May 4, 1954

G. T. RANDOL

2,677,176

SAFETY RAZOR

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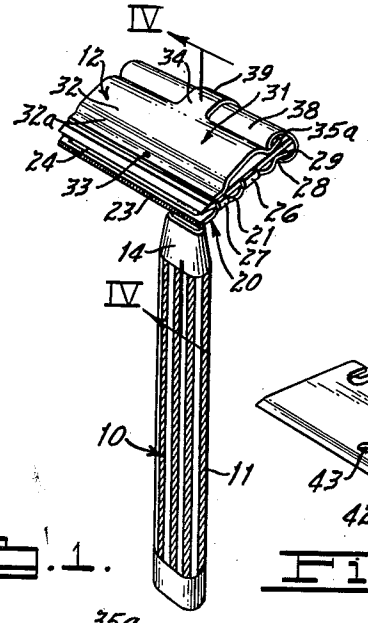


Fig. 1.

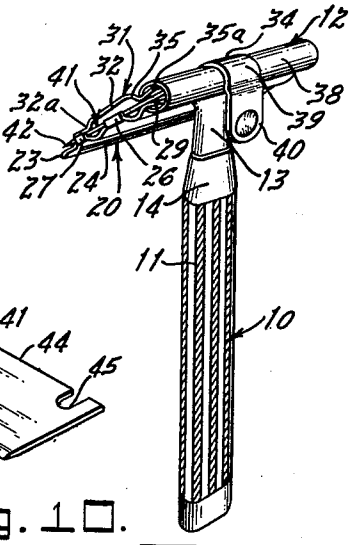


Fig. 2.

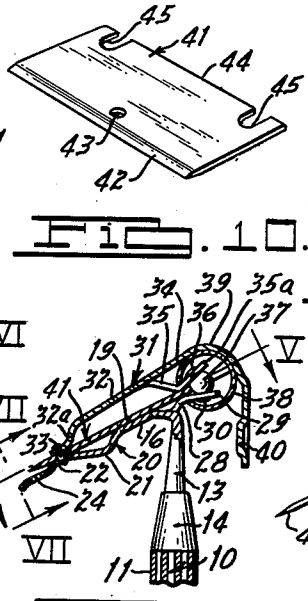


Fig. 10.

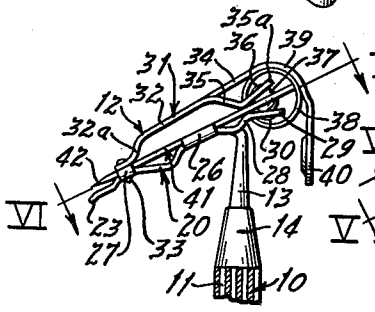


Fig. 3.

Fig. 4.

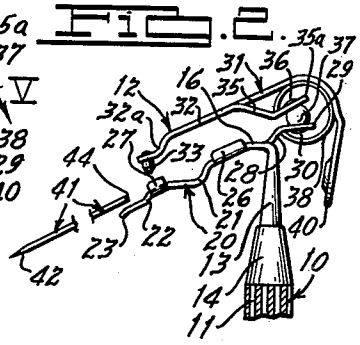


Fig. 9.

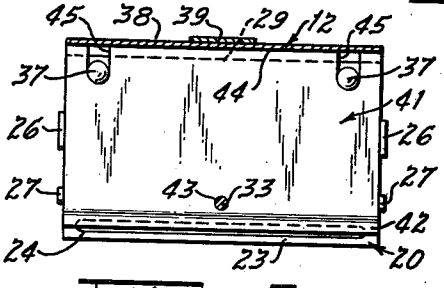


Fig. 5.

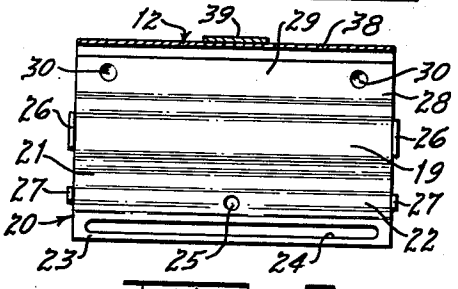


Fig. 6.

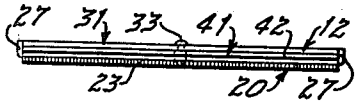


Fig. 7.



Fig. 8.

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SAFETY RAZOR

Glenn T. Randol, Mountain Lake Park, Md.

Application January 3, 1951, Serial No. 204,123

9 Claims. (Cl. 30—58)

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The present invention relates to a safety razor and more particularly to a safety razor wherein a razor blade is securely clamped and locked in effective cutting position between a pair of interfitting spring-urged clamping elements.

