Aug. 12, 1924. 1,504,311

C. F. BAILEY

ELECTRIC SAFETY RAZOR

Filed May 21, 1923

Fig. 1.

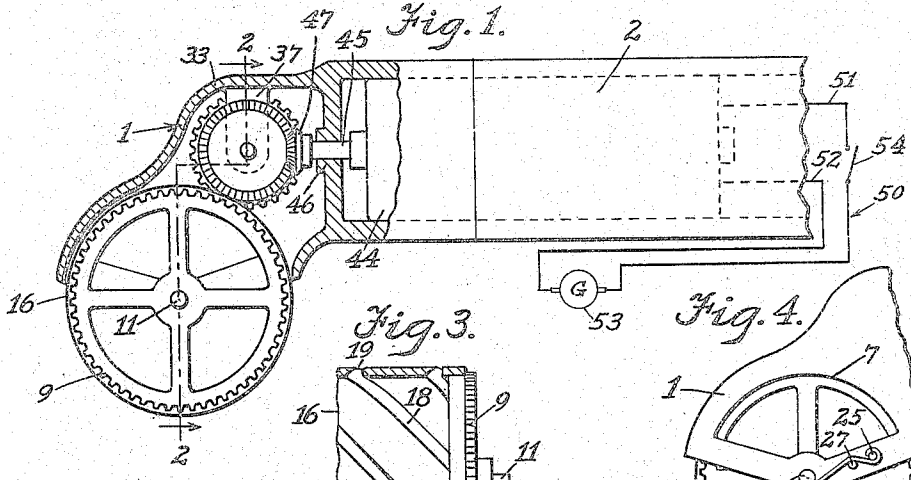


Fig. 3.

Fig. 4.

Fig. 6.

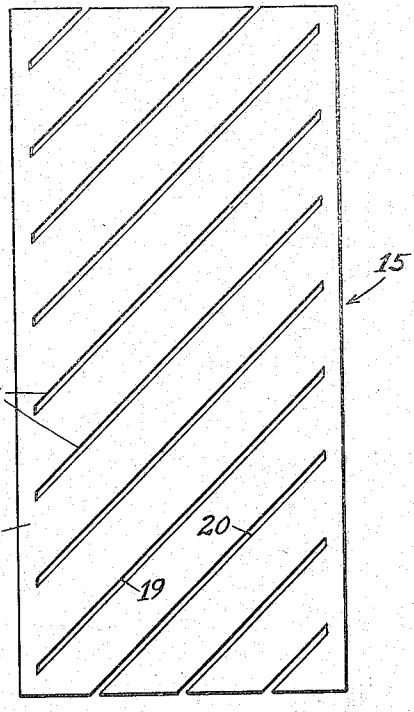


Fig. 2.

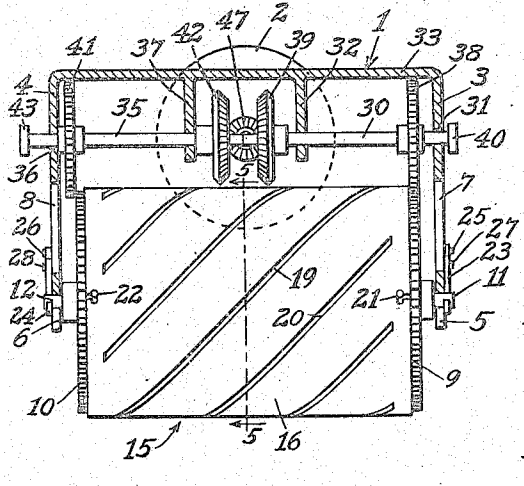
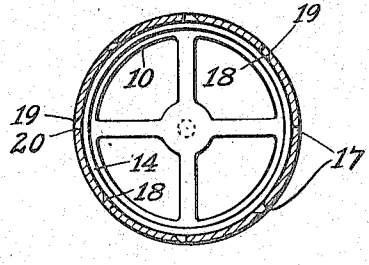


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES F. BAILEY, OF LOS ANGELES, CALIFORNIA.

ELECTRIC SAFETY RAZOR.

Application filed May 21, 1923. Serial No. 640,368.

