United States Patent [19]

Grossan

[11] **3,901,233**

[45] **Aug. 26, 1975**

[54] **EAR APPLICATOR**

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[22] Filed: **Nov. 26, 1973**

[21] Appl. No.: **418,815**

[52] **U.S. Cl.** **128/261;** 128/232

[51] **Int. Cl.** **A61m 35/00**

[58] **Field of Search** 128/260, 261, 245, 248, 128/232, 246; 401/198, 183, 136, 137; 141/311

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[57] **ABSTRACT**

An applicator including a tubular collapsible body containing a liquid preparation, one end being permanently closed, the other end being initially closed and having means for opening it to provide an outlet orifice. Surrounding the orifice and attached to the applicator is a collar made of absorbent spongy material impregnated with a protective substance in ointment form. Desirably the liquid and ointment are silicone. The collar is somewhat larger in diameter than the ear canal and is desirably frusto-conical in outer contour so that it can be inserted into the meatus of the ear and partially into the adjacent portion of the ear canal. A slight twisting of applicator causes the collar to deposit a coating of ointment on the skin it contacts, and the user then squeezes the applicator body to force some of the liquid into the ear canal.

6 Claims, 4 Drawing Figures

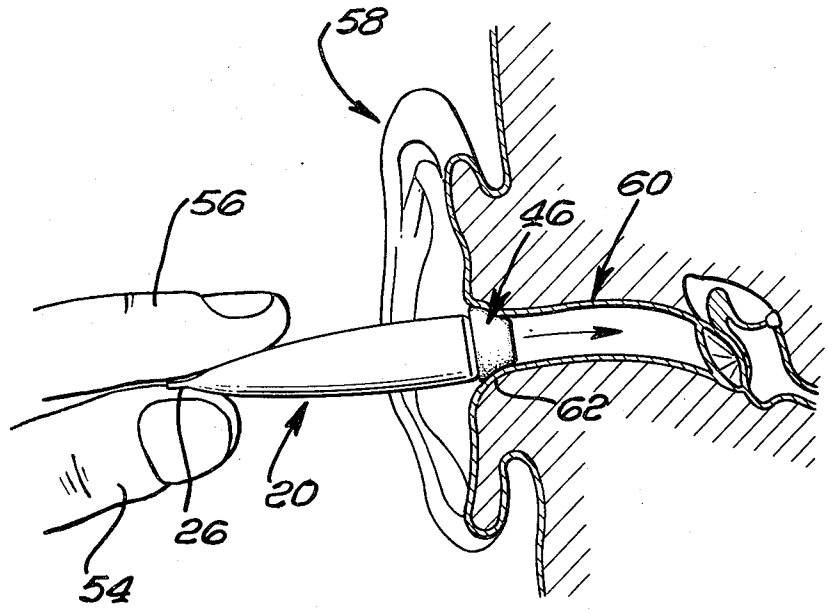


FIG. 1.

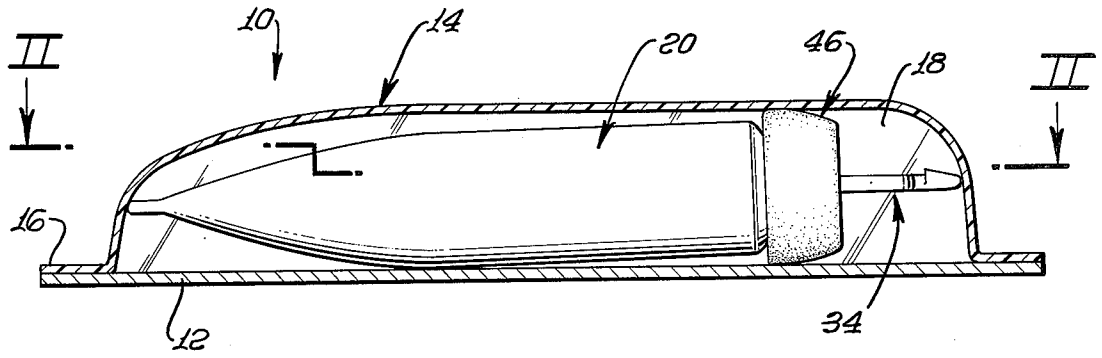


FIG. 2.

