Jan. 26, 1937. N. TESTI 2,068,717

SAFETY RAZOR

Filed Oct. 4, 1935

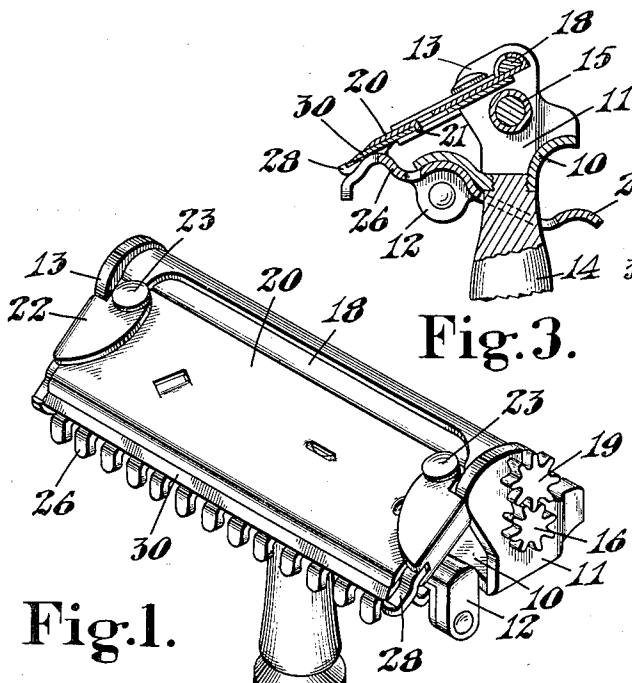


Fig.1.

Fig.3.

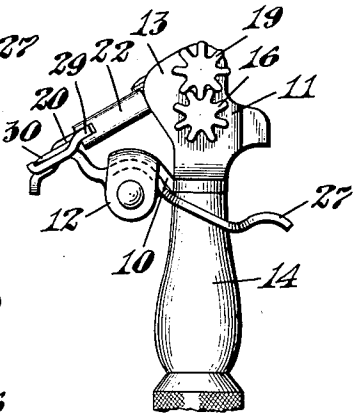


Fig.4.

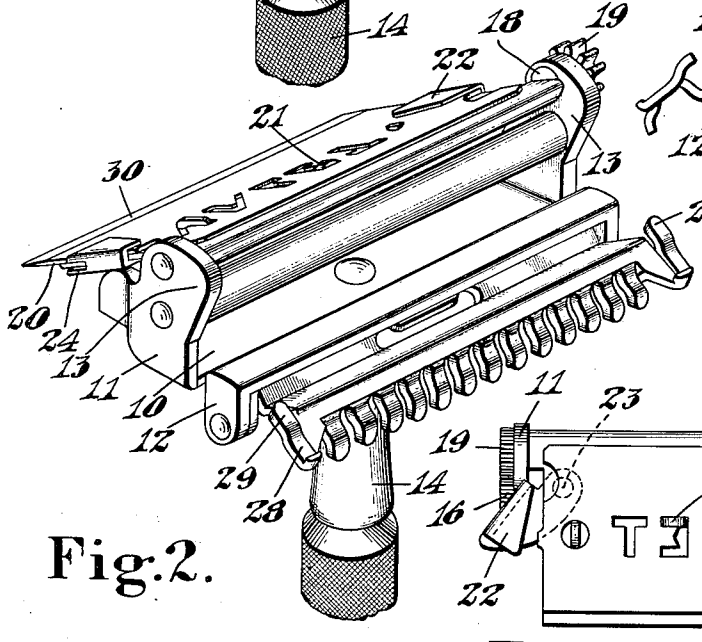


Fig.2.

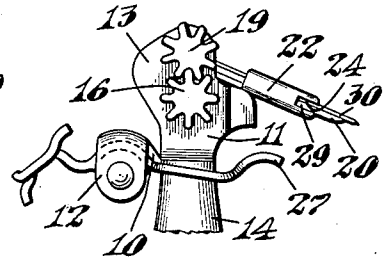


Fig.5.

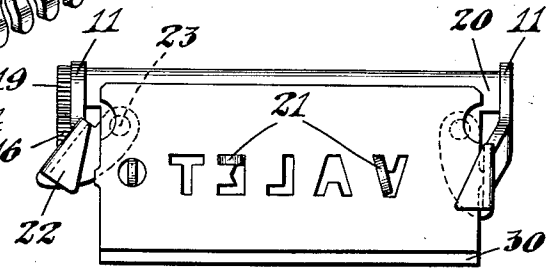


Fig.6.

