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N. TESTI

2,058,529

SAFETY RAZOR

Filed Nov. 15, 1934

Fig. 1

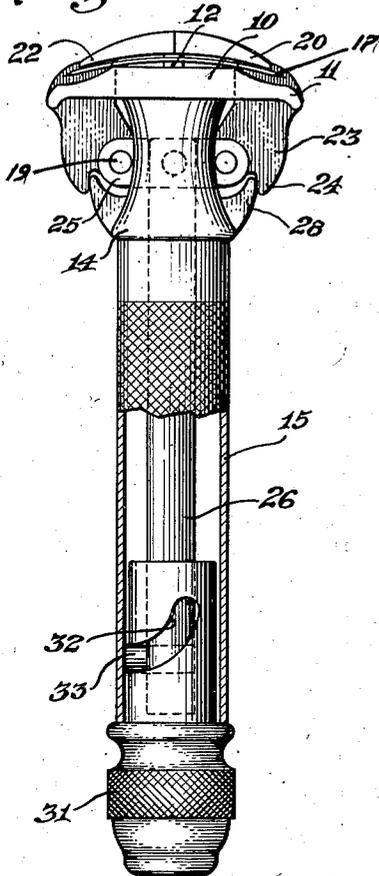


Fig. 2

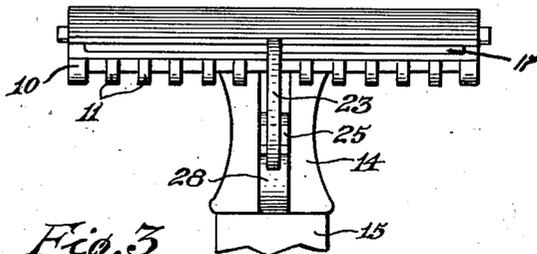


Fig. 3

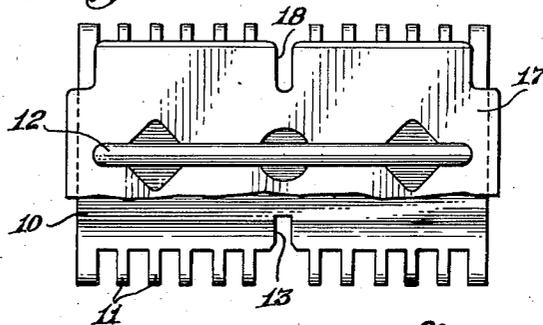


Fig. 4

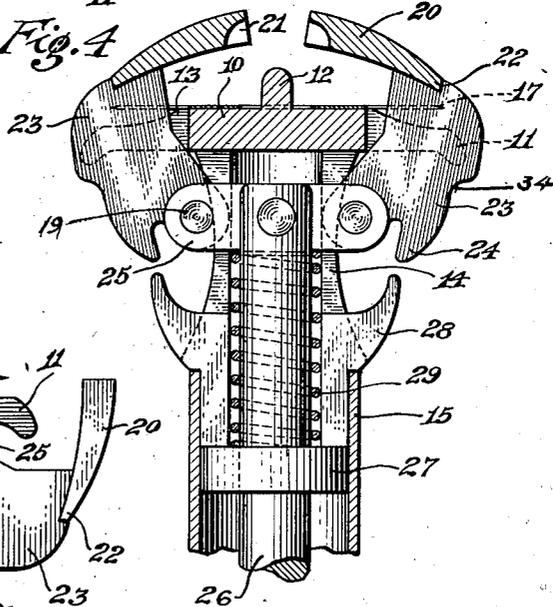
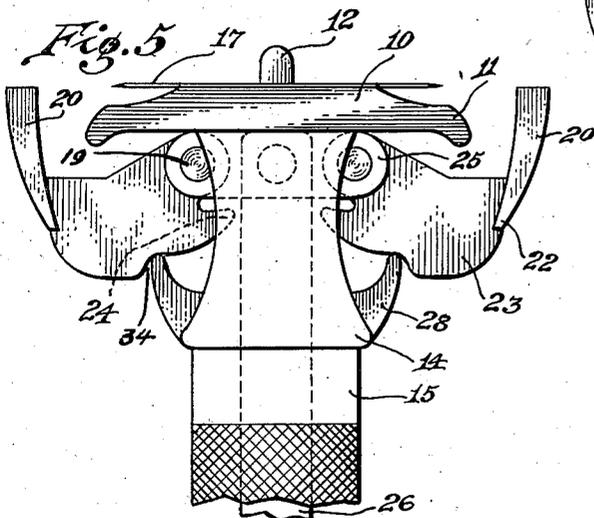


