# United States Patent [19]

**Avery**

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[54] **TIP FOR APPLICATOR SWAB**


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[73] Assignee: **Marion Health and Safety, Inc.**, Rockford, Ill.



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[52] **U.S. Cl.** ..... **128/269**; 128/2 W

[51] **Int. Cl.**[2] ..... **A61F 13/00**

[58] **Field of Search** ..... 128/269, 2 W, 285; 15/506; 300/21



[56] **References Cited**

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*Primary Examiner*—Aldrich F. Medbery

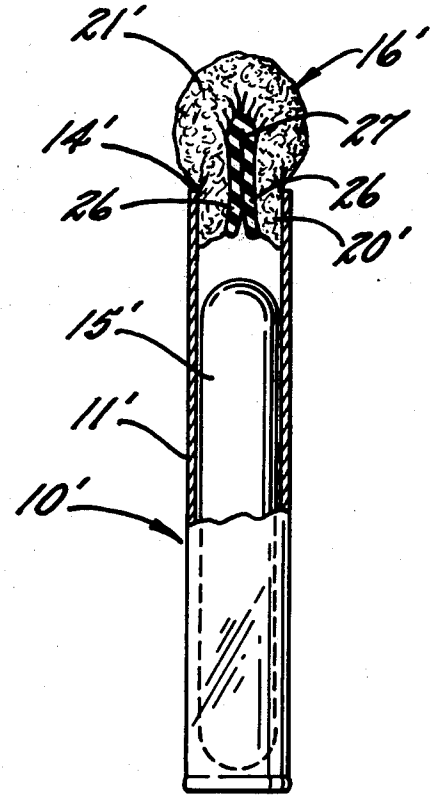
*Attorney, Agent, or Firm*—Wolfe, Hubbard, Leydig, Voit & Osann, Ltd.



[57] **ABSTRACT**

The swabbing tip of an applicator tube is defined by a cotton-like sheet whose margins are folded inwardly and stuffed into the tube so as to leave a rounded dome adjacent the end of the tube. The inner face of the sheet is lined with a resilient foam-like layer which enables the size of the dome to be increased while making the dome more quickly saturable. In an alternative embodiment, the outer face of the cotton-like sheet is covered with a thin sheet of scrim which reduces tearing of the cotton-like material while making the dome substantially lint-free.


**3 Claims, 8 Drawing Figures**



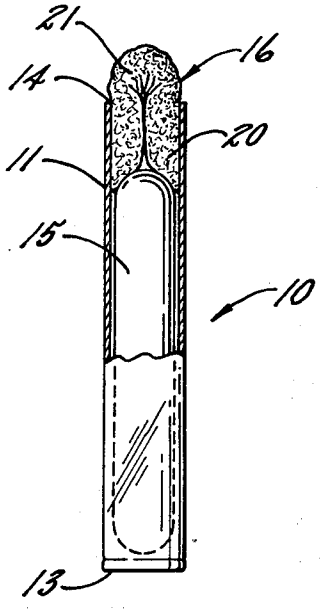



Fig. 1.
(PRIOR ART)

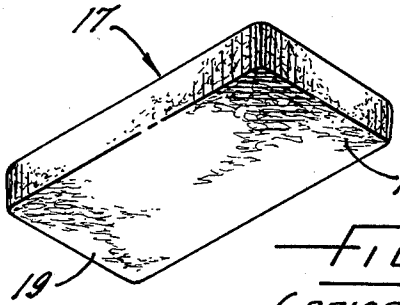



Fig. 2.
(PRIOR ART)

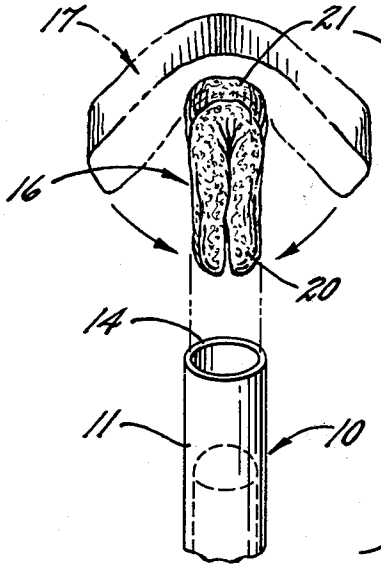



Fig. 3.
(PRIOR ART)

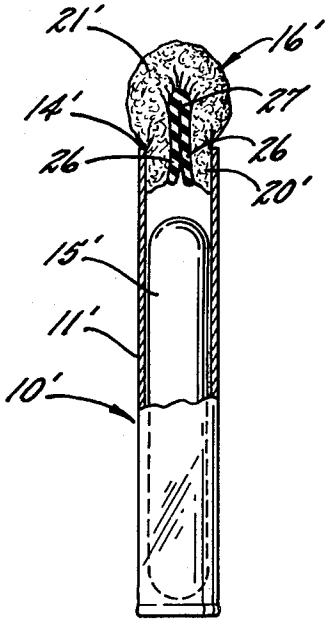



Fig. 4.

