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DENTAL IMPLEMENT

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3 Claims. (Cl. 128—62)

This invention relates to improvements in electrically operated implements intended for the removal of mouth infection, especially that affecting the teeth and gums.

Advantages desired are, that in addition to the removing of tooth surface coatings, there may be a massaging of the gums and adjacent membranes. To attain the aforesaid advantages, my invention contemplates the employment of a handle shaped casing having a vibratory rod therein operable by electromagnetic means energized by an alternating current. The invention comprises a head member for said rod, and to which said head member is secured at an oblique angle, a flexible cup or applicator. By the peculiar formation of this head member, and of the said cup, and by the peculiar positioning of the cup with reference to the position of the rod and the handle, I render possible the utilization of the vibratory action of the rod, and the manipulating of the handle whereby there may be obtained a sweeping and also an intensive direct, and also indirect suction upon the proximal surfaces and the gingival borders of the teeth;—and this, without inconvenience to the user. The invention further consists of certain mechanical and structural improvements in the handle casing and the enclosed mechanical parts, whereby the device in its entirety is economical of construction and dependable, and the interior parts are protected against water and moisture.

In the accompanying drawing forming a part of the specification, the several parts of the invention are identified by suitable characters applied to them in the different views, in which—

Figure 1 is a central longitudinal sectional view of my improved implement.

Figure 2 is a top plan view of the head portion of the implement, a portion thereof being shown in cross section.

Figure 3 is a cross section view on line 3—3 and as seen in the direction of arrow 3 in Figure 1.

Figure 4 is an enlarged sectional detail view taken on the line 4—4 in Figure 2.

The body portion 1 and the head portion 2 of the said casing, and which said casing is about four and one-half inches in length, are made of bakelite or other suitable nonconductive material. At the forward end of the bore 3 is the inturned annular shoulder 4, and central aperture 5. A di-electric tubular body member 6 has a head portion which embodies a flange 7, and threaded boss 8. A magnetic rod 9 which is of diameter substantially the same as, and which is attached at its shouldered portion 9a to the

said tubular member 6, has threaded end 10. The said tubular member 6 when inserted into place has its flange 7 to fit snugly in the said bore 3, and to abut against the shoulder 4, and its boss 8 to pass through the central aperture 5 of the aforesaid casing, as shown in Figure 1.

A solenoid coil 12, embodying a usual core 13, is inserted into the bore 3 of the casing, the core in its forward portion surrounding the tubular member 6, and in its rearward portion surrounding the magnetic member 9. The ends of the solenoid wire are designated 14 and 15.

A di-electric closure piece 16 which is of diameter to fit into bore 3 of the said body section 1, has the opposed tubular terminal posts 18 and 19 to which the wires 14 and 15 of the coil are secured. A di-electric base piece or plug 20 having boss portion 21 of diameter to fit within the open end of the body section 1, has tubular terminals 23 and 24 spaced to engage the said terminals 18 and 19.

A magnetic rod which may be designated as an armature 25 is provided with an integral collar 26. Integral therewith is shank 27 which has its forward end portion 28 angular in cross section, and provided with a threaded bore 29. 2 designates a cone shaped head piece having a central bore in whose forward end is incased a metal bushing 31 having broached opening 32 in which the end 28 of the shank 27 has its bearing. Provided in said head piece 2 is a threaded counterbore 33.

Loose on said armature, and at the rear side of said collar 26 is a helical spring 35, and on the opposite side of said collar is a helical spring 36. The urge of spring 35 is stronger than the urge of spring 36. The armature 25 is inserted into position in the tubular member 6. Said tubular member 6 (with the member 9 attached) is then inserted in the bore 3 of the casing, the flange 7 coming to position of repose against the annular shoulder 4, the boss 8 passing through aperture 5.

By the above described combination and arrangement of parts, there is economy in formation and processing of the several parts, and the work of assembling them is extremely simple. Also all operative parts are shielded and housed against entry of water or moisture.

