July 7, 1953 J. MUROS 2,644,229

QUICK-OPENING RAZOR

Filed Nov. 27, 1948

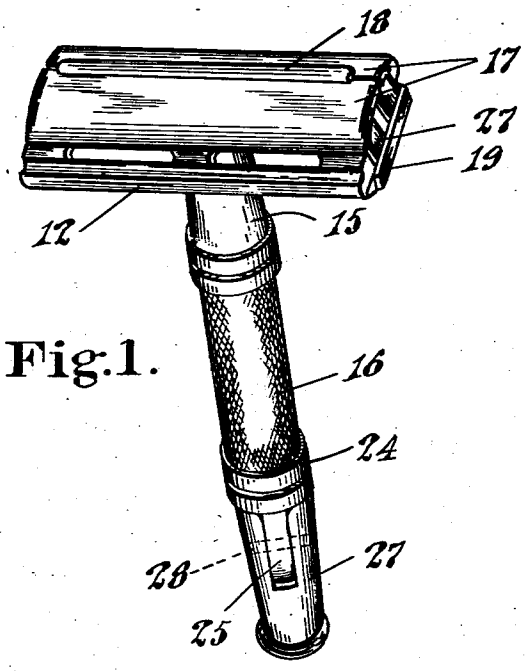


Fig.1.

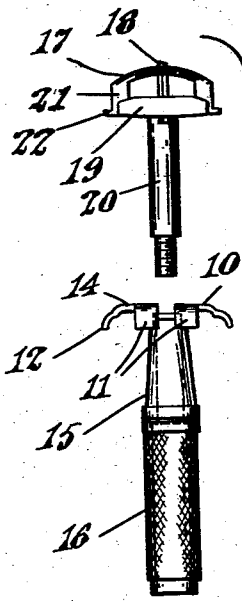


Fig.3.

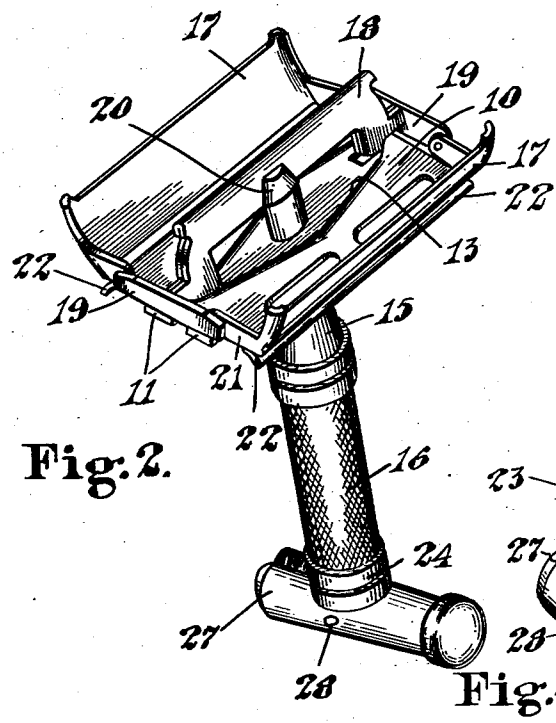


Fig.2.

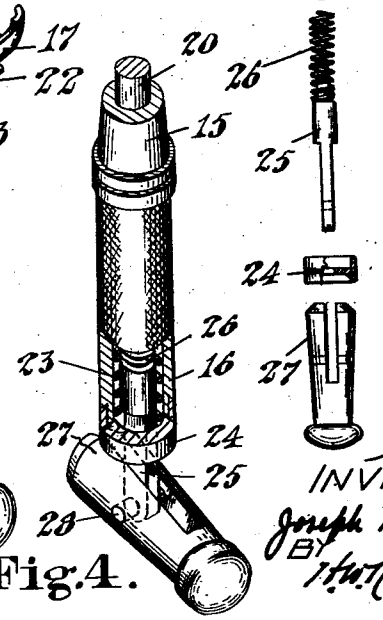


Fig.4.

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QUICK-OPENING RAZOR

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6 Claims. (Cl. 30—60.5)

1

This invention relates to safety razors of the type employing a sectional cap in combination with a guard or other blade-supporting member for the purpose of supporting and clamping a thin flexible blade in shaving condition. A safety razor of this general type is disclosed in my prior Patent No. 2,009,272, dated July 23, 1935, and in one aspect the present invention consists in an improvement in the safety razor of my said patent although it is not limited in its application to that or to any specific type of razor. In such safety razors as heretofore constructed the blade-clamping action has usually been secured by the employment of threaded members including a head by which the threaded connection is conveniently manipulated by the user in clamping the blade with the desired amount of pressure and releasing the cap or cap sections to expose the blade for cleaning or presentation of a fresh blade. The threaded type of connection has been entirely satisfactory from the mechanical standpoint but its action is relatively slow in that the user has generally been obliged to give the controlling head three or more turns to effect either clamping or release and exposure of the blade.