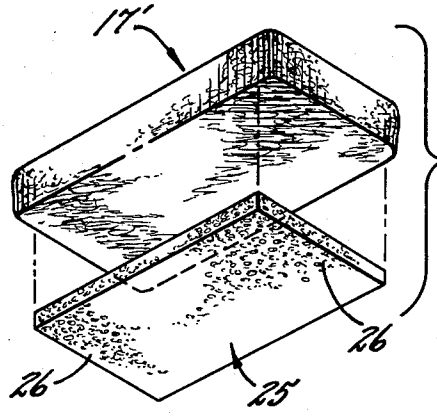



Fig. 5.

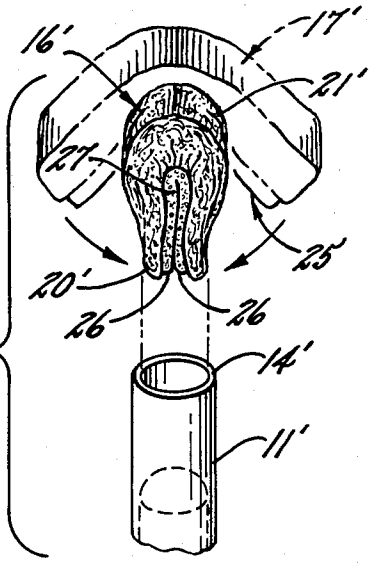



Fig. 6.

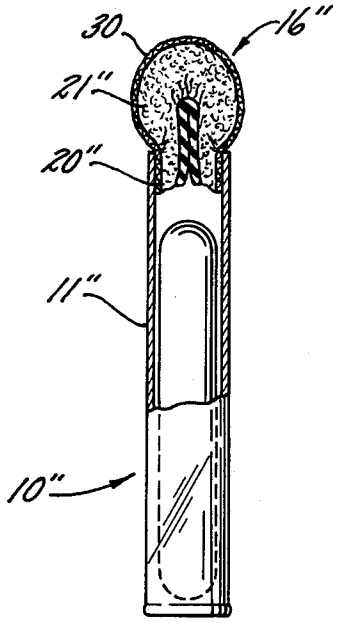



Fig. 7.

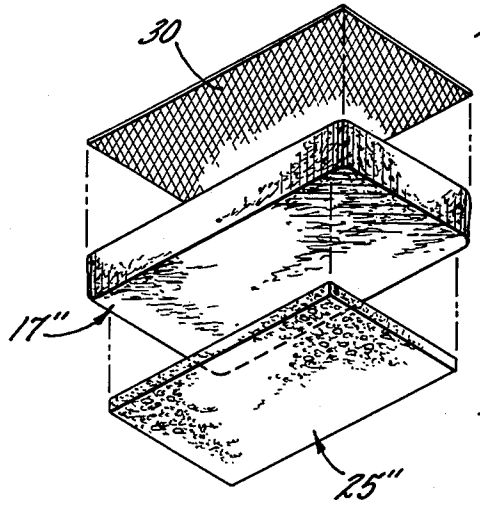



Fig. 8.

# TIP FOR APPLICATOR SWAB

## BACKGROUND OF THE INVENTION

This invention relates to an applicator swab and, more particularly, to a swab of the type which includes a liquid-containing tube into which is telescoped a swabbing tip made of cotton-like material adapted to be saturated by the liquid. A swab of this general character is disclosed in Avery et al U.S. Pat. No. 3,605,240 and, in such a swab, the swabbing tip is made from a cotton-like sheet whose margins are folded inwardly and stuffed into the tube so that the remaining portion of the sheet defines a dome at the end of the tube. To help hold the swabbing tip in the tube, the tip is wetted with a solvent which makes the inside of the tube temporarily tacky so that the tip may adhere to the tube.

## SUMMARY OF THE INVENTION

The general aim of the present invention is to provide an applicator swab having a new and improved swabbing tip which defines a larger and more easily saturable dome at the end of the tube, is held securely in place in the tube and yet requires no more cotton-like material than previous swabs of a comparable size.

