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SAFETY RAZOR WITH SELF-ADJUSTING BLADE

Filed Jan. 27, 1958

4 Sheets-Sheet 1

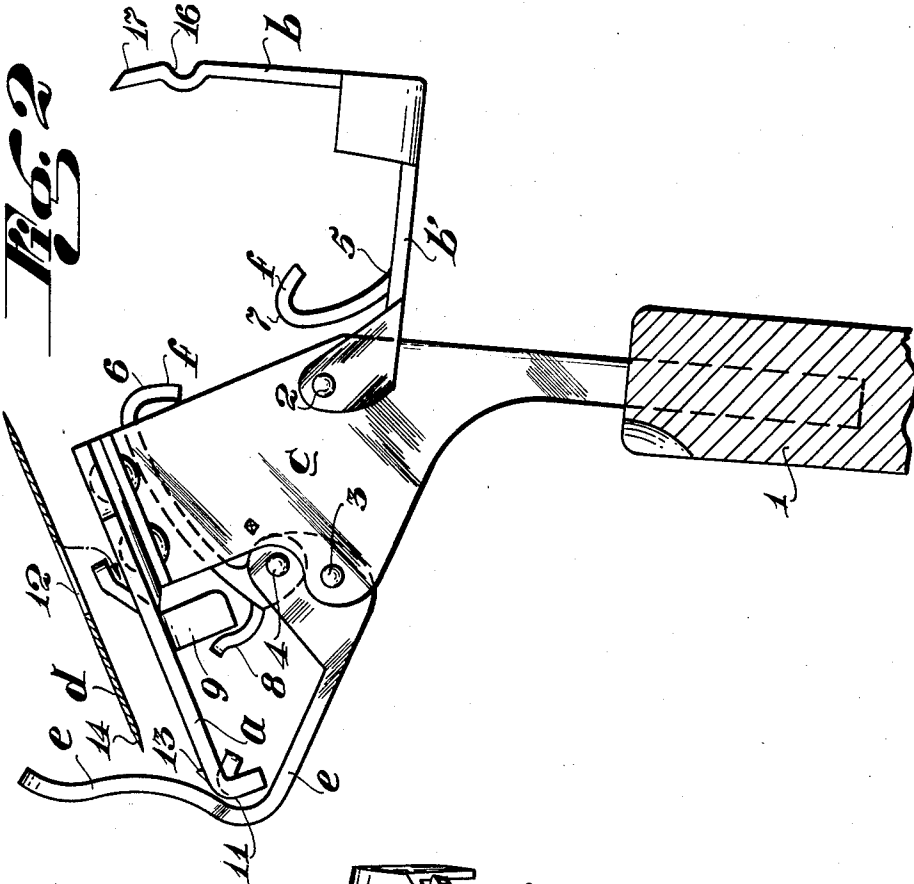


Fig. 2

