J. K. TOLES.

SAFETY RAZOR.

APPLICATION FILED MAR. 8, 1918.

1,337,166.

Patented Apr. 13, 1920.

2 SHEETS—SHEET 1.

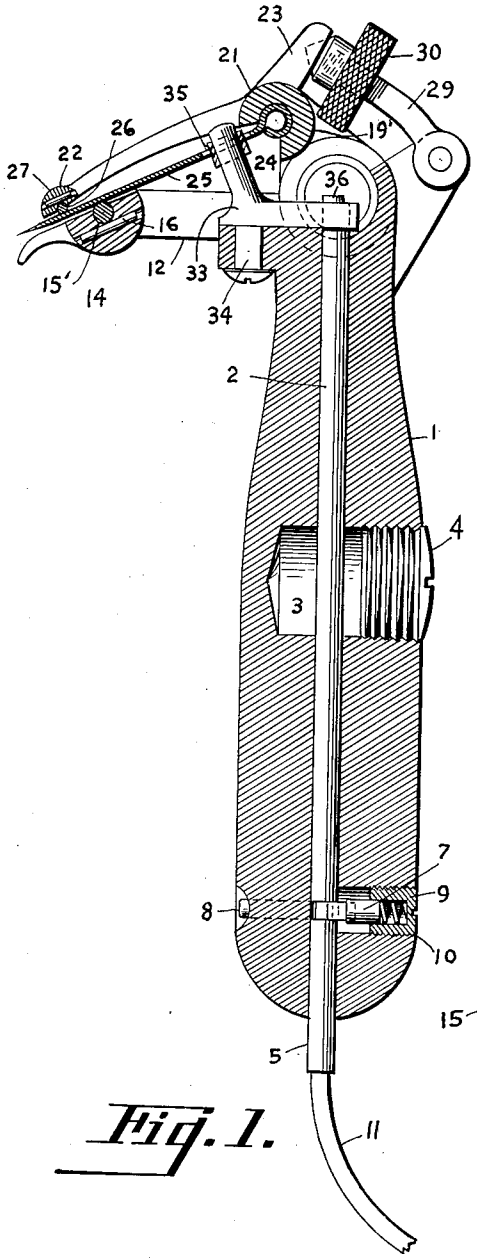

Fig. 1.

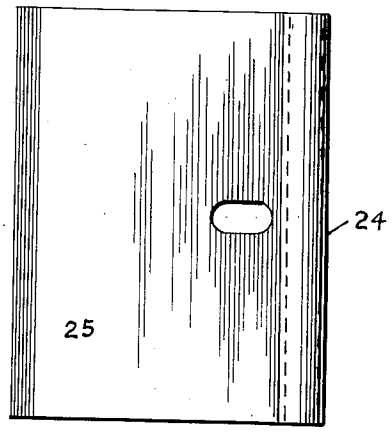

Fig. 2.

Fig. 3.

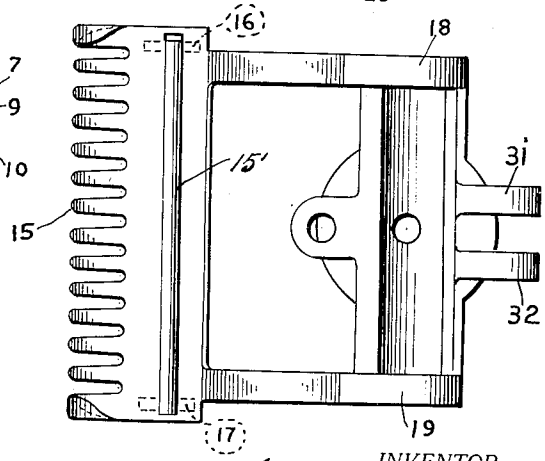

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 6.