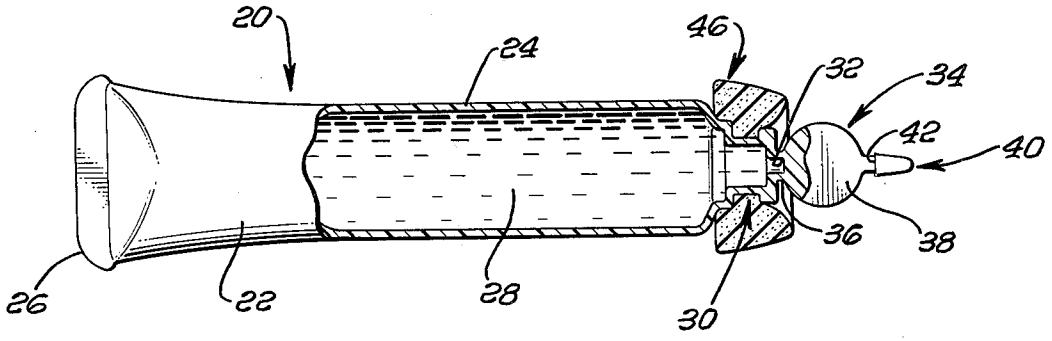


FIG. 3.

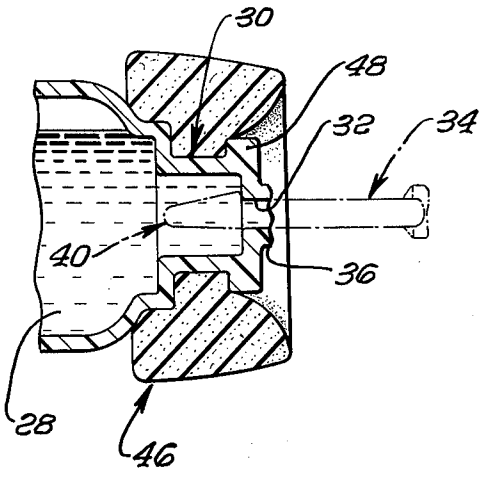
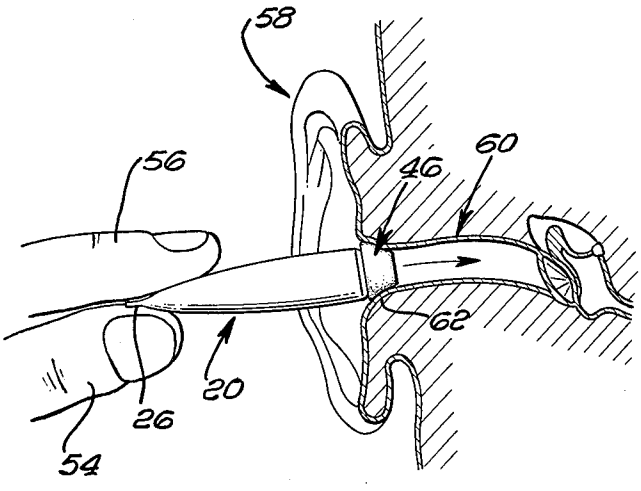


FIG. 4.



EAR APPLICATOR

BACKGROUND AND FIELD OF THE INVENTION

External otitis is frequently observed in swimmers, divers and others whose ears are subjected to exposure to water. Even a humid climate is known to increase the incidence of external otitis, and "swimmer's ear" is a well known form of the disease, typically characterized by maceration of the skin in the ear canal and resulting infection. Prolonged exposure to water, or even to humid atmosphere, tends to dissolve or otherwise remove cerumen, or ear wax, and the drying effect of such exposure on the skin gives rise to the maceration above mentioned. Furthermore, it is believed that cerumen may well have bactericidal or fungicidal properties which maintain the normal healthy state of the skin of the external ear canal, and loss of cerumen may accordingly increase the incidence of external otitis for this reason also.

Ear drops, particularly of silicone, have been used to provide a coating over the skin of the ear canal and thereby minimize removal of cerumen. However, such drops fall out of the ear fairly soon after application, especially if the user moves his head into a number of positions and orientations, as is typical in swimming.

The present invention provides means for application of a coating of a protective substance, preferably silicone, in the form of a gel or ointment to the meatus and adjacent portion of the ear canal and, substantially simultaneously, the application of liquid drops to the inner portion of the ear canal. Since cerumen is produced in the meatus and adjacent portions of the canal, the relatively stronger coating of silicone ointment on those surfaces minimizes loss of cerumen by the action of water, and also tends to inhibit the loss of the liquid ear drops from the inner portion of the ear canal. Moreover, clinical experience tends to indicate that the presence of any foreign substance, e.g. the ointment or gel above mentioned, on the cerumen producing area of the ear canal may actually stimulate the production of cerumen.

In accordance with the present invention, there is provided an applicator having a quantity of liquid preparation in a suitable container such as a collapsible tube having an outlet orifice, and a collar of absorbent spongy material surrounds the orifice and is impregnated with a suitable material in ointment or gel form. Thus, use of the device permits coating of the outer portion of the ear canal with the ointment and, immediately thereafter, application of liquid ear drops in the ear canal.