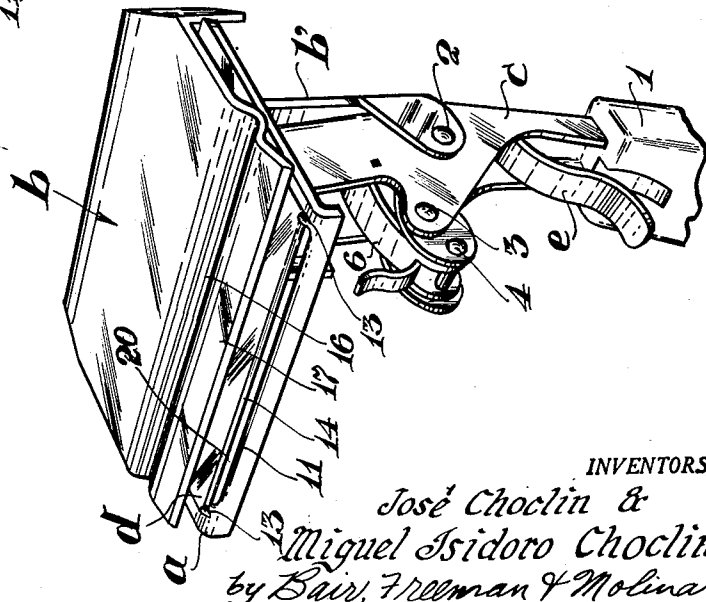


Fig. 1

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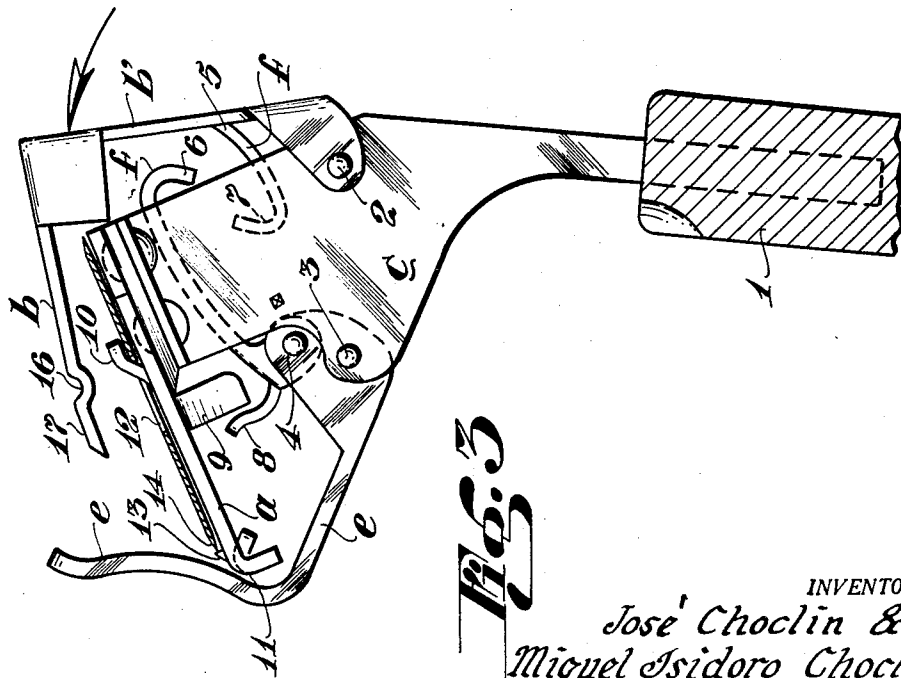
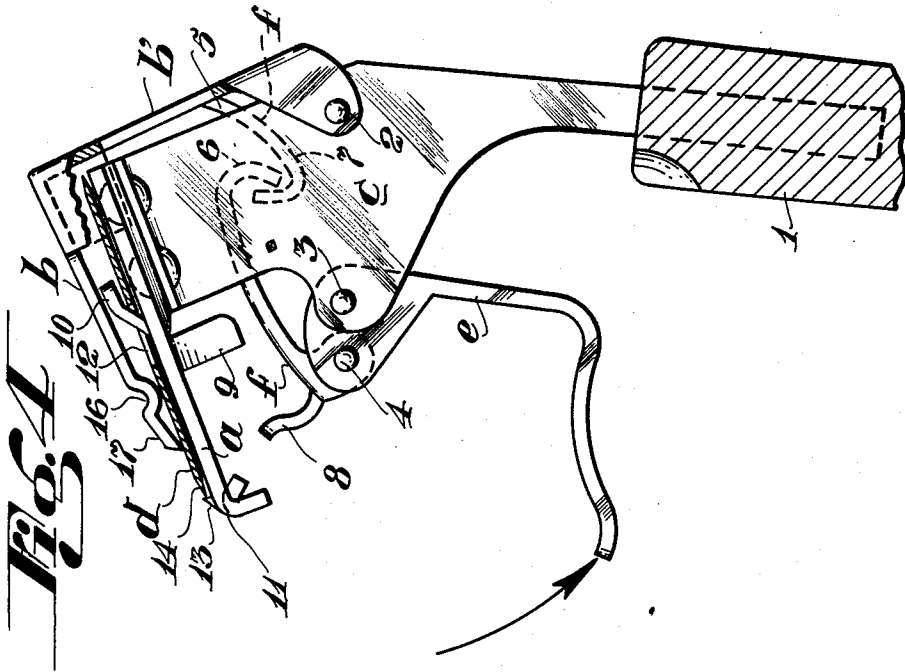


