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2,583,886

POWER-DRIVEN TOOTHBRUSH WITH DEMOUNTABLY SUPPORTED ROTARY BRUSHES

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Fig. 1

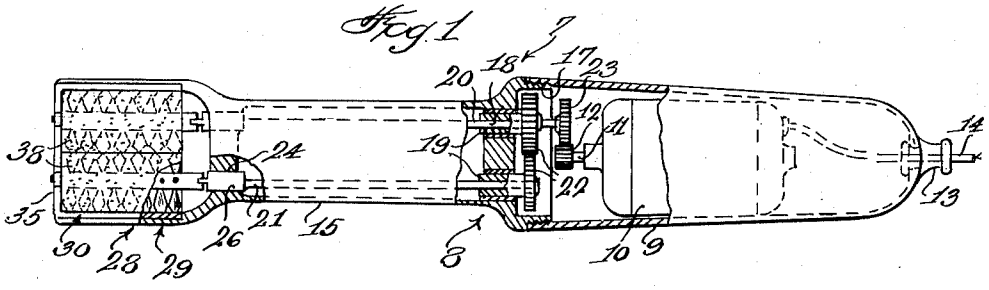
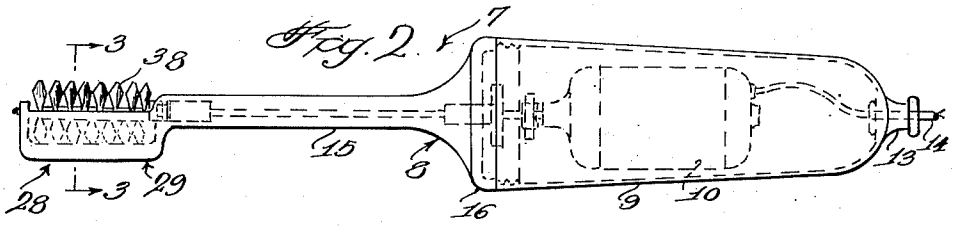
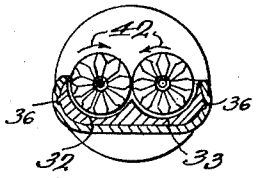


Fig. 2





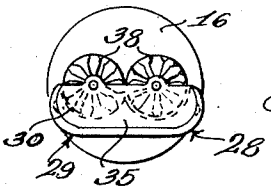


Fig. 4

Fig. 3

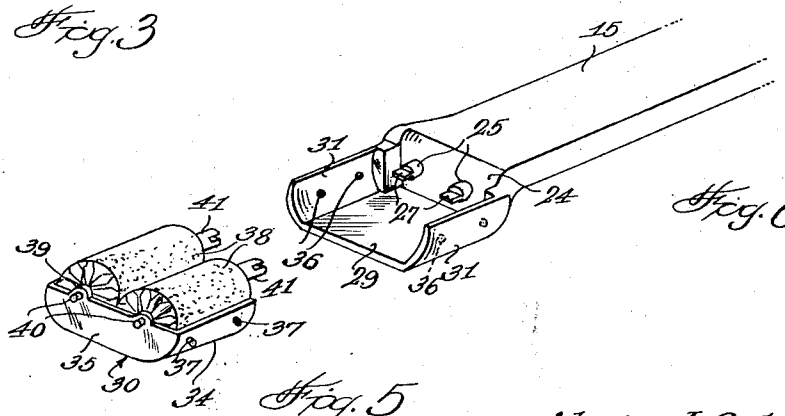


Fig. 6.

Fig. 5

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POWER-DRIVEN TOOTHBRUSH WITH DEMOUNTABLY SUPPORTED ROTARY BRUSHES

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Application October 17, 1947, Serial No. 780,375

1 Claim. (Cl. 15—23)

1

This invention relates to a driven rotary toothbrush adapted for use in efficiently and properly cleaning the teeth and more particularly has reference to a rotary toothbrush of extremely simple construction capable of being driven from a suitable power source for revolving two rotary brushes in opposite directions so that in operation the two brushes will simultaneously clean the upper and lower teeth in a correct and approved manner and by the movement of the bristles of the brushes longitudinally away from the gums.

More particularly, an aim of the invention is to provide a rotary toothbrush adapted to be actuated by an electric motor contained within the handle portion thereof for simultaneously driving the two rotary brushes in opposite directions.

A still further object of the invention is to provide a rotary toothbrush having a novel brush containing head by means of which the rotary brushes may be readily removed and replaced.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a top plan view, partly in section of the rotary toothbrush;

Figure 2 is a side elevational view thereof;

Figure 3 is a cross sectional view taken substantially along a plane as indicated by line 3—3 of Figure 2;

Figure 4 is an end elevational view looking toward the head of the brush;

Figure 5 is a perspective view of the detachable head section of the brush, and

Figure 6 is a fragmentary perspective view of another portion of the rotary toothbrush.

