

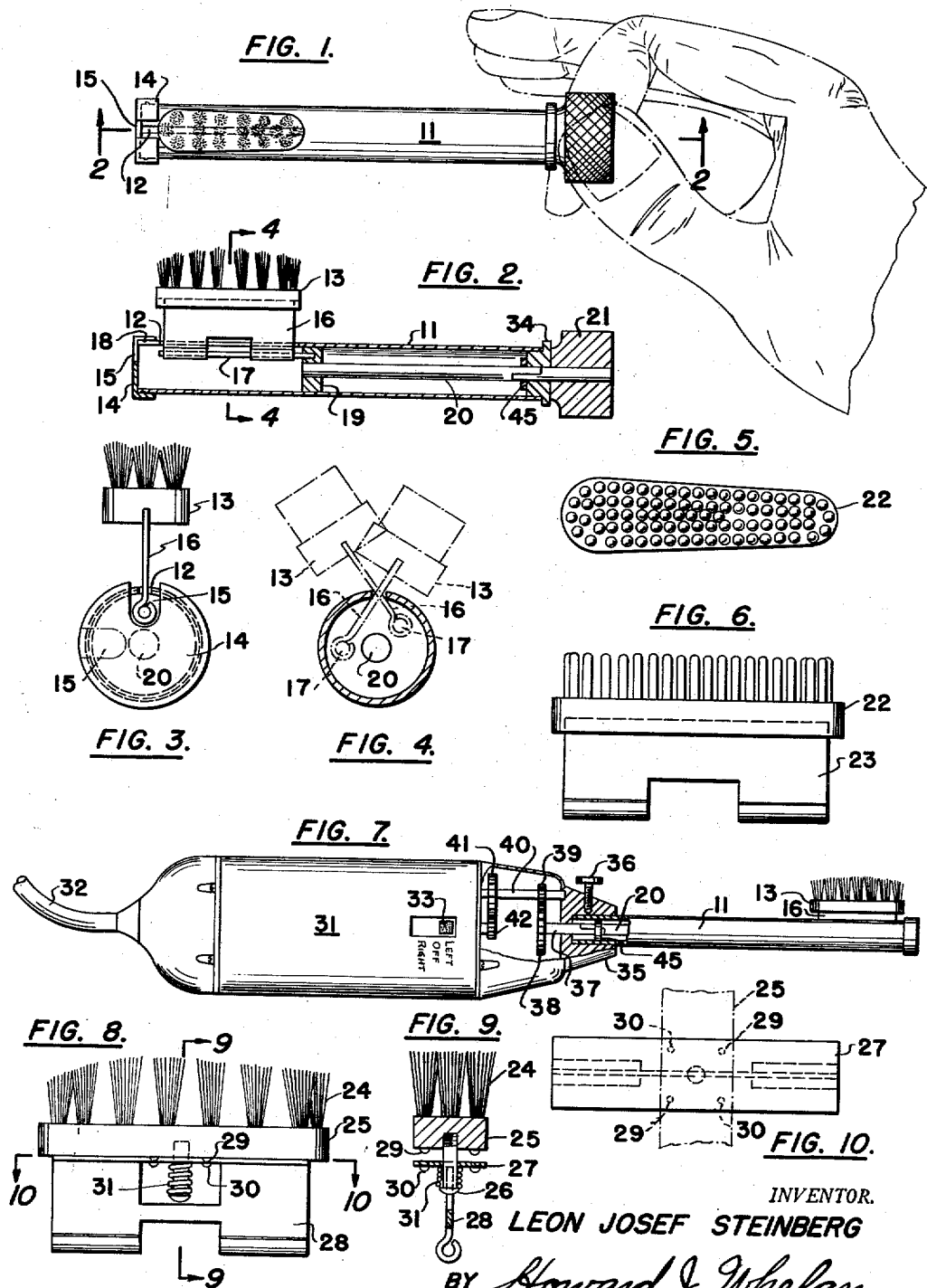
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MANUALLY DRIVEN TOOTHBRUSH

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MANUALLY DRIVEN TOOTHBRUSH

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3 Claims. (Cl. 15—22)

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This invention refers to dental equipment and more particularly to a combined manually operated tooth brush and gum massager, and is an improvement over the mechanical tooth brush shown in Patent No. 2,290,454 issued to this inventor. It has among its objects to provide a device that can be used for the easy removal of the material and substances injurious to the teeth in the most effective way.