In my earlier filed pending application for patent, Serial No. 170,145 filed June 24, 1950 now matured as Patent 2,665,477 dated January 12, 1954, I have disclosed and claimed a safety razor provided with a spring-clip head in which a blade is disposed in effective cutting position. In this earlier filed application, the razor includes a razor head formed of resilient material for effectively clamping the blade in position. The present invention, on the other hand, provides a pair of rigid clamping elements urged into extended surface engagement with a razor blade by means of a split-sleeve type spring urging the clamping elements into contact with a razor blade about bearing means interposed between the clamping elements.

More particularly, the present invention includes a lower clamping member carried by, and preferably formed integrally with, a razor handle and providing upper supporting surfaces in extended surface contact with a blade to support the same in shaving position. An upper clamping element cooperates with the lower clamping element to secure the blade therebetween, the clamping elements being provided with interfitting securing means projecting through the blade for securing the same in position. Bearing means, preferably in the form of ball bearings, are interposed between the clamping elements at that edge of the clamping elements remote from the cutting edge of the blade, and a split-sleeve type spring encircles the remote portions of the clamping elements to urge the same into engagement about the bearing means. An elongated handle is provided for the upper of the clamping means to project in spaced relation to the razor handle to provide means for easily opening the clamping elements my movement of the same about the bearing means.

It will be seen that the instant razor possesses several desirable and novel features. For example, the utilization of a bearing and split-sleeve type clamping means provides easy opening action, while at the same time accommodating the positive, interlocked securing of the blade in cutting position. Securing of the blade in position is further enhanced by the abutment at that end of the blade remote from the cutting edge thereof with an interior surface of the clamping

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spring for substantially the entire dimension of the blade to reinforce the blade, thus preventing blade displacement and blade slanting or tilting movement within the razor. Further, the entire blade cutting edge is exposed for effective cutting action, while the unitary razor post and supporting plate construction is simple in manufacture and inexpensive in cost.

It is, therefore, an important object of the present invention to provide an improved safety razor utilizing spring clip urged clamping elements for securing a razor blade in cutting position.

Another important object of the present invention is to provide a safety razor wherein a blade is positioned between a pair of clamping elements movable about bearing means interposed therebetween, the clamping elements being urged into clamping relation by spring means acting directly on the clamping elements to urge the same into interfitting engagement with the blade.

It is a further important object of the present invention to provide a safety razor including a pair of clamping plates having bearing means interposed therebetween and a split-sleeve type spring urging the clamping members into engagement, the clamping members carrying blade positioning and securing means which project completely through the blade adjacent the blade cutting edge.

Still another important object of the present invention is to provide a safety razor having spring-urged clamping members movable about bearing means interposed therebetween into clamping relation with the razor blade, the blade being securely clamped in position by abutment of the non-cutting blade edge with the means urging the clamping members together, and one of the clamping members carrying means extending completely through the blade for indexing the same to an accurate cutting position and to secure blade in this position.

In the drawings:

Figure 1 is a front perspective view of the razor of the present invention;

Figure 2 is a rear perspective view of the razor of Figure 1;

Figure 3 is an enlarged fragmentary side elevational view of the razor of Figure 1;

Figure 4 is a sectional view, with parts shown in elevation, taken along the plane IV—IV of Figure 1;

Figure 5 is a sectional view, with parts shown

in elevation, taken along the plane V—V of Figure 4;

Figure 6 is an enlarged sectional view similar to Figure 5 taken along the plane VI—VI of Figure 3;

Figure 7 is a front elevational view taken along the plane VII—VII of Figure 4;

Figure 8 is an enlarged fragmentary sectional view similar to Figure 4, illustrating in detail the cutting edge of the blade adjusted in effective cutting position by the taper-ended pin associated with the clamping members;

Figure 9 is a fragmentary side elevational view, similar to Figure 3, illustrating the razor in open position for the ejection or insertion of a razor blade; and

Figure 10 is a perspective view of a blade adapted for utilization with the razor of the present invention.

Referring to the drawings:

In Figure 1, the reference numeral 10 refers generally to a razor of the present invention, including a handle 11 and a razor head indicated generally at 12 and carried by the handle. More particularly, the handle 11 is joined to the head 12 by means of an upstanding post 13 projecting from a terminal reduced portion 14 of the handle 11. The handle 11 is provided with a knurled peripheral gripping surface and the handle is preferably hollow, to telescopically receive the post 13 for attachment thereto.

The post 13 has integrally formed therewith a forwardly projecting portion 16 having an upper surface 19 which is inclined downwardly and forwardly with respect to the post 11 for a purpose to be hereinafter more fully described. The portion 16 of the post forms a part of a lower clamping plate 20 which has a second portion 21 depressed with respect to the portion 16, and a second forward portion 22 which has an upper surface aligned with the surface 19 of the portion 16. The clamping plate 20 terminates in a downwardly displaced forward serrated guard lip 23 which is provided with an elongated central slot 24, also for a purpose to be hereinafter more fully explained.