Fig. 5



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SAFETY RAZOR

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Application November 15, 1934, Serial No. 753,190

18 Claims. (Cl. 30—61)

This invention relates to safety razors of the type employing a sectional cap in co-operation with a guard or other blade-supporting member. The general object of the invention is to improve the accuracy and security of the blade clamping operation in razors of this type and to facilitate and speed up the movement of the cap sections to and from blade-clamping position.

With these ends in view one important feature of the invention consists in cap sections, each supported by a centrally disposed arm pivotally mounted beneath the guard. This arrangement is advantageous in that the cap sections are thus supported in a balanced manner, so that they tend automatically to equalize clamping pressure on the blade, and also because the ends of the cap sections are left free and clear of obstructions likely to make damaging contact with the edge of the blade in presenting or removing it from the razor.

As herein shown, the cap sections and their respective supporting arms are so designed as to be over-balanced outwardly when slightly separated and preferably spring means are provided tending always to open said sections when they are permitted to separate. This results in a particularly smooth and rapid opening of the razor when the user desires to remove a blade for cleaning or for purposes of replacement, and moreover, this opening movement is effected without danger of impairing the keen shaving edge of the blade.

The razor of my invention may include, as another desirable feature, means for locking the cap sections together while in blade-flexing position or in position adjacent to that. As herein shown, the supporting arms of the cap sections are each provided with locking recesses and these are brought into operative engagement with cooperating locking projections as the cap sections approach their blade-flexing position above the guard. Means are provided for moving the cap sections bodily first to unlock them and then to cause them to move laterally into separated positions in which the blade-supporting face of the guard is fully uncovered. Incidentally the construction herein shown is particularly well adapted for opening the cap sections to a position of wide separation in which they clear the blade edges by a wide margin of safety when the latter is being presented to or removed from the razor.

The razor herein shown is adapted to receive a blade having a transverse slot in its cutting edge and advantage is taken of this by designing the

cap section supports to enter such slot and thus impart a more or less straight line pull to the cap sections when the latter are operated to apply blade-flexing pressure to a blade in 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 of the razor in end elevation, with portions of the handle being broken away;

Fig. 2 is a view in side elevation of the razor head;

Fig. 3 is a plan view of the guard member showing a blade positioned thereon;

Fig. 4 is a sectional view, on an enlarged scale, of the razor head, showing the cap sections partially opened; and

Fig. 5 is a view on the same enlarged scale of the razor head in end elevation, showing the cap sections fully opened.

In the embodiment of the invention illustrated the guard 10 is utilized as a blade-supporting member and is provided with spaced longitudinal shoulders over which the blade may be flexed when positioned for shaving. The guard 10 is elongated and provided with guard teeth of the usual construction upon its side edges outside its blade-flexing shoulders. Its upper surface is provided with a narrow elongated blade-positioning rib 12 and at oppositely disposed points, halfway between its ends it is provided with transverse slots 13 which extend inwardly to points slightly within the blade flexing shoulders. As shown in Fig. 3, the slots 13 take the place of the middle guard teeth on each side of the guard.

Rigidly secured to the under side of the guard 10 is a head 14 shouldered at its lower edge to receive the barrel 15 of the handle and this in turn is closed at its lower end by a knurled head 31 which will be referred to hereinafter.

One form of blade 17 suitable for use with a razor of my invention is shown in Fig. 3. It is sharpened upon opposite edges for shaving and provided in each corner with a reentrant recess which defines centrally-disposed unsharpened end portions in the blade. The blade is also provided with a central longitudinal slot adapted to fit accurately upon the rib 12 of the guard and thus locate the blade in shaving position thereon. This central slot is shown as provided with spaced enlargements for fitting blade-locating studs of various shapes which may be encountered in other razors. The blade 17 is also pro-

vided with oppositely disposed transverse slots 18 substantially midway between the ends and these extend inwardly through the cutting edge of the blade in registration with the slots 13 of the guard.