It is an additional object of this invention to provide a device which will operate a tooth brush positioned longitudinally with the brush shank for brushing the outside portion of the upper and lower teeth when the brush is turned transversely.

It is an additional object of this invention to provide a device having removable tooth brushes and gum massagers that can be rotated from a horizontal to transverse position to efficiently clean the teeth and massage the gums.

It is an additional object of this invention to provide a mechanical toothbrush which when turned clockwise will move the brush outward to touch the top of the upper teeth above the gum line, then brush downwardly along the face of the teeth, then move the brush away from the end of the teeth, then move upwardly where the operation is repeated, by rotating the spindle counter clockwise or in the opposite direction the brush will move outwardly to touch the lower teeth at the gum line, then brush upwardly to the end of the lower teeth, then draw away from the teeth then move downwardly to the starting point, where the cycle is repeated.

It is an additional object of the present invention to provide for the use of smaller bristles than customary when desired.

It is a further object of the present invention to provide a mechanical toothbrush that will have such features that will add to the intrinsic value of the article, improve its operation, and render it safe and suitable for domestic purposes.

Other objects will become apparent as the invention is more fully set forth.

The usual type of mechanical brush has not been found practical and its manufacture, in so far as known to this inventor, has never been attempted.

The conventional method of brushing the teeth is erratic and does not follow the accepted standards adopted by the dental profession. Erratic brushing of the teeth follows lines opposing the general flow of blood and against the grain of the teeth, gums and blood vessels, and generally results in injury to the teeth and gums. To over-

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come these objections the applicant has provided this tooth brush which provides the proper stroke for cleaning the teeth and massaging the gums. The brushes may be changed to suit the size of the mouth of the user, in fact the whole family may have their own individual tooth brush and gum massager and attach it to the single mechanical unit. This provides an economical arrangement through the use of separate interchangeable brush units instead of buying self contained motor units with fixed brushes for each individual. The brush in this device may be swung on its pivot from the horizontal to the transverse position to enable one brush to be used for cleaning the outside and the rear of the teeth while holding the motor in one single position.

The conventional manner of cleaning the teeth acts across the teeth transversely and does not clean between the teeth like this device. In order that the invention may be more clearly understood attention is hereby directed to the appended drawings, forming part of this application and illustrating two embodiments of the invention.

Referring to the drawings:

Figure 1 is a side elevation of a hand operated tooth brush embodying this invention;

Figure 2 is a sectional elevation taken along line 2—2 of Figure 1;

Figure 3 is an enlarged end view of Figure 1 showing the slot in the cap aligned with the slot in the tube for attaching or detaching the brush and with the dotted outline of the slot in the cap showing the position of the cap, when the brush is locked in the tube.

Figure 4 is an enlarged sectional view taken along line 4—4 of Figure 2 showing the brush in dotted outlines in various positions;

Figure 5 is a plan view of the resilient gum massager;

Figure 6 is a side elevation of Figure 5;

Figure 7 is a plan view of the motorized unit with parts broken away to show its inner construction;

Figure 8 is an enlarged side elevation of the brush unit used with this device;

Figure 9 is a sectional view taken along line 9—9 of Figure 8 with the brush base spaced away from the shelf, and

Figure 10 is a view taken along line 10—10 of Figure 8 showing the brush in full lines positioned longitudinally and in dotted lines to show the transverse position.

Similar reference characters refer to similar parts throughout the drawings.

