

Dec. 15, 1953

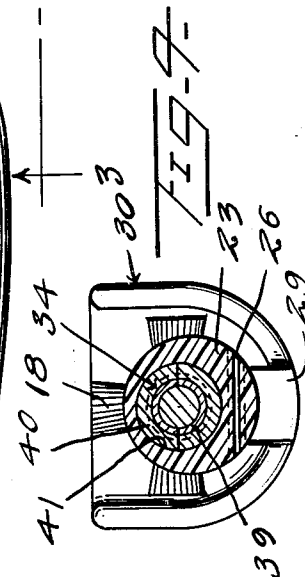
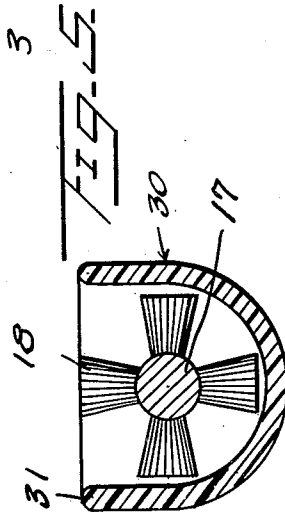
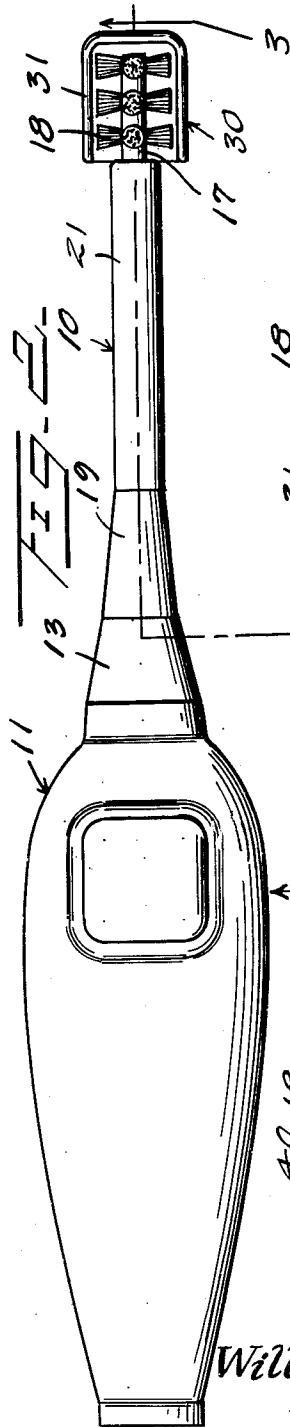
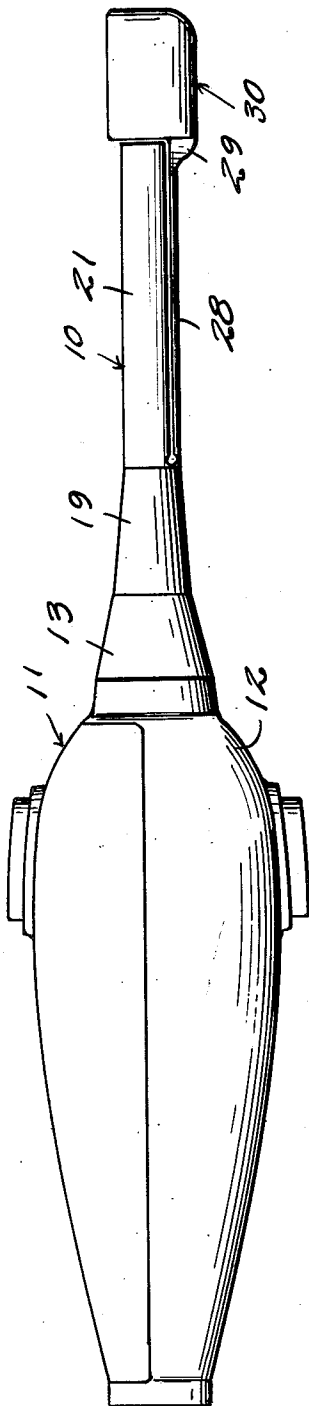
W. G. ROBEY
TOOTHBRUSH GUARD