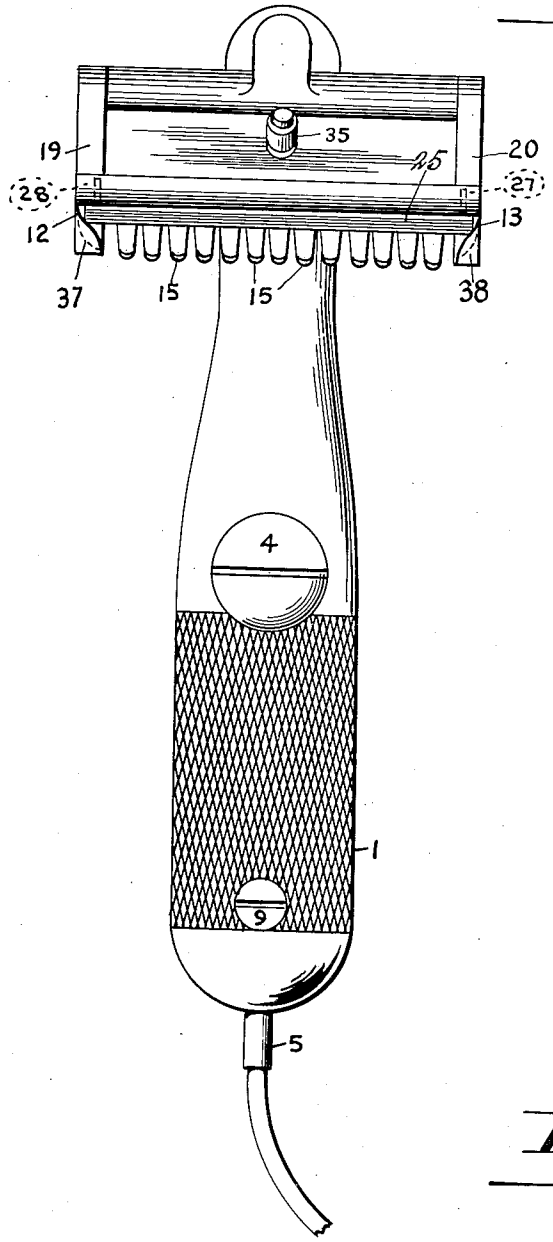

Fig. 5.

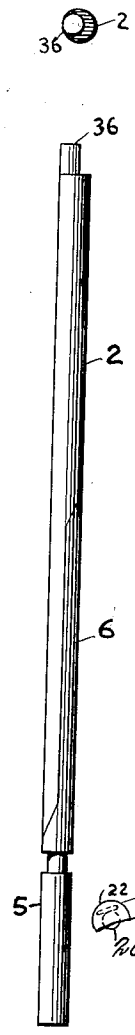

Fig. 7.

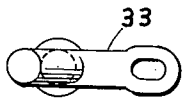

Fig. 8.

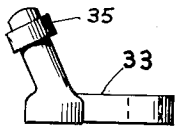

Fig. 9.

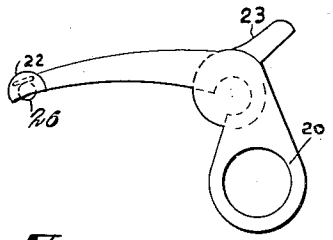

Fig. 10.

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UNITED STATES PATENT OFFICE.

JUSTIN KAY TOLES, OF SAN FRANCISCO, CALIFORNIA.

SAFETY-RAZOR.

1,337,166. Specification of Letters Patent. Patented Apr. 13, 1920.

Application filed March 8, 1918. Serial No. 221,333.

To all whom it may concern:

Be it known that I, JUSTIN KAY TOLES, citizen of the United States, residing at San Francisco, in the county of San Francisco, State of California, have invented a new and useful Safety-Razor, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This inventon relates to a safety razor, and its object is to produce a superior mounting and operating mechanism for such a razor to enable a motor drive to be applied thereto instead of the ordinary fixed blade safety razor.

Other objects of the inventon will appear as the description proceeds.

An embodiment of the invention is shown in the drawings in which the same reference numeral is applied to the same portion throughout, but I am aware that there may be modifications thereof.

