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2,809,386

TOOTHBRUSH

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FIG. 1

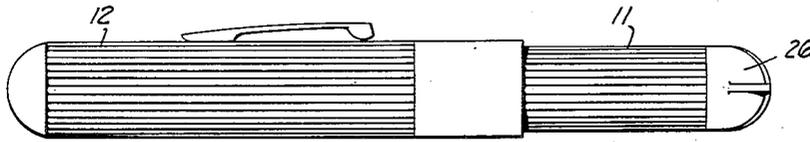


FIG. 2

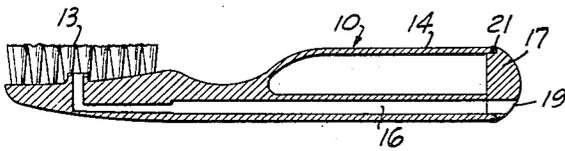


FIG. 3

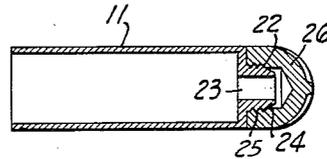


FIG. 4

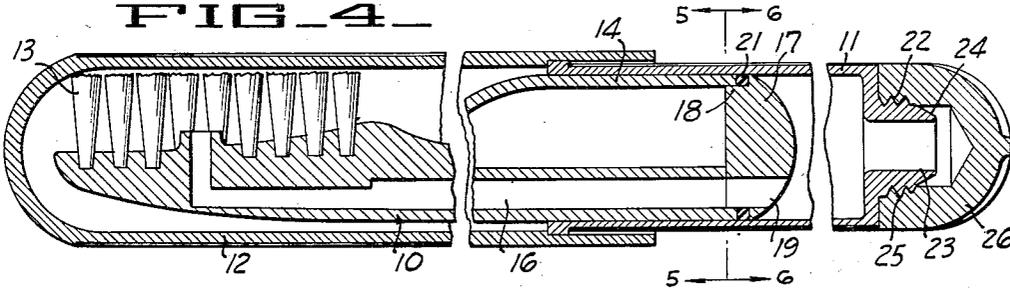


FIG. 5

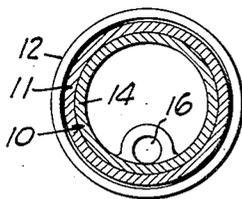


FIG. 6

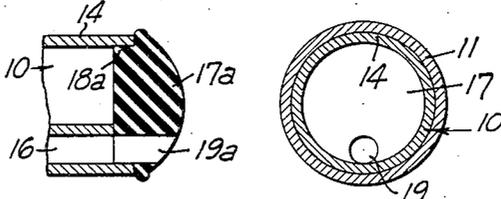
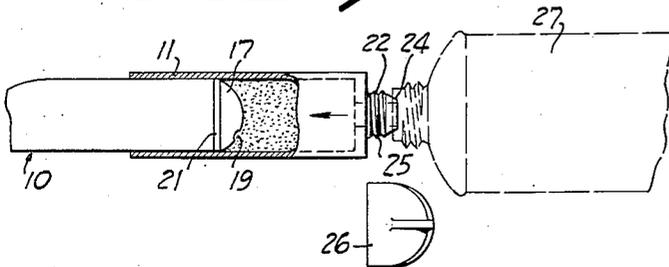


FIG. 8

FIG. 7



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## TOOTHBRUSH

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1 Claim. (Cl. 15—137)

This invention relates to toothbrushes and particularly to toothbrushes of the type which are adapted to contain dentifrice in the handle and which are provided with a suitable cap so that they may be carried by the user in his pocket.

The potential utility of a device of this kind is apparent from the fact that there have been many, many patents issued upon devices of this general nature from the United States Patent Office. They have varied from the bizarre to the almost practical.

Devices which have purported to accomplish this purpose have been so numerous as to render a description of each of them impossible and impracticable, but it is sufficient to say that they have all been subject to some handicap because none of them reached commercial success.

It is an object of this invention to provide a toothbrush in which the dentifrice will be retained in a movable portion of the handle whereby, by a simple manipulation of the handle, the dentifrice may be extruded to the bristle portion of the toothbrush ready for application and use.

It is a further object of this invention to provide a device of this kind which is easily filled; that is, in which the supply of dentifrice may readily and quickly be replaced.