2,662,238

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2 Sheets-Sheet 1

FIG. 1-



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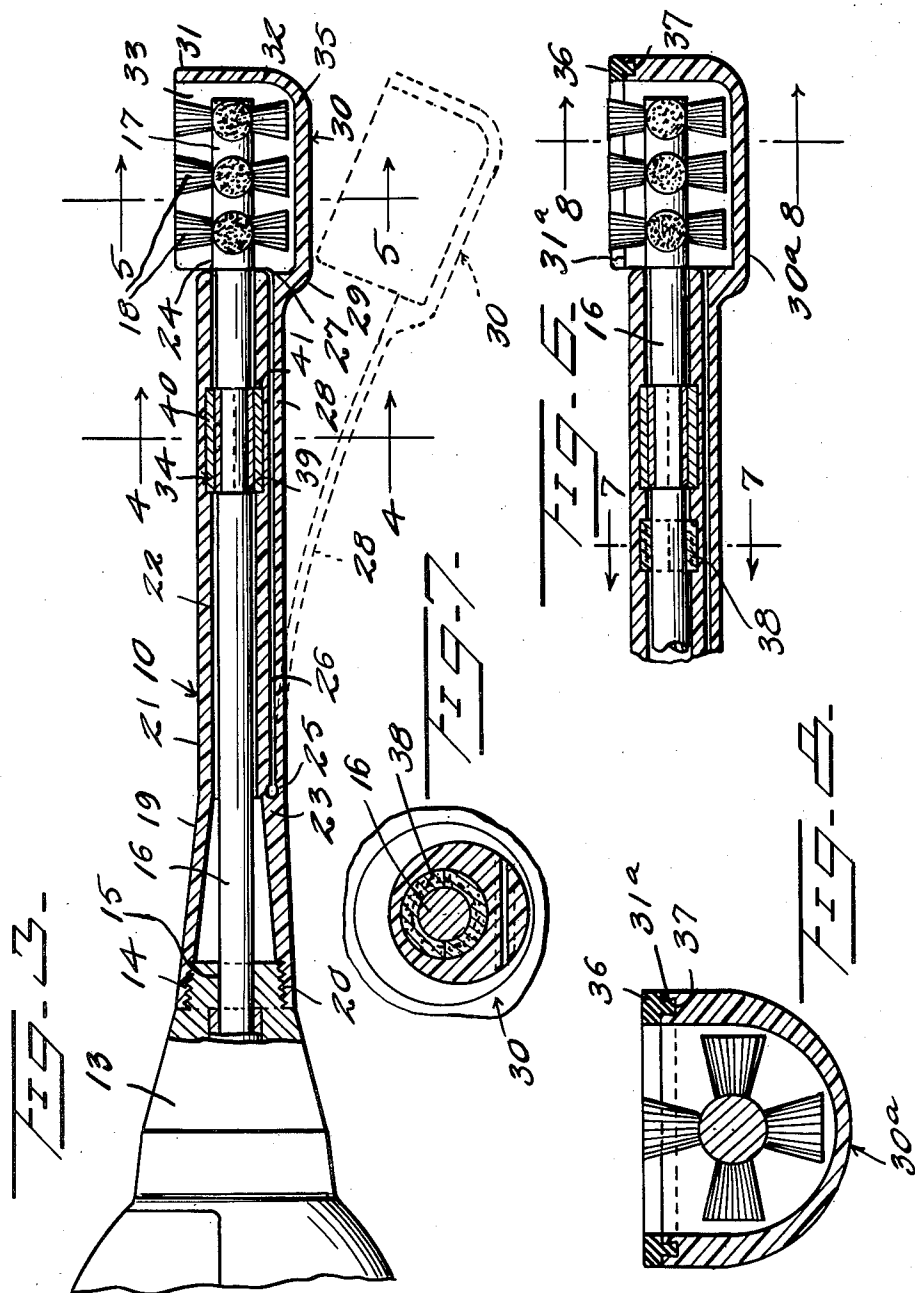
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TOOTHBRUSH GUARD

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3 Claims. (Cl. 15—23)

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This invention relates to toothbrush guards and more particularly an improved guard for use with a rotary toothbrush of the type shown by applicant's prior Patent No. 2,446,995 issued August 10, 1948.

