

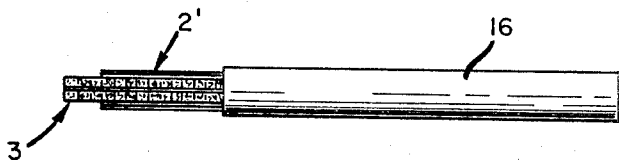
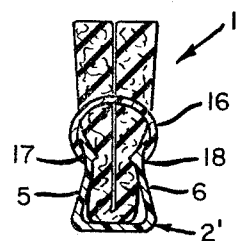
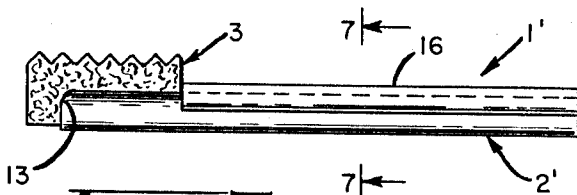
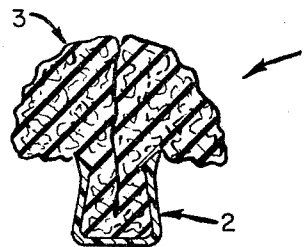
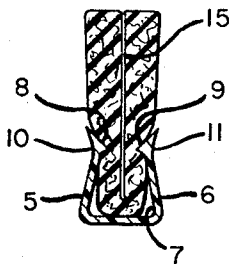
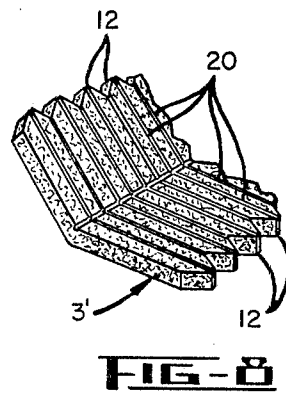
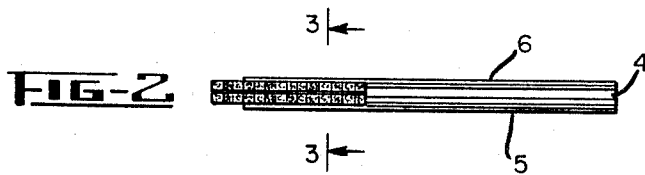
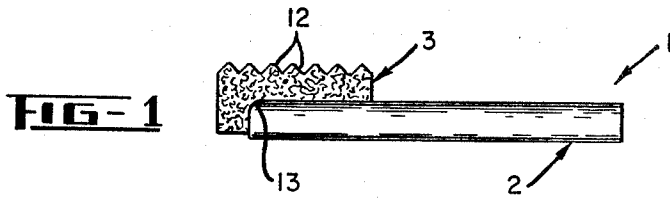
Aug. 23, 1966

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3,267,512

SPONGE APPLICATOR

Filed March 30, 1964



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3,267,512

SPONGE APPLICATOR

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Filed Mar. 30, 1964, Ser. No. 355,565

6 Claims. (Cl. 15-561)

This invention relates to sponge applicators and more particularly to toothbrushes having a sponge type brushing element in which at least the brushing element is disposable.

One major object of the invention is to supply the need for an improved disposable toothbrush for use in situations where conventional toothbrushes are not normally available. Numerous prior constructions have been proposed for supplying this need. Although some of the prior proposals have constituted substantial advances in the art, none has been conceived on the low cost scale of the present invention.

More specifically, an object of the invention is to provide a disposable toothbrush which is so inexpensive to manufacture that it is economically feasible to provide toothbrushes in substantially every situation where they would be desirable but have not previously been available. For example, such uses are contemplated as supplying a disposable toothbrush with every meal served on airplanes and with every field ration supplied to the armed forces.

For example, a related object of the invention is to provide a toothbrush which costs less than one cent to manufacture in volume.

Another object of the invention related to cost is to provide a disposable toothbrush having only two parts, an extrudable one-piece handle and a one-piece tooth-engaging head.

A further object of the invention is to provide a disposable toothbrush which can be easily and firmly gripped even though the handle is made shorter than conventional toothbrush handles to conserve space and reduce cost.

An additional object of the invention is to provide an improved folded sponge type toothbrush having recesses in the inside faces of the folded sponge to carry dentifrice or mouth medicaments.

Another object of the invention is to provide a sponge type disposable toothbrush in which the handle for the sponge is shaped to lock the sponge element firmly in the handle without the use of any adhesives or moving parts.

An additional object of the invention is to provide a folded sponge type toothbrush head which is completely free of bristles to provide an improved type of brushing action and to reduce cost.

A further object of the invention is to provide an improved disposable type toothbrush in which it is intended that only the tooth-engaging head be disposed.

