

G. H. TUTTLE.

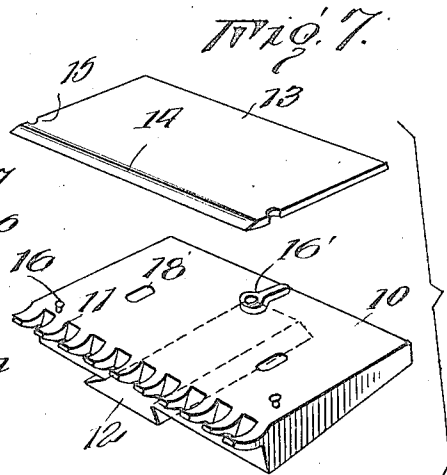
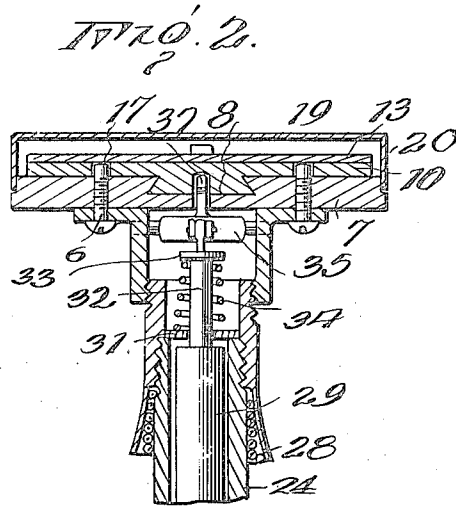
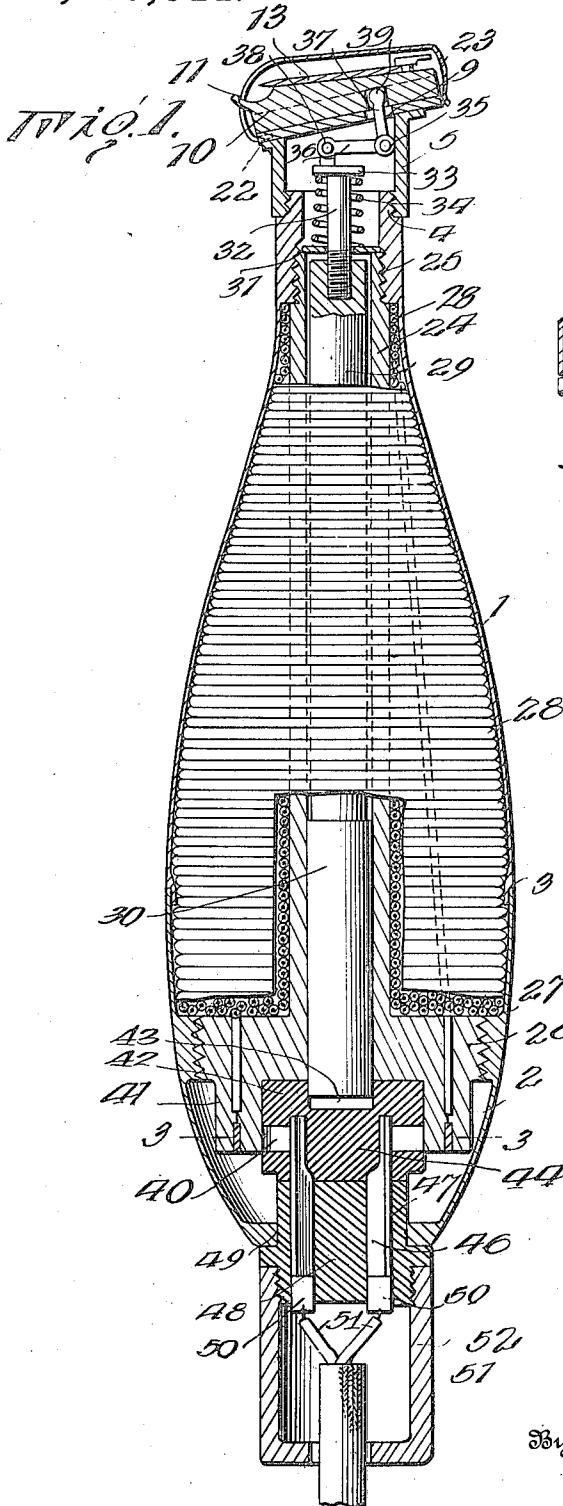
RAZOR.