In the operation of a rotary toothbrush it is highly desirable that exposure of the rotating parts be kept to a minimum. A further problem is to provide an enclosing type of guard that fits closely to the shaft and brush so as to not be cumbersome and too large for comfortable insertion in the user's mouth. To place an unguarded rotating brush in the mouth causes a great deal of discomfort due to the brush's contact with the cheek and gums.

Another problem presented in the use of a rotary toothbrush is the undesirable conduction of moisture and cleaning compound from the mouth by the rotating parts if left exposed.

It is therefore among the objects of the present invention to provide an improved rotary toothbrush guard or shield that substantially encloses the rotatable parts insertable in the mouth and is contoured to their general configuration so as to keep the overall dimensions of the insertable parts to a minimum.

Another object is to provide a guard that substantially encloses all of the rotating parts except for the teeth engaging area of the brush.

Still another object is to provide a guard capable of being moved away from the brush to provide different degrees of exposure thereof adjacent the teeth.

A still further object is to provide a toothbrush guard that is capable of ready disassembly from the brush for cleaning and sterilization.

Another object is to provide a rotary toothbrush guard having an engaging surface that is readily conformable to the contour of the user's teeth and jaws.

A further object is to provide a rotary toothbrush guard having an absorbent insert disposed from the brush to protect the operating parts from moisture and further to specifically prevent moisture from contacting the electric motor which might effect an electric arc which could cause an electric shock to the user.

The invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations, and modifications may be resorted to which fall within the scope of the invention as claimed.

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In the drawings:

Figure 1 is a side elevational view showing the guard of this invention attached to a rotary toothbrush.

Figure 2 is a plan view showing the open face of the guard.

Figure 3 is a sectional view taken on line 3—3 of Figure 2.

Figure 4 is a sectional view taken on line 4—4 of Figure 3.

Figure 5 is a sectional view taken on line 5—5 of Figure 3.

Figure 6 is a partial side sectional view of a modified form.

Figure 7 is a sectional view taken on line 7—7 of Figure 6.

Figure 8 is a sectional view taken on line 8—8 of Figure 6.

Referring now in detail to the drawings the numeral 10 designates generally the guard or shield of this invention which is adapted for attachment to the electric motor driven rotary toothbrush 11 of the type shown and described in U. S. Patent No. 2,446,995 dated August 10, 1948. However, it will be appreciated that this guard may be used on other types of rotary brush drive means providing there is a fixed shaft receiving member to which the guard can be attached in shaft encircling position.

The toothbrush 11 is formed with a housing 12 having a forwardly extending tapered nipple 13. The nipple is formed with a threaded portion 14 (Fig. 3) which is concentrically disposed relative to a brush shaft socket 15. Rotatably and removably mounted in the socket 15 is a brush shaft 16 having a free end 17 disposed forwardly of the nipple 13. Mounted on the shaft end 17 is a rotary brush 18 adapted for cleaning the teeth of a user thereof.

The guard 10 is preferably formed of plastic material conforming in appearance and feel with the plastic material from which the housing 12 is formed. The guard 10 is also formed with a connecting sleeve portion 19 threaded interiorly as at 20 to threadingly engage with the nipple threads 14 to secure the guard in fixed relationship relative to the housing 12. Sleeve 19 is formed with a receding taper complementary to the taper of nipple 13 to merge with the straight lines of an eccentrically shaped mid-section 21 bored as at 22 to fit snugly over the shaft 16. The bore 22 is disposed above the normal center line of the mid-section 21 so as to provide an enlarged or thickened underportion 23. The greater cross-section thusly provided for the bot-

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tom section 23 is best illustrated in Figures 3 and 4. The combined length of sleeve 19 and mid-section 21 is just sufficient to encase shaft 16 to a point 24 adjacent the brush 18 so that the shaft 16 can be inserted in sleeve enclosed relationship within the sleeve 19 and mid-section 21 for rotation of the brush 18 protruding therefrom.

