A disposable applicator device for use with toothpaste dispensers or the like including an elongated body having a bristle portion at one end and adapted to be detachably connected at its other end to a dispenser. The body including a passageway communicating the dispenser with the bristle portion. Orifice means including a baffle-like construction disposed in said passageway for selectively controlling the distribution of fluid material delivered from the dispenser to the bristle portion. A cap-like closure is detachably mounted over the bristle portion adapted to provide a protective cover therefor.
3,653,778

APPLICATOR DEVICE FOR TOOTHPASTE DISPENSERS OR THE LIKE

BACKGROUND OF THE INVENTION

This invention generally relates to an applicator device, and more particularly relates to an improved construction for an applicator device of the type for use with dispensers, such as toothpaste tubes or the like, and which is particularly suited for use as a disposable fountain toothbrush.

Therefore, various arrangements have been employed to provide devices for dispensing fluid materials, such as dentifrices and the like. Such arrangements have included devices wherein the toothpaste tube, for example, was of a special design and/or made integral with some type of toothbrush for dispensing the dentifrice. Such prior devices, however, limited the flexibility for use of the device by reason of the particular design of the toothpaste tube or were not susceptible to being readily of the throw-away type due to the integral construction of the toothpaste tube with the brush, for example. In addition, such prior devices were not only cumbersome and space-consuming to store, but were oftentimes difficult to operate by reason of clogging of the dentifrice and the practical inability to clean the same without damage to the component parts of the dentifrice material. Other arrangements have included complex multi-part devices for dispensing, such as squeezing, pressing, etc., the tube in order to discharge the dentifrice material therefrom. Such devices, however, are generally intended for relatively lasting and permanent use and hence, are generally not disposable, compact, inexpensive to produce, easy to transport and store, or convenient to use.

SUMMARY OF THE INVENTION

An applicator device for use with a toothpaste dispenser of the like comprising an elongated body having a forward end and a rearward end, said body including a bristle portion adjacent said forward end and adapted to be detachably connected adjacent its rearward end to said dispenser, and said body having a passageway terminating inwardly of said forward end and communicating with said bristle portion and opening onto the rearward end adapted for transmitting fluid material delivered from said dispenser to said bristle portion. The body includes a plurality of orifice means having a baffle-like construction disposed in such passageway adapted to selectively control the distribution of fluid material into said bristle portion. The baffle construction is arranged so as to uniformly distribute the fluid material throughout the bristle portion. A closure means is adapted to be detachably mounted over the bristle portion to provide a protective cover therefor in the installed position thereof.

From the foregoing description and following specification including the accompanying drawings, it will be seen that the present invention provides a novel and improved construction for an applicator device for use with a toothpaste dispenser which is of an inexpensive, throw-away construction for repeated use. The applicator device is of a simple, yet rugged construction which can be employed efficiently with practically any type and/or size of toothpaste tube. Accordingly, the device has great flexibility and lends itself to use for household and commercial application. The device is of a compact construction made from a minimum number of parts which can be economically produced, and which can be quickly and easily assembled with a minimum time and effort. Furthermore, the device by reason of its construction and arrangement, can readily be produced and sold separately as a unit and/or sold as a package along with the toothpaste dispenser, as desired. Still further, the device is constructed and arranged so as to provide optimum flow conditions for distributing the dentifrice material uniformly throughout the bristle area of the brush so as to afford maximum application. In addition, the device effectively prevents clogging by the dentifrice material of the essential parts thereof and includes a cap-like closure which is readily detachably mounted over the bristle area to prevent contamination in the stored condition thereof. Other advantages of the invention will be apparent as the description proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation view, partly in section, showing the applicator device of the invention detachably mounted on a fluid dispenser, such as a toothpaste tube;

FIG. 2 is an enlarged, fragmentary top plan view illustrating the bristle-containing end of the device of FIG. 1;

FIG. 3 is an enlarged, fragmentary section view taken along the line 3–3 of FIG. 2; and

FIG. 4 is a fragmentary, generally perspective view illustrating a modified form of the cap-like closure which can be employed with the applicator device of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring again to the drawings, and particularly to FIG. 1 thereof, there is illustrated the applicator device, designated generally at 2, of the invention for detachable connection to a dispenser 4, such as a toothpaste tube or the like. The applicator device 2 is preferably of a unitary, one-piece construction which, in the embodiment shown, may have a detachable closure member 6 mounted thereon. The device 2 may be made from suitable materials which preferably include polymeric materials which can be economically formed by conventional molding techniques, as known in the art, so that the device may be disposed of or thrown away after each use thereof, as desired.

In the embodiment shown, the applicator device 2 includes an elongated body 8 having a rearward end adjacent the dispenser 4 and a forward end remote from the dispenser. Preferably, a major portion of the body is tapered in a convergent direction away from the rearward end in a generally cylindrical construction and then levels out into a generally planar, polygonal construction to provide a support surface for the bristles, as will hereinafter be more fully described.

The body 8 includes an elongated passageway 10 which tapers convergently in a direction from the rearward end toward the forward end and then makes a generally right-angle bend at 12 so as to open onto the upper surface of the body to provide a fluid transmitting passageway for communicating the dispenser 4 with the bristles 14. Accordingly, the passageway opens into a generally circular aperture or opening 14 (FIG. 2) which is disposed generally centrally within a support section 16 which mounts the bristles. Preferably, the passageway 10 is tapered throughout a major length of the body 8, but is then of a generally cylindrical linearly extending construction within the support section 16 wherein it is of a generally uniform diameter so as to form the bend 12 and hence, the opening 14 which is preferably of a greater diameter than that of the linearly extending portion of the passageway which is disposed in the support section 16, as seen in FIG. 3. By this arrangement, there is provided a good runner system for transmitting fluid materials, such as dentifrices or the like from the dispenser 4 through the applicator body 8 and out through the orifice opening 14.

