

July 27, 1926.

J. E. HENDERSON

1,593,763

ROTARY TOOTHBRUSH

Filed Feb. 24, 1925

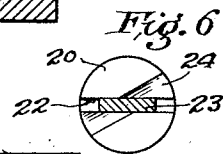
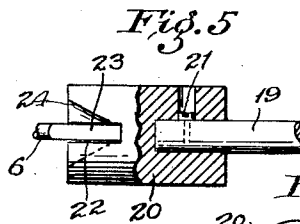
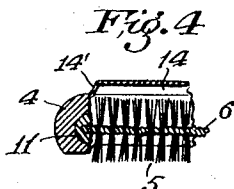
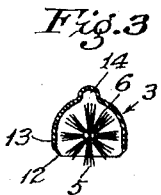
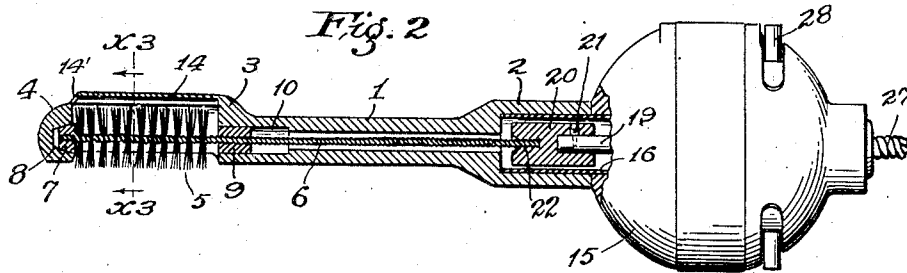
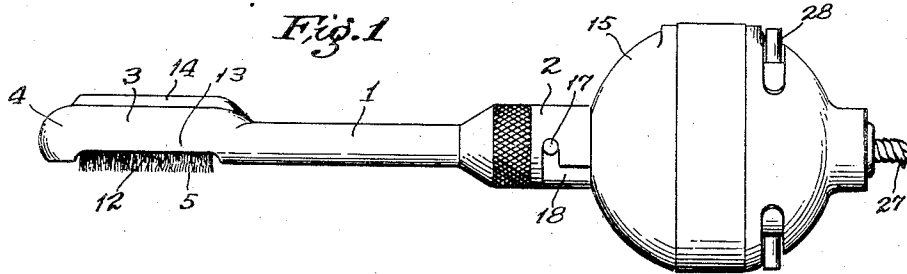
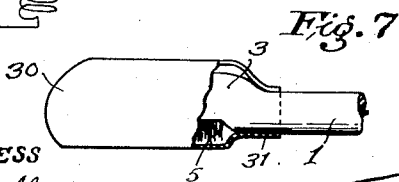
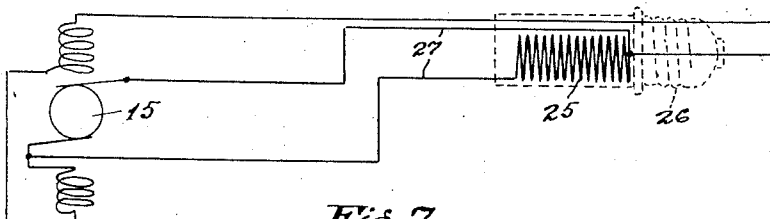


Fig. 8



WITNESS
C. C. Kelly

INVENTOR.
JOHN E. HENDERSON

by
James R. Townsend
his atty.

Patented July 27, 1926.

1,593,763

UNITED STATES PATENT OFFICE.

JOHN E. HENDERSON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-TENTH TO WILLIAM J. CORBETT, OF LOS ANGELES, CALIFORNIA, AND ONE-TENTH TO CAROL B. CUNNINGHAM, OF SAN FRANCISCO, CALIFORNIA.

ROTARY TOOTHBRUSH.

Application filed February 24, 1925. Serial No. 11,157.

This invention relates to a tooth brush having means integral with the brush handle to rotate the brush; and in which the brush may be readily detached from the handle and in which the bristles cannot engage the cheek of the user, and the brush shaft cannot engage the teeth or gums.

An object is to provide a rotary tooth brush driven by an electric motor, the brush of which may only be detached when the handle is detached from the motor.

A feature is to prevent any current from passing to the user from the motor.

Other features are simplicity in construction, ease and efficiency in operation, and the proper directional brushing of both the upper and lower teeth.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

The accompanying drawing illustrates the invention.

Figure 1 is a side elevation of my rotary tooth brush.

Fig. 2 is a longitudinal sectional view of the same.

Fig. 3 is a section taken on line x^3 , Fig. 2.

Fig. 4 is a fragmentary sectional view of a modified form of brush bearing.

Fig. 5 is an enlarged longitudinal sectional view of the brush and motor coupling block.

Fig. 6 is an end view of the coupling block.

Fig. 7 is a side view of the protective cap with parts broken away.

Fig. 8 is the wiring diagram of the motor driving the shaft.

The tubular casing 1 in which the brush is mounted, is formed with an enlarged thimble 2 on the rear end thereof, and a brush shield or cap 3 on forward end thereof. The forward end of the shield 3 is closed as shown at 4 to provide a bearing for the brush as will be further described. The tube, thimble and shield are preferably integrally formed.