The bottom portion 23 is split as at 26 from a point 25 disposed forwardly of sleeve 19 to the outer end 27 to form a flap 28 that extends co-extensively with the mid-section 21 to provide a downwardly bendable free end 29. Attached to the free end 29 or integrally formed therewith as an extension of the flap 28 is a cup 30. The cup 30 is formed with an inside cavity sufficiently dimensioned to receive the brush 18 with its periphery substantially planar with a U-shaped rim 31 that extends along both sides and the outer end of the cup as best illustrated in Figure 2 leaving an open top 33 of sufficient width to permit passage of the brush therethrough on bending of the flap 28 as shown by dotted lines in Figure 3. The cup 30 is proportioned and contoured to snugly and rotatably receive the brush 18 extended therein with the wall thickness being held to a minimum. The bottom portion 35 or back surface of the cup 30 is rounded and smoothly finished so as to slip easily within the user's mouth between the cheek and jaws allowing the brush 18 to be exposed through the open top 33 to engage the teeth as desired.

Disposed within the bore 22 of the mid-section 21 is a suitable bearing 34 surrounding shaft 16. The bearing 34 is preferably formed with an inner sleeve 39 carried by the shaft 16 engaging within an outer sleeve 40 carried in a socket 41 formed in mid-section 21 concentrically of bore 22. This bearing arrangement reduces the possibility of vibration at the shaft end to a minimum.

In the operation of the rotary toothbrush to which the guard 10 has been attached the amount of brush exposure or engagement with the user's teeth is easily controlled by the user merely increasing or decreasing the side pressure on the brush 18 as it is rotated. This changing of the pressure is used to effect movement of the brush in or out of the cup 30 which on engagement of the rim 31 with the gums of the user causes bending of the flap 28 to the extent necessary to attain the brush movement desired. After using the guard can be readily removed for cleaning and sterilization by merely unscrewing the sleeve 19 from the nipple 13. The shaft 16 and brush 18 can be withdrawn by merely bending the flap 28 to allow the end clearance from the cup 30 as desired.

In Figure 6 the guard 10 is shown as being formed with a cup 33a having a rim 31a formed with a soft rubber insert 36. The insert 36 is preferably secured to the rim 31a by tongue and

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groove construction as at 37. The function of the insert 36 is to provide a resilient gum engaging member which will more closely enclose the brush 18 as it is being rotated. The resilient rim 31a will also provide for softer contact with the gums of the user. Disposed in the mid-section 21 of the modification shown by Figure 6 is a collar 38 formed of absorbent material to surround the shaft 16 and prevent conduction of moisture along the shaft. The provision of an absorbent collar 38 protects the brush driving mechanism from injury and further prevents any danger of forming an electric arc from the motor caused by moisture and abrasive material which might otherwise be conducted along the shaft.

Inasmuch as various embodiments of the present invention may be made without departing from the scope thereof, it is to be understood that all matter herein set forth, or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. A guard for a rotary toothbrush comprising a sleeve, said sleeve having a bore and being adapted to receive a rotatable shaft inserted therein with an end protruding therefrom, said sleeve being longitudinally slotted along a substantial portion of its length forming an integral resilient flap having a swingable end disposed coextensive therewith, a cup carried by said flap adjacent the end of said sleeve for substantial enclosure of a brush mounted on the end of the shaft, said cup having an opening for outward movement of the brush on swinging movement of the cup.

2. A device as defined by claim 1 having a bearing disposed within the bore of said sleeve adjacent said cup and an absorbent collar for surrounding engagement with said shaft.

3. A device as defined by claim 2 wherein the cup is formed with a groove in the rim thereof and a soft, rubber member having a tongue engaged in said groove to provide a resilient rim for close engagement with an irregular gum surface.

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