5 The razor includes in its organization a pair of cap sections 20 similar in shape and curved so as to flex the blade 17 over the blade-flexing shoulders of the guard 10 when the two cap sections are closed and then moved relatively to the guard. The inner thick edge of each cap section is provided with a longitudinal groove 21 to receive the rib 12 of the guard when the two cap sections are closed and moved into blade-clamping position. Each cap section 20 has an outer relatively thin straight edge 22 adapted to engage the upper surface of the blade and flex it into shaving position. Each cap section 20 is supported in position and moved transversely by means of a thin plate-like arm 23 which is attached to the cap section midway between its ends and extends outwardly and downwardly to a point of pivotal support 19 upon a transverse link or rocker 25. The transverse link 25 is pivotally supported midway between its ends in the upper end of a spindle 26, slidable longitudinally in the barrel of the handle. A collar 27 is secured in place within the barrel 15 at some distance below its upper end where it forms a spacer for the spindle. A compression spring 29 located in the bore of the head 14 bears at its lower end against the collar 27 and at its upper end against the link 25 and tends at all times to move the link upwardly and thus to throw open the cap sections 20, as will presently be explained. Each cap section and its supporting arm is designed to fall open by gravity when slightly displaced from its inner position.

The inner edges of the plate-like arms 23 of the cap sections 20 are formed as cam surfaces co-operating with the edges of the guard 10 at the inner ends of the slot 13, as shown in Fig. 4, to throw the arms and cap sections outwardly when the link 25 is moved upwardly toward the under side of the guard. In the outer surface of the arms 23 are formed shallow recesses 34 which co-operate with a pair of projecting cams 28 which are secured to the collar 27 and extend outwardly through slots provided for that purpose in the walls of the head 14. The cams 28 determine the wide open position of the cap sections when seated in the recesses 34. Each of the arms 23 is also provided with a downwardly-extending projection 24 which defines a deep locking recess in the periphery of the arm near its point of pivotal support.

The spindle 26, as already stated, is provided at its lower end with a knurled head 31 and from this extends upwardly within the barrel 15 a tubular sleeve provided with a cam slot 32. This cam slot co-operates with a stud 33 extending outwardly from the spindle 26 and the shape of the cam slot is such that when the knurled head 31 turns in a clockwise direction the spindle 26 and the parts carried thereby will be pulled downwardly against the compression of the spring 29.

As shown in Fig. 1, the knurled head 31 is represented as being turned to the limit of its clockwise movement and in this position the spindle 26 is fully lowered, the cap sections are closed and are drawn forcibly downwardly with respect to the guard 10 into blade-flexing position. In this position the cam projections 28 fit into the locking recesses formed by the projections 24 of the arms 23, so that the cap sections are thus locked positively in closed position.

If now it is desired to open the cap sections for replacing or cleaning the blade the knurled head 31 is turned in a counter-clockwise direction, whereupon the cam slot 32 travels along the stud 33 and spindle 26 is elevated or rather released so that the compression spring 29 may elevate it. In this operation the locking recesses of the cap section arms 23 are first disengaged from the stationary cam projections 28, as clearly indicated in Fig. 4, and the inner edges of the arms 23 begin to react with the edges of the guard 10 to swing the cap sections 20 outwardly. This action continues rapidly as the spindle 26 is lifted and the link or rocker 25 carried nearer and nearer to the bottom of the guard 10. Finally the cap sections are thrown into their wholly opened position, as shown in Fig. 5 and in this position the cam projections 28 again engage the outer periphery of the arms 23, this time entering the depressions 34 which limit the outward swing of the arms and determine their limiting position. In this position it will be seen that the face of the guard is entirely free and unobstructed by the cap sections and that then the blade 17 may be removed or positioned upon the guard with particular facility.

It will be noted, moreover, that the cap sections are supported by the arms 23 in a symmetrical manner, so that the pressure imparted thereto will be balanced and the cap sections will tend to accommodate themselves automatically to any irregularity in the shape or position of the guard 10. Further equalizing effect arises from the rocker 25 which may yield angularly in permitting the razor parts to adjust themselves when brought together under blade-clamping pressure. Moreover, the ends of the cap sections are left entirely free and clear and the razor as a whole is thus rendered compact and convenient in its design.