APPLICATION FILED JAN. 18, 1917.

Patented Sept. 11, 1917.

2 SHEETS—SHEET 1.

1,239,644.



Inventor
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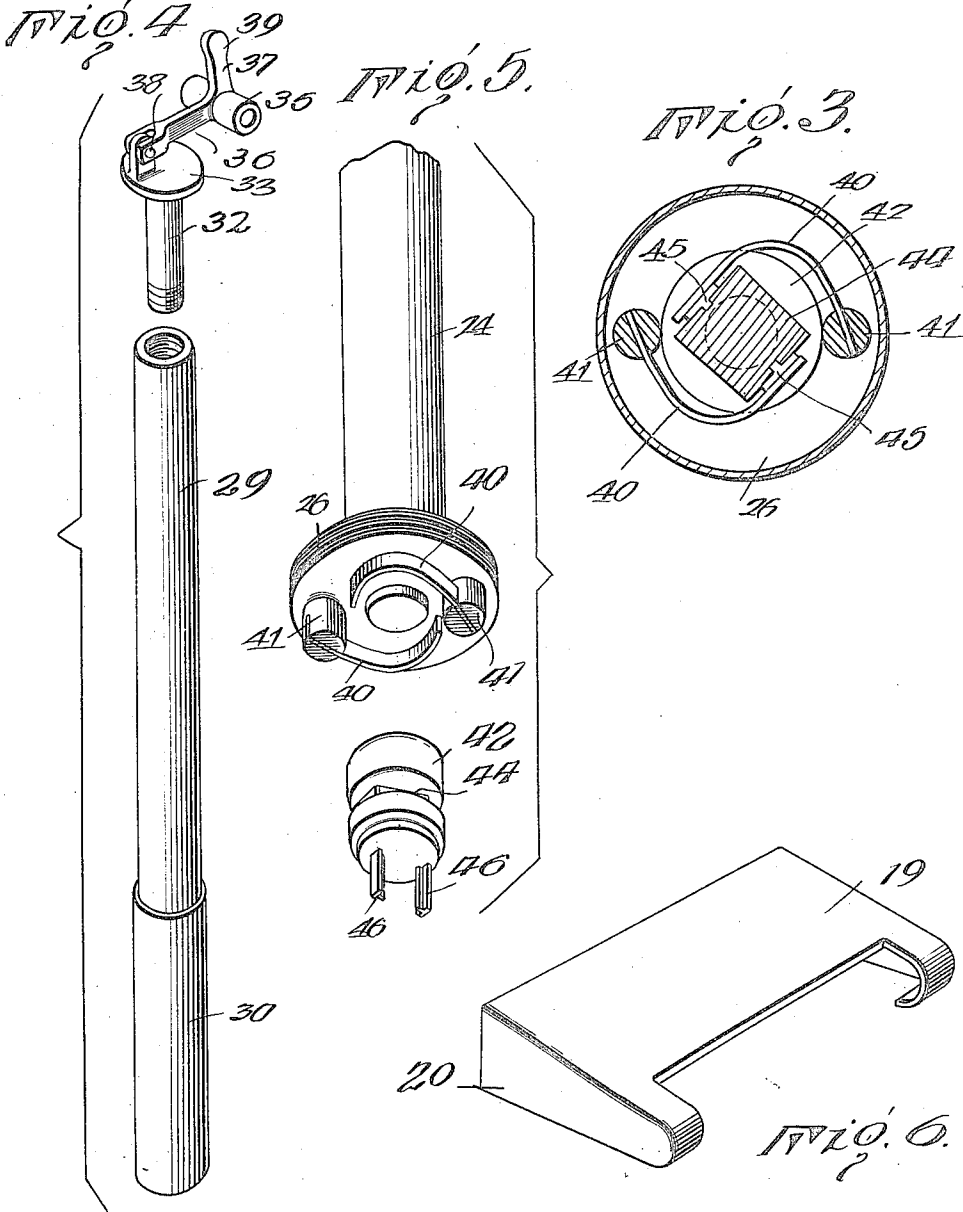
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UNITED STATES PATENT OFFICE.

GEORGE H. TUTTLE, OF LINCOLN, NEBRASKA.

RAZOR.

1,239,644.

Specification of Letters Patent. Patented Sept. 11, 1917.

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To all whom it may concern:

Be it known that I, GEORGE H. TUTTLE, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Razors, of which the following is a specification.

