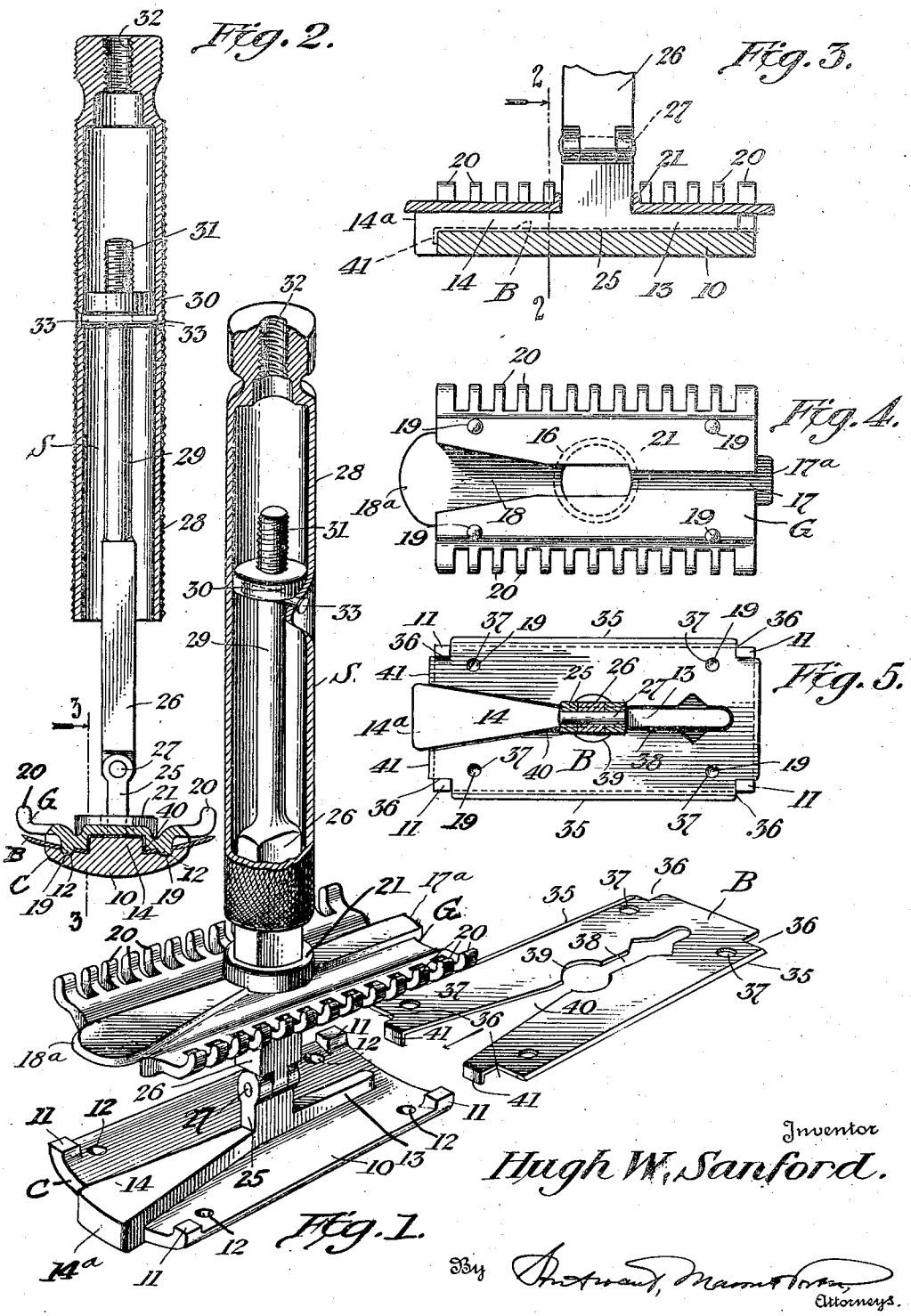
July 21, 1936. H. W. SANFORD 2,048,625

SAFETY RAZOR AND BLADE THEREFOR

Filed June 22, 1932 2 Sheets-Sheet 1



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SAFETY RAZOR AND BLADE THEREFOR

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Fig. 6.

