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3,400,999

DENTAL APPLIANCE

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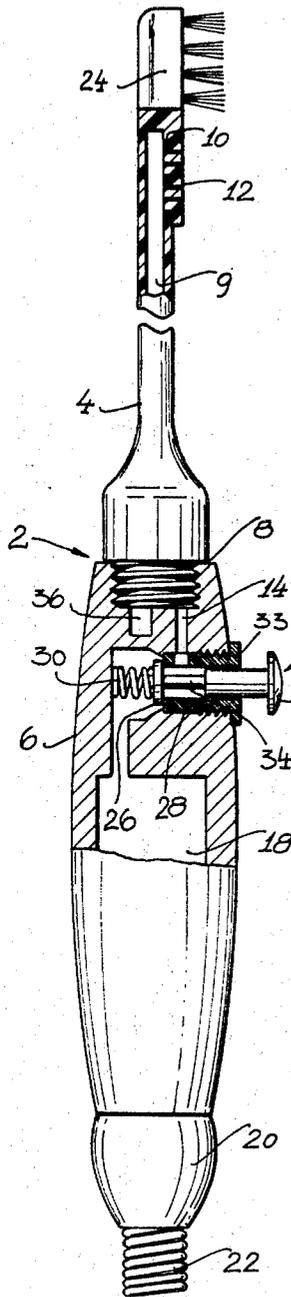


FIG. 1

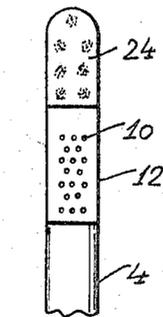


FIG. 2

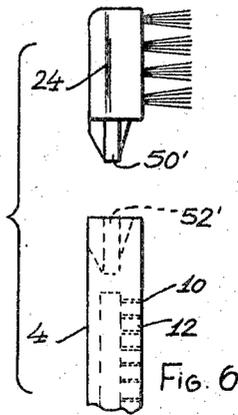


FIG. 6

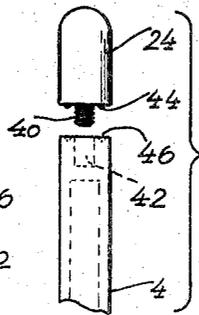


FIG. 3

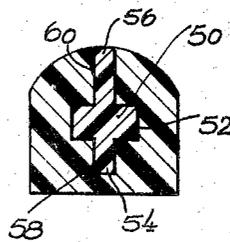


FIG. 5

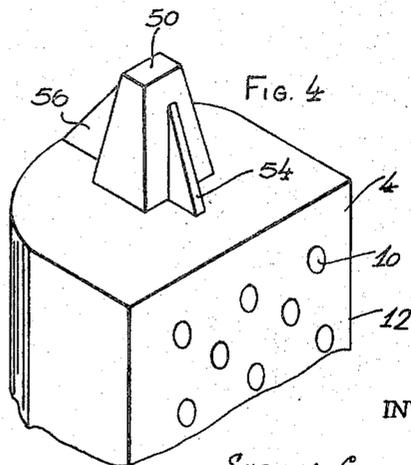


FIG. 4

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DENTAL APPLIANCE
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 22,041
 4 Claims. (Cl. 401—278)

ABSTRACT OF THE DISCLOSURE

A dental appliance comprising a handle connectible at one end to a source of water and formed with a passageway conducting the water to a location adjacent to the opposite end where the passageway terminates in a plurality of transverse openings forming a spraying head, a separable brush unit being releasably secured to the spraying head by an axial pin carried by one received in an axial opening in the other, the pin being formed with a rib and the opening being formed with an accommodating recess to prevent relative rotation between the two.

The present invention relates to a dental appliance, an object of the invention being to provide an improved dental appliance which may be used for brushing the teeth or gums and for dispensing water or a treating substance during the brushing action, or it another time.

The invention may take a large number of forms but is herein described, by way of example only, with reference to the accompanying drawings, in which:

FIG. 1 is a side view, partly in section, of one embodiment of the invention;

FIG. 2 is a front view of a portion of the device of FIG. 1;

FIG. 3 is a rear view, partly in section, of one arrangement for removably mounting the brush to the handle in the device of FIG. 1;

FIGS. 4 and 5 are, respectively, a perspective view and a transverse sectional view illustrating a second form of mounting; and

FIG. 6 is a partially sectional view of a third form of mounting arrangement.

The dental appliance illustrated in FIG. 1 comprises a handle generally designated 2 consisting of two sections, namely an upper section 4 and a lower section 6 removably attached together by an externally threaded fitting 8 carried at the lower end of section 4 and received within the internally threaded upper end of section 6. The upper end of section 4 is formed with a longitudinal bore 9 defining a passageway and terminating in plurality of transverse openings 10 forming a spraying head 12 this head also being in communication with a corresponding passageway 14 formed in handle section 6. The latter section carries a hand-operated valve 16 between passageway 14 and a hollow chamber 18. The lower end of handle section 6 is connected by a fitting 20 and a hose 22 to a source of water. A separable brush unit 24 is removably attached to the upper end of handle section 4, at the end of the spraying head 12.

