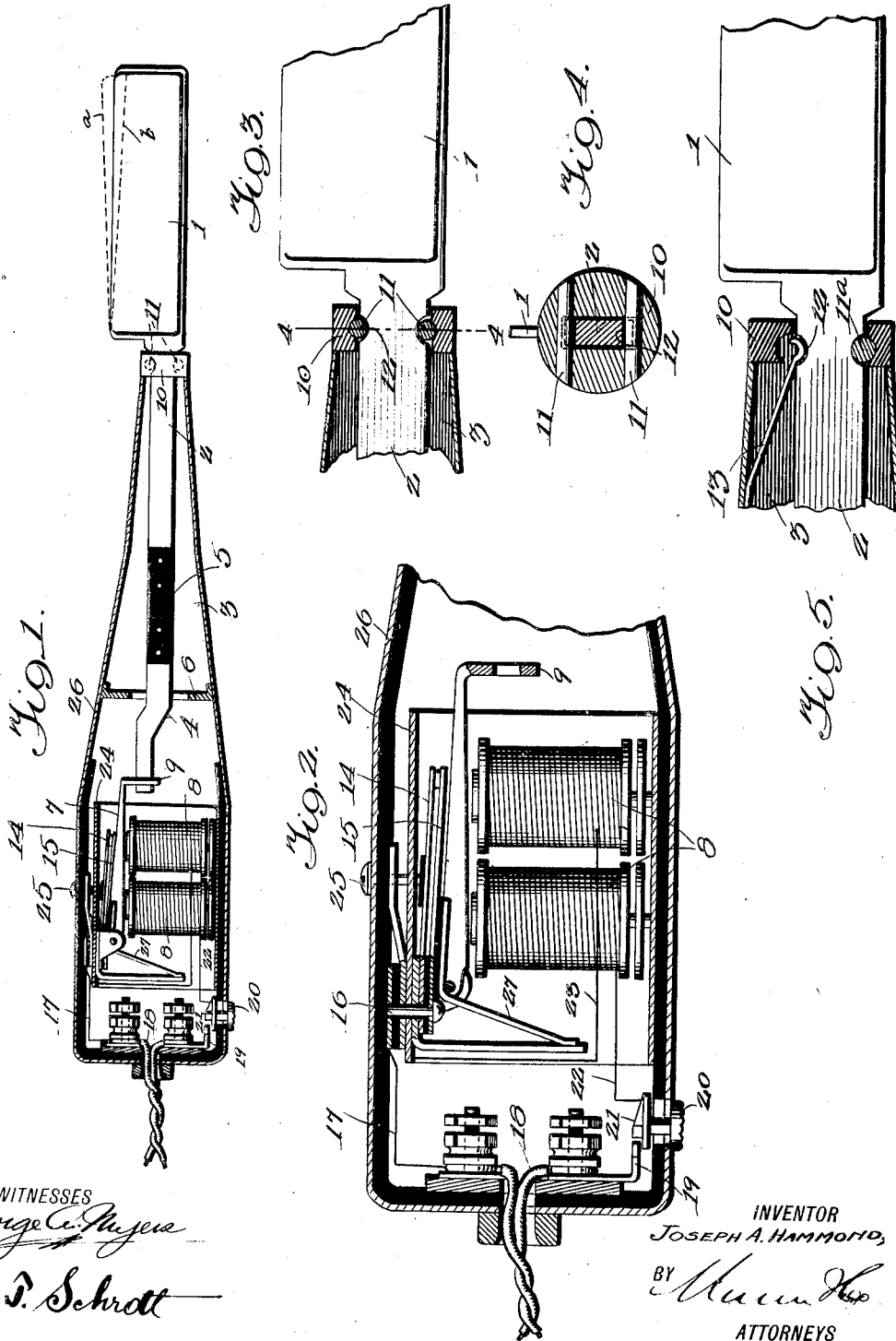


J. A. HAMMOND.
ELECTRIC RAZOR.
APPLICATION FILED MAY 6, 1920.

1,390,702.

Patented Sept. 13, 1921.



WITNESSES
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ELECTRIC RAZOR.

1,390,702.

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To all whom it may concern:

Be it known that I, JOSEPH A. HAMMOND, a citizen of the United States, and a resident of Deming, in the county of Luna and State of New Mexico, have invented certain new and useful Improvements in Electric Razors, of which the following is a specification.

My invention relates to improvements in razors, it being more particularly an improvement in electric razors, and it consists in the constructions, combinations and arrangements herein described and claimed.