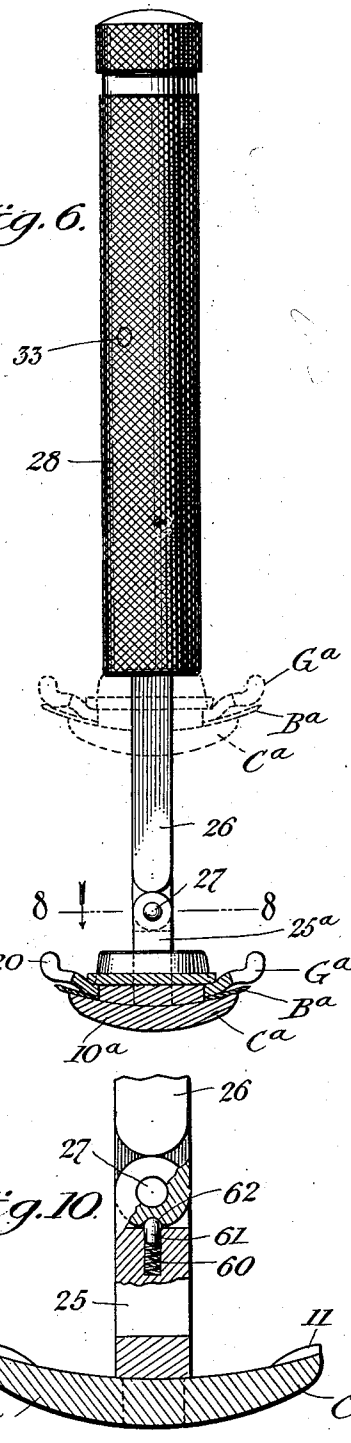


Fig. 10.

Fig. 7.

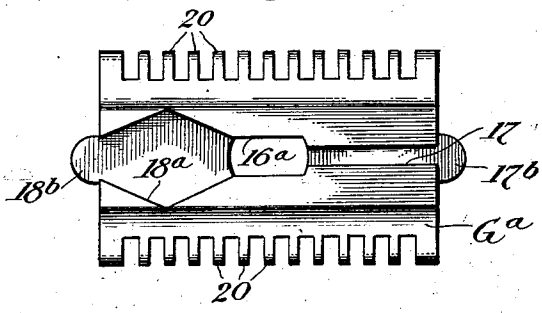
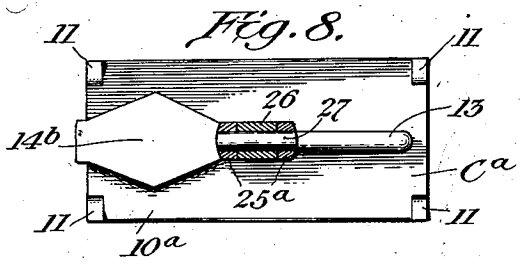


Fig. 8.



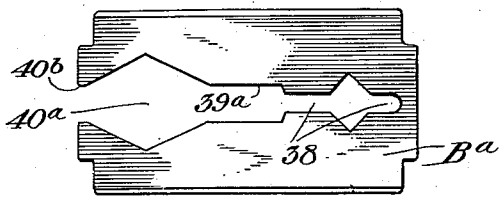
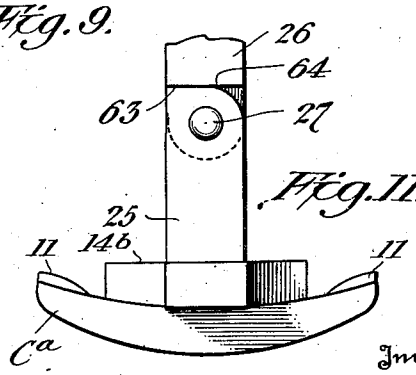


Fig. 9.

Fig. 11.



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2,048,625

SAFETY RAZOR AND BLADE THEREFOR

Hugh W. Sanford, Knoxville, Tenn.

Application June 22, 1932, Serial No. 618,767

4 Claims. (Cl. 30—47)

The present invention relates to a safety razor of the separable blade type, and to a blade designed for easy removal and separation therefrom.

One of the features of the present invention is the provision of a razor blade holder in which the parts are permanently assembled together, but are movable with respect to one another for storing in a space of limited dimensions, and for the operations of insertion and removal of the separable blade.

Another feature of the present invention is the provision of a razor blade holder having a cap plate and a guard plate to engage a separable razor blade, together with a stem secured to the cap plate and providing a guiding slide upon which the guard plate is movable to and from blade holding positions, but is constantly held against rotation relative to the cap plate about the axis of the stem.

A further feature of the invention is the provision of a razor blade holder having a cap plate and a guard plate for the reception therebetween of a razor blade, and a stem secured to said cap plate and including a pivotal joint whereby the stem may be folded down toward the plane of the cap and guard plates.

