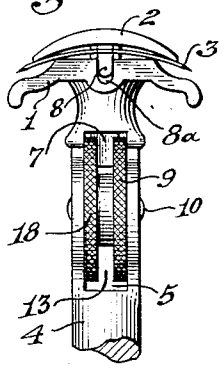


Fig. 2

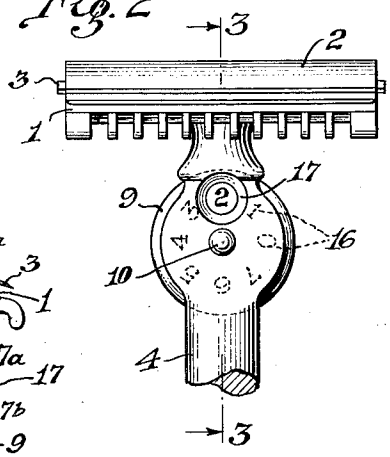


Fig. 3

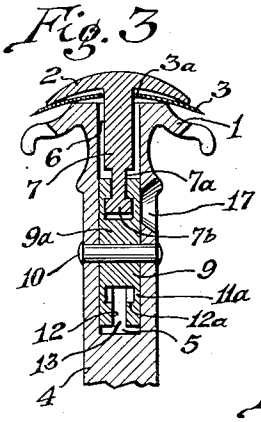


Fig. 4

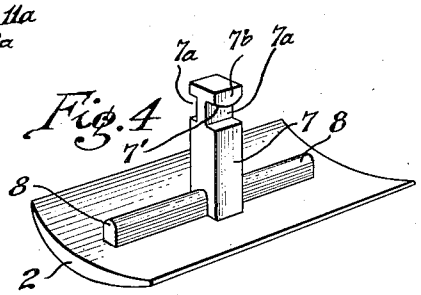


Fig. 3a

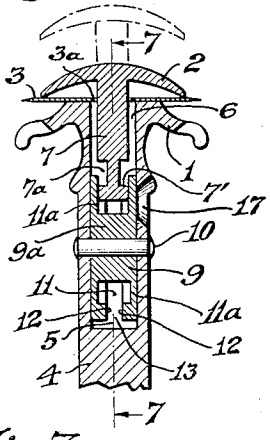


Fig. 5

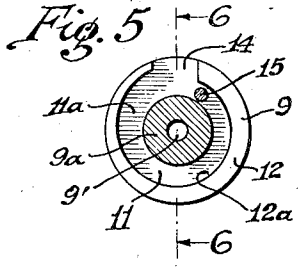


Fig. 6

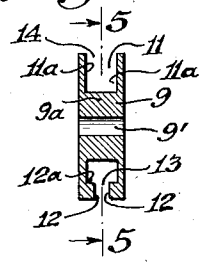


Fig. 7

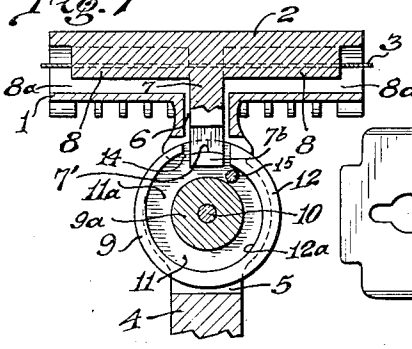
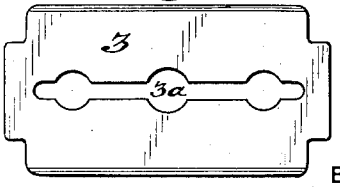


Fig. 8



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UNITED STATES PATENT OFFICE

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SAFETY RAZOR

Application filed May 12, 1931. Serial No. 536,749.

My invention has reference to improvements in safety razors, and is applicable in the variety of safety razors comprising a blade holder including blade clamping members, such as a guard member and a cap or backing member for the blade.

An object of my invention is to provide simple and convenient means for readily clamping the members against a blade and for readily releasing said members for removal and replacement of a blade.

In carrying out my invention I provide blade clamping members, such as a guard member and a blade cap or backing member, and a handle connected with the guard member and provided with a recess, the cap or backing member having a stem to enter said recess, the handle being provided with a movable member or retainer to cooperate with said stem to retain the clamping members against a blade for shaving, said movable member being adapted to release the stem to permit removal of the blade from the holder. By preference said movable member is cooperative with the stem in such a way as to compress or flex the blade more or less between the clamping members for adjustment of the cutting edge of the blade with respect to the guard, the resiliency of the blade between the clamping members tending to prevent displacement of the stem and the movable member when the blade is flexed.

My invention also comprises novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawing, wherein

Fig. 1 is an end view of a safety razor embodying my invention;

Fig. 2 is a side view of the razor;

Fig. 3 is a section on line 3, 3 in Fig. 2;

Fig. 3*a* is a view similar to Fig. 3, illustrating the parts in a different position;

Fig. 4 is a perspective view of the blade cap or backing member;

Fig. 5 is a sectional detail of the movable member or retainer, in section on line 5, 5 in Fig. 6;

Fig. 6 is a section on line 6, 6 in Fig. 5;

Fig. 7 is a section on line 7, 7 in Fig. 3*a* illustrating parts in position to engage, and

Fig. 8 is a plan view of a blade.