This invention relates to safety razors and has as its object to provide an electrically operated safety razor embodying a movable blade, and means for vibrating the said blade.

The invention aims to provide an electrically operated safety razor which will be compact, convenient to handle and not liable to get out of order or require adjustments.

Another aim of the invention is to provide in a razor of this class a novel form of switch which will permit of the current being quickly and conveniently turned on and off while using the razor.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view through the razor embodying the present invention, the section being taken on a plane from front to rear;

Fig. 2 is a vertical transverse sectional view through the upper end of the razor;

Fig. 3 is a horizontal sectional view on the line 3-3 of Fig. 1;

Fig. 4 is a group perspective view illustrating the core of the solenoid which constitutes the actuating means for the blade of the razor, and the parts associated therewith;

Fig. 5 is a similar view of the parts comprising the switch of the razor;

Fig. 6 is a perspective view of the cap plate for the blade supporting head of the razor;

Fig. 7 is a group perspective view illustrating the blade carrier and the blade to be carried thereby.

Briefly stated, the razor embodying the present invention includes a head which is arranged at one end of a handle and which supports the razor blade holder for reciprocatory motion and the said handle has a solenoid so connected with the blade carrier that when the solenoid is energized and deenergized by an alternating current vibratory motion will be imparted to the said blade carrier. The handle is preferably formed in two sections each of which is substantially semi-elliptic and hollow, the upper or forward section being indicated by the numeral

1 and the other section being indicated by the numeral 2. These sections may be formed from any suitable material and at their major or meeting ends are arranged to snugly fit one another, as, for example, by the provision of a flange 3 at the said end of the member 1 to which flange the corresponding end of the other section is snugly fitted. At its minor end, the section 1 of the handle is exteriorly threaded, as at 4, and removably fitted thereto is the end of a relatively short shank or neck 5 which is secured to the underside of the head of the razor by means of screws 6, the shank 5 having its upper end inclined or disposed at an angle to the axis of the said shank and the said supporting head, indicated by the numeral 7, being also inclined to a degree corresponding to the inclination of the said end of the shank 5. For a purpose to be presently explained, the head 7 is formed in its upper side with a dove-tail recess 8 extending from the front to rear edge of the said head and also for a purpose to be presently explained the said head is formed with a slot 9 communicating with the said recess. The blade holder or carrier comprises a plate 10 preferably substantially rectangular but increased in thickness gradually from its rear to its forward edge, the plate being formed at its said forward edge with a number of guard fingers 11 similar to the guard fingers of the ordinary safety razor blade holder. Upon its underside this plate is provided with an integral rib 12 which extends from front to rear of the said plate and which is dove-tailed so as to slidably fit within the groove 8. The razor blade is indicated in general by the numeral 13 and the same has a cutting edge 14, the blade being formed in its opposite end edges near its forward corners with notches 15 receiving studs 16 upon the upper face of the holder or carrier 10, the rear edge of the blade being engaged by a cam latch 16' mounted upon the said upper side of the holder or carrier 10, the blade being in this manner clamped to the said holder or carrier. By reference to Fig. 7 of the drawings it will be observed that one of the studs is located nearer the forward edge of the holder 10 than the other and that the notches in the blade are correspondingly located so that the cutting edge of the blade will not extend at a true right angle to the front to rear median line of the holder but will be slightly inclined so that

the cutting edge of the blade will act more effectually when the razor is in use. In its reciprocatory motion the carrier is guided by the upper ends of the screws 6 which are left unthreaded, as indicated at 17, and which project into short slots 18 formed in the said carrier 10.

It will be observed by reference to the drawings that the cutting edge of the blade 14 is presented toward the guard fingers 11 but is suitably spaced from the ends of the said fingers and in order to substantially cover the blade and prevent the same coming into contact with the skin in such manner as to cut the same, the head is provided with a cap plate or cover comprising a top 19 and depending sides 20, the said top at its forward corners being provided with downwardly curved extensions which engage at their ends in sockets 22 formed in the forward edge of the head 7. At its rear the cap plate 19 is provided with a resilient clip finger 23 which engages the rear edge of the said head 7 and by reference to Figs. 1 and 2 of the drawings it will be observed that the top 19 and sides 20 so inclose and protect the blade carrier and blade that the blade cannot come in such contact with the skin as to cut the same.