A brush 5 is mounted in the shield 3 on the forward end of a shaft 6, which may be formed of twisted wire, a flexible rod, or any other desirable construction, with the brush 5 suitably secured thereto, but I prefer the twisted wire with bristles entwined

therein. This shaft extends rearwardly through the casing 1 and into the thimble 2.

A conical bearing block 7 is secured to the forward end of the shaft 6, and enters the conical journal 8 in the end 4. A second cylindrical bearing block 9 is secured to the shaft 6 rearwardly of the brush 5, and is journaled in a bore 10 in the tubular casing 1.

The bore 10 is longer than the block 9 to permit longitudinal movement of the block therein, the purpose of which will be further described. Thus it will be seen that the brush 5 is accurately and firmly journaled between the blocks 7 and 9. In the slightly modified form shown in Fig. 4, a hemispherical bearing block 11 is secured to the end of the shaft and fits into a journal in the end 4.

An elongated opening 12 is provided in the shield 3 through which the bristles of the brush 5 are adapted to extend, and the side walls 13 about the opening 12 depend below the shaft 6 so that the shaft is always shielded thereby, and cannot engage the teeth or gums, no matter how hard the pressure is on the brush 5.

A groove or recess 14 is provided in the top of the shield 3 to receive the tooth paste which may be inserted through the orifice 14' opening into said groove. The brush 5 in its rotation carries the paste from the groove to the teeth.

An electric motor 15 of a very small type, about 2 inches in diameter more or less, is mounted on the rear of the tube 1.

A sleeve 16 extends from the motor 15 and a pin 17 rises therefrom. The thimble 2 extends over the sleeve 16, and a bayonet slot 18 therein receives the pin 17, thus removably securing the tube and motor together.

The motor shaft 19 is positioned in the sleeve 16 and is coupled to the shaft 6 by a block 20 formed of an insulating material. This block is secured to the motor shaft 19 by a set screw 21. A slot 22 is formed in the front face of the block 20, and the end of the shaft 6 is flattened as at 23 to enter said slot.

Angular cuts or chamfers 24 extend into the slot 22 to guide the shaft into said slot when assembling.

It is essential for the proper brushing of

the teeth that the motor 15 rotate at a comparatively slow speed, about 1000 R. P. M. more or less. The average motor of the type I desire to use revolves at about 3500 R. P. M., therefore a resistance 25 is included in the rotor circuit to reduce the speed.

This resistance is preferably mounted in the connecting plug 26, and suitable wires 10 27 extend to the motor 15.

The upper and lower teeth must properly be brushed in opposite directions, therefore the brush must be rotated in opposite directions. For this purpose I provide a motor 15 reversing switch 28 suitably mounted on the motor or adjacent thereto.

To remove the brush 5 from the tube 1, the thimble 2 is first removed from the sleeve 16, by disengaging the pin 17 from slot 18. The end of the shaft 6 is thus released from the block 20. The brush 5 and shaft 6 are now moved rearwardly, which movement is permitted by the elongated bore 10, until the block 7 is free of the journal 8.

The shaft 6 is then bent to escape the shield 3 and the brush and shaft pulled forwardly and out of the tube 1.

Conversely the brush and shaft may be replaced. It will be seen that the brush 5 may be removed only when the tube 1 is removed from the motor 15. Paste is inserted in the recess 14 while the brush 5 is removed.

35 An individual brush is provided for each member of the family or each one may have an individual casing 1 and brush which is readily applied to the motor 15.

40 A protective and sanitary cap 30 formed of a light, inexpensive substance such as celluloid is slipped over the shield 3 entirely covering the brush 5, and a neck 31 therein grips the tube 1 adjacent the sleeve 3.

I claim:

45 1. A rotary tooth brush comprising a tubular casing, a shield on one end and a thimble on the other end thereof, a shaft extending longitudinally through the casing and shield; a brush carried by said shaft and disposed in said shield, said shield 50 being provided with an elongated opening

whereby the brush is partially exposed; a bearing block secured to the end of said shaft, and journaled in said shield, a second bearing block on said shaft, said casing 55 having a bore therein adapted to receive the second bearing block, a motor, a sleeve on said motor over which said thimble extends, and means coupling said shaft and the motor shaft. 60

2. A rotary tooth brush comprising a tubular casing, a shield on one end and a thimble on the other end thereof, a brush shaft extending longitudinally through the casing and shield, a bearing block secured 65 to the end of said shaft, and journaled in said shield, a second bearing block on said shaft, said casing having a bore therein adapted to receive the second bearing block, a motor, a sleeve on said motor over which 70 said thimble extends, said thimble having a slot adapted to receive a pin on the sleeve, an insulating coupling block secured to the motor shaft, said block having a recess therein to engage said shaft. 75

3. A rotary tooth brush comprising a tubular casing and a shield at one end thereof, said shield having a groove adapted to receive tooth paste, there being an orifice 80 opening into said groove; a shaft rotatably mounted in said casing and provided with a brush in said shield; and electrical means connected to said casing to rotate said shaft and brush. 85

4. A rotary tooth brush comprising a tubular casing, a shield on one end and a thimble on the other end thereof, a brush shaft extending longitudinally through said casing and shield and journaled therein; a 90 motor, a sleeve on said motor over which said thimble extends, said thimble having a slot adapted to receive a pin on the sleeve, an insulating coupling block secured to the motor shaft and having a recess therein, and chamfers extending into said recess, the end of said shaft being flat to enter said recess. 95

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 13th day of February, 1925.

JOHN E. HENDERSON.