One of the foremost objects of the invention is to provide a concave razor of the ordinary straight blade type, with electrically operated means for giving the blade a swinging cutting stroke in contradistinction to the parallel or "chopping" stroke which is characteristic of all electric razors now in common use.

A further object of the invention is to provide a razor of the type described, wherein the operating mechanism is so housed or incased in the handle, that an implement of graceful appearance is presented, the proportions being such that it can be agreeably handled.

A further object of the invention is to provide an improved pivotal mounting for the shank of the razor blade, which mounting consists either of a double-pin arrangement or an arrangement with one pin and a pressure spring.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing, in which:—

Figure 1 is a vertical longitudinal section of an electric razor constructed in accordance with my invention.

Fig. 2 is an enlarged section of the base or handle, illustrating more clearly the electric operating mechanism,

Fig. 3 is a detailed enlarged section illustrating one form of razor shank mounting,

Fig. 4 is a detail horizontal section taken substantially on the line 4—4 of Fig. 3, and

Fig. 5 is a view similar to Fig. 3, illustrating a slight modification in the razor shank mounting.

In carrying out my invention I provide a razor blade 1 of the ordinary concave

straight-blade type, on the end of the shank 2, which extends into the handle 3 and is connected to the extension shank 4 by means of the insulating connecting piece 5. The purpose of the insulating connecting piece is to prevent the passage of electric current over the shank of the razor to accidentally reach the face of the user in case a short circuit should occur.

A guide 6, suitably fixed inside of the handle 3, serves to stabilize the oscillatory motions of the shank. These motions are produced by the rapid vibration of the armature 7 of the electro-magnet 8. The upper end of the armature 7 has a suitable keeper 9 in which the lower end of the extension shank 4 fits, it being obvious that as the armature 7 vibrates, the shank 2 is caused to rock on its fulcrum and thus give the blade 1 the swinging cutting motion indicated by the double dotted lines *a—b*.

Attention is directed to the construction of this pivotal mounting. The upper and reduced end of the handle 3 terminates in a collar 10, through which two pins 11 are driven to partially occupy the concavities 12 in the opposite edges of the shank 2. The connection between the concavities and pins is sufficiently loose to enable the resultant swinging motion of the blade when the shank is reciprocated as just stated.

A modification of the pivotal mounting is illustrated in Fig. 5. Here only one of the pins 11^a is employed, the opposite concavity 12^a serving as the seat for the upper end of the leaf spring 13 which presses the shank 2 over against the pin 11^a and thus maintains a tight joint at all times. The arrangement in Fig. 5 is valuable in that all loose play and wear is respectively prevented and taken up, so that no rattling of the blades can occur.

The make-and-break mechanism of the magnet 8 and armature 7 is of the conventional type and briefly described, consists of the spring contacts 14, 15, the latter of which is in electrical connection with the stud or rivet 16 which leads one side of the external circuit into the operating mechanism, through the wire 17. The stud 16 is insulated from the other part of the mechanism as clearly shown in Fig. 2. The other side

of the circuit enters at the wire 18 and terminates at the switch contact 19.

Carried by the slide button 20 is the companion switch contact 21, the wire 22 of which leads to one of the coils of the electro-magnet. The other coil is connected by means of the wire 23 to the metallic cylinder 24 by which the coils, etc., are carried. Adjustments of the contacts 14 and 15 are made by means of the screw 24.

The cylinder 24, and in fact, the whole of the electrical mechanism, is housed in the insulating casing 26 which fits in the bottom of the handle 3 so as to protect the hand of the operator in case of a short circuit on the inside.

The operation may be briefly reviewed to advantage. In order to start the cutting operation of the blade 1, the slide button 20 is shoved down so that the companion contact 21 engages the fixed contact 19.

Current then flows from the source of current supply, over wire 18, through contacts 19 and 21, over wire 22 to the coils of the electro-magnet 8, returning via wire 23, the ground connection of the cylinder 24 with which the contact 14 has engagement, through contact 15, stud 16 and wire 17 to the negative pole of the source of supply.

As is commonly known, in a make-and-break device of this character, the completion of a circuit along the path just indicated, energizes the electro-magnet 8 so that the armature 7 is attracted, thereby breaking the connection between the contacts 14 and 15 and in turn breaking the circuit. The leaf spring 27 causes the return of the armature, whereupon the above circuit is immediately reestablished. The result of this operation is the rapid vibration of the armature and the oscillation of the shank 2.

One might suppose that the razor blade 1 would require a guard in order to prevent the user from cutting his face. But by actual experimentation it has been demonstrated that the razor, even in inexperienced hands, will not cut the flesh. The manner in which the razor is used, is to simply move it across the face with a moderately rapid stroke, the swinging of the blade 1 accomplishing the shaving operation in a rapid and clean manner.