The head member 40 has threaded stem 41 which is adapted to be screwed into the bore of shank 27. The end of the said head member is inclined at an angle of about thirty degrees and is provided with an annular recessed seat 42. Cup 43 is made of rubber and has its inner sur-

face 44 of corrugated formation. These cups, as shown in Figure 2, are arranged side by side, and each is secured by a fastener stud 45.

By my invention there is obtained a reciprocal movement which is positive and sufficiently powerful, and which is free from vibration. By providing the spring 36 the tension of which is less than that of spring 35, the armature 25 is stayed against vibration or bouncing, and possibility of its being momentarily out of the magnetic field is eliminated. Moreover the stroke, while being of the desired energy, is so cushioned that there is absence of pounding or hammering effect. By the positive, relatively powerful and peculiar actuation of the armature and its head member, there is enabled the use of the cup or cups in such manner that the tooth surfaces and gingival borders of the gums may be swept and traversed. At the same time, by manipulating the implement so that slightly increased pressure is applied, there is such action by the cups that suction and expulsion is effected. Results are that coatings and interposed deposits are removed, and there is no abrasion of tooth surfaces, no irritation of the gums, and the effect of antiseptic solutions is augmented.

In addition to the foregoing advantages enjoyed in cleansing of the teeth, there is practicable the massaging of the gums and adjacent membrane areas. The implement lends itself to being easily manipulated whereby all of the interior and anterior gum surfaces may be swept and massaged. It being recognized that stimulation of blood circulation in the gums is the most effective agency in overcoming tendencies to pyhorrea and kindred diseases, the importance of the advantages afforded by my invention is apparent.

The head member 40 being detachable, it is capable of being sterilized independently of the body portion of the implement. Moreover the head member with its cups, is capable of being manufactured at such relatively small cost that with each implement it is practicable to have a quantity of these.

Whereas in the present application I have described what I consider as the preferred form and structure of the several parts, it will be understood that minor changes may be made in the different features and details, within the scope of the invention as it is defined in the appended claims, without departing from the principles of the invention.

What I claim as my invention, is—

1. In a device of the kind described, a di-electric casing, a solenoid coil therein, an armature therefor mounted for longitudinal movement

in the casing and having a shank portion projecting beyond the casing and there being a collar integrated therewith spaced from its end, a di-electric coupling member attached to the front end of the casing and having a bore through which the said armature is passed, a spring between said coupling and the rear side of said collar, a spring to bear against the front side of said collar, and a di-electric head piece having a bore through which the shank of said armature is passed, and being provided with a counterbore to enclose said springs and constitute an abutment for the forward spring, and which said head piece is adapted to be secured in sealed union with said casing and coupling.

2. An implement of the kind described, comprising a di-electric handle shaped cylindrical casing having an internal annular flange at its forward end, a tubular di-electric member having a threaded boss to project beyond the end and having an integral collar to seat against the internal annular shoulder of the said casing, a magnetic rod having its forward end secured to the rear end of said tubular member, a solenoid coil surrounding the said tubular member and the said magnetic rod, an armature loose in said tubular member and which is provided with a collar spaced from its forward end, a helical spring between said collar and the boss of said tubular member, a helical spring of weaker tension disposed in advance of said collar, and a di-electric head piece having a bore to constitute a guide for the frontal portion of the armature, and a threaded counterbore engaging the threaded boss of said tubular member whereby when the said head piece is screwed to tightened status, the tubular member, head piece, and casing are united, and the armature and the said springs are retained in position.

3. For an implement of the kind described embodying a rod mounted for longitudinal movement, and electrically operated means for vibrating said rod, a housing structure therefor consisting of a di-electric handle shaped casing having an inturned flange at its forward end, a tubular di-electric member having a threaded boss to project beyond the end and an integral collar to seat against the inturned flange of the said casing, and a di-electric head piece having a bore to constitute a guide for said rod and being provided with a threaded counterbore engaging the threaded boss, whereby when the said head piece is screwed to tightened status, the said tubular member and casing are united and their jointures are hermetically sealed.

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