It is an object of this invention to provide a device of this kind which has a minimum number of moving parts and no threaded or similar parts whereby the sanitary value of the item is reduced.

It is a further object of this invention to provide a device of this kind which is easily used and which may be easily manufactured and assembled with a minimum number of parts and with maximum efficiency.

Other objects and advantages of the invention will appear from the following specification, taken in conjunction with the accompanying drawings in which:

Figure 1 is a side view of my toothbrush;

Figure 2 is a cross sectional view of the brush and piston portion of my device;

Figure 3 is a cross sectional view of the storage and cylinder portion of my device;

Figure 4 is a cross sectional view of the device as illustrated in Figure 1;

Figure 5 is a cross sectional view taken along the line 5—5 of Figure 4;

Figure 6 is a cross sectional view taken along the line 6—6 of Figure 4;

Figure 7 illustrates a method of transferring dentifrice from a tube to the cylinder or storage portion of my device and;

Figure 8 illustrates an optional form of the plug shown in Figure 4.

As illustrated in the drawings, my device consists primarily of three parts. The part 10 will hereinafter be referred to as the brush and piston portion, the part 11 will hereinafter be referred to as the cylinder and storage

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handle section, and the part 12 will hereinafter be referred to as the cap or cover portion.

As indicated particularly in Figures 2 and 3, the brush and piston portion 10 may be molded of any suitable material and consists generally of a bristle retaining portion which is adapted to support the bristles 13. The bristle retaining portion then enlarges to an enlarged elongated round portion 14 which will hereinafter be referred to as the piston. The member 10 is provided with an inner elongated tubular member 16 whose purpose will more fully hereinafter be described. The open end of the member 10 remote from the bristles is adapted to be closed by a plug member 17 which, as illustrated in Figures 2 and 4, is provided with an enlarged cap portion and an inwardly extending flange 18. When the member 17 is inserted in the end of the piston portion 14 its orifice 19 is in registry with the tube 16. An O-ring or sealing gasket 21 is slipped over the flange 18 so that when the members 10 and 17 are assembled as illustrated in Figures 2 and 4 the outer diameter of the O-ring 21 is slightly greater than the outer diameter of the piston portion 14. Moreover, the tubular member 16 which is in registry with the orifice 19 at one end opens into the brush or bristle portion 13 at the other.

The storage portion 11 is in the form of a tube which is open at one end and whose inner diameter is substantially identical to the outer diameter of the piston portion 14. The O-ring or sealing member 21 is adapted closely to engage the inner wall of the cylindrical member 11 yet the fit is not so tight but what the devices may be removed with respect to each other along their longitudinal axes. The end of the tubular member 11 remote from the open portion into which the piston portion 14 fits is provided with a threaded extension 22 and a tubular opening 23. The extension 22 is not threaded in its entirety but the exposed end thereof is tapered as at 24 whereby, upon the removal of the threaded cap 26 which is adapted to engage threads 25, a conventional tooth paste tube may be urged into intimate position with the tapered portion 24 of the extension 22 and dentifrice expelled from the tube through the orifice 23 into the reservoir 11. It is preferable that the members 10 and 11 be separated when the dentifrice is being introduced so that no air will be entrapped within the member 11 or the tubular opening 23.

The cover member 12 is likewise an elongated cylindrical member whose inner diameter is substantially the same as the outer diameter of the member 11, so that a relatively close fit is obtained therebetween. While the fit is not air-tight, it is substantially so. There are no orifices in the member 12 so that when the three units are assembled as illustrated in Figure 1, there is substantially no introduction of new air into the area within the cover 12 and surrounding the bristle portion 13.

Operation of the device may briefly be described as follows. The cover 12 is removed from the assembly. Let it be assumed that the device is not yet loaded with a quantity of dentifrice. The members 10 and 11 may be extended to the relative positions of Fig. 7. The cap 26 is removed from the threaded portion 22 and a tube of dentifrice is urged into intimate contact with the tapered portion 24 of the extension 22 and dentifrice is caused to pass through the tubular extension 23 into the area within the storage chamber 11. When the storage chamber 11 is filled with the desired quantity of dentifrice, the tube is removed therefrom and the cap 26 is placed thereon. The reservoir portion 11 is then filled and ready for use. If desired, the reservoir 11 may be completely removed from member 10 for filling then fitted over the piston-like end 14 of the member 10 and the O-ring or sealing member 21 closely engages the smooth

