

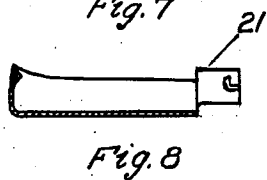
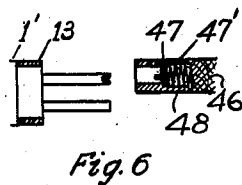
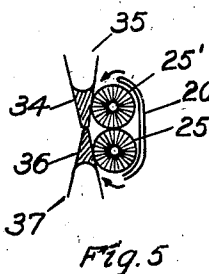
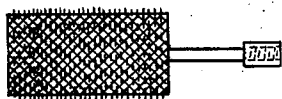
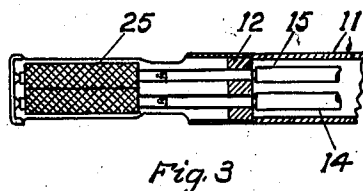
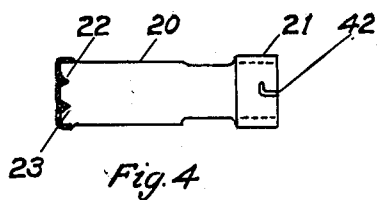
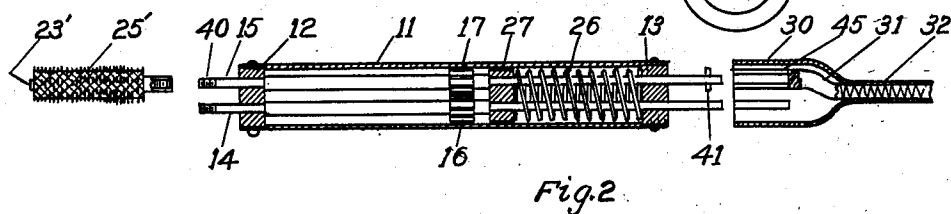
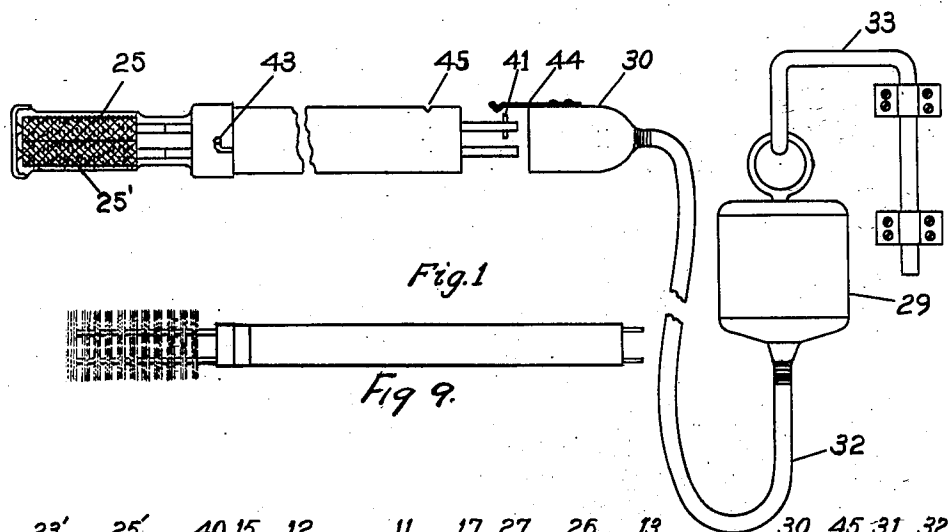
March 14, 1933.

R. A. FESSENDEN

1,901,503

ROTARY BRUSH

Filed Sept. 27, 1928



Reginald A. Fessenden  
by Ezekiel Wolf  
his attorney

## UNITED STATES PATENT OFFICE

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## ROTARY BRUSH

Application filed September 27, 1928. Serial No. 308,795.

My improvement relates to motor driven brushes, more particularly adapted to be used for cleaning the teeth, and characterized in particular by being detachable and driven  
5 from a flexible shaft.

It has for its object the more efficient operation of such brushes and greater efficiency and convenience in cleaning objects, more particularly teeth and in producing and  
10 maintaining a more healthy condition of the mouth.

While rotary tooth brushes are known in the art, they have not come into common use because of their complicated construction and the difficulty involved in keeping  
15 them clean and preventing the water from reaching the encased parts.

In the present invention, I have constructed a rotary tooth brush in which the handle containing the driving mechanism and the  
20 brushes are of simple construction and easy to keep clean. The brushes are detachable yet there are no holes where dirt can collect or where water can settle and make the device unsanitary.

The holder may safely be used by more than one person, each person having a particularly marked tooth brush if desirable for  
25 attaching to the holder.

The holder itself is encased with only the driving shafts running through the end plate bearings so that they are substantially water tight and exclude any chance of contamination  
30 by allowing the interior of the holder to become wet.

The attached drawing forming a part of this specification, shows partly diagrammatically means suitable for carrying out my  
35 invention, and a suitable embodiment of the same.

Figure 1 shows the device of the invention in schematic form.

Figure 2 shows a part in detail.

Figure 3 shows a modification of a detail of Figure 2.

Figure 4 shows a detail of the shield.

Figure 5 shows the application of the device to cleaning the teeth.

Figure 6 shows a modification of Figure 2.

Figure 7 shows a further modification in the brushes for use in the system.