In the construction shown in the drawings, 11

represents a hollow shell of some suitable material like one of the many insulating materials existing and available today. The shell is preferably formed as indicated with a slot 12 positioned longitudinally in one of its ends for the placement of the tooth brush 13 therein, a cap 14 is rotatably positioned on the end of the shell 11 and is provided with a slot 15 for alignment with the slot 12 in the shell 11 to allow the support 16 attached to the brush to be slid therethrough and positioned on the eccentrically positioned rod 17. The cap 14 is then rotated sufficiently to misalign the slots 12 and 15 to prevent the brush and support from sliding off the rod 17. The end of the shell 11 and the cap are preferably provided with a tongue and groove arrangement 18 which allows the cap to be rotated on the shell for positioning the slots without the possibility of the cap becoming detached. The rod 17 is eccentrically positioned in a collar 19 which is centrally mounted on a shaft 20 which is supported in the shell by a support 34 and is rotatable therein by means of a knob 21. When the knob 21 is rotated clockwise the brush 13 moves outwardly, downwardly and inwardly and in a reverse manner when the direction of the rotation of the knob 21 is reversed. During the operation of the brush the support 16 is rocked in the slot 12 through the action of the eccentric rod 17 when turned by the knob 21. The shaft 20 is preferably provided with a split coupling 46, as shown in Figure 2, so that the knob 21 may be slid in and out of rotary contact with the remainder of the shaft 20. A collar 45 is attached to shaft 20 for positioning same in the shell 11.

A resilient gum massager 22 mounted on a bracket 23 is interchangeably used with the tooth brush 13 on the eccentric rod 17. The brush preferably used with this device is shown in Figures 8, 9 and 10 in the drawings. The bristles 24 are mounted on a base 25 that is provided with a pin 26 projecting therefrom for positioning through a hole in the shelf 27 attached to the bracket 28. The base 25 and shelf 27 are provided with projections 29 and indentations 30 respectively to hold the brush in predetermined positions on the shelf, through the tensioning of the base and shelf faces through the use of a spring 31. The gum massager 22 may be mounted in the same manner as that shown in Figures 8, 9 and 10.

Figure 7, shows the device described above, attached to a motor device which is supplied with electric power through conductors 32 in the usual manner. The motor is of the reversible type and is controlled by a switch 33 which can be positioned to operate the tooth brush or gum massager in either a right or left hand direction or it can be used to turn the current off and stop the motor and brush. The hand operated device shown in Figures 1 and 2 may be used with the motor device shown in Figure 7, by removing the support 34 and the knob 21, and placing the shell 11 in the neck portion 35 and tightening the screw 36, so the shaft 20 will align with stub shaft 37 and be driven thereby, a gear 38 attached to stub shaft 37 is driven by gear train 39 and 41 mounted on shaft 40. A gear 42 mounted on the motor

shaft drives the assembly and reduces the movement of the brush unit at a speed required for safe operation.

While but two general forms of the invention are shown in the drawings and described in the specification it is not desired to limit this application for patent to these particular forms or in any other way otherwise than limited by the scope of the claims, as it is appreciated that other forms could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. A tooth brush comprising an open-ended hollow shell having a longitudinal slot merging with one of said open ends, a closure for said shell adjacent the end of said slot, a shaft in said shell, inner and outer spaced-apart supports in said shell for said shaft, the inner support being fast with the shaft and being rotatable in the shell, the outer support constituting a closure for the end of said shell opposite the longitudinal slot, a handle mounted on the end of said shaft adjacent said last mentioned closure and extending outside of the shell, a stub shaft eccentrically mounted on the inner support and being fast therewith and extending between said support and the adjacent end of the shell to a point short of said first mentioned closure, and a tooth brush insertable through the aforesaid slot and secured to and swingable with said stub shaft, said brush having its bristles wholly outside said shell, said handle operating said shaft for oscillating said stub shaft and said brush.

2. A tooth brush as set forth in claim 1, said brush consisting of a bracket mounted on the stub shaft, a shelf secured to said bracket, a base carrying the bristles, cooperating locking means between the base and the shelf and spring means carried by the base to force the shelf against the base.

3. A tooth brush as set forth in claim 1, said shell having an end closure on the end thereof removed from said handle, said closure having an opening alignable with the slot of said shell to permit sliding of said brush on said stub shaft and said end closure being rotatable to place said opening and slot out of alignment to prevent removal of said brush when in place.

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