That portion 22 of the plate 20 which is aligned with the portion 16 is provided with a centrally located generally circular aperture 25 (Figure 8) which is in spaced relation to the slot 24, and the plane portion 16 is provided with upturned, integrally formed marginal flanges 26 alongside each edge thereof, while the portion 22 is provided with similar upturned marginal flanges 27 (see Figure 9).

The lower clamping plate 20 is provided with a rearwardly extending portion 28 generally aligned with the portions 16 and 22 and terminating in a downturned lip 29 which is provided with at least two longitudinally spaced recesses 30 in closely spaced relation to each of the rear marginal edges thereof for a purpose to be hereinafter more fully explained.

An upper clamping plate 31 is provided for cooperation with the lower clamping plate 20, the upper plate including a substantially plane intermediate portion 32 having a forwardly depending lip 32*a* bearing at its forward end a depending, generally cylindrical, taper-pointed pin 33 dimensioned for entrance within the aperture 25 of the bottom clamping plate 20, the novel purposes of said pin will hereinafter become apparent. The plate 31 is provided with a central rearwardly extending flange 34 of reduced width to be hereinafter more fully described, and the rear plate portions are to be depressed, as at 35, on each side of the flange 34, the depressed portions 35 terminating in upwardly inclined lips 35*a* each having recesses 36 formed therein corresponding to and registering with the recesses 30.

The lower clamping plate 20 and the upper clamping plate 31 are adapted to receive therebetween bearing elements 37, preferably in the form of ball bearings, seated in the cooperating and registering recesses 30 and 36 of the plates, respectively. A generally cylindrical, longitudinally split, sleeve-type spring 38 formed of resilient material, such as spring steel or the like, contacts both the lower plate 20 and the upper plate 31 at approximately the line of juncture between the lips 29 and 35*a*, respectively, and the plates. More particularly, the edges of the sleeve defining the split therein are spread, so that the sleeve is insertable over the plate lips, and the sleeve encircles the bearing elements 37 so as to urge the plates 20 and 31 together about the bearing elements as a fulcrum.

The upper plate flange 34 is deformed, as at 39, to conform to the contour of the spring sleeve 38, the terminal end 40 of the flange depending from the sleeve to provide an actuating arm which, upon movement toward the forward portion of the razor head 12, opens the clamping plates 20 and 31 against the action of the spring sleeve 38.

A razor blade 41 (Figure 10) is provided for utilization with the razor 10. The blade is provided with a forward sharpened cutting edge 42, and an aperture 43 substantially the same size as the aperture 25 formed in the bottom clamping plate 20 and positioned centrally of the blade immediately adjacent the cutting edge 42. The rear butt edge 44 of the blade is notched or recessed, as at 45, to receive the bearing elements 37 therein. The positioning of the blade within the razor structure will be evident from an inspection of Figures 4 and 5 of the drawings, in that the rear unsharpened edge 44 of the blade abuts the interior surface of the spring sleeve 38, the notches 45 receive the bearing elements 37 therein, and the conically-pointed pin 33 extends through the blade aperture 43 into the aperture 25 of the bottom plate 20 in registry therewith. Further, the blade is adjusted into effective cutting position by engagement of the tapered portion of the pin 33 with the margin of the blade aperture 43 in aligning the same with the bottom clamping plate aperture 25, while the full diameter of said pin when projected through the apertures 43—25 is effective to secure the blade in its adjusted cutting position. Shifting of the blade out of its aforesaid adjusted position is further prevented by confinement thereof adjacent the cutting edge between the lip 32*a* and the portion 22 and by confinement adjacent the rear edge between the lips 35*a* and lip 29.

It will be seen that the transverse sides of the blade 41 snugly engage the marginal flanges 26—27 of the lower plate, so that lateral shifting of the blade is prevented. The cooperation of the lateral flanges 26 and 27 with the pin 33 and with the bearing elements 37 positioned in the slots 45 insures the locking of the blade in effective cutting position without the possibility of either lateral or transverse blade displacement during use.

Thus, it will be seen that the present invention provides an improved safety razor wherein a

blade 41 is positioned between a pair of cooperative clamping elements 20—31 by means of a split resilient sleeve-type spring 38 acting about bearing elements 37. The bearing elements are positioned within recesses or similar positioning means carried by the clamping plates themselves, and a continuation; namely, the extension or leg 40; of one of the clamping plates forms an actuating lever for effecting opening movement of the clamping plates against the action of the spring 38. The sole fastening means for the entire head construction is the spring 38, and this means, in and of itself, accommodates insertion and removal of a blade by its inherent resiliency and without any complicated mechanical movement.

