Feb. 10, 1931. W. G. ROBEY 1,792,188

TOOTHBRUSH

Filed Sept. 7, 1929

Fig. 1.

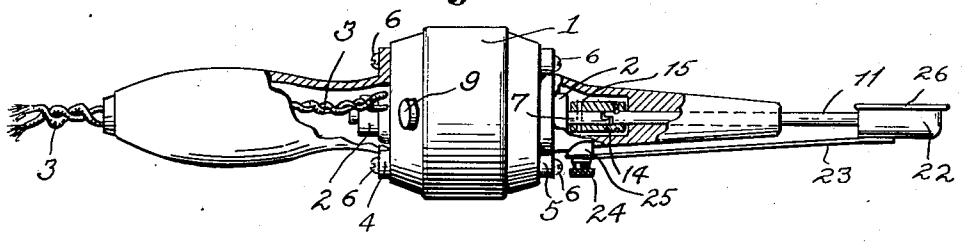


Fig. 2.

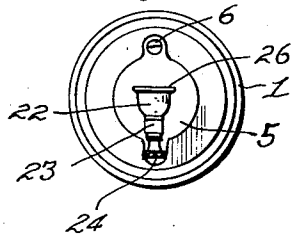


Fig. 3.

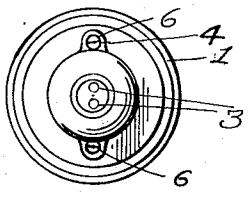


Fig. 4.

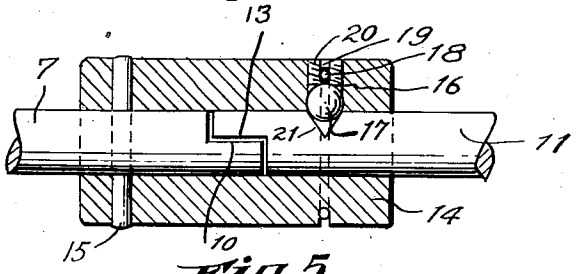


Fig. 5.

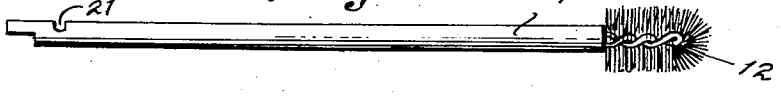


Fig. 6.

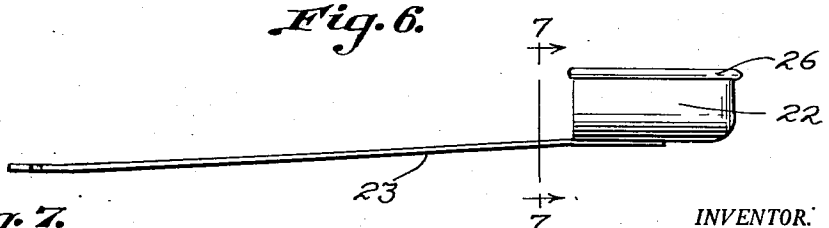
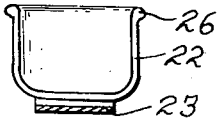


Fig. 7.



INVENTOR.

W. G. Robey

BY

C. E. Traino

ATTORNEYS.

Patented Feb. 10, 1931 1,792,188

UNITED STATES PATENT OFFICE

WILLIAM G. ROBEY, OF GRAFTON, WEST VIRGINIA

TOOTHBRUSH

Application filed September 7, 1929. Serial No. 390,996.

This invention is an improvement in tooth brushes, and more particularly in brushes of the rotary, motor driven type.

With the usual form of tooth brush, it is very difficult to properly clean the teeth, since the brush does not operate to the best advantage lengthwise of the teeth, and the brushing is usually confined to movement crosswise of the teeth.

Hence, the spaces between the teeth are not properly cleaned, since the bristles of the brush, in crosswise brushing, do not enter these spaces, and particles of food are left to decay, and to cause decay of the teeth.

It is also of advantage to massage the gums, and this operation can not be done effectively with the usual brush, since the best results are to be only attained by the pressure of a relatively hard, unyielding body, having a smooth, uniform surface.

One of the primary objects of the present invention is the provision of a relatively small, easily manipulated motor driven rotary brush, capable of attachment to a light plug for current, and having the brush so attached to the motor shaft, as to permit easy detachment when desired, yet to be held firmly and tightly, when in use.

Another object is the provision of a brush of the rotary type, wherein an efficient guard is provided for the brush, within which the brush is received when not in use, but which will be retracted when the brush is pressed against the teeth to an extent sufficient to enable the bristles to engage the teeth effectively, while at the same time the guard will protect the mucous membrane of the mouth against injury by the bristles not in contact with the teeth.

Another object is the provision of a brush wherein all of the parts are housed against the entrance of foreign matter, and so constructed as to be easily disassembled to enable access to the parts.

Another object is the provision of a guard of a nature such that it may be utilized as an instrument of massage for the gums, during the brushing of the teeth, or alone, if desired.