Similar numerals indicate corresponding parts in the several views.

Numerals 1 and 2 indicate blade clamping members of a blade holder of a safety razor, the member 1 being shown in the form of a guard member and the member 2 in the form of a blade cap or backing member, adapted to receive a blade 3 between them. The construction is such that when the parts are assembled, as illustrated, the blade may be clamped in shaving position between the members 1 and 2, and the blade may be flexed in curved form. At 4 is a handle which may be attached to the guard member 1 in any usual or desired way. The handle 4 is shown provided with a recess or slot 5 in register with an opening 6 in the guard member, said opening and recess being adapted to receive a stem 7 which projects from the cap or backing member 2. Any suitable means may be provided on one or both of the blade clamping members to position a blade between them in shaving relation to the guard teeth of the guard member 1. I have illustrated projecting ribs 8 carried by the cap or backing member 2, adapted to enter corresponding recesses 8*a* in the outer surface of the guard member for locating the clamping members 1 and 2 in shaving position, (Fig. 1).

At 9 is a movable member or retainer, carried by the handle, adapted to cooperate with the stem 7 to retain the cap or backing member 2 in shaving position against the blade for clamping the blade between the members 1 and 2. The retainer 9 is shown located in the recess or slot 5 of the handle and rotatively carried thereby by means of a pivot 10 extending through the handle and through said retainer. The retainer 9 is provided with means to cooperate with the stem 7 to retain the latter against the blade with the latter on the guard member. I have illustrated the retainer 9 as in disc-like form and provided with an internal recess 11 adapted to receive a portion of the stem 7. The recess 11 opens outwardly through the periphery

of the retainer 9 providing spaced walls 11*a* extending from a hub 9*a*. Each wall 11*a* of the retainer is provided with a rim 12, which rims extend toward each other providing a peripheral space therebetween, indicated at 13, adapted to receive a portion of the stem 7. The rims 12 are shown provided with inner curved surfaces at 12*a*, which are shown in convolute or eccentric form with respect to the axis of rotation of the retainer at its hole 9′ that receives the pivot 10, (Figs. 5 and 6). The rims 12 do not extend completely around the retainer but terminate in spaced relation, as indicated in Fig. 5, providing a space at 14 between the spaced ends of said rims, into which space the outer end of the stem 7 may project. Said stem is shown provided with recesses 7*a* on opposite sides, at a suitable distance from the outer end of the stem, providing a head 7*b* on the stem. The surfaces 7′ of the stem 7 are perfectly curved to bear smoothly against the surfaces 12*a* of the rims 12. The retainer 9 is shown provided with a stop or pin 15 extending across the recess 11, near one end of the rims 12, in position to engage the stem 7 to limit rotation of the retainer in one direction when the stem 7 is in the path of said stop pin 15. Although a stop pin 15 is herein shown it is principally for convenience and not necessary to the successful operation of the device. When the stem 7 is not in the path of the retainer 9 said retainer has unlimited rotation in either direction. The retainer may be kept in a set position by friction between the parts 4 and 9.

When the parts are to be assembled the retainer 9 will be placed with its recess 14 in register with the opening 6. The cap may be inverted, as in Fig. 4, and the blade placed thereon, and the guard member may be applied over the blade, the stem 7 being pushed through an aperture 3*a* in the blade, through the opening 6 into the recess 5 of the handle, and into the recess 14 of the retainer, with the parts substantially in the position shown in Fig. 3*a* and in Fig. 7. Upon rotating the retainer 9, in a clock-wise direction as viewed in Fig. 7, the rims 12 of the retainer will engage the head 7*b* of stem 7, and since the surfaces 12*a* of said rims are convolute or eccentric to the axis of rotation of the retainer, said surfaces will engage the surfaces 7′ of the stem and thereby will draw the stem into the handle, causing the cap or blade backing member 2 to bear against the blade and cause the latter to be flexed or bent to the desired position respecting the teeth of the guard member. By rotating the retainer 9 to the desired extent the cutting edges of the blade may be adjusted more or less toward the guard teeth to determine the character of shave desired. The engagement of the rims 12 of the retainer with the head 7*b* of stem 7 will be with sufficient friction to retain the parts in a set position, and with a resilient blade 3 flexed between the members 1 and 2 the tension of said blade against the member 2 will aid in causing the head of the stem 7 to be kept pressed against the rims 12 for retaining the parts assembled.

