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TOOTHBRUSH

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Fig. 1.

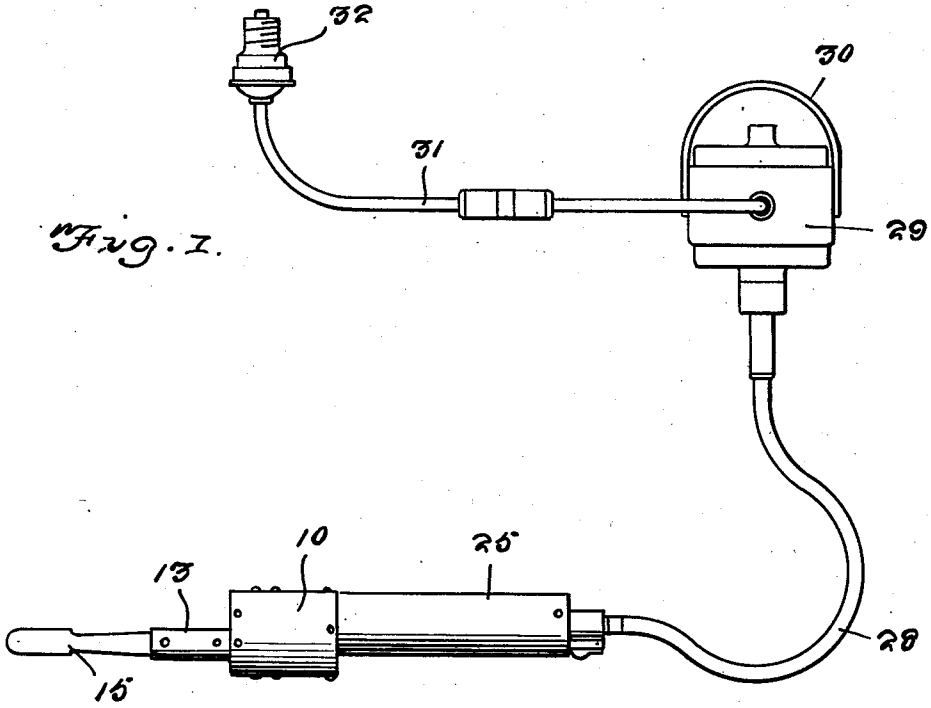

Fig. 2.

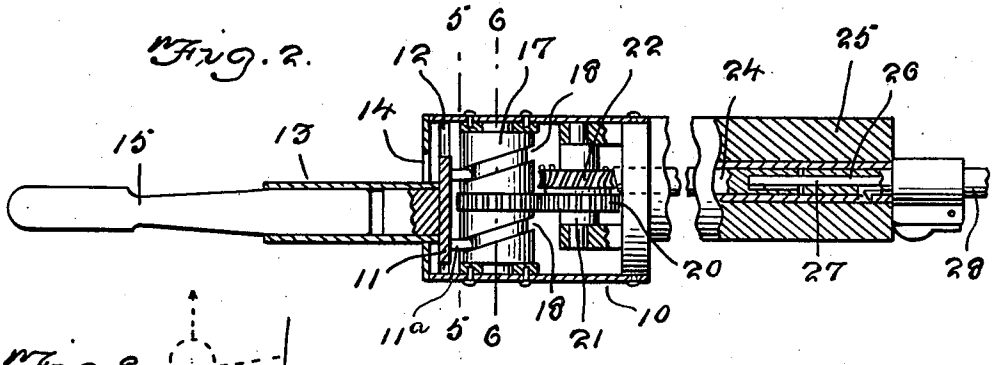

Fig. 3.

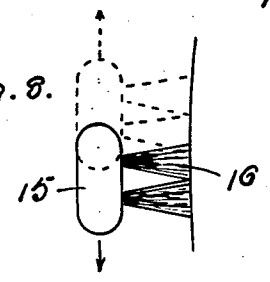

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Fig. 3.

