

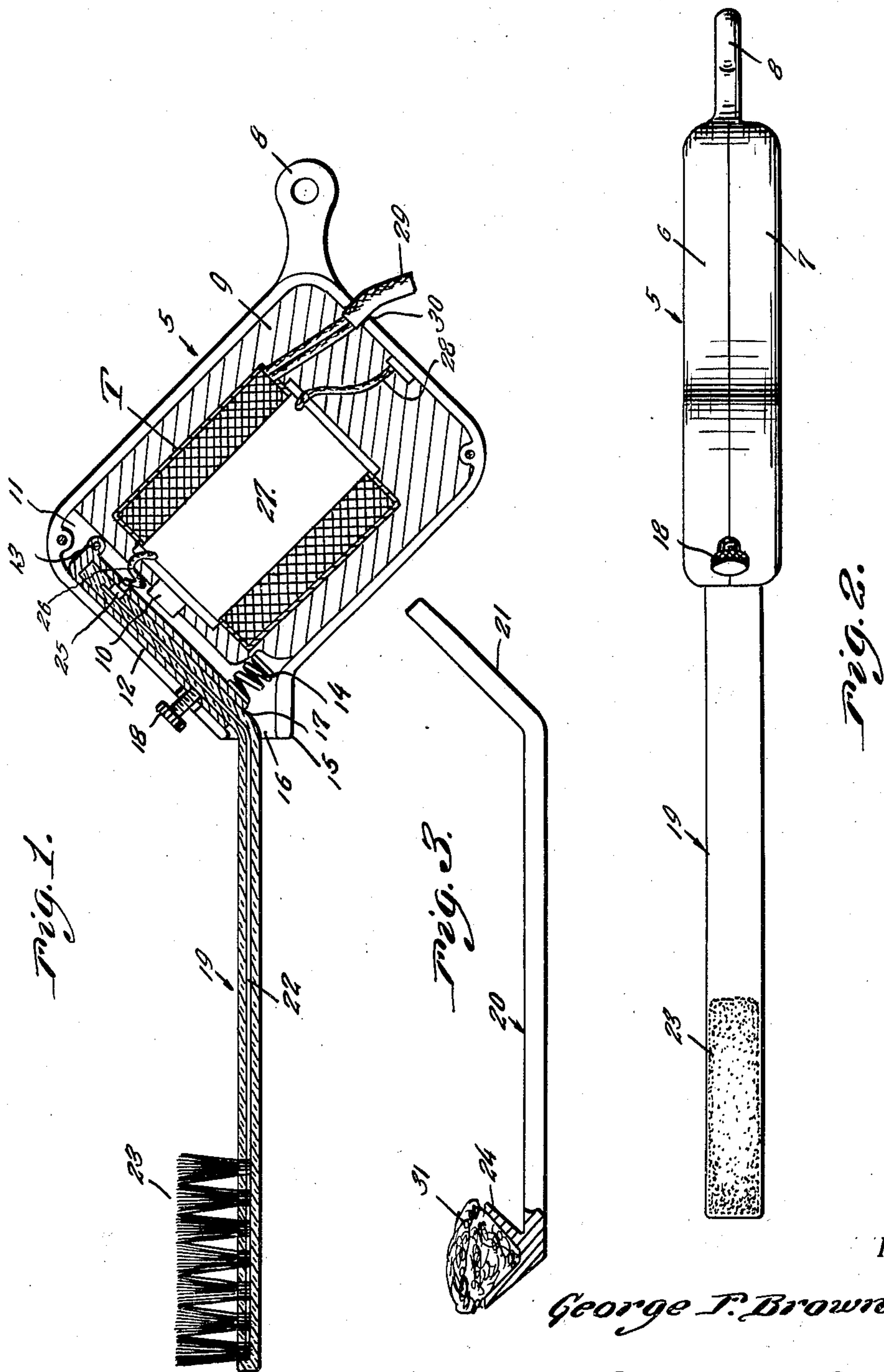
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DENTAL APPLIANCE

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## DENTAL APPLIANCE

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5 Claims. (Cl. 174—173)

My invention relates to dental appliances, and particularly to means for cleaning and massaging the teeth and gums.

It is an important object of my invention to provide an electrical device which is designed to be employed either as a tooth brush or as a medicament applicator and electric current applicator whereby there is applied to the teeth and gums while being mechanically cleaned or massaged, electric current pulsations which are synchronized with the mechanical pulsations or vibrations.