A more detailed object is to achieve the foregoing by providing a swabbing tip in which the inside face of the cotton-like sheet is lined with a layer of resilient foam-like material. The foam-like layer resiliently urges the margins of the cotton-like material outwardly into tight engagement with the inner side of the tube so as to enable secure holding of the tip within the tube without need of stuffing so much cotton-like material into the tube and thus leaving more material to define the dome. In addition, the foam-like material provides a porous core at the center of the dome and enables the liquid in the tube to pass more quickly through the dome.

The invention also resides in the use of a thin sheet of scrim around the dome to reduce tearing of the cotton-like material and to provide a substantially lint-free covering for the cotton-like material.

These and other objects and advantages of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an elevational view of a typical prior art applicator swab, parts being broken away and shown in section.

FIG. **2** is a perspective view of a cotton-like sheet used to form the swabbing tip of a typical prior art swab.

FIG. **3** is an exploded perspective view which shows the cotton-like sheet of a typical prior art swab in a folded condition prior to being stuffed into the tube.

FIG. **4** is a view corresponding to FIG. **1** but showing an applicator swab having a unique swabbing tip incorporating the new and improved features of the present invention.

FIG. **5** is an exploded perspective view showing the sheets used to form the unique swabbing tip.

FIG. **6** is an exploded perspective view showing the sheets of FIG. **5** in a folded condition prior to being stuffed into the tube.



FIGS. **7** and **8** are views corresponding to FIGS. **4** and **5**, respectively, but show another embodiment of the invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An appreciation of the present invention may be best gained by understanding the construction of a prior applicator swab of the type sold for several years by the assignee of the present invention. Such a swab is shown in FIG. **1** of the drawings and is generally similar to the swab shown in FIG. **8** of the aforementioned Avery et al. patent.

The swab **10** shown in FIG. **1** comprises a tube **11** made of flexible but self-sustaining plastic and having a closed end **13** and an open end **14.** The tube has a length of approximately 1 ¾ inches and an inside diameter of approximately 9/32 inch.

Telescoped into the tube **11** is a frangible ampoule **15** made of glass and filled with a liquid such as Merthiolate. When the swab **10** is used, the tube is squeezed inwardly between the thumb and the forefinger to break the ampoule and release the liquid into the tube. The released liquid saturates an absorbent swabbing tip **16** which is telescoped into the open end **14** of the tube and which may be used to apply the liquid to a surface such as the skin area surrounding a wound.

The swabbing tip **16** is made of a cotton-like material such as non-woven fibrous cotton known by the name Webril or a synthetic fibrous material similar to polyester. Other cotton-like materials may be used for the swabbing tip as long as the material is soft and absorbent. The tip is formed from an initially rectangular sheet **17** (FIG. **2**) of cotton-like material by folding at least the two shorter margins **19** of the sheet inwardly to form an inner cylinder **20** and an outer rounded dome **21.** The cylinder **20** defined by the inwardly folded margins is stuffed snugly into the open end **14** of the tube **11** (see FIG. **1**) while the dome **21** is left protruding from the outer end to form the applicator portion of the tip **16.** To help hold the tip in a fixed axial position in the tube, the tip is wetted with a solvent such as acetone after the ampoule **15** and the tip have been placed in the tube. The solvent reacts with an acetate lining around the inner side of the open end portion of the tube and renders the lining tacky so that the cylinder **20** subsequently becomes cemented to the inner side of the tube. The aforementioned patent discloses a method and machine for making the tip and for assembling the tip to the tube.

In the case of the swab **10** having a tube **14** with the dimensions set forth above, a cotton-like sheet **17** having a length of about 1 inch, a width of about ½ and a thickness of between 3/32 inch and ⅛ inch is used to form the tip **16.** To insure that sufficient material will be cemented to the tube to hold the tip securely in place, the cylinder **20** within the tube is made relatively long, the cylinder having a length of about 9/32 inch. As a result, the dome **21** protrudes outwardly approximately 3/16 inch from the end of the tube and has a major diameter of about 5/16 inch.

The present invention contemplates the provision of an applicator swab **10'** (FIG. **4**) having a new and improved swabbing tip **16'** which, when compared with the tip **16,** defines a significantly larger applicator dome **21'** and yet uses a cotton-like sheet **17'** (FIG. **5**) which is no larger than the sheet **17.** In addition to being larger and thus forming a better applicator, the

dome 21′ is more readily saturable than the dome 21 and thus the liquid released into the tube 11′ flows to the outer end of the dome 21′ more quickly so that there is less delay between the time of breaking of the ampoule 15′ and the time the outer end of the dome becomes wet and ready for use.