An object of the present invention is to provide a quick-opening razor wherein the blade-clamping members may be released by a single movement of the user and the cap or cap sections quickly and automatically moved into wide-open position by spring action. As herein shown, this desirable result is achieved by providing a spring acting at all times to open the cap or cap sections in combination with mechanism including a pair of pivoted link members opposing the spring in their straightening movement and releasing the spring when broken so as to permit it quickly to open the cap or cap sections.

Another important feature of my invention consists in the provision of a yielding connection between the links and the cap or cap sections.

This is important in two respects. In the first place manufacturing costs would be greatly increased if it were necessary to manufacture the razor parts with such precision that the links straightened in toggle fashion bring the blade-clamping members positively to the exact clamping position desired. In the second place, excessive positive clamping pressure tends sometimes to break blades. By interposing a yielding element between the links and the cap or cap sections, desirable tolerance is allowed in the manufacturing operations and the danger of blade breakage is obviated.

2

These and other features and advantages of my 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 drawings, in which:

Fig. 1 is a view in perspective of the complete razor in closed position;

Fig. 2 is a similar view showing the razor in open position;

Fig. 3 is a view in elevation showing the parts of the razor in exploded relation; and

Fig. 4 is a fragmentary view in perspective illustrating the toggle action of the razor parts.

The razor selected as an illustrative embodiment of my invention includes in its structure a rectangular guard or blade-supporting member 10. This may be constructed of heavy sheet metal and provided at its ends with down-turned ears 11 and along its longitudinal edges with guard bars 12 of the usual construction. The guard member may be formed by die-pressing or molding a single-piece blank and is provided with an elongated depressed reentrant recess 13 of diamond shape and adjacent convex blade-supporting faces. The guard member is provided in each end with a centrally-depressed notch or slot opening through the walls of the recess 13. It is also provided in each corner with a notch 14 providing a vertical passage for the arms of the cap sections as will presently be described. The guard is rigidly connected to a tubular head 15 from which projects a tubular barrel 16 which comprises the handle of the razor.

The cap, which comprises two similar sections 17, is carried by a spider comprising a bar 18 having a transverse cross arm 19 at each end and a central spindle 20 which is arranged to pass freely down through the head 15 and into the barrel 16 of the handle. The spindle 20 is shouldered and threaded at its lower end as shown in Fig. 3. The cap sections 17 are provided at both ends with arms 21 and these arms are pivotally connected at their lower or inner ends to opposite ends of the cross arms 19 of the spider. They are of such width as to pass freely through the notches 14 of the blade-supporting member 10 and each is provided with an outturned tongue 22 which when the spider is raised engages the body of the blade-supporting member at the outer edge of one of the notches 14 and swings its related cap section into the wide-open position shown in Fig. 2. On the other hand when the spindle 20 is forcibly drawn downwardly, the arms 21 of the cap sections engage

the upper face of the blade-supporting member and are rocked inwardly with the cap sections as the spider is lowered and the arms 21 are carried downwardly through the notches 14 of the blade-supporting member.

The razor construction hereinabove described in connection with the drawings is not herein claimed but is substantially shown in my prior patent above identified.

A compression spring 23 encircles the spindle 20 within the tubular barrel 16 of the handle, bearing at its upper end upon the shoulder of the spindle and at its lower end upon a perforated disk 24 which acts as a ferrule for the razor handle as well as an abutment for the spring.

A flat stem or toggle link 25 is arranged for movement in the lower portion of the barrel 16, being flattened to such dimensions as to pass freely through the perforation of the disk 24. This link is shouldered and threaded at its upper end to receive a close wound spring 26, which at its upper end is wound upon the threaded end of the spindle 20. The spring 26 therefore provides a yielding connection between the spindle 20 and the toggle link 25 which may be slightly elongated when the toggle is straightened, as will presently appear. The connecting spring 26 is substantially smaller in diameter than the compression spring 23 so that it may be arranged concentrically therein and each spring may partake of its full movement without interference from the other.

The toggle link 25 is pivotally connected at its lower end to a forked finger piece 27 the inner part of which constitutes the cooperating toggle link of the pair. The toggle connection comprises a transverse pin 28 which is located approximately midway of the finger piece 27. The upper end of the finger piece 27 is rounded or beveled so that it makes a fair bearing with the rounded or beveled underface of the disk 24 and so that it can be moved readily by the user from the broken position shown in Fig. 2 to the straightened pressure-applying position shown in Fig. 1.