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Patented Jan. 26, 1937

2,068,717

UNITED STATES PATENT OFFICE

2,068,717

SAFETY RAZOR

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Application October 4, 1935, Serial No. 43,563

8 Claims. (Cl. 30—57)

This invention relates to safety razors of the type employing a pivotally mounted blade carrier which is movable from shaving position to present the blade in position for convenient replacement or to reverse the position of the blade to permit stropping in the razor. Razors of this general type are to be found in U. S. Letters Patent No. 1,639,335 and No. 1,770,170, granted on applications of Henry J. Gaisman. In one aspect the present invention consists in improvements in razors of that type with a view to facilitating the manipulation of the razor in removing or replacing the blade, increasing the security of the blade clamping operation and simplifying the mechanical construction and expense of manufacture. In another aspect the invention consists in novel features which may be usefully applied to safety razors of other and different types.

With these ends in view an important feature of the invention consists in a blade carrier pivotally supported for movement to and from shaving position in combination with a blade clamping member mounted upon the blade carrier and means for automatically closing the clamping member when the carrier is swung toward shaving position. This construction improves the safety of the razor by insuring complete clamping of the blade in shaving position with a safe amount of blade exposure regardless of any action on the part of the user. One of the chief sources of danger in the use of safety razors is thus obviated since improper or incomplete clamping of the blade many times results in a dangerous edge exposure. This construction may be embodied in clamps which engage only the end portions of the blade and which, therefore, require slight releasing movement in fully exposing the blade for replacement and thus contribute to the convenient manipulation of the razor.

In accordance with another feature of the invention the blade clamping members are utilized also as locking means for maintaining the blade carrier positively in shaving position so that it may not be accidentally displaced while the razor is in use. The feature of utilizing a blade clamp for the additional function of locking the blade carrier is believed to be broadly novel and contributes to simplify the mechanical structure of the razor.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawing, in which,—

Fig. 1 is a view in perspective on an enlarged scale of the razor head in shaving condition;

Fig. 2 is a similar view showing the blade holder swung rearwardly into stropping position;

Fig. 3 is a view of the razor head in vertical section;

Fig. 4 is an end view of the razor head in shaving condition;

Fig. 5 is a similar end view showing the blade holder in rear stropping position; and

Fig. 6 is a rear view of the blade holder and associated parts.

The razor head comprises a sheet metal frame which includes a base 10 having two downwardly concave edge portions connected by a relatively flat intermediate portion from the ends of which project two upright arms 11. Downturned ears 12 are formed at the ends of the forward concave portion of the base and between these ears the guard 26 is pivotally mounted, as will be explained hereinafter. The handle 14 is screwed into the intermediate portion of the base 10. In the upright side arms 11 are provided bearings for two transversely-extending shafts located one above the other. The lower shaft carries the stropping roll 15 and is provided at one end with a pinion 16. The upper shaft 18 is half round in cross-section and is provided at one end with a pinion 19 meshing with the pinion 16 of the stropping roll and actuated thereby in the stropping operation to oscillate the upper shaft 18.

As shown in Fig. 2, the end portions of the shaft 18 are circular in cross-section within their bearings in the arms 11 and the shaft is reduced to half round section between its bearing. The blade-carrier plate 20 is shaped to conform with the contour of the shaft 18 and is rigidly secured thereto. As shown in Fig. 3 the carrier plate passes beneath and across the flat surface of the shaft 18 in flat condition and is then bent upwardly and over the curved portion of the shaft, the plate being cut away in the center portion of its curved edge as best shown in Fig. 1, thus exposing to view a portion of the shaft 18 when the razor is clamped with its parts in shaving position. This construction for connecting the blade carrier plate and its shaft is advantageous from the standpoint of manufacturing the razor and affords a particularly secure and reliable connection which in no way interferes with the swinging movement of the carrier.

The carrier plate 20 is provided on its blade receiving face, which is shown as downwardly disposed in Fig. 1 and upwardly disposed in Fig. 2, with blade-locating projections 21 and as here-

in shown these are shaped to form a part of the word "VALET" which is displayed as a cut-out in the blade 30. When the carrier plate is reversed and swung into its rearwardly inclined position, as shown in Fig. 2, the blade 30 may be conveniently presented thereto by the user and is held thereon in approximate shaving position by the blade-locating projections 21.

At either end the carrier plate 20 is provided with a forked clamp 22 pivotally mounted to swing toward and over the end of the carrier plate and the end of the blade supported thereon in such a manner as to clamp the plate and blade closely together in the position determined by the blade locating projections 21. These clamps 22 may be swung inwardly or outwardly by the user while the carrier plate occupies its open position as shown in Fig. 2. When the clamps are swung outwardly into inoperative position the blade is free to be removed for replacement but when the clamps are swung inwardly the blade is locked in operative position upon the carrier plate.

Means are also provided for automatically swinging the clamps 22 inwardly as the blade carrier and blade are swung into operative position and for positively locking the clamps in position while the carrier plate occupies its closed or shaving position. To this end forwardly projecting cams 13 are formed upon the front edge of each upright side arm 11, and these cams are so shaped as to engage the rear edge of both clamps 22 as the carrier plate approaches shaving position and to swing the clamps inwardly into blade-engaging position as shown in Fig. 1. The action of the cams 13 is to insure closing and locking of the clamps 22 in case they may not have been fully closed by the user and to prevent accidental unlocking while the razor is in use or while the carrier is being oscillated from one side to the other of the razor in the stropping operation. On the other hand, when the blade-carrier plate 20 is swung rearwardly or into its open position the clamps 22 are carried entirely out of range of the cams 13 so that they can be manipulated conveniently without any interference whatever.