Another feature of the invention is the provision of a guard plate and a cap plate for the reception therebetween of a razor blade, and a stem having a portion secured to the cap plate and extending in guiding relationship through the guard plate for holding the plates in parallel relationship during insertion and removal of the blade, and including means for preventing the disassembly of such parts, together with a blade having an open-ended slot for insertion and removal without disassembly of such parts.

Still another feature of the present invention is a provision of a separable razor blade for employment with such a blade holder, which may be inserted and removed by a movement in a plane parallel to the general plane of the cap plate.

A still further feature of the present invention is a provision of a separable razor blade adapted to be inserted by a sliding movement, and having portions for co-operation with the cap and/or guard plate whereby the razor blade is held definitely in operating position when the blade holder is closed upon it.

With these and other objects in view as will appear in the course of the following specification and claims, an illustrative form of construction of the blade holder and associated blade are set out on the accompanying drawings, in which:

Figure 1 is a perspective view with the blade holder in position to receive the illustrated razor blade.

Figure 2 is a section through the blade holder, with a blade clamped therein, substantially on line 2—2 of Fig. 3.

Figure 3 is a sectional view substantially on line 3—3 of Figure 2.

Figure 4 is a plan view of the bottom surface of the guard element.

Figure 5 is a plan view of the cap element, with a razor blade thereon.

Figure 6 is a view corresponding to Figure 2, but showing a modified form of construction.

Figure 7 is a plan of the guard plate according to Figure 6.

Figure 8 is a sectional view substantially on line 8—8 of Figure 6, showing the cap plate with the guard plate and blade removed.

Figure 9 is a plan view of a blade for the holder of Figures 6 to 8.

Figure 10 is a view, on a large scale, of a cap plate and stem, partly in section, showing a retaining device.

Figure 11 is a view similar to Figure 10, showing another form of retaining structure.

In the drawings, the end or cap plate C has a stem S secured thereto and including two telescoping elements. The inner or guard plate G is mounted for sliding movement on this stem, and is held in blade-clamping position relative to the cap plate C upon the telescoping movement of the elements of stem S. A razor blade B may be moved in the direction of the arrow in Fig. 1 into position between the cap C and the guard plate G, and is then clamped in operating position by telescoping the stem S as aforesaid, so that the two plates are brought together and tightly hold the blade B between them.

The cap plate C includes a body 10 illustrated as having a concavely arcuate surface toward the guard plate G and having at its corners the similarly directed blade alining lugs 11, while blade alining apertures 12 may be provided adjacent thereto for definitely determining the operative position of the blade. A guide and support rib is provided on this concave surface, comprising the portion 13 having parallel walls and terminating short of the adjacent end of the body 10, and the portion 14 having walls diverging from the center of the body 10 and including a portion 14a extending beyond this end of the body. A similar projection 15 is provided at the other end of the body 10, and has a surface flush with the aforesaid concave surface of this body. Lugs

17a, 17b project at the ends of the guard plate beyond all part of the cap plate and blade.

The guard plate G has an aperture 16 therethrough of non-circular form whereby to prevent rotation of the guard plate about the axis of the stem S on which it is slidably mounted. On the face of the guard plate G directed toward the cap plate C, it is provided with a groove portion 17 having parallel walls and conforming to and closely fitting the rib portion 13. At the opposite end of the body of the guard G, it is provided with a groove portion 18 having walls divergent from the center, so that it conforms to and closely fits the rib 14. Projecting pins 19 adjacent the corners of the guard plate are adapted to enter corresponding apertures in the razor blade and the apertures 12 of the cap plate to aline the blade in position (Fig. 2). The guard plate is illustrated as provided with the comb teeth 20 at its lateral edges for cooperation as usual in protecting against accidental cutting by the blade. The length of the guard plate G is substantially identical with the length of the cap plate C. On the exposed face of the guard plate G, it may be provided with a collar 21 surrounding the stem and providing a thrust member for engagement by the stem and assisting in maintaining parallelism of the plates.

The cap plate, in the form illustrated, has an extension 25 from the ribs 13, 14 and preferably is integral therewith: and by further preference, all parts of the cap plate, as described, are made in one piece.

The stem S comprises a non-circular portion 26 connected to the projection 25 by means of a pivot pin 27. This non-circular portion 26 of the stem projects into a telescoping tube or handle portion 28, and has a reduced section 29 therein which terminates in an enlarged collar 30, and a threaded end 31. The hollow handle 28 has a cylindrical internal aperture to fit closely the collar 30, and being reduced at the free end and provided with screw threads 32, in the illustrated form, for engagement with the threaded end 31. A chordally extending pin 33 on the hollow handle engages the collar 30 and prevents separation of the inner stem portion 26, 29 which is secured to the cap plate, and the hollow handle portion 28 which is axially telescopable with respect thereto.