The retainer 9 may be provided with space indicators, such as numerals at 16, illustrated in Fig. 2, which may be observed through a hole or window 17 in the side of the handle. With the construction described it will be understood that the retainer may be adjusted with the zero of the indicators in register with the opening 17 to indicate that the recess 14 of the retainer is in register with the opening 6 of the guard in position to receive the stem 7. When the stem has been set with its head 7*b* projecting into the retainer, the latter may be rotated to attach the stem of the cap to the guard, the numerals indicating different positions or extents of flexure of the blade and the relation of its cutting edges to the guard teeth for the character of shave desired. When it is desired to remove and replace a blade the retainer may be rotated counter-clockwise to present its recess 14 in register with the opening 6, whereupon the rims 12 release the head of the stem 7 so that the stem and the cap may be removed. The periphery of the retainer 9 extends beyond the handle in position to be engaged for operation, and as a convenience for operating the retainer its periphery may be knurled at 18, as indicated in Fig. 1, whereby the user may readily rotate the retainer by applying the thumb or finger or both to the knurled surface. It will be noted that the retainer 9 is centrally mounted at 10 so that balanced forces may be applied at opposite sides of the handle on the knurled portions 18 at deiametrically opposed positions. This particular manner of mounting the retainer is very effective because of the manual control which it affords and in addition the extensive rotary movement makes it possible to apply a camming surface or surfaces of a very slight pitch thereby bringing into operation mechanical advantages very desirable in safety razors of this variety. The use of a cam of slight pitch in combination with the balanced application of forces and the manual control including the enhanced pulling capacity on the stem is unique.

My improvements provide a simple and effective means for detachably connecting together blade clamping members of the blade holder of a safety razor, and the handle may be permanently attached to the guard member whereby it is not necessary to detach the handle from the guard member as is customary in well-known types of safety razors.

Changes may be made in the details set forth, within the scope of the appended claims, without departing from the spirit of my invention.

Having now described my invention, what I claim is:—

1. A safety razor comprising a guard member and a cap member to clamp a blade therebetween, the guard member being provided with a handle having an opening, a retainer rotatively supported in said handle and having graduations arranged to be read through said opening, said retainer having an interior recess and surrounding spaced rims having a space between their ends, said rims having inner eccentrically disposed surfaces, the cap having a stem adapted to pass through said space into the retainer, said stem having means to cooperate with the eccentric surfaces of the retainer for clamping the guard and cap against the blade and said graduations indicating the degree of such clamping pressure.

2. A safety razor comprising a guard member having a handle with a recess therein, a rotary retainer mounted in the handle for extensive rotation and having an eccentric annular surface, a cap member provided with a stem shaped to project into said recess and to be engaged by the eccentric surface of the retainer, and a stop pin carried by the retainer within the retainer and operative within said recess to engage the stem and limit rotation of the retainer in one direction, said retainer having indicating means thereon, said handle having a window in the path of the indicating means whereby the position of the stop pin and the amount of pressure on the blade may be instantly denoted.

3. In a safety razor, in combination, a cap, a guard, and a handle, said cap having a stem, said guard and handle having openings receiving said stem, said handle having a slot or recess extending transversely of said handle and in communication with the opening in the handle, a retainer comprising a cylindrical body of disc-like form rotatably mounted in the slot of said handle, co-acting interengaging camming portions on said stem and retainer, said retainer having finger gripping portions amply exposed on opposite sides of the handle, whereby balanced forces may be applied to the retainer to draw the parts together, said handle having a window and said retainer having indicating means located concentrically thereon in the path of the window whereby the amount of pressure on a blade may be instantly denoted.

4. In a safety razor including a cap, a guard, and a handle, said cap having a stem, said guard and handle having openings receiving said stem, said handle having a slot or recess extending transversely of said handle and in communication with the opening in the handle, a retainer comprising a cylindrical body of disc-like form rotatably mounted on a pin in the slot of said handle, an annular camming portion in said retainer located eccentrically of said pin, said stem having a lug engaging the camming portion, whereby the cap and guard may be drawn together to clamp a blade in shaving position between them, indicating insignia located on said retainer in combination with a cut-away portion on said handle to provide for visual display of said insignia whereby the amount of pressure on the blade may be readily denoted.

5. In a safety razor including a flexible blade, a cap, a guard and a handle, said cap and guard having opposed blade shaping faces, said cap having a stem, said blade, guard and handle having openings receiving said stem, said handle having a slot or recess extending transversely of said handle and in communication with the opening in the handle, a retainer comprising a cylindrical body having a plurality of finger gripping portions amply exposed at opposite sides of the handle, said retainer being rotatably mounted in said slot, co-acting interengaging means on said stem and retainer whereby the parts of the razor may be drawn together into shaving position, indicating insignia on said retainer, means on said handle providing a window in the path of the insignia whereby the adjustment of the blade may be readily denoted.

6. A safety razor handle having an opening to receive a stem of a cap member, said handle having intermediate its ends a slot or recess transverse to the handle and in communication with said opening, a cylindrical body rotatably mounted in said slot or recess, said body having within its periphery a camming surface eccentrically located with reference to the axis of rotation of said body, said camming surface being extensive and of slight pitch, and said body being amply exposed on opposite sides of the handle to form finger grips thereby affording balanced application of forces to said rotatable body, indicating insignia on said retainer in combination with a window in the handle in the path of the insignia.

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