The guard member 26 is of sheet metal and provided along its forward edge with downwardly curved guard teeth of the usual construction. As already explained it is pivotally supported between the two downturned ears 12. It is cut away centrally so as to straddle the handle 14 and provided with a rearwardly extending finger piece 27 by which it may be swung downwardly and from operative position in a convenient manner. The guard is provided at each of its forward corners with a gauge stop 28 which is arranged to engage the corners of the blade when the guard is swung upwardly into shaving position and these gauge stops positively and accurately determine the position of the shaving edge of the blade and the amount of edge exposure with reference to the guard teeth. The guard is also provided at each end with a locking projection 29 arranged to fit into a recess 24 formed on the edge of each of the clamps 22. Accordingly, when the gauge is swung upwardly into its operative position it first accurately positions the blade and then locks the assembled blade-carrier and blade in shaving position.

Assuming that the razor has been organized with its parts in the position of Figs. 1, 3 and 4 and that it is desired to strop the blade 30 in position upon the blade carrier plate, in this case, the user has merely to lift the finger piece 27 of the guard swinging it downwardly and forwardly and carrying the locking projections 29 out of the recesses 24 of the blade clamps. He may then introduce a strop beneath the stropping roll 15 and between the edge of the blade 30 and the guard 26. As the strop is drawn toward the left as seen in Fig. 3 it tends to rotate the strop roll 15 in a clockwise direction and, therefore, to hold the edge of the blade yieldingly against the strop. When the direction of movement of the strop is reversed, the strop roll 15 may act to throw the blade carrier into the position shown in Fig. 5 and again to hold the blade in yielding engagement as the strop continues to be moved toward the right. Each time the blade carrier is swung toward the left or into the position of Fig. 3 the cams 13 become effective to swing inwardly the clamps 22 and thus prevent the danger of blade displacement in the stropping operation. If now the user desires to replace the blade he has only to swing the clamps 22 outwardly when the blade carrier is in its rearwardly inclined position, as shown in Figs. 2, 5 and 6 and in which the clamps are positioned so as to clear the cams 13. Upon replacing the blade the clamps 22 may be closed by the user or the carrier plate may be merely swung into closed position, the cams 13 being relied upon for closing the clamps. Downward movement of the finger piece 27, returning the gauges to operative position completes the step of restoring the razor to shaving condition.

It is to be noted that the clamps 22 engage the unsharpened ends of the blade and, accordingly, when they are retracted the ends of the blade are left free and unobstructed so that the user may conveniently grasp them in removing or replacing the blade.

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

1. A safety razor, having in combination, a frame, a blade-carrier pivotally supported therein, blade clamping members mounted upon the blade-carrier, and means for automatically closing said clamping members when the carrier is swung toward shaving position.

2. A safety razor, having in combination, a frame, a blade-carrier pivotally supported therein, blade clamping members movable with the blade-carrier, and means for externally engaging and automatically locking said clamping members in closed position while the carrier ocupies its shaving position.

3. A safety razor, having in combination, a frame, a blade-carrier pivotally supported therein for movement toward or from shaving position, a blade clamp movable with the carrier, and a cam so located as to engage and close the clamp in the movement of the carrier in one direction.

4. A safety razor, having in combination, a frame, a blade-carrier pivotally supported therein for movement toward or from shaving position, clamps pivotally mounted on the carrier for movement about axes at right angles to that of the carrier, and curved cams arranged to engage the clamps during a part of the carrier movement into shaving position and to disengage the clamps in another part of the carrier movement.

5. A safety razor, having in combination, a frame, a blade-carrier pivotally supported therein for movement toward or from shaving position, a blade clamp movably mounted on the carrier, means for automatically closing the clamp during the movement of the carrier into shaving position, and means interlocking with the clamp for pre-

venting movement of the carrier out of shaving position.

6. A safety razor, having in combination, a frame, a blade-carrier pivotally supported therein for movement toward or from shaving position, forked blade clamps pivoted to the carrier, cams for closing the clamps when they are moved by the carrier into range thereof, and a guard movable to interlock with the clamps and maintain the carrier in shaving position.

7. A safety razor, having in combination, a frame having upright arms at each end both provided with a curved cam projection, a blade-carrier journaled between said arms, and blade clamps movably mounted in said carrier and arranged to be actuated by said cams in the movement of the carrier.

8. In a stropping safety razor, a pivotally mounted blade-carrier arranged to reverse the position of the blade in the stropping operation, blade clamps mounted on the carrier, and means for engaging said clamps once in each oscillation of the carrier to insure that they are maintained in blade-clamping position.

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