With these and other objects in view the invention consists in the construction and novel combination of parts fully described hereinafter, illustrated in the accompanying drawings, and pointed out in the claims appended hereto, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims, may be resorted to without departing from the spirit of the invention.

In the drawings forming a part hereof:—

Fig. 1 is a side view of the improved brush, with parts in section.

Fig. 2 is an end view, looking at the right of Fig. 1.

Fig. 3 is a similar view, looking at the left of Fig. 1.

Fig. 4 is a detail in section of the chuck or clutch mechanism.

Fig. 5 is a side view of the brush and shaft.

Fig. 6 is a side view of the brush shield or guard.

Fig. 7 is a section of Fig. 6 on the line 7—7.

In the present embodiment of the invention, a housing 1 is provided, in which is mounted a suitable motor 2, as for instance an electric motor, and the motor is supplied with current through lead wires 3, from a source of supply, an ordinary plug being connected by the wires for plugging in a socket. The housing has an extension at each end, indicated at 4 and 5, and the extensions are secured to the housing by screws 6 passing through flanges on the extension and engaging the housing.

The lead wires 3 pass through the extension 4, and the shaft 7 of the motor extends within the inner end of the extension 5. The extension 4 is shaped to form a handle, for grasping to manipulate the brush, and push buttons 9 are arranged in the housing wall, for controlling the current to the motor. The outer end of the motor shaft is stepped, as shown at 10, and the end of the brush shaft 11 remote from the brush 12, is similarly stepped to fit, as shown at 13.

A chuck sleeve or housing 14 is secured to the motor shaft by means of a pin 15, the said sleeve extending beyond the end of the motor shaft. The sleeve has a radial opening 16, in which is held a ball 17, and the ball is pressed

toward the axis of the shaft by an annular spring 18, held in an annular groove 19 in the sleeve. A part of the ball normally extends into the bore of the sleeve, but the ball is prevented from escaping into the bore by slightly reducing the inner end of the radial opening. A screw 20, threaded into the outer end of the radial opening, prevents displacement of the ball outwardly, and enables removal of the ball when desired.

The brush shaft has a radial notch 21, for engagement by the ball, to lock the shaft to the motor shaft, so that the brush shaft rotates with the motor shaft, and is restrained from longitudinal movement with respect to the said motor shaft. The extension 5 of the housing provides a housing or bearing sleeve for the brush shaft, and it is suitably recessed to receive the sleeve 14. Referring to Figs. 3 and 4, it will be seen that two screws 6 are provided for connecting each extension.

In Figs. 6 and 7, the guard for the brush is shown. This guard comprises a guard proper 22, and a spring arm 23. The guard is trough shaped, closed at its outer end and open at its inner end, and the arm extends from the inner open end. At the end remote from the guard 22, the arm has an opening through which passes a screw 24, and the screw engages within an internally threaded boss 25, on the extension 5, to detachably connect the arm to the extension.

The upper edge of the guard 22 is thickened by a rib or bead 26, and the parts are so constructed that the spring arm 23 holds the brush against the bottom of the shield, except when the rib 26 is pressed against the gums or teeth. At this time the arm yields, permitting the brush to move forward and bringing it into position to clean the teeth. The normal position of the brush, when not in use, is shown in Fig. 1.

The beaded edge of the guard serves to massage the gums, while the brush is operating upon the teeth. The hard smooth surface of the bead on the guard provides an excellent instrument of massage, which operates automatically during the use of the brush, and it may be used separately, if desired. The spring provides a yielding pressure for the guard. When a brush is worn out, it may be removed from the instrument, and a new one substituted. The brush shaft is disengaged by pulling it outward away from the motor, and connected by pushing it inwardly toward the motor.

Two push buttons are provided for controlling the circuit, arranged at opposite sides of the motor housing, so that a button is in position for convenient engagement, whether the brush is grasped in the right or in the left hand.

Both tubular extensions are detachable from the motor housing, which provides a convenient access to the motor. Any preferred type of brush may be used. That is, the bristles may be of any desired length and flexibility, and they may be connected to the shaft in any desired manner. That is, they may be set in rubber, or in any other suitable manner.

What is claimed as new is:—

1. In a rotary motor driven tooth brush, a brush shaft having at one end a cylindrical brush, and a guard for the brush within which the brush is normally received to hold it out of contact with the mouth, a resilient mounting for the guard, whereby said guard is retractible by pressure of the brush toward the teeth to expose an operative portion of the brush.

2. In a rotary motor driven tooth brush, a brush shaft having at one end a cylindrical brush, and a guard for the brush within which the brush is normally received to hold it out of contact with the mouth, a resilient mounting for the guard, whereby the guard is retractible by pressure of the brush toward the teeth to expose an operative portion of the brush, said guard having a beaded free edge for the purpose set forth.

Signed at Grafton, in the county of Taylor and State of West Virginia, this 4th day of September, A. D. 1929.

WILLIAM G. ROBEY.