Figure 1 is a longitudinal sectional view of the razor holder showing the driving mechanism used therewith,

Fig. 2 is a plan view of the razor separate from the handle,

Fig. 3 is an end view of one of the razor blades,

Fig. 4 is a plan view of the razor holding head with the driving mechanism and razor clamp removed therefrom,

Fig. 5 is a view of the complete razor looking at right angles to Fig. 1,

Fig. 6 is an end view of the eccentric pin on the top of the driving shaft,

Fig. 7 is a side elevation of the driving shaft showing the means for connecting the shaft in the razor handle to the shaft extending from the flexible cable,

Fig. 8 is a plan view of the bell crank extending from the driving shaft to the razor blade,

Fig. 9 is a side elevation of the crank shown in Fig. 8, and

Fig. 10 is an end view of the razor blade clamp.

The numeral 1 indicates a handle through which a shaft 2 extends. The shaft 2 is lubricated from an opening 3 in the handle, which opening is closed with a screw cap 4, and which is connected with the revoluble driving shaft 5 by means of the splined ends 6, and the shaft 5 is held in place by means of the latch 7, which latch is disengaged by the push button 8. The latch 7 is held in place by means of the screw cap 9, which cap carries a spiral spring 10 to hold the latch in engagement with the grooved shaft 5. The shaft 5 is connected in any suitable manner with a flexible shaft 11 which is driven from any suitable source of power.

At the upper end of the handle there are two forwardly projecting arms 12, 13, which are connected by means of a cross piece 14 from which a series of teeth 15 project to give the usual comb effect adjacent the cutting surface common to safety razors.

The cross member 14 has a longitudinally extending rod 15′ placed therein which bears upon two small rollers 16 and 17. The rod 15′ is embedded in the cross member 14 above its diameter so that it cannot be removed therefrom when once placed in the proper position, and it may be moved longitudinally about one sixty-fourth of an inch in the actual device. The handle is provided with two bearings 18, 19 to receive the arms 19′, 20 of the razor clamp, and which arms are connected by two cross pieces 21, 22. The cross piece 21 has a projecting arm 23, and has an opening to receive the curled over edge 24 of the razor blade 25.

The member 22 is provided with a longitudinally extending roller or bearing bar 26 which bears upon two transversely extending rollers 27, 28, and like the roller 15′, the roller or bearing bar 26 may be moved longitudinally about one sixty-forth of an inch.

The rollers 16, 17 and 27, 28 are very small and are just loose enough to permit them to rock as they support the bars 15′ and 26 as they are moved by the knife.

The knife or blade clamp is held in engagement with the blade by means of a screw 29 which has a head 30 threaded thereon which bears upon the arm 23 when the clamp is to be placed into position against the knife blade.

The screw 29 is pivotally supported by means of two lugs 31, 32 which project from the handle 1 at the opposite side from the arms 12 and 13. Immediately under the blade is a bell crank or L-shaped lever 33, which is pivotally mounted to a screw 34, and it has a collar 35 to increase the bearing area upon the razor blade. One arm of the

bell crank engages the eccentric pin 36 on the top of the shaft 2 and receives motion therefrom.

In order to protect the face, there are overlapping end pieces 37, 38 at the ends of the razor blade which cover the corners of the razor and prevent it from touching the face at those points.

In operation the shaft 11 receives power from any suitable source, preferably a small high speed electric motor, and as the shaft 2 is rapidly rotated the razor blade is rapidly longitudinally reciprocated thereby improving the cutting effect. The position of the clamp is such that the blade is drawn down into close contact with the comb points 15 and cannot injure the face, and the bearing of the knife blade upon the bars 15′ and 26 does not prevent its movement since they are supported upon roller bearings for longitudinal movement.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is as follows, express reservation being made of permissible modifications:

1. A safety razor comprising a handle, a razor comb carried thereby, a razor blade, a clamp pivotally mounted on the handle and having a bearing on which the razor blade is movable longitudinally, rollers to support said bearing, means to hold the blade with its cutting edge in close proximity to its comb, and means to reciprocate the blade longitudinally.

2. A safety razor comprising a handle, a razor comb carried thereby, a razor blade, a clamp pivotally mounted on a movable pair of rods one over the blade and the other under it for holding it with its edge in close proximity to said comb rollers on which said rods are movable longitudinally, means to reciprocate the razor blade longitudinally, and a screw at the back of the clamp for adjusting the pressure of the blade.

In testimony whereof I have hereunto set my hand this 2d day of Jan., A. D. 1918.

JUSTIN KAY TOLES.