DEVELOPMENT FOR PENETRATING TEETH WITH FLUORIDE
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Fig. 1

Fig. 2

Fig. 3

Fig. 4
DEVICE FOR PENETRATING TEETH WITH FLUORIDE

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1 Claim. (Cl. 128—172.1)

The present invention relates to a device for penetrating teeth with fluoride for prevention of teeth from being decayed.

It has been already known to apply onto the surface of the teeth a powder or a tooth powder containing a fluoride or a solution thereof in order to prevent the teeth from being decayed. This is possible due to the fact that the fluoride penetrates the porous tooth materials, i.e., enamel and dentine materials and thereafter passes into the internal dental pulp structure, where the fluoride suppresses breeding of lactic fermenters generated in the pulp structure. When a medicine is applied to the surface of a tooth, however, there is observed a diffusion of ions, such that positive ions diffuse from the surface of the tooth toward the pulp structure, while negative ions diffuse, on the contrary, from the pulp structure toward the surface because the pH of the dental pulp blood is observed to be about 7.8, while that of the pulp structure is about 7.3 and that of the saliva is about 6.8. Therefore, when a conventional fluoride medicine is applied onto the surface of a tooth, negative ions of the fluoride can not penetrate into the interior of the tooth but diffuse in the saliva which is a weak acid and flow out of the mouth uselessly.

One object of the present invention is, therefore, to remove the above mentioned disadvantage by obtaining, under utilization of the ionization phenomenon of an electrolyte solution, a device which enables negative ions of fluoride in the fluoride solution when applied to the surface of a tooth or teeth to penetrate positively into the dental pulp interior.

Another object of the invention is to obtain a simple, compact and cheap device of the kind mentioned above.

The accompanying drawing shows two embodiments of the device according to this invention, wherein

Fig. 1 shows an elevation of one embodiment,

Fig. 2 is a cross-sectional view of the same,

Fig. 3 is an electric connection diagram of the same and

Fig. 4 is a longitudinal sectional view of another embodiment.

Referring now to Fig. 1, numeral 3 denotes the handle of a tooth brush into which a lead wire 4 is inserted, one end of which is connected to a metal plate 2 touching the roots of planted natural or artificial bristles 1, while the other end of which is connected to one pole of a direct current source, i.e., a battery 5 (Fig. 3), whose positive pole is connected to a conductor plate 7 through a lead wire 6.

Now, when one applies to his teeth a fluoride attached onto the brush bristles while touching the conductor plate 7 with a suitable part of his body, the fluoride mixes with his saliva, while the electric current flows from the battery 5 through the conductor plate 7, his body, the dental pulp structures, the fluoride solution on the surfaces of his teeth, the metal plate 2, the lead wire 4 and back to the battery. Consequently, the negative ions of fluoride in the fluoride solution advance by ionization in a direction thus opposite to the current direction, penetrating into the tooth structure, in order to diffuse and settle in said tooth structures. Thus, when lactic fermenters are generated in the pulp structures, breeding of these fermenters is suppressed strongly, with the result that the decaying of teeth can be prevented effectively.

A simple and compact device of the present invention is shown in Fig. 4, in which the root portion of the handle 3 is screwed into a tube 8 of an electrically insulating material, which is covered tightly with a metal cap tube 9. The tube 8 contains therein a small dry battery 10, the positive pole of which touches the inside bottom of the metal tube 9, while the negative pole is connected elastically to the exposed terminal 4' of a lead wire 4 embedded in the handle 3. The other end of the lead wire 4, as in the brush shown in Fig. 1, is connected to the metal terminal 2 touching the roots of the planted bristles. Thus, when one grips the metal tube 9 of this tooth brush and applies to his teeth a fluoride attached to the brush bristles, a phenomenon similar to that stated above with regard to Fig. 3 occurs to prevent the teeth from being decayed.

It will thus be seen that the present invention provides a tooth treating process which includes the steps of applying fluoride to the teeth of a human being and completing an electrical circuit through the fluoride and the body of the human being.

From the foregoing it will be seen that many modifications of the specific disclosed form of the invention may be resorted to, and it is to be understood that the scope of the invention is to be ascertained solely by the appended claims.

Having thus described the invention, what is claimed is new and desired to be secured by Letters Patent, i.e.,

A tooth brush comprising an elongated bristle carrying and handle portion made of electrically non-conductive material, said handle portion having an elongated hollow free end located distant from said bristle carrying portion thereof, an electrically conductive plate carried by said bristle carrying portion, a plurality of bristles carried by said bristle carrying portion and engaging said plate so that an electrically conductive liquid carried by the bristle will communicate electrolytically with said plate, an electrical lead extending from said plate through said handle portion to said hollow end thereof, a battery in said hollow end of said handle portion having one pole connected electrically with said lead, and an electrically conductive member covering said hollow end of said handle portion, adapted to be engaged by the hand of the user, closing said hollow end of said handle portion and electrically connected with the other pole of said battery.

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