The razor blade B is illustrated as formed symmetrically with respect to its longitudinal central axis and has the two cutting edges 35 along its sides. The corners 36 are cut away for cooperation with the lugs 11. Apertures 37 are provided adjacent the corners for engagement by the pins 19. A central slot is provided having a portion 38 to closely engage the rib 13, an enlarged center portion 39 for freedom at the location of the stem, and a portion 40 having walls diverging from the center so that it can closely fit the lug 14. Adjacent the open end of the slot provided by the most divergent portion of the walls of the slot 40, the blade is illustrated as provided with fingers 41 bent out of the general plane of the blade.

In operation, the parts may be held in the position shown in Fig. 1, with the cap plate vertically downward and guard plate G held by a finger against falling onto the cap plate C. A razor blade B may then be inserted by sliding movement in the direction of the arrow (Fig. 1) wherewith the divergent walls of the slot 40 assist in guiding the blade into the desired position, so that upon dropping toward the concave surface of the cap plate C, the blade substantially alines itself by engagement between the several lugs 11 and by fitting the ribs 13, 14. In this position, the fingers 41 engage against the left hand end of the cap plate C in Figures 1, 3 and 5. The guard plate G may then be released and permitted to fall down upon the blade. By holding the cap and guard plate, the hollow handle 28 may now be dropped until its lower end (Figs. 1 and 2) comes near the collar 21. At this moment, the threaded end 31 engages with the threads 32 and prevents further approximating movement of the hollow handle 28 and the collar 21. By rotating the hollow handle 28, the threaded engagement between 31 and 32 causes a further approach movement of the hollow handle 28 and the guard plate G, until finally the hollow handle engages and rotates upon the collar 21 and causes a clamping movement of the guard plate G until the blade is held fixedly in the desired working position. At this time, the blade is held fixedly against a sliding lengthwise withdrawal by the engagement of the fingers 41 as above, while the edges are definitely supported by the engagement of the walls of slots 38, 40, and by the presence of the pins 19 in the apertures 37. A great uniformity of operation of the razor blade is thus attained.

To remove a blade for replacement or cleaning a reverse manipulation is accomplished. It is preferred, however, to do this by revolving the hollow stem relative to the plates. This releases the clamping relationship between the plates C and G, and finally the threads 31 and 32 are disengaged from one another. By now holding the stem in one hand in the position of Fig. 1, and engaging the fingers of the other hand with the lugs 17a, 18a, the guard plate G may be lifted away from the cap plate C, thus exposing the blade so that it may be lifted and drawn out, or dropped out by rocking the axis of the stem S and shaking the holder: it will be noted that this maneuver also accomplishes a withdrawal of the fingers 41 from engagement with the cap plate.

The device may be folded for storage in a space of limited dimension, after cleaning, by bringing the guard plate G against the cap plate C, and then folding the stem by pivotal movement about the pivot pin 27 so that it is substantially in the plane of the guard and cap plates. Thus the space required for the structure may have one dimension less than the width of a razor blade.

In the form of construction shown in Figures 6 to 9, the guard plate Ga is similarly mounted for guided sliding movement on the stem which includes the outer telescoping hollow handle 28 and the inner non-circular guiding portion 26, as before, and having a pivotal connection 27 to an end piece 25a which is fixed to the cap plate Ca. The body 10a of the cap plate has a rib portion 13 extending from the stem extension 25a toward one end for close fitting engagement with the small end 38 of the razor blade slot as before: and is provided with a diamond-shaped widened rib portion 14a at the opposite end for corresponding interengagement with a diamond-shaped portion 40a of the razor blade slot. The stem extension 24a likewise closely fits the central portion 39a of the blade slot which has, in this modification, parallel side walls spaced apart a distance substantially equal to the width of the throat 40b at the open end of the blade slot.

The guard plate Ga has a groove portion 17 for the rib portion 13, a widened central groove

portion 16a of non-circular form closely fitting the stem portion 26 and/or its extension 25a, and a diamond-shaped groove portion 18a for the reception of the portion 14b of the cap plate. The guard likewise is illustrated as having comb teeth 20, and end lugs 17b, 18b.