It is accordingly a principal object of the invention to provide a novel applicator for applying protective material to the meatus and the ear canal. Other objects are to provide such a device having a container from which liquid can be expelled from an orifice, and a collar of spongy material surrounding the orifice and impregnated with a protective material in ointment form; to provide such a device particularly effective in applying silicone to the ear canal to minimize loss of cerumen; and for other purposes as will be understood from the following description of a preferred embodiment of the invention, taken in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a side elevational view of an applicator of the present invention, in a package shown in section.

FIG. 2 is a partially sectional view of the applicator, taken on arrows 11—11 of FIG. 1.

FIG. 3 is a fragmentary section view of the outlet end of the applicator with the closure member reinserted after initial use of the device.

FIG. 4 is a sectional view of the outer portion of the human ear, showing actual use of the applicator.

DETAILED DESCRIPTION

In FIG. 1 there is shown an applicator in accordance with the present invention as it may be packaged for distribution in a conventional container which serves to prolong shelf life by minimizing drying out of the impregnated collar of the device. Such a container is indicated generally at **10** and includes a base sheet **12** of cardboard or the like and a cover indicated generally at **14** desirably made of a preferably transparent plastic sheet material of the type used in the conventional blister pack and having a continuous marginal lip **16** attached to base sheet **12** by a suitable adhesive. Thus cover **14** and base **12** form a cavity **18** within which is housed the device of the present invention indicated generally at **20.**

With reference to FIG. **2,** the applicator **20** has an elongated tubular body **22** having a thin wall **24** of impermeable flexible sheet material such as a suitable plastic which may be easily bent inwardly by external digital force applied on opposite sides of the body. One end **26** is permanently closed, as by crimping and heat sealing, and the opposite end is initially closed but may be opened by the user when desired. More specifically, the openable end includes a neck portion indicated generally at **30** having formed therein an outlet orifice **32** which is initially closed by a closure member indicated generally at **34** formed integrally with neck portion **30** of the body. Closure **34** is connected to neck **30** by a thin frangible annulus **36** surrounding the orifice **32.** Thus the user, just prior to first using the applicator, can twist the closure **34** relative to the applicator proper in order to break the attachment between the closure and the neck **30.** The closure is provided with a disk portion **38** to facilitate the grasping and twisting operation, and, opposite the frangible annulus **36,** a sealing prong indicated generally at **40** projects from the disk and includes a shoulder **42** to assist in retaining the prong in resealing position after initial use, as is shown in FIG. **3.**

Surrounding the neck **30** is a collar indicated generally at **46** made of absorbent spongy resilient material and impregnated with a suitable material such as silicone in ointment or gel form. Neck **30** is provided with an annular flange **48** adjacent to orifice **32,** and collar **46** is retained on neck **30** by resilient abutting engagement against the flange. The outer surface of collar **46** may be slightly frusto-conical in contour as shown for reasons later appearing.

Use of the applicator will be described with reference to FIG. **4.** The auricle or pinna, indicated generally at **58,** is effectively an outer continuation of the ear canal indicated generally at **60,** merging with the canal at meatus **62.**

The user grasps the closed end **26** of the applicator **20** between thumb **54** and finger **56** and inserts the im-

pregnated collar **46** into meatus **62** and partially into the adjacent portion of the ear canal. Desirably he then twists the applicator slightly, in order to make certain that a coating of ointment is deposited ringing the meatus, and then squeezes the applicator to force some of the liquid **28** outwardly of the applicator and into the ear canal proper. The coating thus shields the coated portion of the ear canal, and tends to retain the liquid in the ear, particularly when the liquid and the ointment are of similar materials such as the preferred silicone.

It will thus be seen that the ointment-impregnated collar **46** contacts the meatus and adjacent portion of the ear canal before the liquid is squeezed out of the applicator. It has been found that, if the skin is first wetted by liquid silicone, the silicone ointment will not adhere well to the skin.

It is particularly to be noted that the size of the spongy collar prevents its being inserted far enough into the canal to cause damage, and the resilience of the collar material similarly makes it safe to use without harm to the skin.

I claim:

1. An applicator for applying protective substance to the ear canal comprising:

a container having therein a quantity of skin protective liquid and an outlet orifice for depositing said liquid in the ear canal;

and a collar of absorbent spongy material surrounding said orifice and impregnated with a skin protective substance in ointment form for depositing said ointment on the meatus of the ear,

said collar being of a size as to prevent its total entry into the ear canal.

2. The invention as defined in claim **1** including a removable closure means for said orifice.

3. The invention as defined in claim **1** wherein the skin protective liquid is silicone.

4. The invention as defined in claim **1** wherein said protective substance in ointment form is silicone.

5. The invention as defined in claim **1** wherein said collar is somewhat larger in diameter than the ear canal.

6. The invention as defined in claim **5** wherein the collar is frusto-conical in contour.

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