In the embodiment shown, the orifice opening 14 is provided with a baffle construction for distributing fluid material uniformly throughout the bristles. The baffle construction includes a baffle member 18 which extends transversely in bridging relation across the opening 14. The bridging member 18 provides a bifurcated construction for the opening 14 and acts as a divider or partition to divide the opening into a smaller hole 20 and a larger hole 22. By this arrangement, a greater amount of fluid material may be emitted through the hole 22 so as to be distributed upwardly and generally forwardly throughout the bristles while the smaller hole 20 enables a reduced amount of material to be so distributed, thereby to insure a uniform distribution throughout the bristles. In the form shown, the baffle member 18 is preferably of a polygonal, such as triangular construction,
which has a generally upper flat surface 24 disposed in the general plane of the support member 16 and a pair of inclined side surfaces 26 and 28 (FIG. 3) which extend convergently toward one another in a direction away from the upper surface 24. Preferably, the side surface 26 is disposed at a greater angular inclination with respect to the longitudinal central axis of the body 8 as compared to the forwardly disposed side surface 28. By this arrangement, the surfaces 26 and 28 act as deflectors for selectively controlling the distribution of fluid material through the respective openings 20 and 22 with the inclination of the side surface 28 being disposed so as to deflect a greater portion of the fluid material upwardly and forwardly throughout the bristles as compared to the amount deflected by the surface 26. As best seen in FIG. 2, the support section 16 is provided with a rear end by a ring wall 54. The member 56 is provided at its other end with a flexible sealing member 56 comprised of an elastomeric material, such as rubber or the like. The sealing member 56 is provided with a cut-out opening 58 which is shaped so as to correspond to the transverse cross-sectional shape of the body 8. Preferably, the opening 58 is of a peripheral dimension less than that of the outer peripheral shape of the body 8 so as to provide a tight fluid seal around the body to prevent the ingress of deleterious materials onto the bristles.

In FIG. 4, there is illustrated another modified form of the closure means for the applicator device 2 of the invention. In this form, the means includes a closure member 60 which is also of a cap-like construction. In this form, however, the member 60 is of a generally U-shaped construction defined by an endless side wall 62 which is closed at one end by an integral top 64. The member 60 has an open end remote from the top 64 which has a periphery generally corresponding to that of the support section 16 so as to be supported in generally nested relation thereon. As shown, the member 60 includes two pair of oppositely disposed recesses 66 adapted for interlocking snap-acting coaction with projections or protuberances 68 which are made integral with and which project outwardly from the support section 16. Accordingly, by this arrangement, the closure member 60 may be disposed over the bristles and conveniently snapped into place for securement on the support member 16 to provide a protective cover for the bristles for the purposes, as aforesaid. In the invention, the closure members 56 and 60 are preferably made from a lightweight polymeric material which is preferably transparent to facilitate visual observation of the condition of the bristles, as desired.

1. A toothbrush device for use with a toothpaste dispenser of the type including a compressible body containing toothpaste therein and having a neck portion for dispensing toothpaste therefrom, said device comprising, (a) an elongated body having a forward end and a rearward end, said body including a bristle portion adjacent said forward end and a hollow coupling member adjacent said rearward end for detachable connection to said neck portion of said dispenser, (b) said body including an passageway disposed in fluid communication with and opening into said coupling member and terminating inwardly of said forward end adjacent said bristle portion for transmitting toothpaste from said dispenser to said forward end, (c) said passageway including orifice means adjacent said forward end for guiding said toothpaste to said bristle port, (d) said orifice means including an orifice opening and a partition member extending transversely of said orifice opening defining a plurality of orifice areas including at least one large area and at least one relatively small area spaced rearwardly from said large area, (e) said body including a support surface adjacent its forward end for supporting said bristles, (f) said partition member being of a polygonal construction including an upper surface disposed adjacent said support surface and at least two inclined surfaces converging toward one another in a direction away from said upper surface, one of said inclined surfaces defining said larger orifice area for deflecting said toothpaste forwardly on said bristle portion and another of said inclined surfaces defining said smaller of said orifice areas for deflecting toothpaste rearwardly on said bristle portion, and (g) said one inclined surface being disposed at a greater angle of inclination with respect to the longitudinal central axis of said body as compared to said other inclined surface for deflecting a greater portion of said toothpaste upwardly and toward its forward end providing a good runner system for transmitting toothpaste to said bristle portion.

2. An applicator device in accordance with claim 1, including a closure means detachably mounted over said bristle portion and adapted to provide a protective cover therefor.

3. An applicator device in accordance with claim 2, wherein said closure means includes a cap-shaped member having a flexible end member, and said end member made from an elastomeric material having an opening therethrough adapted to receive said body and being dimensioned to provide a fluid tight seal around said body in the installed position thereof.

4. An applicator device in accordance with claim 2, wherein said closure means includes a cap-shaped member open at one end adapted to be disposed over said bristle portion and into locking engagement with said body.

5. An applicator device in accordance with claim 4, wherein said cap member includes recess means adjacent said open end adapted for interlocking coacting engagement with protuberance means disposed on said body for holding said cap member in the installed position thereof.

6. A toothbrush device in accordance with claim 1, wherein said coupling member is of a cap-like construction, and said coupling member includes internal threads for threaded connection to said neck portion.

7. A toothbrush device in accordance with claim 6, wherein said coupling member is made integral with said body, and said passageway is generally cylindrical having a tapered diameter from its rearward end toward its forward end providing a good runner system for transmitting toothpaste to said bristle portion.