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

1. A safety razor comprising an elongated guard member, and co-operating cap sections each provided with a vertically disposed supporting arm located substantially midway between its ends and which is pivotally mounted to swing about a horizontal axis beneath the mid portion of the guard.

2. A safety razor comprising a guard having teeth arranged along its edge and a face for supporting a flexible blade with its edge extending above said teeth, and cap sections shaped to overlie a blade on the guard and each having a supporting arm movable transversely between the guard teeth.

3. A safety razor comprising an elongated guard member having longitudinal blade-flexing shoulders and slots extending transversely to said shoulders, and cap sections pivotally supported by arms movable in said slots.

4. A safety razor comprising a guard having an elongated blade-locating rib and a parallel blade-flexing shoulder, said shoulder being provided centrally with a slot disposed at right angles to said rib, and a cap section pivotally supported by an arm movable in said slot.

5. A safety razor comprising an elongated guard having a blade-supporting face, cap sections movable relatively thereto to flex a blade in co-operation therewith, and pivotally supported arms projecting from said sections and rigidly attached thereto substantially midway between their ends and adjacent to their outer edges re-

spectively for supporting the sections in blade-flexing position.

5 6. A safety razor comprising an elongated guard, and curved cap sections co-operating therewith to flex a blade, each section having a rigidly attached arm projecting therefrom midway between its ends thereby supporting the section in a balanced manner while leaving its ends free and clear.

10 7. A safety razor comprising an elongated blade support, a flexible blade having a transverse slot in its cutting edge and being adapted to be positioned upon said support, and a movable cap member having a supporting arm arranged to pass into the slot of the blade.

15 8. A safety razor comprising an elongated guard having oppositely disposed transverse slots in its side edges substantially midway between its ends, and cap sections supported by arms shaped to enter said slots.

20 9. A safety razor comprising a guard, a transverse link pivotally supported for bodily movement toward or from the underside of the guard and cap sections independently connected to the ends of said link and equalized, by their link support, in their pressure.

25 10. A safety razor comprising a guard, a spindle movable longitudinally beneath the guard, a rocker pivotally mounted in the end of the spindle, and cap sections pivotally connected to the ends of the rocker at points beneath the guard and thereby equalizing in their pressure.

30 11. A safety razor comprising a guard, pivotally supported cap sections having supporting arms projecting therefrom between their ends, said arms having cam surfaces on their opposite edges for swinging the cap sections to and from position above the guard.

35 12. A safety razor comprising a guard, cap sections each having a blade-flexing edge and a central supporting arm rigidly attached thereto and projecting from said edge, said arms being pivotally mounted in the razor, and means acting on said arms for positively locking the cap sections in position above the guard.

13. A safety razor comprising a guard, a handle, cap sections having central supporting arms pivotally supported below the guard, locking recesses on said arms, and co-operating locking projections in said handle.

5 14. A safety razor comprising a guard, a handle secured thereto, movable cap sections co-operating with the guard and having arms with cam-shaped edges including therein locking recesses, and spaced projections arranged to travel along the cam edges in closing the cap sections and then to enter the locking recesses.

10 15. A safety razor comprising a guard for supporting a flexible resilient blade, co-operating cap sections pivoted for movement to and from superposed position above the guard, means for locking the cap sections together, and a spring tending at all times to separate said cap sections and being operative when the latter are unlocked.

15 16. A safety razor comprising a guard for supporting a blade, co-operating cap sections supported on pivots which are bodily movable in spaced parallel paths below the guard, the cap sections being so shaped as to fall open by gravity when partially separated, and means for locking said cap sections together.

20 17. A safety razor comprising a guard, co-operating cap sections movable toward and from the guard to flex a blade thereon and also laterally to uncover a blade, each being supported entirely by an arm projecting from the section midway between its ends, locking means for the cap sections acting on said arm, and means for moving said cap sections simultaneously first to unlock said cap sections and then to spread them laterally.

25 18. A safety razor having a guard presenting a blade-flexing face, and curved cap sections shaped to overlie said face, each having an outer blade-engaging edge and each provided with a supporting arm united to the section and extending outwardly from its blade-engaging edge and then downwardly to a point of pivotal support below the guard.

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