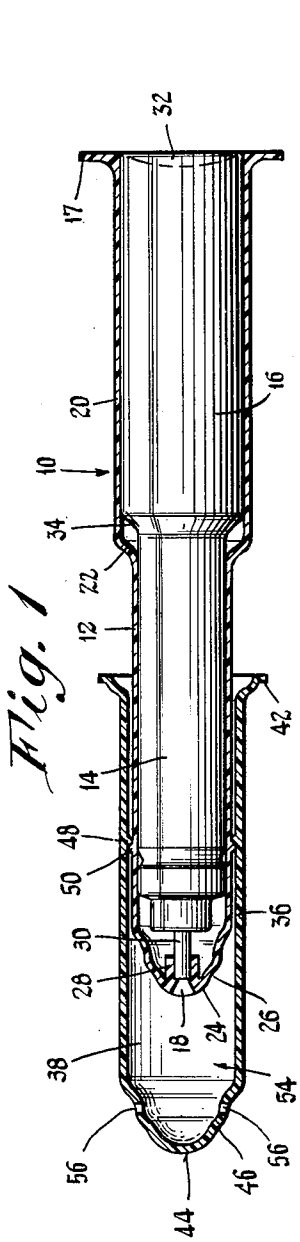
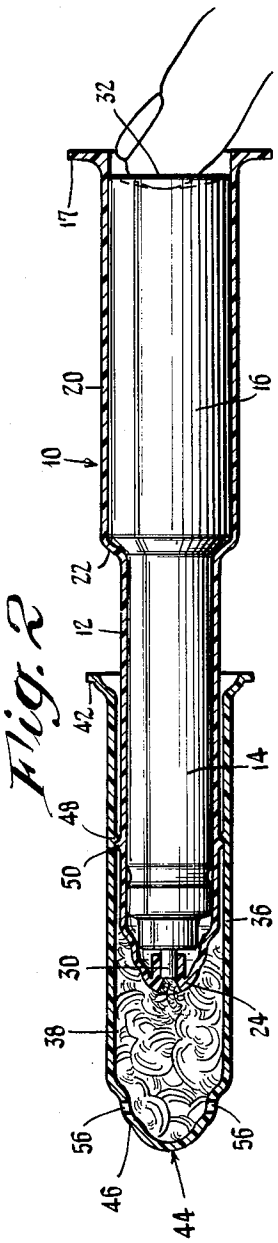
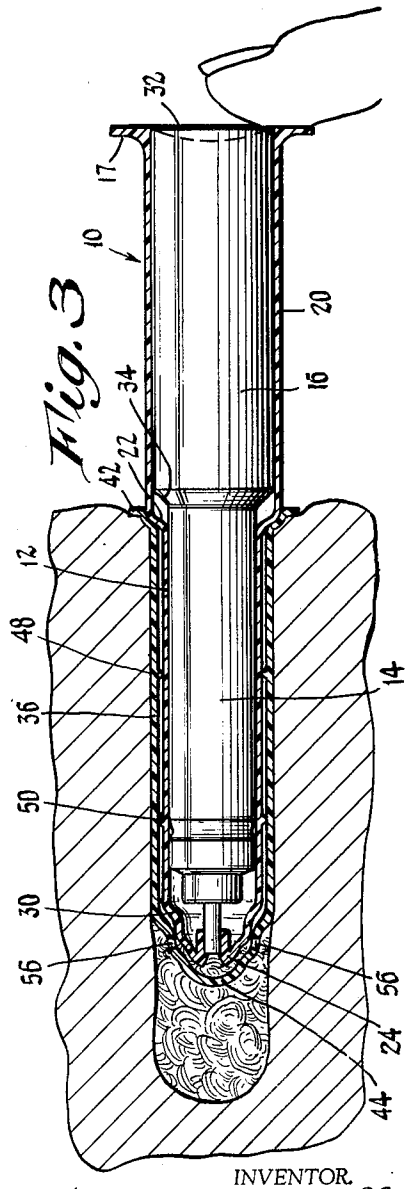
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AEROSOL TYPE APPLICATOR FOR BODY CAVITY

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AEROSOL TYPE APPLICATOR FOR BODY CAVITY

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This invention relates to applicator devices, and more particularly to applicators intended to deposit a measured amount of fluid substance in a body cavity.