Fig. 5

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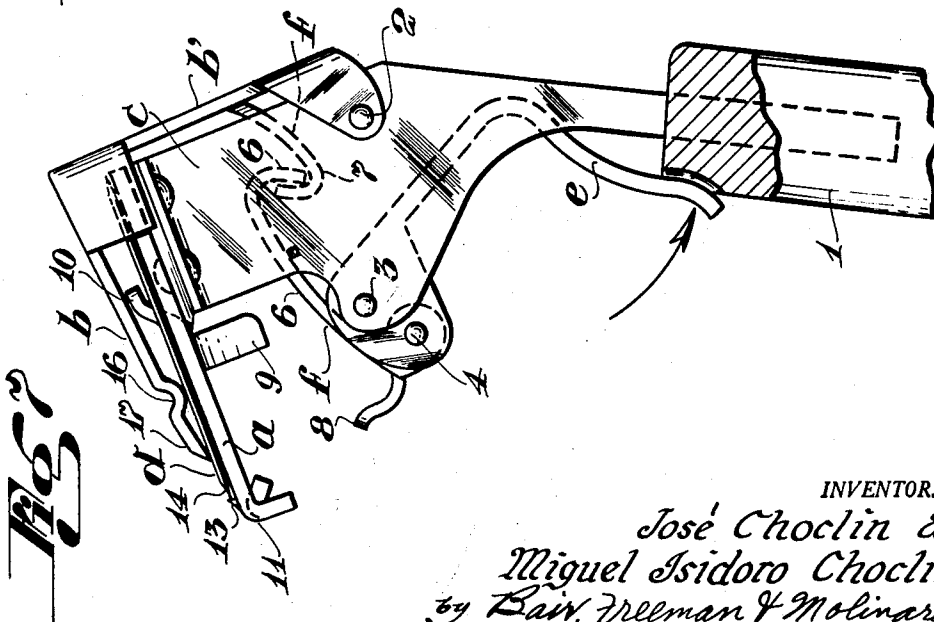
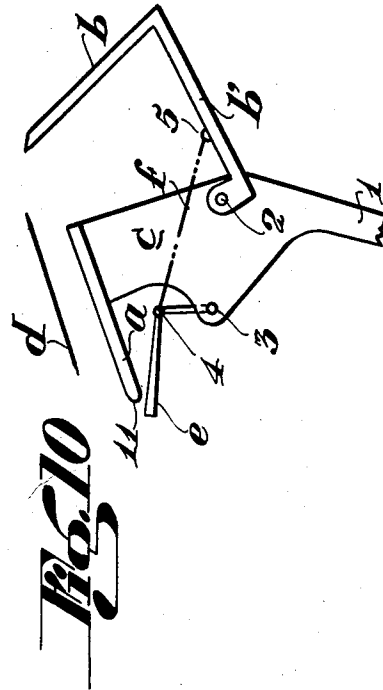
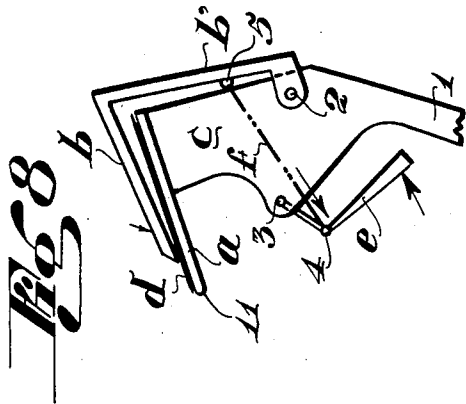
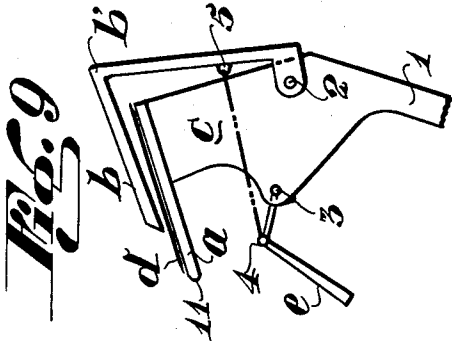
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SAFETY RAZOR WITH SELF-ADJUSTING BLADE

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4 Sheets-Sheet 4



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SAFETY RAZOR WITH SELF-ADJUSTING BLADE

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2 Claims. (Cl. 30—58)

The present invention concerns a safety razor, the object of which is to provide a new means of adjustment which, according to the results obtained in the test models, is an ideal device for shaving with interchangeable blades.