It is also an important object of my invention to provide a device of this kind which embodies the characteristics and effects of a vibrator and of an electric current applying device, whereby the gums and/or teeth may be treated and stimulated simultaneously by means of mechanical vibration and the action of electrical currents of low voltage and long wave length.

Other objects and advantages of my invention will be apparent from a reading of the following description taken in connection with the drawing, wherein for purposes of illustration I have shown a preferred embodiment of the invention.

In the drawing:—

Figure 1 is a general longitudinal sectional view through the embodiment of my invention showing the same in the capacity of a tooth brush.

Figure 2 is a top plan view of Figure 1.

Figure 3 is a sectional elevational view of a medicament applicator for replacing the tooth brush shown in Figure 1.

Referring in detail to the drawing, wherein like numerals refer to like parts throughout the same, the numeral 5 generally designates a relatively thin flat longitudinally divided metallic casing formed of sections 6 and 7. On the section 6 is provided a hanging loop 8 for suspending the device when not in use.

Within the casing is disposed a combination electro-magnet and transformer generally designated by the letter T, which is disposed longitudinally thereof and embedded in a suitable filling of wax or other suitable insulating material generally designated by the numeral 9. The core 10 of the electro-magnet is exposed into a transverse chamber 11 at one end of the casing, whereby to affect an armature 12 which is disposed rockably within the chamber 11, being hinged at one end of the chamber as indicated at 13. At the other end of the chamber 11 is disposed a suitable spring means 14 for maintaining the armature normally out of contact with the

core 10, and for aiding in the vibratory movement of the armature.

The casing is provided as indicated at 15 with a mouth having the opening 16 communicated with the chamber 11.

The armature generally designated 12 consists of a magnetically permeable metal block having extending longitudinally thereof a recess or passage 17 open at one end. Through one wall of the armature 12 is threaded an adjusting set screw 18 for clamping an applicator inserted therein.

Adapted for insertion into the passage 17 of the armature and to be secured therein by means of the set screw 18 there may be provided a multiplicity of tooth brushes 19 or applicators 20, which may be of different form and size, according to the purposes to which they are to be devoted.

As seen in the drawing the handle portions of the brush and applicator have an angularly directed end portion 21 which is adapted to be received and held in the manner already described in the armature 12, so as to vibrate therewith when the appliance is in use.

Both the tooth brush and the applicator have extended through the handle thereof a conductor 22 which is electrically connected with the bristles 23 or with the applicator head 24 whereby to communicate simultaneously to the gums and teeth electrical pulsations as well as mechanical vibrations, the electrical pulsations being of low voltage of long wave character synchronized with the mechanical vibrations.

A lug 25 connected to the conductor 22 and extending through one of the walls of the armature 12, provides means for connection by one of the secondary terminals 26 of the secondary 27 of the reducing transformer T. The remaining terminal of the secondary of the transformer indicated at 28 is grounded to the casing 5 as indicated or in any other suitable manner. Suitable supply conduits 29 lead through an opening 30 in the casing for connection with the primary of the transformer.

It will be observed that when the device is operated, the armature 12 will vibrate so as to cause vibration of the tooth brush or applicator as either is applied to the teeth or to the gums, and at the same time electrical current pulsations of low voltage and long wave length, induced in the secondary of the transformer by the movements of the armature, and synchronized with the mechanical vibration pulsations will be conveyed to the teeth or gums. Because of



the fact of the synchronization of the electric current impulses applied to the teeth and gums simultaneously with the mechanical pulsations or vibrations of the brush or applicator, the shock which is usually attendant upon application of electric currents to parts of the body or to the gums or teeth, will not be felt as shocks, but only as a slight and pleasant intensification of the sensations produced by the mechanical vibrations.

The applicator 20 having a conical or other suitably formed applicator head 24 is adapted to carry therein a quantity of cotton or the like 31 upon which the medicament is carried for application to the teeth and gums.

Due to the synchronization of the application of electric current impulses with the mechanical vibrations, the stimulating effects upon the circulation and upon the nerves of the teeth and gums are very effective, and are cumulative, whereby to produce a desirable effect of this kind of more useful character than has been heretofore obtained in a device suitable for family or domestic use.