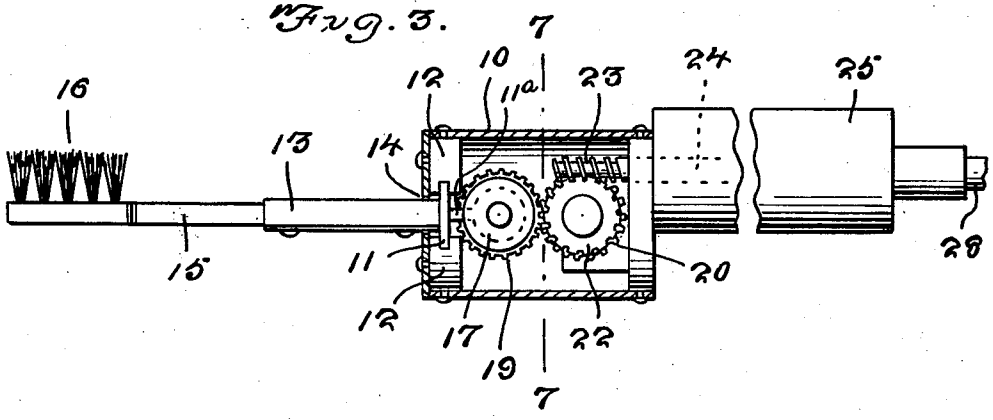


Fig. 4.

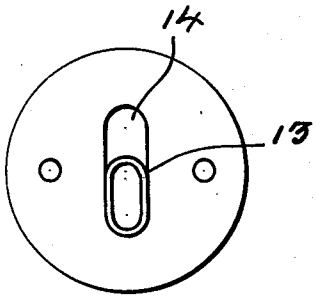


Fig. 5.

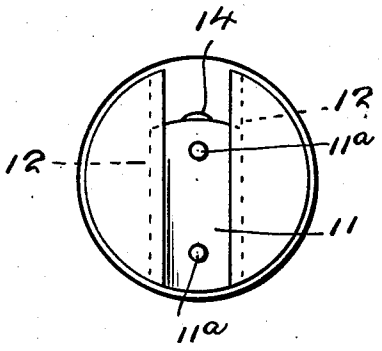


Fig. 6.

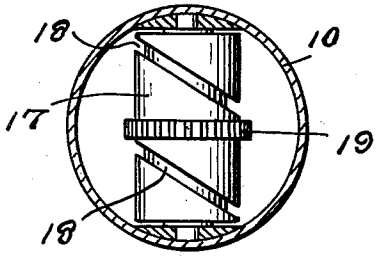
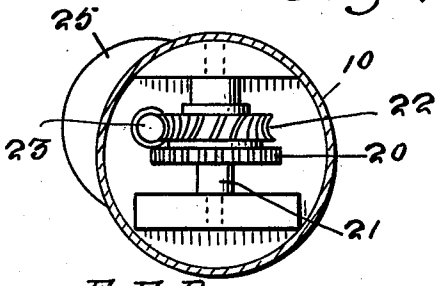


Fig. 7.



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Patented Feb. 10, 1931 1,792,358

UNITED STATES PATENT OFFICE

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TOOTHBRUSH

Application filed July 14, 1927. Serial No. 205,565.

This invention relates to improvements in power operated brushes and has especial reference to tooth brushes, an object being to provide a power operated brush which will have a movement at direct right angles to the length of the brush bristles, and will thus provide means to operate the brush so that the bristles will be moved longitudinally of the teeth with the same degree of contact throughout.

We are aware that it is old to provide power operated tooth brushes in which the brush is moved longitudinally, it is also old to provide means for moving the brush in the direction of the length of the bristles, or to provide means to swing the brush in opposite directions on a radius whose center is the brush head.