There is considerable virtue in the particular arrangement of the parts shown in Fig. 1. The gradual tapering shape of the handle 3 provides the means whereby the implement can be held and manipulated for a great length of time without undue fatigue, at the same time providing ample facilities for the housing of all of the requisite mechanism.

While the construction and arrangement of the improved electric razor as herein described and claimed, is that of a generally

preferred form, obviously modifications and changes can be made without departing from the spirit of the invention or the scope of the claims.

I claim:—

1. A mechanically operated razor, including a pivoted blade, and means for imparting a swinging cutting stroke thereto, in contradistinction from a parallel cutting stroke.

2. A razor, comprising a blade of the straight concave type, with a shank and means providing a pivotal mounting; and means for oscillating the shank on its mounting to impart a swinging cutting stroke to the blade.

3. A razor, comprising a blade, with a shank in longitudinal continuation thereof, and a mounting on which the shank is pivoted; and means operative on the end of the shank to oscillate it on its pivot and impart a swinging cutting stroke to the blade.

4. A razor, comprising a straight concave blade, with a shank to which it is attached and which extends longitudinally in the line of the cutting edge; means providing a pivotal mounting for the shank close to the blade, and means operative at the end of the shank for oscillating it on its pivot to impart a swinging cutting stroke to the blade.

5. A razor, comprising a straight concave blade, with a shank to which it is attached and which extends longitudinally in the line of the cutting edge; means providing a pivotal mounting for the shank close to the blade, and means operative at the end of the shank for oscillating it on its pivot, including an electro-magnetically vibratory member with a keeper into which the end of the shank loosely fits.

6. A razor, comprising an electrically vibrated member with a keeper, and associated electrical connections; a razor blade with a shank provided with a pivotal mounting, and a separate extension shank fitting into the keeper; and an insulating bridge piece joining the shank and its extension, and preventing electric current reaching the blade in the event of a short circuit in the electric operating mechanism.

7. A razor, comprising a hollow handle, tapering from an enlarged base to a terminal collar embodying mounting means; a shank located in the tapered portion and terminating in the enlarged handle portion, pivoted on said mounting and having a blade extending beyond said collar; and electrical vibrating means including a keeper loosely receiving the end of the shank to impart an oscillatory motion thereto on its pivot and a swinging cutting stroke to the blade.

8. A razor, comprising a hollow handle, tapering from an enlarged base to a termi-

nal collar, with a pivotal mounting; a two-part shank extending longitudinally of the handle from its pivotal mounting to the enlarged base, and including a blade operative
 5 above said collar; a vibratory member in the base, with a keeper receiving the adjacent end of the shank, with electrical vibrating means including all connections; an insulating connection in the enlarged base carrying said electrical mechanism and preventing
 10 current reaching the handle in the event of a short circuit, and a bridge piece connecting the two-part shank, preventing current reaching the blade in the event of a
 15 short circuit.

9. A razor, comprising a hollow handle, with an insulating casing, and a metallic cylinder providing the mounting for electro-magnetic vibrating means and a part
 20 of a current path leading from current connections to said vibrating means; a shank in the handle, with a connection to the vibrating means, and a pivotal mounting on a part of the handle, also including a
 25 straight blade above said mounting, operated with a swinging cutting stroke when the shank is oscillated by said vibrating means.

10. In an electric razor, a blade with an
 30 integral shank, and separate extension shanks; and an insulating bridge piece connecting the shanks to make a one-piece

structure but prevent the passage of current from the extension to the main shank.

11. The combination in an electric razor, 35 of a hollow handle with a terminal collar with a cross pin, and a blade with a shank extending through the collar into the handle, having a concavity resting on the pin.

12. The combination in an electric razor, 40 of a hollow handle with a terminal collar with a cross pin, a blade with a shank extending through the collar into the handle, having a concavity resting on the pin, and companion means for holding the shank in
 45 engagement with the pin.

13. The combination in an electric razor, of a hollow handle with a terminal collar with a cross pin, a blade with a shank extending through the collar into the handle, 50 having a concavity resting on the pin, and a leaf spring engaging an opposite concavity to hold the shank in engagement with the pin to prevent loose play.

14. A mechanical razor, comprising a 55 blade, a supporting element adjacent one end of the blade, and means rapidly swinging the blade on its support, to produce a substantially angular motion of the cutting edge.

15. A mechanical razor, comprising a 60 blade pivoted adjacent one end, and means for swinging the blade on its pivot.

JOSEPH A. HAMMOND.