In a preferred form of the invention a prehensile razor cap which secures the blade, is actuated by a lever which acts through a toggle mechanism so that, with a simple closing movement, the blade is precisely located and locked in position on a blade-supporting base plate. The base plate has a set of positioning studs and a set of stops for locating the blade, and as the prehensile cap possesses lateral guide ears, the centering is produced during the closing operation. The cap is resilient and imposed yielding pressure on the blade to secure it to the base plate.

For a greater clearness and comprehension of this device, it has been illustrated with several drawings in which:

Fig. 1 is a perspective view of the razor in closed position with the sharpened blade set ready for use.

Fig. 2 is a lateral view of same in open position, graphically showing the manner in which the blade is positioned prior to closing.

Fig. 3 is a lateral view showing the prehensile cap moving towards the base plate; in this position the hooks approach each other forming a tension coupling.

Fig. 4 is another lateral view showing the transition towards the closing in which the connection of the hooks is established.

Fig. 5 is a top view of the head with the prehensile cap partly broken away, in the position corresponding to that of Fig. 3.

Fig. 6 is a top view of the head in the closed position of Fig. 4. In same may be seen the prehensile cap, in partial section, presenting its angular guide ears so as to center the blade.

Fig. 7 is a lateral view of the device represented in closed position, with the cap bearing on the blade.

Fig. 8 is a schematic view of the device in closed position, seen laterally, showing the principle on which the system is based (corresponding to position of Fig. 7).

Fig. 9 is an intermediate or transition position as might be that of Fig. 4, and finally

Fig. 10 is a schematic view of the principle of the device in open position.

In the several views the same numbers indicate equal or corresponding detailed parts, the different basic elements being indicated by letters.

As may be seen in the drawings, *a* is the base plate which with the razor cap *b* forms the head of the razor which being manually operated, possesses a handle *1*.

The base plate *a* is joined to frame *c*, having a stem on which handle *1* is mounted.

Cap *b* has an arm-like hinge *b'* integrally formed therewith and pivotally secured to frame *c* by pin *2*, so that said cap in dihedral angle with hinge *b'*, presses and

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adjusts the cutting blade *d* against the base plate *a* in closed position, Fig. 1.

Since cap *b* joined to hinge *b'* is displaced when open, said hinge and cap have a relatively ample angular autonomy, so that in the open position plate *a* is exposed to facilitate insertion or removal of the blade. As cap *b* must cover part of the blade, at the same time pressing on same, there is a mechanism provided through lever *e*, hooked link *6* and a cooperating hook *7* as shown in Figs. 8, 9 and 10 which hooks can be disconnected as shown in Figs. 1, 2, 3, 4 and 7. Lever *e* is pivoted at *3* to frame *c* and to link *6* by pin *4* to form a toggle joint for pulling engaged hooks *6*, *7* together when lever *e* is moved downwardly toward handle *1*, as shown in Fig. 4.

Moving lever *e* as shown in Figs. 8, 9 and 10, the hinge *b'* varies in its angle in respect to frame *c*. Whilst in position of Fig. 10 the cap *b* is separated from the base plate *a*. When carried to the intermediate position of Fig. 9 the cap *b* is set on blade *d* which in turn rests on plate *a* and following the displacement of lever *e*, as in Fig. 8, the desired adjustment is obtained given by tension of cap *b* which is resilient through its free projection.

In Figs. 1 to 7 the member *f* is composed of cooperating hooks *6* and *7*. Although coincident, hook *7* can be disconnected from hook *6* so as to obtain a maximum displacement as in Fig. 2. This is produced as consequence of the limitation of hook *6* for this hook possesses a finger *8* which engages stop *9*, so that when lever *e* is carried to the open position (Figs. 2 and 3) the downward movement of hook *6* is limited, remaining out of reach of hook *7*. In this manner hook *7* is free to allow hinge *b'* and cap *b* to open widely, as shown in Fig. 2.