The solenoid heretofore referred to includes a tubular spool 24 of any suitable insulating material which is exteriorly threaded at one end and fitted, as at 25, into the minor end of the section 1 of the handle, the spool extending longitudinally medially within the handle and being formed or provided at its other end with a head 26 which is threaded, as at 27, into the intermediate portion of the section 2 of the handle. The winding for the solenoid is indicated at 28 and is, of course, carried by the said spool and is housed by the handle. It will be understood that by threading the upper end of the spool into the section 1 and the head 26 of the spool into the section 2, these two sections are united and held against accidental separation. The soft iron core of the solenoid is indicated by the numeral 29 and inasmuch as the major length of this core is housed within the upper portion of the spool 24, when the winding of the solenoid is energized the core will be drawn downwardly, its movement in such direction being limited by a fixed core section, indicated by the numeral 30, and located within the lower end of the said spool. A disk 31 is disposed at the upper end of the spool 24 and threaded into the upper end of the core 29 is a stem 32 having a head 33 formed at its upper end. A spring 34 is fitted to this stem and bears at its lower end against the disk 31 and at its upper end against the head 33 and it will be understood that after the solenoid has been energized and the core 29 thereof has been drawn downwardly and the

circuit is broken, the spring 24, having been compressed in the downward movement of the core, will be free to expand and in so doing will draw the core upwardly. Mounted for rocking movement, as at 35, within the shank 5 is an angle lever including an arm 36 and an arm 37 and the said arm 36 is pivotally connected, as at 38, with the head 33 of the stem 32 and the arm 37 extends through the slot 9 and engages at its end in a socket 39 formed in the underside of the rib 12 of the blade carrier. It will now be understood that as the solenoid is rapidly energized and deenergized, reciprocatory motion will be imparted to the core 29 and as a result rocking motion will be imparted to the angle lever so that in such movement of the core the blade carrier will be reciprocated.

The terminals of the wire comprising the winding 28 are led through the head 26 of the spool of the solenoid and are connected electrically with spring contact fingers 40 which are supported by and extend from studs 41 which are integral with the underside of the head 26. These contact fingers 40 have a tendency to spring inwardly toward each other at their free or engaging ends and are designed to coact with contacts carried by the rotary switch member which comprises a cylindrical body 42 having at its upper face a central recess 43 rotatably receiving the projecting end of the fixed core section 30, the said body rotating between the studs 41 in the manner clearly shown in Figs. 1 and 3 of the drawings. Intermediate its upper and lower ends the rotary member 42 is reduced in diameter and its reduced portion is preferably rectangular in cross section, as indicated at 44. Opposite faces of the reduced portion 44 carry contacts 45, the other faces being devoid, however, of contacts and thereby constituting insulating means between the spring contact fingers when the engaging ends of these fingers are in contact with the said latter faces. The contacts 45 project beyond the lower end of the rotary member 42, as indicated at 46, and are fitted within sockets 47 formed in a cylindrical member 48 which is rotatably fitted through an opening 49 formed in the lower or minor end of the section 2 of the handle. Contacts 50 are fixed within the lower ends of the socket 47 and when the member 48 is fitted through the opening 49 the projecting lower ends of the contacts 45 will electrically engage the contacts 50, as shown in Fig. 1. The conductor wires for supplying current to the solenoid, which wires are indicated by the numeral 51, are permanently connected with the fixed contacts 50 and surrounding these wires and inclosing the contacts 50 is a ferrule 52, the same being threaded to the lower end of the member 48. It will now be understood that

when the ferrule 52 is grasped and rotated, rotary motion will also be imparted to the member 42 and as the member 42 is rotated the contacts 45 will be brought into electrical contact with the spring contact fingers 40, thereby closing the circuit. Of course, when it is desired to break the circuit the ferrule 52 may be again rotated so as to bring the other opposite faces of the portion 44 of the member 42 into position for engagement by the upper ends of the contact fingers.

Having thus described the invention, what is claimed as new is:

In a razor, the combination of a support, 15 a blade carrier mounted on the support, a guard along one edge of said carrier, a blade secured on the carrier, a reciprocatory motor within the support, a head connected with the motor, a stop within the support, a 20 spring disposed between and bearing against said stop and the head, and an angle lever fulcrumed within the support and having one arm pivoted to said head and its other arm freely engaging the carrier. 25

In testimony whereof I affix my signature.

GEORGE H. TUTTLE. [L. s.]