MECHANICALLY POWERED TOOTHBRUSH

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UNITED STATES PATENTS
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ABSTRACT

An electrically powered mechanically driven toothbrush comprising an elongated preferably cylindrical thin casing formed in two parts, one for batteries, the other for the motor. The toothbrush shank is secured to the motor section while a switch physically separates the batteries from the motor and selectively connects the motor to the batteries for operation.

1 Claim, 4 Drawing Figures
MECHANICALLY POWERED TOOTHBRUSH

The invention relates to a mechanically powered toothbrush.

Such toothbrushes with a casing having a diameter of approximately 35 mm are known. Such toothbrushes are of the type disclosed in my U.S. Pat. No. 3,183,538 issued May 18, 1965 for PORTABLE ELECTRIC TOILET APPARATUS. These casings which serve as handles are difficult to hold and manipulate, especially for children, limiting their pleasure and effective use of the toothbrush. Further, these casings are not cylindrical in shape and have discomforting projections. However, in order to ensure an optimal care of the teeth, it is of great importance that the use of mechanically powered toothbrushes be started at an early age. It is therefore an object of the invention to improve the easy handling of such toothbrushes.

To solve this problem, the driving elements of the toothbrush, according to the present invention, are disposed inside of a thin casing of a substantially cylindrical shaped construction having an outer diameter of at most 26 mm or, alternatively, the driving elements are disposed inside of a thin casing of an oval tubular construction having an outer diameter of at most 28 mm. Consequently, the thin shape of the toothbrush approximates the handle of a normal toothbrush and easy handling is considerably enhanced.

Moreover, the thin toothbrush weighs less than conventional electrically powered toothbrushes, which also contributes to easy handling thereof.

The relatively long length of the handle must be considered advantageous since, according to a further embodiment of the invention, the “on and off” switch separates the length of the casing in a ratio approximately 1:2 and is disposed laterally to the brush.

The easy handling of the device is especially significant when one considers that the electric toothbrush is a relatively little used appliance. The dislike for an unknown appliance disappears the faster, the better the appliance fits into the hand and the simpler it is to handle.

In the drawing there are shown schematically two modifications of the invention, namely:

FIG. 1 is a partial longitudinal sectional view of an electric toothbrush according to the concepts of the present invention;

FIG. 2 is a transverse sectional view of the toothbrush in the plane of line 2—2 in FIG. 1;

FIG. 3 is a transverse sectional view of the casing taken along the plane of line 3—3 in FIG. 1; and

FIG. 4 is a transverse sectional view of another embodiment of casing.

With continuing reference to the accompanying drawing, wherein like reference numerals designate similar parts throughout the various views, in casing 1 of an electrically powered toothbrush according to the invention there is disposed an electric motor 2 which is connected to batteries 3. Two “penlite” sized batteries can be used. On shaft 4 of the motor 2 there is secured an eccentric disc 5, which when switched on produces vibrations. The vibrations are transferred to brush handle 6 attached. The eccentric disc 5 is screwed into threaded recess 8 of the casing 1. The recess 8 is immediately adjacent that eccentric disc 5. A thin wall 28 separates in a fluid proof manner the shank 6 of the toothbrush from the electric motor.

Between the motor 2 and batteries 3 there is disposed an “on and off” switch 9 which is actuated transversely to the longitudinal axis of the casing 1.

The “on and off” switch 9 consists of two ring-shaped sockets 10, in which two contact springs 11, 12 are secured and in which a transversely displaceable pin 13 is accommodated. Contact spring 11 is electrically conductively connected with the motor 2, and the other contact spring 12 with the batteries 3.

The pin 13 is provided from one end thereof up to its center with an insulating jacket 14 and at the connection to jacket 14 with an annular groove 15.

When the pin 13 is displaced by means of the elastic cover 16, 17 which closes the casing 1 in the area of the “on and off” switch 9, the contact springs 11, 12 move from the insulating jacket 14 into the annular groove 15 and thereby switch the motor 1 in or out of the annular groove 15 onto the jacket 14. In this position the toothbrush is disconnected.

The casing 1 consists of two parts. In the part closer to the brush are mounted the motor 1 and the switch 9, in the other part are disposed the batteries 3 inside of the jacket 18, which is clamped over an elastic, convex disc 19 between switch 9 and the bottom of the casing 1 and laterally by means of an elastic ring 20. At the bottom of the jacket 18 there is provided a spiral spring 21 which presses the batteries 3 against a contact 22 of the switch 9.

The switch 9 separates the length of the casing in a ratio 1:2 approximately and is mounted on the brush side.

The casing 1 has an annular cross section (FIG. 4) with a diameter of approximately 23 mm. It is especially suitable for the mounting of motors with attached eccentric weight disc as well as for other equipment for producing vibration or oscillation movements.

Another electric toothbrush, driven, for example, by a non-illustrated oscillating lever motor, has an oval casing 23 with a diameter of maximum 28 mm.

I claim:

1. A mechanically driven toothbrush comprising an elongated tubular relatively thin casing having a maximum outside diameter of 28 mm, said casing being formed in two sections having the same diameter and detachably secured to each other, a motor in one of said sections, the other of said sections being substantially twice the length of said one section, means for causing vibrations drivingly connected to said motor disposed in said one section, a toothbrush shank detachably secured to said one section, batteries in said other section, and switch means mounted in said one section and having contact means extending into said other section for selectively electrically operatively connecting said motor to said batteries, said switch means being disposed and extending between said motor and said batteries, said switch means extending transversely of said casing and being mounted on the sides of the casing and being selectively actuable from both sides of said casing, said contact means including a pair of contact springs connected respectively to said motor and said batteries, said switch means including a displaceable pin, said pin having an insulating jacket thereon and an annular groove therein, said casing having elastic covers on opposed sides thereof, said pin being engageable by said covers and being movable
diametrically of said casing to selectively engage said contact springs in said groove and with said insulative jacket to respectively complete and break an operative electric circuit from said batteries to said motor.