The hand-operated valve in handle section 6 comprises a valve member or disc 26 biased against a valve seat 28 by means of a coil spring 30, normally to close the valve and to interrupt the flow of water from chamber 18 to passageway 14. The handle section 6 carries a button 32 adapted to be depressed within a collar 33 whereupon it moves the valve stem 34 and thereby the valve disc 26 away from the valve seat 28. This permits the water to flow from chamber 18 to passageway 14, and from there through the handle section 4 and out through spraying head 12. The handle may be formed with a compartment

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36 for containing a treating substance adapted to be dispensed with the water passing therethrough.

An important feature of the present invention is the provision in a removable manner of brush unit 24 at the end of handle section 4 next to the spraying head 12. One form of removable attachment is illustrated in FIG. 3. In this form, brush unit 24, is secured by means of a threaded pin or screw 40 carried by the brush and adapted to be threadedly received within an opening 42 formed at the upper end of handle section 4. To hold the brush 24 against rotation when attached, ball and detent means are provided comprising a pair of embossments 44 formed at the end face of brush 24 adapted to be seated in corresponding recesses 46 formed in the end face of handle section 4. Both the brush 24 and the handle section 4 are preferably made of plastic material, whereby the two contacting faces will deform somewhat to enable the embossments 44 to seat in recesses 46 when the two are attached.

An alternative attaching arrangement is illustrated in FIGS. 4 and 5. Here, the upper end of handle section 4 is formed with an axial pin 50 adapted to be received within a corresponding axial opening 52 formed in brush unit 24. Pin 50 is formed with a rib. Preferably ribs, 54 and 56, are formed on two opposite sides thereof and are adapted to be received within accommodating recesses 58 and 60 formed in opening 52 in brush 24. Pin 50 and ribs 54 and 56 are preferably tapered toward the upper end, as shown in FIG. 4, whereupon the opening 52 and its recesses 58 and 60 will likewise be tapered to accommodate the latter elements. Recess 60 extends to the outside surface of the brush 24, forming a slit in the brush, which provides a spring-action upon insertion of the pin.

The foregoing attaching arrangements enable the brush to be quickly and easily attached to the handle section including the spraying head 10 and securely holds the brush against rotation.

It will of course be appreciated that the structures of the contacting faces between the brush unit 24 and the handle section 4 could be reversed, without changing the basic attaching arrangement. FIG. 6 briefly illustrates this reversal of parts with respect to the arrangement in FIGS. 4 and 5. In FIG. 6 it will be noted that pin 50' is formed on brush unit 24, and the opening 52' is formed in handle section 4.

The dental appliance illustrated may be used in many different ways. In one application, a treating material may be included in compartment 36 useful for massaging the gums, and water carrying the treating material may be caused to pass through spraying head 12 onto the gums, by depressing button 32, while the gums are massaged by brush 24. Instead of using the device for massaging gums, it can also be use for brushing the teeth, in which case compartment 36 would contain tooth powder or paste. The device could also be used without brush 24, for example for rinsing the mouth. When the brush is worn out, it can be easily removed and discarded, and a new one applied with relatively small expense.

It will further be appreciated that the device could be used without handle section 6 and its valve 16, the handle section 4 being directly coupled to the line 22 in this case, and the flow of the water being controlled by the valve in line 22.

Many changes, variations and applications of the illustrated embodiments of the invention may be made within the scope of the invention as defined in the following claims.

I claim:

1. A dental appliance comprising a handle having means at one end for connecting same to a source of water and formed with a passageway conducting the

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water therethrough to a location adjacent to the opposite end thereof, the said passageway terminating at said location in a plurality of transverse openings forming a spraying head at said opposite end of the handle, a separable brush unit disposed at the end of said spraying head and in alignment therewith and with said handle, and securing means for releasably securing said separable brush unit to said spraying head including an axial pin carried by one adapted to be received in an axial opening in the other, said pin being formed with a rib and said opening being formed with an accommodating recess to prevent relative rotation between the two.

2. A dental appliance according to claim 1, wherein the pin is formed with a rib on two opposite sides thereof, and said opening is formed with two accommodating recesses one of which extends to the outside surface of the member in which the opening is formed.

3. A dental appliance according to claim 2, wherein said pin and rib are inwardly tapered toward the outer end

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thereof, the accommodating recesses being correspondingly tapered to receive said pin and ribs.

4. A dental appliance according to claim 1, wherein said handle includes a section provided with a hand-operated valve controlling the flow of water through the handle.

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