To all whom it may concern:

Be it known that I, CHARLES F. BAILEY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Electric Safety Razors, of which the following is a specification.

My invention relates to razors and particularly to electric safety razors and the main object of my invention is to provide a razor of the character stated including a rotary blade of novel construction and means whereby said blade may be electrically rotated in one direction for shaving and in a reverse direction for honing. My razor is simple in construction, easy and safe to handle and efficient in operation.

Other objects and advantages will appear hereinafter and while I disclose herein a preferred form of construction, I desire to be understood that I do not limit my invention to such form but that various changes and adaptations may be made therein without departing from the spirit of my invention.

My invention is illustrated in the annexed drawing which forms a part of this specification in which Fig. 1 is a central vertical longitudinal section of my razor.

Fig. 2 is a transverse vertical section of my razor taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary longitudinal section of the rotary blade showing how one of the driving gears are held in said end of said blade.

Fig. 4 is a fragmentary side view of my razor showing how the rotary blade is detachably journaled.

Fig. 5 is a transverse section of the blade taken on line 5—5 of Fig. 2.

Fig. 6 is a face view of the blade developed out straight.

Corresponding numerals designate the same parts in all the view.

Referring in detail to the drawing 1 indicates a housing and 2 a handle on the forward end of which said housing is secured. In the lower side edges of the side walls 3 and 4 of said housing are vertical bearing slots 5 and 6 and openings 7 and 8 are formed in said side walls above said slots. Spoked gears 9 and 10 are journaled respectively in said bearing slots by means of journals 11 and 12 projecting respectively from the centers of said gears through said slots respectively. Said gears have formed on their inner sides annular flanges 13 and 14 respectively.

The blade 15 of my razor comprises a cylindrical shell 16 provided with spiral slots 17 spaced equidistant apart throughout its circumference, one side of said slots being under-cut or beveled inwardly as at 18 to form outer shaving edges 19 while the other side 20 of said slots is rounded off to prevent cutting thereof when the blade is rotated backwardly.

The ends of the shell 16 fit on the gear flanges 13 and 14 and are detachably secured to said flanges by bayonet points 21 and 22 respectively.

Springs 23 and 24 are secured at one end on the outside of the housing side walls 3 and 4 by means of pins 25 and 26 respectively on said walls, and said springs are sprung over other pins 27 and 28 on said walls and under the journals 11 and 12 respectively, whereby said journals are held in the upper end of slots 5 and 6 respectively and the gears 9 and 10 and blade 15 detachably journaled in the lower part of said housing, so that the lower half of said blade extends below said housing. A transverse shaft 30 is slidably journaled at its outer end in the upper part of housing 1 as at 31, and near its inner end in a bearing 32 depending from the upper wall 33 of the housing at the right of the transverse center of the housing; a transverse shaft 35 is slidably journaled at its outer end, in axial alignment with shaft 30, in the housing side wall 4 as at 36, and near its inner end in a bearing 37 depending from the upper housing wall 33 at the left of the transverse center of said housing, the inner ends of said shaft and shaft 30 abutting.

On the shaft 30 is secured a gear 38 adapted to mesh with gear 9 when said shaft is moved to the innermost position. On said shaft near its inner end is secured a bevel gear 39. A button 40 is secured on

the outer end of shaft 30 for moving said shaft inwardly or outwardly.

On the shaft 35 is secured a gear 41 adapted to mesh with the gear 10 when said shaft is moved inwardly to its innermost position. On said shaft near its inner end is secured a bevel gear 42. On the outer end of said shaft is secured a button 43 for moving said shaft inwardly or outwardly.

Within the handle 2 is mounted an electric motor 44, the shaft 45 of which is journaled in a bearing 46 in the inner end of said handle and projects into the upper part of housing 1 in axial alignment with the shafts 30 and 35 and between the bevel gears 39 and 42. A bevel pinion 47 is secured on the inner end of shaft 45 and is adapted to mesh with the bevel gear 39 or 42 when the shaft 30 or 35 is moved inwardly to its innermost position.

The motor 44 is included within an electric circuit 50, which includes leads 51 and 52 extending through the handle 2 and connected respectively at their ends to a generator 53 and to the motor 44. A switch 54 controls circuit 50.