Figure 8 shows a side view of the shield, and

Figure 9 shows the invention in its ordinary proportions in actual use.

In the drawing, 11 is the handle of the brush, preferably formed of square, round or oblong silver tubing, or composition, as for instance the material known by the trade  
60 name of bakelite. 12, 13, are bearings for the two shafts, 14, 15, which are geared together by the gears, 16, 17, and are furnished with keyed or squared ends, projecting from the  
65 bearings 12, 13, as shown in Figures 3 and 6 or with threaded ends as shown by 40 in Figure 2 or with a keyed shaft as shown by 41; as shown, the bearings being fixed by  
70 brazing or other convenient method in the ends of the tube 11. The shafts will, through being geared, rotate in opposite directions, and drive the two brushes 25, 25' accordingly, and preferably so that the exposed parts  
75 of the brushes rotate towards one another though they may rotate away from each other.

20 is a shield which performs the important function of shielding the delicate skin of the mouth from the action of the brushes. It is shown in top view in Figure 4 and in side  
80 view in Figure 8. At the closed end are preferably two embossed cones 22, 23, to support the outer ends of the brushes 25, 25'. The inner open end 21 forms a sleeve which may slip over the end of the handle 11, or  
85 may be brazed or spot welded to it permanently. If not permanently attached, one side of the sleeve 21 is preferably left open, for convenience in cleaning, as shown in Figure 4; that is, instead of being a ring or cylindrical in shape, the sleeve 21 is a half ring  
90 so that the inside surface may be cleaned easily.

The shield 20 may be attached in various ways. It may be permanently attached as  
95 shown in Figure 3 or as shown in Figures 1 and 4 the shield 20 may have a slot 42 in its sleeve and the handle 11 may have a pin 43 in which the shield 20 catches, or it may be slipped on in any suitable way.  
100

The brushes shown in position in Figure 3, are preferably circular in shape, and preferably in the form of cylinders, externally. They are preferably formed of bristles, though other suitable materials may be used, e. g. rubber or rayon. The axes or shafts of the brushes have suitable apertures in them to take the ends of the shafts 14, 15, and the cones 22, 23. They may be detached after use and cleaned or replaced by pulling off the shield 20. Or when the shield 20 is permanently attached, the shafts 14, 15, may be pushed or pulled back against the spring 26 and movable bearing 27, so detaching the brushes. 30 is the end shield of the flexible shaft 31, and when 30 is slipped over the outer end of 11, the flexible shaft 31 engages with one of the shafts of the brush 15, as shown and drives it from the small motor 29, which is suspended from the swinging arm 33, attached to the wall of the bath room. 32 is the external non-rotating sheath of the flexible shaft 31.

The operation is shown in Figure 5 where 34, 36 are upper and lower teeth, and 35, 37 the corresponding gums. The arrows show the direction of rotation. When it is desired to clean the inner surfaces of the teeth, the exposed parts of the brush are held against the inner surface in which case the brushes move the same way, away from the gums, as before.

The brushes may easily be removed either by removing the shield 20, when it is not permanently attached and then unscrewing or just pulling out the brushes if they are keyed, or the brushes may be removed without removing the shield. In this case the shafts 14 and 15 at the end furthest from the brushes may be pulled back against the springs 26, and then the brushes just removed or unscrewed. When the brushes are inserted the shafts may be pulled back and then the brushes set in place. The spring is made just long enough so that the bearing 23' at the end of the brushes bears slightly against the cones 22 and 23. This is shown in Figure 3 where the shoulders of the shafts 14 and 15 do not bear against the bearing 12, the end bearing taking the pressure of the spring 26.

The plug 30 may be similar in shape to an electric light plug. It may be provided with a spring 44 which snaps into a catch 45 in the handle 11. The driving shaft may have a cross pin 41 as shown in Figure 1 or 2. In this case the plug 30 is provided with a slotted driving shaft 45 driven by the flexible shaft 31, in which shaft the pin 41 sets and is turned.

In place of the shaft 15 being pinned, the shaft may be slotted as shown in Figure 6. In this case the driving shaft 46 is provided with a keyed disc 47 having a tongue 47' adapted to fit in the slot of the shaft 15. The disc is backed by a spring 48 so that if

the tongue does not catch into the slot in the shaft when inserted, as soon as the shaft 46 begins to turn, the tongue 47' will catch. In this way it is unnecessary to do any more than just plug the plug into the handle 11.

In Figure 7 is shown a large brush with a long stem which may be attached to the driving shaft 15 and the shaft 14 may be neglected. The shield may be removed also if the brush is to be used for different purposes which demand a freely exposed brush. If the shield is removed the brush used may be of the type shown in Figure 2, which screws on the shaft 15, thereby eliminating the necessity of a support at the end bearing of the brush.

Figure 9 shows the tooth brush in its ordinary size which can be very easily manipulated in the mouth. The brushes interlock slightly so that they are self cleaning besides giving a larger cleaning surface for the same shaft spacing though they may dovetail without touching if greater cleaning surface is desired.

Having now described my invention, I claim:—

In a motor driven brush, a handle, a shaft journaled in said handle, a plate closing the brush end of said handle and providing a bearing for said shaft, said shaft provided with a shoulder on the inner side of said plate, and means including a spring for maintaining said shoulder firmly against the inner surface of said plate.

REGINALD A. FESSENDEN.