This modified form of construction is handled and operated the same as the form shown in Figures 1 to 5. When the hollow handle 28 is released and the plates separated therefrom, which may occur by gravity when the device is held in the position of the dotted lines in Figure 6, so that the plates and inner stem portion 26 drop to the position shown in full lines in Figure 6, the guard plate may be raised by seizing the end lugs 17b, 18b thereof, which project at the ends beyond the cap plate. The blade is thus exposed so that it may be displaced in the direction of its length and removed from between the plates.

A new blade may be inserted by simple sliding movement in the direction of its length, the throat 40b permitting it to move freely past the inner stem 26 or its extension 26a. If the device is being held in the position of Figure 6, but with a guard plate raised, this guard plate may now be released so that it will fall down upon the blade which has been temporarily alined by engagement with the corner lugs 11 of the cap plate, and by the engagement of the diamond-shaped groove and rib. The hollow handle may now be tightened down upon the guard plate for clamping the two plates together, thus bringing the blade definitely into engagement with the inner surface of the cap plate in the usual way. The blade in dimensons conforms closely to the rib structure and the stem extension 25a, so that its edges are supported in proper position against movement toward one another, and are held by the corner lugs 11 against spreading movement. In this form of construction, the blade is prevented from endwise movement by the engagement of the oppositely divergent walls of the diamond-shaped slot with the diamond-shaped rib piece 14a, and by engagement with the corner lugs 11.

In some instances it is desirable to have the extension 25 or 25a held fixedly in prolongation of the internal stem portion 26. In Figure 10, the stem portion 25 is illustrated as having a recess containing a spring 60 and a plunger 61 which is forced by the spring into engagement with a notch 62 in the end of the stem portion 26 while the parts are in alinement, but permitting the relative rocking movement of the parts about the axis or hinge pin 27 when the device is to be folded.

A modified form of such retaining structure is shown in Figure 11, where the extension 25 is not semi-circular concentrically with the axis of the hinge pin 27 as in Figure 10, but has a stop projection 63 which engages with the shoulder 64 of the stem portion 26 and prevents a folding of the device when it is rocked in a counter-clockwise direction in Figure 11.

It is obvious that the invention is not limited to the specific form of construction shown, but that it may be modified in many ways within the scope of the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. A razor blade holder comprising a cap plate, a stem portion of non-round section fastened to the cap plate, a guard plate surrounding and guided by said stem portion for movement at all times parallel to said cap plate, means telescoping with said stem for clamping said plates together, and a hinge joint in said stem portion located at a point thereof exposed when said guard and cap plates are together, and said telescoping means is withdrawn from said plates so that the telescoping means may be folded with respect to said plates.

2. A razor blade holder comprising a cap plate, a guard plate, a piece rigidly connected to the cap plate and extending through the guard plate when the plates are together, a stem portion jointedly connected to said piece for swinging movement relative to said plates when together, said guard plate being slidable along said piece and stem portion to provide a gap for the insertion of a slotted razor blade between said plates and means movable relative to both said piece and stem portion and carried by the stem portion and cooperative therewith for releasably clamping said plates together and including a part which extends over the stem portion and piece when in clamping position for preventing pivotal movement at the joint.

3. The combination of a razor blade holder comprising a cap plate, a stem portion of non-round section fastened to the cap plate, a guard plate surrounding and guided by said stem portion against rotation about the axis of said stem portion while sliding thereon, means carried by the stem portion and axially movable therealong for clamping said plates together, means for preventing separation of said clamping means and stem portion, one of said plates on its face adjacent the other plate having a lug extending substantially from one end of the plate to the other and including a portion with divergent walls extending from said stem portion toward one end of the plate for receiving and guiding a razor blade, said other plate having a recess closely receiving said divergent walls, and a razor blade having an open ended slot with divergent walls adjacent its open end engageable with said divergent walls on said lug portion.

4. A razor blade holder comprising a cap plate, a stem portion jointedly connected to the cap plate on an axis parallel to the edge of the cap plate, a guard plate surrounding and slidable along said stem portion, said axis being spaced from the cap plate a distance greater than the thickness of adjacent parts of the guard plate, and axially movable means carried on the stem portion and cooperative therewith for releasably clamping said plates together and therewith preventing pivotal movement at the joint, the stem portion and guard plate including cooperating portions thereon for preventing relative rotation of said guard and cap plates about the axis of said stem portion when the guard plate has been slid therealong to a point remote from the cap plate in order thereby to permit insertion of a blade between said cap and guard plates, said stem portion being rockable relative to the cap and guard plates when they are together and when the axially movable means is withdrawn from clamping position for permitting the compact storage of the holder.

HUGH W. SANFORD.