inner walls of the cylindrical member 11. As the member 10 is urged to the right as viewed in Figure 4, the dentifrice is urged through the tubular member 16 into the area immediately adjacent the bristles. The toothbrush is then in condition for operation after a sufficient quantity of dentifrice has been extruded. The members 10 and 11 may simply be reciprocated or the member 11 may be twisted slightly as both of the members are concentric and are coaxially aligned. At any rate, when the tooth brushing operation has ceased, the member 11 may be retracted slightly, thereby relieving the pressure on the dentifrice in the tube 16 in some instances, serving to draw dentifrice back into the tube-like member 16 so that it is not wasted. The cover 12 may then be positioned as illustrated generally in Figure 1, and the toothbrush is then ready for storage without excess air coming into contact with the dentifrice in the tube 16. In this manner, the toothbrush is maintained in a sanitary and clean condition and there is no difficulty involved in storage, transportation, etc. Capping the brush in a substantially non-aerated atmosphere in the cap 12 also serves to keep the dentifrice moist and prevents its caking in the tube 16 or drying out.

It is apparent from the foregoing that I have provided a device which consists of three fundamental parts, each of which (it is admitted) may consist of one or two parts. However, when the device is assembled as previously described, it presents a fool-proof, easily operable and easily cleaned device. All threads have been eliminated. All substances used are preferably inert and have no reaction with any acid or other materials in the dentifrice which is to be used. The parts are relatively interchangeable and the utilization of the O-ring prevents the seepage of dentifrice between the members 10 and 11 except when desired, thus utilizing the full pressure created by the relative movement between members 10 and 11.

As shown particularly in Figure 8, the end cap member 17 and O-ring 21 may be substituted for by end cap 17a formed of yieldable material and molded in substantially the shape illustrated (Figure 8).

It will be noted that the member 17a is provided with an annular molded portion which is similar to the shape defined by the members 17 and 21 and which performs the same function.

It should also be pointed out that in the molding operation the walls of the members 10, 11 and 12 must be of uniform thickness. In the molding of these parts, uniform wall thickness will permit even shrinkage and thus prevent warping or other mis-shaping. It will also be noted that the tubular member 16 is straight and lies adjacent one side wall of the member 10. In this manner, a straight-through charge is delivered to the area around the bristles 13. Moreover, this type of construction renders my device practical and is an essential feature thereof. In the event a tube were to be molded which was coaxial with the member 10 or which was in any position other than adjacent the side wall of the member

10, molding problems would be compounded, manufacturing and assembly problems would be practically unsurmountable. Furthermore this portion of the tube 16 permits the construction of the bristle portion as shown, that is, with the bristles and their supporting base member all lying within a cylindrical projection of the walls of the enlarged portion 14, whereby when the cap 12 is positioned as shown in Figure 1, the entire brush may be supported therewithin.

I claim:

In a device of the character described, a toothbrush element comprising a bristle-supporting portion and an elongated cylindrical portion, said toothbrush element having a straight passageway therein from the area adjacent the bristles to the remote end of the cylindrical portion, a cylindrical dentifrice reservoir member having one open end and whose inner diameter is substantially identical to the outer diameter of said cylindrical portion, the length of said cylindrical portion being substantially the same as the length of said reservoir, said reservoir member being telescoped over and slidable on said cylindrical portion and movable longitudinally with respect thereto, a seal comprising a resilient O-ring positioned adjacent said remote end of said cylindrical portion and projecting outwardly of the periphery thereof to effectively seal the space between said cylindrical portion and said reservoir, a cylindrical cover having one open end adapted to surround the toothbrush portion, the inner diameter of the open end portion of said cover being substantially identical to the outer diameter of said reservoir member, said cover adapted to be slidably and removably positioned and frictionally held on either end of said reservoir member in telescoping relation thereto and a shoulder on the inside of said cover portion adjacent said open end adapted to engage an end of said reservoir member to limit the positioning of said cover with respect to said reservoir member whereby said cover may serve as a container for said toothbrush and also as an extension of said reservoir to function as a handle, the distance from said shoulder to the closed end of said cover being at least equal to the distance from the open end of said reservoir to the end of said bristle-supporting portion when said reservoir is substantially filled with a dentifrice.

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