The first referred to, or longitudinal movement of the brush is objectionable in that movement of the bristles is transversely of the teeth and is therefore an incorrect method of brushing the teeth, while the second mentioned movement imparts a tapping or beating to the teeth and gums by the ends of the bristles without providing a wiping or scrubbing movement, while the last mentioned means provides a circular or sweeping motion, and if forced inward between the teeth, will cut and injure the gums. In addition, the bristles will not be in contact with the teeth throughout the length of the latter.

The present invention provides a brush whose movement imparts an even contact of the bristles throughout the length of the teeth, so that the bristles may be forced inward between the teeth and will travel from the outer to the inner ends of said teeth without injuring the gums.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claim.

In the drawings:—

Figure 1 is a view of a power operated brush constructed in accordance with the invention.

Figure 2 is an enlarged fragmentary sectional view.

Figure 3 is a view at right angles to Figure 2 with parts broken away and shown in section.

Figure 4 is an end view of the casing with the brush removed.

Figure 5 is a section on the line 5—5 of Figure 2.

Figure 6 is a section on the line 6—6 of Figure 2.

Figure 7 is a section on the line 7—7 of Figure 3.

Figure 8 is a diagram illustrating the movement of the brush.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the invention as shown comprises a casing 10. This casing is shown as cylindrical, although it is obvious that its shape may be changed as desired. Mounted within the casing is a slide 11 and this slide operates in guides 12, so that it may have a lateral reciprocatory movement. Extending from the slide is a socketed member 13 and this member extends through and is movable longitudinally of a slot 14 provided in the end of the casing 10. The handle 15 of a brush 16 is removably mounted within the socketed member with the bristles of the brush extending at right angles to the direction of sliding movement of the socketed member 13.

Various means may be employed for imparting this movement to the slide 11, the means shown comprising a rotatable cylinder 17 having spaced grooves 18 therein, the grooves being arranged at a transverse incline with respect to the axis of the cylinder. The slide 11 carries pins 11*a* which extend into the grooves 18, so that when the cylinder is rotated, an oscillatory sliding movement will be imparted to the slide 11. The cylinder carries a pinion 19 which is engaged and driven by a pinion 20, the latter being mounted upon a shaft 21 whose trunnions are disposed in suitable bearings provided in the casing. Also fast upon the shaft 21 is a worm gear 22 which is engaged and driven by a worm 23, the latter being mounted upon

the inner end of a shaft 24. This shaft extends through a handle 25 which is secured to the casing 10 and is provided with a socket 26 to removably receive the end 27 of a flexible shaft 28. The end 27 of the shaft 28 is removably locked in position by any suitable means.

The shaft 28 is driven by a motor which is arranged within a housing 29 and the latter is provided with a handle or bail 30 for convenience. A conductor cord 31 extends from the housing 29 and is provided with a suitable plug 32 for connection with a source of current.

When power is applied to the shaft 24, the latter will operate to rotate the cylinder 17 through the gearing just described. This rotation of the cylinder 17 will impart a reciprocatory sliding movement to the slide 11 whose guides 12 are parallel, so that a lateral reciprocatory sliding movement at direct right angles to the length of the bristles of the brush 16 will be imparted to the brush. The bristles may thus be held against the teeth and the movement of the brush head will be directly vertical so that the bristles will travel over and between the teeth with substantially the same degree of contact throughout the length of the teeth. The bristles may thus be forced inward into the spaces between the teeth so as to thoroughly clean out and remove all accumulated foreign substances without injury to the gums.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claim.

Having described the invention what is claimed is:—

In combination, a tooth brush having its bristles projecting laterally and arranged longitudinally with reference to its handle, a brush operating device including a brush actuating element and power operated mechanism connected to said element for imparting a rectilinear reciprocatory movement to said element, and handle engaging means providing a fixed operative connection between said element and handle to maintain the brush head in constant right angular relation to the direction of reciprocatory movement.

In testimony whereof we affix our signatures.

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WILLIAM G. WHEAT.