The vibrating brush acts to chop into and readily remove sticky plaques, helps to tighten loose teeth by stimulating the surrounding tissues through the artificial exercise supplied.

By means of my device, such medicaments as pyorrhea medicine can be worked mechanically, deep into the crevices of and between the teeth, and enable the securing of results of professional merit through simple home treatments.

It will be apparent that because of the interchangeability of the brushes and applicators, that, for instance, each member of a family may use the same appliance simply by inserting his or her own brush or applicator. Because of the detachability and interchangeability of the brushes and applicators, the device lends itself readily to the maintenance of sanitary conditions, since each of the applicators and brushes may be sterilized before and after use.

Though I have shown and described herein a preferred embodiment of the invention, it is to be definitely understood that I do not desire to limit the application of the invention thereto, and that any change or changes may be made in material and structure and arrangement of parts, consistent with the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. A combined mechanical vibrator and electric current applying device comprising a conductive casing for holding in the hand, a body of dielectric material filling all but a portion of the casing, a transformer electro-magnet embedded in the body of dielectric material having its core exposed into said portion, a vibrating armature mounted in said portion in the magnetic field of the core, a conducting applicator arm carried by the armature, connections from a source of current supply to the primary of the electro-magnet, a second connection from the secondary of the electro-magnet to the conducting applicator, a third connection from the secondary to the casing whereby vibration of the armature will synchronously vary the output of the secondary of the transformer electro-magnet so that when the conductive casing is held in the hand and the applicator applied to another part of the body, synchronized mechanical and electrical pulsations will be communicated to such other part of the body by the applicator.

2. In a combined mechanical vibrator and electric current applying device involving a conductive casing, a supply current transforming electro-magnet, and a conductive applicator; an elongated tubular armature, hinge means mounting one end of the tubular armature at one side of the casing so as to position the armature across the casing and across the electro-magnet, said conductive applicator being carried by an insulated member inserted into the free end of the tubular armature and extending outwardly through an opening provided in the side of the casing opposite said one side of the casing, and a conductor in said insulated member and electrically connected to said armature and to said applicator.

3. A combined vibrator and electric current applying device comprising a relatively small elongated flat casing for holding in the hand, a longitudinal electro-magnet in the casing, a transverse armature in the casing and hingedly mounted by one end near one side of one end of the casing and across the electro-magnet, the corner of the casing adjacent the free end of the armature being provided with an opening, a conductive applicator, a tubular insulated member carrying the applicator and arranged in the opening and connected to the armature so as to be supported and operated by the armature, and a conductor extending through said tubular member from said armature to said applicator and electrically connected thereto.

4. A vibrator and current applying device comprising a relatively small flat elongated conductive casing for holding in the hand, a body of dielectric material filling the major portion of the interior of the casing and spaced from one end of the interior of the casing in a manner to define an armature space, a transformer electro-magnet longitudinally arranged in the dielectric body and having its core exposed through that end of the dielectric body which defines the armature space, a conductive armature arranged in the armature space transversely of the casing and hinged by one end near one corner of and on the casing, the directly opposite corner of the casing being formed with an opening communicating with the armature, a conductive applicator working in the opening and connected to the armature so as to be supported and operated by the armature, suitable energizing connections to the primary of the transformer electro-magnet, and other suitable connections between the secondary of the transformer electro-magnet and the conductive casing and conductive armature, portions of the walls of the casing surrounding the said opening being extended outwardly in a direction diagonal of the casing and forming a guard for the free end of the armature and a portion of the applicator, that portion of the applicator which is outward of the armature being bent within the casing so as to extend the remaining portion of the applicator diagonally from the casing.

5. A combined mechanical vibrator and electric current supplying device comprising a generally rectangular casing to be held in the palm of the hand, an applicator extending diagonally from one corner of said casing, said applicator having an angulated armature portion within and lying across the adjacent end of said casing and hinged adjacent to the side of the casing opposite said corner, said angulated armature portion working through an opening in said cor-



ner, an electro-magnet arranged longitudinally in said casing and having its core arranged in attractive relation to said armature portion, said armature portion including a tubular receiver  
5 part of magnetically permeable material directly hinged to the casing and a dielectric part socketed in said receiver part, and a locking screw travers-

ing the side of said receiver part and engaging said dielectric part for locking said dielectric part and the applicator in place, said locking screw being accessible for adjustment through an opening provided therefor adjacent said corner of the casing. 5

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