An additional object of the invention is to provide an improved applicator of the type described in the preceding paragraphs which is useable to apply any liquid-soluble material to any desired surface.

By way of brief description an applicator according to the invention comprises a one-piece handle having an extrudable shape, and more specifically having a continuous U-shaped cross section providing a slot throughout its entire length. An applicator head made of expandable sponge material is received in the slot adjacent one end of the handle.

Other and further objects and features of advantage will be apparent from the following detailed description wherein reference is made to the accompanying drawings in which:

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FIGURE 1 is a side elevational view of one embodiment of an applicator according to the invention;

FIGURE 2 is a top view of the applicator of FIG. 1;

FIGURE 3 is a cross-sectional view of the applicator taken on line 3-3 of FIG. 2 and showing the applicator sponge head in unexpanded condition;

FIGURE 4 is a cross-sectional view similar to FIG. 3 but showing the sponge head in expanded condition;

FIGURE 5 is a side elevational view of a modified construction of an applicator according to the invention;

FIGURE 6 is a top view of the applicator of FIG. 5;

FIGURE 7 is a cross-sectional view of the applicator taken on the line 7-7 of FIG. 5; and

FIGURE 8 is a perspective view of a modified construction of the sponge head for use with either of the embodiments of FIGS. 1 and 5. In FIG. 8 the sponge head is shown partly unfolded.

Referring in more detail to the drawings, FIGS. 1-4 show one embodiment of an applicator 1. The applicator comprises a one-piece handle 2 and an applicator or tooth-engaging head 3 which is preferably also of one piece.

In order to provide the handle with its feature of extremely low cost, it is of uniform cross section throughout its entire length so it can be extruded. Any inexpensive relatively rigid extrudable material can be used. Vinyl plastic has been found to be very satisfactory. In order to provide a slot 4 for the head 3, the handle is given a U-shaped cross section. The sides 5 and 6 of the handle are shaped to provide slot 4 with a wide lower portion 7 and a narrow upper portion formed by barbs 8 and 9 which slope inwardly and downwardly to lock the applicator head 3 in slot 4. In order to make it possible to grip the handle easily and firmly the side walls 5 and 6 are sharp at the top. In addition, the walls are wide at the top and bottom on the outside and relatively narrow intermediate the top and bottom to provide finger-gripping grooves 10 and 11 running the length of the handle on each side. The shape to provide firm gripping is important because in many situations where the applicator is useful, one requirement is that it occupy very little space. In one such design, the handle length rearward of the applicator head is only about 1½ inches.

The applicator head 3 is made of a conventional sponge material which expands substantially upon contact with liquid. A preferred sponge is a material known as medical sponge, expandable sponge, or expandable cellulose. The sponge head 3 is positioned in the slot 4 in the handle as shown in FIGS. 1-3. Then when the head is wetted, it expands to the shape shown in FIG. 4. In expanded condition, the sponge 3 fills the wide portion 7 of the slot 4. The wide bottom and narrow top configuration of the slot 4 and the expanded sponge provides a dovetail locking action which, together with the action of barbs 8 and 9, prevents the sponge head 3 from coming out of slot 4. The sponge is preferably provided in the form of a folded strip, and in its expanded shape as shown in FIG. 4 provides a large continuous surface for brushing teeth and gums or other surface with a beneficial action which does not involve any bristles. A material to be applied, such as a dentifrice 15, is preferably supplied in the crevice between the two folds of the sponge head 3. In order to improve the brushing or applying action, the free upper ends of the folded sponge 3 are preferably scalloped to provide ridges 12. It will be noted that the sponge head 3 is positioned to extend substantially forward of the front end of the handle so that it is improbable that the gums or other surface will be damaged with the end of the handle. In addition, the upper front edge of the handle is curved at 13 to provide as much sponge as possible

between the surface of the sponge and the forward upper edge of the handle so that the presence of said edge will not be felt through the sponge and also to permit the sponge to expand more smoothly into a more desirable shape than if the edge 13 were not rounded.