As hinge *b'* is moved to position of Fig. 4 with lever *e* extending downwardly, the hook *6* is liberated when finger *8* is disengaged from stop *9*, and falls into engagement with hook *7* forming together member *f*. Continuing the displacement of lever *e* towards the closing position (Fig. 7) the member *f* constituted by hooks *6* and *7* is put in tension consequent to pivoting of point *4* behind the pin *3*. Since hook *6* is essentially curved it is thereby resilient so that tension adjustment is reflected on cap *b* which, also being resilient, forms a manner of press on blade *d* against plate *a*. It will not be noted that points *4* and *5* form a triangle, or toggle with fulcrum *3*, which with the elasticity of hook *6* offers resistance to closing.

The base plate *a* possesses a pair of hook-like positioning studs *10* extending away from the guard *11* which is formed by the turned-down front edge of plate *a*; said studs *10* are laterally-spaced so as to thread the perforation *12* in blade *d* so that in slanting manner said studs *10* secure the threaded blade to the base plate *a*, adjacent the slot *20* behind the guard.

The base plate *a* has two projections or stops *13* disposed adjacent the extremes of the guard *11* which determine the position of the edge *14* of blade *d* with respect to the slot *20*, that is to say that when blade *d* is set the sharpened edge *14* is spaced from and parallel with the guard *11*.

The cap *b* has a pair of depending guide ears *15* at the rear corners that butt against the sharpened corners of blade *d* and act as centering means for the blade, which means that when hinge *b'* is moved from the position of Fig. 5 to that of Fig. 6, the guide ears *15* set in position the blade *d* in the geometrical center of the base plate *a*.

The cap *b* terminates forwardly in a pressing rib *16* and lip *17* parallel to the edge of blade *d* and as may be seen, when cap *b* is carried to a closed position (Fig. 4) the resilient lip *17* first touches the blade, and as further force is applied the rib *16* bears against the blade to secure it to plate *a*. Thus, in this closed position the cap

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b with its lip 17 and rib 16 produce a very strong adjustment able to firmly maintain the blade d in the operative head so that its sharpened edge 14 and cooperating guard 11 may operate with the greatest precision and efficiency.

In order to prepare the razor for shaving, as in position of Fig. 2, after placing blade d as shown by arrows, under studs 10 (Fig. 3) it is only necessary to move the hinge b' against the base of the head as shown by the arrow and act on lever e (Figs. 4 and 7) precisely to center and lock the blade in place.

After use, from the position in Figs. 1 and 7, the lever e is lifted as shown in Fig. 3 to release the cap b and permit removal of the blade.

In the opening of the razor an interesting mechanical effect may be observed resulting from the operation of lever e for, as shown in Fig. 3, as said lever is forced upwards, the hooks 6 and 7 are disengaged to release the cap b.

Within the terms of the appended claims, various modifications of detail and structure may be made without departing from the scope or principles of the invention.

We claim:

1. A safety razor comprising a frame, a handle for said frame, a blade-supporting base plate integral with said frame having a downwardly-turned forward edge which serves as a guard, a slot adjacent said guard, a pair of razor blade positioning studs mounted on said plate near either end of said slot, a cap pivotally mounted on said frame at the rear edge of said plate by means of a depending hinge member pivotally secured to said frame below said plate for positioning and locking a razor blade

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on said plate, guide ears depending from the rear corners of said cap for engaging the rear corners of a blade disposed on said plate, a lever pivotally mounted on said frame, a pivoted link forming a toggle joint with said lever having a hook on its free end, and a cooperating hook on said hinge member, said lever, link and hooks serving to draw said cap toward said plate to position a blade disposed thereon by means of said ears and said stops, and to lock same on said plate.

2. The razor of claim 1 in which said link carries a finger projecting upwardly therefrom and said plate has a depending stop against which said finger abuts when said lever is moved upwardly, thereby disengaging said cooperating hooks and permitting said cap to pivot away from said plate.

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