It will be understood that when the spring 23 is permitted to act, the spider with the cap sections 17 is elevated. The cap sections are thrown into their wide-open position and the blade seat of the razor is fully exposed so that a blade may be readily placed in position thereon. At the same time the toggle link 25 is pulled upwardly and the finger piece 27 held in transverse position against the disk 24 of the handle. When the user desires to clamp a blade in shaving position, he has merely to turn the finger piece 27 to an angle of 90 degrees, bringing its curved upper end into sliding relation with the lower face of the disk 24 as suggested in Fig. 4 and thereby forcing downwardly by toggle action the link 25 and the spider which is connected thereto through the close-wound spring 26. The razor parts are assembled so that the close-wound spring 26 is obliged to yield slightly as the toggle links reach their fully straightened position and as the cap sections reach their final position of blade-clamping pressure. The blade is thus clamped under substantial and adequate yielding pressure and is at the same time safe-guarded from destructive positive pressure of the clamping members.

Now when the user desires to open his razor he has only to rock the finger piece 27 sufficiently to carry its upper rounded surface beyond the rounded face of the abutment disk 24, whereupon the spring 23 becomes effective to snap the finger piece 27 fully into its transverse broken toggle position, to elevate the spindle 20 and to cause the cap sections 17 to fly apart into their wide-open position.

It will be understood that when the finger piece 27 is turned into its transverse broken toggle position, it may be rotated with the link 25 and the spring connection between the link 25 and the spindle thus lengthened or shortened. This affords a convenient means for the user to adjust the blade-clamping pressure of the razor.

Having thus disclosed my invention and described in detail an illustrative embodiment thereof, I claim as new and desire to secure by Letters Patent:

1. A quick-opening safety razor comprising a blade-supporting member and a pair of separable cap sections cooperating therewith to clamp a flexible blade in shaving position, together with a spider carrying the cap sections and having a spindle, a handle enclosing the spindle and providing an abutment at its lower end, a toggle link slidable on said abutment, a second toggle link connected to the first link, a close wound spring connecting said second link and spindle, and a compression spring concentric with and enclosing said close wound spring and tending at all times to lift the spider.

2. A quick-opening safety razor comprising cooperating blade-clamping guard and cap portions relatively movable to clamp or release an interposed blade, a handle including a tubular portion extending downwardly from said guard portion and enclosing an axially movable stem operatively connected with said cap portion, the lower end of said tubular portion bearing a concave socket, a spring applying axial thrust to said stem, and a finger-piece pivotally linked at an intermediate point therealong to said stem beyond said tubular portion, said finger-piece having a convexly shaped upper end receivable in said concave socket when the finger-piece is swung into axial alignment with said tubular portion against the force of said spring.

3. A quick-opening safety razor comprising cooperating blade-clamping guard and cap portions relatively movable to clamp or release an interposed blade, a handle including a tubular portion extending downwardly from said guard portion and enclosing an axially movable stem operatively connected with said cap portion, a spring applying axial thrust to said stem, and a finger-piece pivotally linked at an intermediate point therealong to said stem beyond said tubular portion and being pivotable from a position in axial alignment with said tubular portion to a transverse position, and cooperating means on said tubular portion and said finger-piece releasably retaining them in axial alignment, said finger-piece being shaped as a continuation of said tubular portion to provide jointly therewith a composite handle.

4. A quick-opening safety razor comprising cooperating blade-clamping cap and guard portions relatively movable to clamp or release an interposed blade, a handle including a tubular portion extending downwardly from said guard portion and enclosing an axially movable stem operatively connected with said cap portion, a spring applying axial thrust to said stem, and a finger-piece pivotally linked at an intermediate point therealong to said stem beyond said tubular portion and being pivotable from a position in

axial alignment with said tubular portion to a transverse position, and cooperating nesting means on said tubular portion and said fingerpiece releasably retaining them in axial alignment.

5. In a safety razor having relatively movable cooperating blade-clamping members, a handle construction comprising a cylindrical sleeve fixedly related to one of said members and enclosing an axially movable stem connected with the other of said members, a spring interposed between said sleeve and said stem and urging them in axially opposite directions, an end of said stem projecting beyond said sleeve, a fingerpiece pivotally secured at a point intermediate the ends thereof to said stem end, said fingerpiece being generally circular in cross section and being pivotable against the force of said spring from a position transverse to the axis of said sleeve to a position in axial alignment therewith.

6. In a safety razor having relatively movable cooperating blade-clamping members, a handle construction comprising a sleeve fixedly related to one of said members, an axially movable stem disposed within said sleeve and connected with

the other of said members, said stem including a helical spring capable of applying an axial force, means for progressively varying the overall effective length of said helical spring over an infinite range thereby to adjust the blade-clamping pressure to any of an infinite number of desired settings, a second spring interposed between said sleeve and said stem and urging them in axially opposite directions, and a manually operable external portion connected with said stem and manipulable against the force of both of said springs.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,124,498	Millar	Jan. 12, 1915
1,330,260	Graham	Feb. 10, 1920
1,850,240	Muros	Mar. 22, 1932
2,109,554	Smith	Mar. 1, 1938

FOREIGN PATENTS

Number	Country	Date
698,529	Germany	Nov. 12, 1940