Referring more specifically to the drawing, the rotary toothbrush comprising the invention is designated generally 7 and includes a housing, designated generally 8 which may be formed of plastic or any other suitable material and which includes a hollow handle portion 9 in which is fixedly positioned a small electric motor 10 having a driven shaft 11 projecting from one end thereof towards an enlarged, open inner end of the handle 9 and to which is keyed a pinion 12. The opposite, outer end of the handle 9 is provided with a boss 13 through which the electric conductors 14, connected to the motor 10 extend and which are adapted to be connected to any suitable source of electric current, not shown, such as a conventional electrical outlet, for energizing

2

the motor 10. The housing 8 also includes an elongated, substantially flat hollow shank 15 which is provided with a substantially circular head 16 adjacent one end thereof which is threadedly connected, detachably at 17 through the enlarged open inner end of the handle 9. The head 16 is provided with a wall or partition 18 through which spaced bushings or bearings 19 extend and in which are journaled the shafts 20 and 21. The shafts 20 and 21 have meshing gears 22 keyed thereto and disposed in the hollow outer end of the head 16 and said shaft 20 extends beyond the gears 22 into the handle 9 and has a gear 23 keyed thereto which meshes with the pinion 12 so that the shafts 20 and 21 are driven by the motor shaft 11 and in opposite directions.

The shank 15 is provided adjacent its opposite end with a transverse wall 24 having openings 25 extending therethrough in which are journaled corresponding coupling members 26 which are suitably connected to or formed integral with the opposite ends of the shafts 20 and 21 and which are provided at their outer ends with flattened extensions or key 27.

The housing 8 also includes a brush head, designated generally 28 formed of sections 29 and 30. The section 29 preferably forms an integral extension of the last mentioned end of the shank 15 and includes a bottom portion and upwardly curved side walls 31. The section 30 comprises a bottom 32 the upper side of which is longitudinally grooved at 33, as clearly illustrated in Figure 3 and as seen in 32. Section 30 also includes upwardly curved side walls 34 and an outer end wall 35. The head section 30 fits into the head section 29 and with the bottom 32 thereof resting on the bottom of the section 29, as seen in Figure 3 and with the side walls 34 disposed within the side walls 31. The side walls 31 are provided with inwardly opening recesses or indentations 36 and the side walls 34 are provided with outwardly projecting teats or projections 37. The walls 31 and 34 are preferably resilient so that the teats 37 can project into the indentations 36 for detachably connecting the head sections 29 and 30 and by spreading the walls 31 said projections 37 can be disengaged from the indentations 36 for disconnecting said head section 30. A pair of rotary brushes 38 are disposed longitudinally within the head section 30 and substantially concentrically of the longitudinal grooves 33 thereof, into which portions of the brushes 38 project and said brushes include shafts 39 which extend axially therethrough and which have corresponding ends thereof journaled in bearing portions 40 of the

end wall 35. The shafts 39 are provided with female coupling elements 41 at their opposite, inner ends having outwardly opening slots for receiving the keys 27 of the coupling elements 25 when the head section 30 is applied to the head section 29, and as previously described and is held fixed therein by engagement of the teats 37 with the indentations 36.

Assuming that the toothbrush 7 is assembled, as seen in Figures 1 and 2 and that the electrical conductors are connected to the source of the electric current, it will be readily obvious that said brushes will be revolved by the shafts 20 and 21 in opposite directions as indicated by arrows 42 in Figure 3. It will also be apparent that approximately a half of each of the brushes 38 projects from the open side of the head 28 and is in an exposed position so that when the brush head 28 is placed within the mouth the exposed half of one of the brushes 38 will engage the upper teeth while the other brush 38 engages the corresponding lower teeth. Consequently, due to the direction of rotation of the brushes 38 said brushes will clean the teeth by a motion whereby the bristles of the brushes are moved longitudinally of the teeth and in directions away from the gums. Obviously, tooth paste or powder may be placed upon the peripheries of the brushes 38 and water may be allowed to flow thereover for wetting or rinsing the brushes.

It will also be readily apparent that the head section 30 and brushes 38 carried thereby may be removed and replaced by another head section 30 containing brushes 38 and the detached head sections 29 and 30 may be effectively cleaned and maintained in a sanitary condition. Because of the detachability of the head sections and the ease with which they may be cleaned, different users, each with his own head section 30 and brushes 38, carried thereby, may utilize the remainder of the toothbrush 7.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claim.

I claim as my invention:

A rotary toothbrush comprising a housing including an elongated shank portion, a pair of shafts extending longitudinally through and journaled in the shank portion, means driving said shafts in opposite directions, a head forming an end of the housing and projecting from one end of the shank portion and into which corresponding ends of the shafts extend, said head having an open top and including a demountable section and a section formed integral with the shank portion, each of said head sections including a bottom and upwardly extending outwardly bowed side walls, said demountable section having an outer end provided with an integral end wall having laterally spaced bearing openings and an open opposite inner end, said integral head section having an inner end closed by said end of the shank portion and having an open outer end through which the demountable head section is inserted into or removed from the integral head section, a pair of rotary brushes disposed in the demountable head section each including a shaft, corresponding ends of said brush shafts being journaled in said bearing openings for supporting and journaling the rotary brushes in the demountable head section, said side walls of the head sections being resilient, the side walls of the demountable head section having outwardly projecting studs, the side walls of the integral head section having openings to receive the studs for detachably latching the demountable head section in the integral head section, said first mentioned shafts and said brush shafts having adjacent ends provided with interengaging tongue and groove means for keying the first mentioned shafts to the brush shafts, said demountable head section being insertable into and removable from the integral head section in directions longitudinally of the shank portion for coupling and uncoupling the first mentioned shafts and the brush shafts, and said interengaging studs and openings of the side walls latching the head sections together and the first mentioned shafts and last mentioned shafts in coupled engagement, the outer end of the demountable head section forming the outer end of said head.

ALVIN J. SCHLEGEL.

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