The blade is supported in a preferred inclined relation to the razor handle 11 by means of the spaced surfaces provided by the bottom clamping plate. The surface 19 constitutes the main supporting surface of the lower clamping plate 20, while the portions 22 and 28 contact blade surfaces on each side of that blade surface contacted by the surface 19, so that adequate blade support is insured. Inasmuch as the guard lip 23 is positioned below the blade cutting edge 42, it will be seen that quite an effective cutting action is provided by the cooperation of these members.

In addition, cleaning of the razor is facilitated without the necessity of removing the blade 41 therefrom by the provision of the open sides of the head and the utilization of the spring clip 38 as the sole means securing the plates 20 and 31 together.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention as defined in the claims appended hereto.

I claim as my invention:

1. A razor comprising a blade having a longitudinal cutting edge, an aperture adjacent said cutting edge and a longitudinal butt edge opposite said cutting edge; a pair of clamping plates cooperating to secure said blade therebetween; bearing means interposed between said plates; a split resilient sleeve encircling adjacent portions of said plates and said bearing means; one of said plates having an aperture in spaced relation to said resilient sleeve, and a pin carried by the other of said plates and projecting toward said one plate for reception by the aperture therein, said blade being positioned between said plates with its said opposite longitudinal edge bottomed against said resilient sleeve and its said aperture being in registry with the aperture of said one of said plates and receiving said pin therethrough to interlock said blade with said plates against longitudinal and transverse movements relative thereto.

2. A safety razor comprising a pair of clamping plates and a blade clampable therebetween having an aperture adjacent the intermediate portion of the cutting edge thereof, a handle carried by one of said plates, bearing means interposed between confronting faces of adjacent longitudinal edge portions of said plates, a split tubular clamping-spring contacting the oppositely disposed faces of said longitudinal portions to bias said plates into cooperative clamping engagement with said blade about said bearing means, and a taper-pointed pin fixed to one of said plates and extending substantially normal therefrom toward a registering aperture in said other plate and adapted to projecting through the aforesaid apertures of the said blade and other plate to adjust and secure said blade in effective cutting position upon said clamping-spring effecting clamping engagement of said plates with said blade.

3. A safety razor according to claim 2 wherein one of said plates carries transversely spaced marginal portions substantially normal thereto for preventing longitudinal movement of said blade.

4. A safety razor according to claim 3 wherein the butt edge of said blade carries longitudinally spaced notches adapted to receive said bearing means therein when said blade is clamped in effective cutting position by said clamping-spring.

5. A safety razor according to claim 4 wherein the clamping plate not carried by the handle incorporates a narrowed medial rear portion which terminates in a depending arm in spaced parallel relation to the upper end portion of said handle, to accommodate manual-actuation of said plates about said bearing means in opposite directions against the biasing force of said clamping-spring, to release the blade from between the aforesaid clamping plates.

6. A safety razor according to claim 5 wherein the clamping plate attached to the handle has a longitudinal edge opposite the handle formed as a guard immediately below and forward of the blade cutting edge, said guard edge containing an elongated slot through which lather ladened with beard-cuttings may be expelled, and further adapted to accommodate utilization of the full length of the blade cutting edge.

7. In a safety razor: a single-edged blade; a handle; a lower clamping plate rigid with said handle; a longitudinally slotted blade cutting edge guard portion on said lower plate opposite said handle; an inclined lip portion depending from the opposite edge of said lower plate; an upper clamping plate rotatable with respect to and cooperating with the lower plate to releasably clamp the blade in effective cutting position therebetween, said upper plate terminating at its longitudinal edge adjacent the cutting edge of said blade into an offset marginal portion; and at its opposite longitudinal edge into an inclined lip portion; a depending taper-pointed pin mounted medially on said marginal portion; aligned longitudinally spaced pairs of confronting depressions formed in said lip portions; a bearing element disposed between each pair of confronting depressions; a split clamping spring sleeve encircling said lip portions and bearing elements, and in distended engagement with the lip portion adjacent regions of said lower and upper clamping plates, said sleeve normally biasing the upper clamping plate against the lower clamping plate; an extending arm integral with the upper plate and including an arcuate segment embracing the portion of said spring sleeve opposite the split therein; and a depending extension integral with said arcuate segment for the application of manual pressure to rotate the upper clamping plate about the bearing elements against the biasing force of the spring sleeve aforesaid.

8. A safety razor according to claim 7, wherein the recited blade includes: a body portion provided with a forward cutting edge opposite a rearward butt edge; a circular aperture disposed medially of the blade formed in the body portion immediately adjacent said cutting edge for

the reception of the recited taper-pointed pin; and longitudinally spaced notches formed in the body portion along said butt edge for the reception of the recited bearing elements.

9. A safety razor according to claim 7, wherein the recited depressions in the lip portions are of substantially semi-circular configuration, and wherein the bearing elements associated therewith are of spherical configuration.

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