FIGS. 5-7 show a modified applicator 1' which is designed for semi-disposable use. More specifically, in the embodiment of FIGS. 5-7, the sponge head 3 is intended to be replaced after each use. In FIGS. 5-7 parts which are identical to those in FIGS. 1-4 are given the same reference numbers and parts which are similar are given primed reference numbers. The handle portion 2' has exactly the same cross section as handle 2 and differs only in that handle portion 2' is longer, at least for use in a toothbrush, in order to be about the same length as a conventional toothbrush handle. The embodiment of FIGS. 5-7 includes one additional part, namely a handle upper section 16. Handle upper section 16 has a generally part-circle cross section. The important point is that the edges 17 and 18 of the upper section project inwardly to provide a locking fit with the grooves 10 and 11 of the lower section. The handle sections can be easily assembled by sliding one longitudinally along the other. It should be noted that the upper section 16 has a uniform cross section throughout its entire length so it can be extruded. The length of the upper section is made less than the length of the lower section 2' by an amount sufficient to leave a portion of section 2' exposed to receive the sponge head 3. In addition, the relative length of section 2' and 16 are selected so that when one end of sponge head 3 abuts the upper section 16, the other end of the sponge head will extend the optimum distance beyond the front end of the handle section 2' as shown in FIG. 5. In use, the applicator of FIGS. 5-7 is employed the same as the applicator of FIGS. 1-4 except that after every use the sponge head 3 is removed and a new unexpanded sponge head is inserted for the next use. The presence of the upper handle section 16 serves to automatically position the sponge head 3. In addition, section 16 reinforces the side wall 5 and 6 of the lower section so that the side walls will not be spread apart by the repetitive force of expansion of the sponge heads.

FIGURE 8 shows a modified construction for the sponge head which is useable in both the applicator of FIG. 1 and the applicator of FIG. 5. Sponge head 3' is exactly the same as sponge head 3 except that sponge head 3' is provided with recesses 20 on the inside surfaces of the folds. One purpose of the recesses is to make it easier to supply the sponge head uniformly and in the exact optimum amount with the material such as dentifrice which is to be applied. For this purpose, the recesses can be given any of a variety of shapes such as grooves, dimples, or waffle shape. Another purpose of the recesses 20 is to assure free flow of the material to the top of the sponge head 3' even when the two folds of the sponge are compressed tightly together after the sponge is expanded. The latter purpose is achieved by making the recesses 20 in the form of grooves extending from the bottom of the fold to the top of the sponge head.

The applicator has been described with particular emphasis on its use as a toothbrush for applying self contained dentifrice or mouth medicaments such as crystalline fluorine. However, it should be understood that the applicator can also be used to apply material which is not self-contained. For example, when the applicator is used as a toothbrush, it can be used to apply toothpaste or powders from conventional containers in a manner similar to conventional toothbrushes. In addition it should be understood that an applicator according to the invention can be used for a wide variety of purposes to apply a wide variety of material whether or not self-contained to a wide variety of surfaces. For example, the applicator can be used to apply soluble disinfectants

or other medicaments to any injury, or can be used as a brush to apply soluble paints.

Although preferred embodiments of the present invention are shown and described herein, it is to be understood that modifications may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. An applicator comprising a handle and an applicator head, said head comprising a sponge material which expands upon contact with liquid, said handle having a slot therein of uniform cross section throughout the entire length of the handle, the walls of said slot being shaped on the inside to provide a slot cross section having a wide portion adjacent the bottom of the slot and a narrower portion upwardly from the bottom of the slot, and the walls of said slot being shaped on the outside to provide a handle cross section having an external shape which is wide adjacent the bottom and the top of the slot and relatively narrow intermediate the top and bottom to form a finger gripping recess along the length of each side of said handle, said head being in the form of a folded sheet, the folded edge of said sheet being received in said slot adjacent one end thereof with a substantial portion of the head projecting beyond the end of the handle, and the two sides of said folded sheet being completely free to expand laterally relative to each other into gripping engagement with the walls of said slot.

2. An applicator as claimed in claim 1 in which each side wall of said handle has a barb projecting downwardly and inwardly on the inside surface thereof at said narrower portion.

3. An applicator as claimed in claim 2 in which the inside faces of said folded sheet are provided with recesses.

4. An applicator comprising a handle and an applicator head, said head comprising a sponge material which expands upon contact with liquid, said handle comprising a lower section having a uniform U-shaped cross section throughout its entire length, an upper section having a uniform U-shaped cross section throughout its entire length, and said upper section being inverted over said lower section with the inside of the side walls of the upper section engaging the outside of the side walls of the lower section, said upper section being shorter than said lower section, said head being received in said lower section, and projecting outwardly of the lower section at a portion of the lower section which is not covered by said upper section.

5. An applicator as claimed in claim 4 in which the length of said upper section plus the length of said head is longer than the length of said lower section.

6. An applicator comprising a handle and an applicator head, said head comprising a folded-over piece of sponge material which expands upon contact with liquid, said handle having a slot therein in which the folded edge of said sponge head is received, the inside faces of said folded sponge material being provided with grooves extending from adjacent the fold of said folded-over sponge material to the free upper end of each side of the fold, the width of said slot and the thickness of the folded sponge being such that the inside faces of the two leaves of the folded sponge are pressed against each other even when dry, and material to be applied by said applicator being stored in said grooves.

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