Specifially, the foregoing advantages are achieved by lining the inner face of the cotton-like sheet 17′ with a layer 25 (FIG. 5) of foam-like material such as polyurethane foam or similar resilient and porous material. The foam-like layer 25 has rectangular dimensions approximately the same as those of the cotton-like sheet 17′ and has a thickness just less than 1/16 inch.

The foam-like layer 25 is superimposed with the inner side of the cotton-like sheet 17′ before the latter is folded and stuffed into the open end 14′ of the tube 11′. As a result, the margins 26 of the foam-like layer 25 are located within the tube 11′ on the inner side of the cotton-like cylinder 20′ while the central portion of the layer 25 defines a porous core 27 at the center of the dome 21′.

By virtue of their resiliency, the margins 26 of the foam-like layer 25 urge the outer side of the cylinder 20′ outwardly into pressing engagement with the inner side of the tube 11′. When the tip 16′ is wetted with the acetone solvent, the margins 26 of the layer 25 expand and urge the outer side of the cylinder 20′ even more tightly into engagement with the inner side of the tube so that an extremely good bond may be established between the cylinder and the tacky inner surface of the tube. As a result of the good bond, the cylinder 20′ need only extend a short distance into the tube to hold the tip 16′ firmly in place in the tube. Indeed, with the present swab 10′, the length of the cylinder 20′ within the tube is only about ⅛ inch or approximately one-half the length of the cylinder 20.

Because the inner cylinder 20′ is comparatively short, more material is left to define the outer dome 21′. In the case of the swab 10′, the dome protrudes outwardly about 11/32 inch from the open end 14′ of the tube 11′ and has a major diameter of approximately 13/32 inch. When wetted by the liquid in the ampoule 15′, the foam layer 25 expands and causes the dome 21′ to blossom to an even larger diameter. Accordingly, the large dome serves as a more effective applicator and is less likely to flatten when pressed against the skin being swabbed. Moreover, the sides of the dome overhang and shield the raw edge defined by the open end 14′ of the tube 11′ and form a cushion for such edge so that the edge will not abrade the skin.

While it is possible, of course, to form a large dome simply by using a sheet of cotton-like material larger than the sheet 17 or 17′, the dome and cylinder formed by such a sheet are very tightly compressed and thus are not easily saturated. The present invention avoids this disadvantage and provides a large and quickly saturable dome 21′ because the cylinder 20′ is comparatively short and because the liquid may pass quickly through the porous core 27 defined by the foam-like material at the center of the dome. Indeed, the large dome 21′ of the present invention, with its central porous core 27, becomes saturated even more quickly than the smaller dome 21 of the previous swab 10.

Another swab 10″ incorporating the features of the invention is shown in FIGS. 7 and 8 and, in this instance, the outer side of the cotton-like sheet 17″ is covered with a very thin sheet 30 of nylon scrim whose margins are folded inwardly and directly engage the inner side of the tube 11″ when the sheets 17″ and 30 and the foam layer 25″ are stuffed into the tube to form a cylinder 20″ and a dome 21″. The scrim 30 tears less easily than the cotton-like sheet 17″ and thus is less likely to shred and tear away from the tube if an attempt is made to pull the tip 16″ out of the end of the tube. In addition, the scrim provides a smooth but porous covering for the dome 21″ and is substantially free of loose fibers or lint.

I claim as my invention:

1. An applicator swab comprising a tube made of flexible but self-sustaining plastic and having an open end and a closed end, an ampoule filled with liquid and housed within said tube, said ampoule being frangible and releasing said liquid into said tube when the sides of the tube are squeezed inwardly to break the ampoule, and an absorbent swabbing tip telescoped into the open end of said tube and adapted to be saturated by said liquid, said tip comprising a sheet of cotton-like material whose margins are folded inwardly and stuffed into said tube to cause said sheet to define a dome adjacent the open end of the tube, and a layer of resilient foam-like material lining and contacting the inner face of said sheet and resiliently urging the folded margins of said sheet outwardly toward the inner side of said tube, the remaining portion of said layer defining a porous inner core at the central portion of said dome.

2. An applicator swab comprising a tube, a quantity of liquid within said tube, and a swabbing tip telescoped into said tube and adapted to be saturated by said liquid, said tip comprising a sheet of cotton-like material whose margins are folded inwardly and stuffed into said tube, and a layer of resilient foam-like material lining and contacting the inner face of said sheet and resiliently urging the folded margins of said sheet outwardly toward the inner side of said tube.

3. An applicator swab as defined in claim 2 further including a thin sheet of scrim covering the outer face of said cotton-like sheet and having its margins stuffed into said tube.

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