Upon pushing the shaft 30 inwardly the gear 38 is brought into mesh with gear 9 and the bevel gear 39 is brought into mesh with bevel pinion 47, while the shaft 35, engaged at its inner end by the inner end of shaft 30, is moved outwardly and the bevel gear 42 and gear 41 respectively moved out of mesh with bevel pinion 47 and gear 10.

The operation of the motor 44 now rotates the blade 15 forwardly through the medium of bevel pinion 47, bevel gear 39, shaft 30, and gears 38 and 9, so that the blade edges 19 will shave one's face when the blade 15 is applied thereto. Upon pushing the shaft 35 inwardly the gear 41 is brought into mesh with gear 10 and the bevel gear 42 is brought into mesh with bevel pinion 47, while the shaft 30, engaged at its inner end by the inner end of shaft 35, is moved outwardly and the bevel gear 39 and gear 38 moved out of mesh with bevel pinion 47 and gear 9. This reverses the operation of the blade 15 which is now rotated backwardly by the motor 44 through the medium of bevel pinion 47, bevel gear 42, shaft 35 and gears 41 and 10, so that the blade 15 upon being applied to a stone will have its edges 19 sharpened.

The blade 15 may be flushed out with water which may be introduced through the blade through the apertures 7 and 8 in housing 1 and between the spokes in gears 9 and 10.

The gears 9 and 10 are slightly smaller in diameter than the blade 15 so that said gears will not contact with the face while shaving or with the stone while being sharpened.

Having thus described my invention, I claim:

1. A razor including a housing, a blade comprising a cylindrical shell mounted in said housing and projecting therefrom, said blade being provided with spiral slots, one edge of which being sharp, and means for rotating said blade so that said sharp edges will shave.

2. A razor including a housing, a handle secured to said housing, a blade mounted in said housing and extending below the same, said blade comprising a cylindrical shell provided with slots one edge of which being sharp, a motor mounted in said handle and means whereby said motor is enabled to rotate said blade so that said edges will shave.

3. A razor including a housing, a handle secured to said housing, a blade mounted in said housing and extending below the same, said blade comprising a cylindrical shell provided with slots, one edge of which being sharp, a motor mounted in said handle, and means whereby said motor is enabled to rotate said blade in one direction so that said edges will shave or in a reverse direction so that said blade edges may be sharpened on a stone.

4. A razor including a housing provided with vertical slots in the lower edges of its side walls, a pair of gears, journals on said gears adapted to extend through said slots, springs in the housing engaging the inner sides of said journals for holding the same in said slots, a rotary blade mounted on said gears, gearing in mesh with said gears, and means for driving said gearing to rotate said blade.

5. A razor including a housing, two gears detachably journaled in the lower part of the side walls respectively of said housing, annular flanges on the inner sides of said gears, a blade comprising a cylindrical shell provided with slots, one edge of which being sharp, the ends of said shell detachably fitting on said flanges, gearing in mesh with said gears, and means for driving said gearing to rotate said blade so that said slot edges will shave.

6. A razor including a housing, two gears detachably journaled in the lower part of the side walls respectively of said housing, annular flanges on the inner sides of said gears, a blade comprising a cylindrical shell provided with slots, one edge of which being sharp, the ends of said shell detachably fitting on said flanges, bayonet points for holding the ends of said shell on said flanges and to prevent turning of said shell relative to said gears, gearing in mesh with said gears, and means for driving said gearing to rotate said blade so that said slot edges will shave.

7. A razor including a housing, two gears journaled in the lower part of said housing, a rotary blade mounted on said gears and formed with blade edges for shaving when the blade is rotated in one direction, two shafts slidably journaled in the upper part

of said housing with their inner ends abutting, a gear and a bevel gear on each of said shafts, a drive shaft journaled in said housing, a bevel pinion on said drive shaft, the gear and bevel gear on each of said slidable shafts being adapted to mesh with one of said first gears and said bevel pinion respectively when said slidable shaft is pushed inwardly, while the other slidable shaft is thereby pushed outwardly and the bevel gear and gear on the latter slidable shaft are disengaged from said bevel pinion and the other of said first gears respectively.

CHARLES F. BAILEY.