Heretofore various types of fluid applicator devices intended for the above purpose have been proposed and produced. While the produced articles have operated in a manner to give generally satisfactory service, they did not function to provide repeated doses in the most convenient manner and with the utmost reliability.

The above disadvantages of prior applicator devices have been obviated by the present invention, and one object of the invention is to provide a novel and improved aerosol type applicator device which may always be relied on to provide relatively accurately measured doses of the aerosol substance.

Another object of the invention is to provide an improved aerosol applicator device as above set forth, which will give many repeated doses or injections of the aerosol substance, all characterized by a full measure or accurate quantity as required.

A further object of the invention is to provide an improved aerosol applicator as outlined, wherein the utmost convenience is had in effecting the applications.

An additional object of the invention is to provide a novel aerosol applicator of the kind set forth, which is sanitary and safe to use.

Features of the invention reside in the provision of an improved applicator device embodying an aerosol dispenser, which is simple to understand and to operate, involves relatively few parts, and is economical to fabricate and produce.

Other features and advantages will hereinafter appear.

In the drawings accompanying this specificatiaon, similar characters of reference are used to designate like components throughout the several views, in which:

FIG. 1 is an axial sectional view of the novel aerosol type applicator as provided by the invention, incorporating a pressurized valved aerosol container. The device is shown in its inoperative position.

FIG. 2 is an axial sectional view of the applicator device, illustrating the actuation thereof to discharge a measured quantity of fluid substance from the aerosol container, prior to applying the applicator to the body cavity.

FIG. 3 is an axial sectional view of the applicator after it has been applied to the body cavity and operated to eject the measured quantity of aerosol substance into the cavity.

Prior to giving a detailed description of the construction of the applicator, a brief explanation will be given of the novel mode of operation. Prior to the applicator being inserted in the body cavity it is initially actuated by the user to discharge or set out a measured quantity of fluid substance (preferably a foam) from the aerosol container into a temporary storage chamber of the applicator. Such storage chamber is completely filled with

the fluid substance or foam, and has transparent walls whereby the filled condition may be readily observed. After filling of the temporary storage chamber is completed, the applicator is applied to or inserted in the body cavity, and thereafter actuated in a manner different from the first actuation, to now discharge the fluid substance from the temporary storage chamber into the body cavity. Such actuation eventually completely empties the storage chamber whereby the measured quantity which it has held is completely transferred to the body cavity. The applicator device is thereafter withdrawn from the cavity, with the discharged fluid substance or foam retained in the cavity. After a simple cleansing of the applicator device it is again in readiness for use at a later time, as needed.

Considering now the novel constructional details of the applicator device, the invention provides a tubular holder member indicated generally by the numeral **10**, said holder having an apertured end portion **12** constituted as a plunger and adapted to receive and carry the valved end **14** of a pressurized aerosol container or dispenser **16** in such a manner that discharge of the aerosol substance or foam therefrom may be effected through an end opening **18** in the plunger portion **12** of the holder. The outer or rear end of the holder **10** is provided with an annular external flange **17** to facilitate the operation of the device, as will be later brought out. The holder **10** may be constituted of any suitable material, that preferred at present being molded plastic substance such as polyethylene or similar formulations. The pressurized aerosol container **16** is preferably formed of metal, such as aluminum or the like.

The tubular holder **10** has a body portion **20** of diameter larger than the plunger portion **12**, there being an annular shoulder **22** between the two portions to connect these. At its front end the plunger portion **12** of the holder has a rounded tip **24** provided with an annular groove or displaced configuration **26**. A hollow boss **28** at the inside of the rounded end portion **24** receives the valve stem **30** of the aerosol dispenser, such stem controlling a conventional valve means (not shown) in the dispenser portion **14** in such a manner that discharge of the aerosol substance takes place through the hollow stem **30** when the latter is depressed or relatively moved from left to right as viewed in the figures.

Such discharge may be readily effected by applying finger pressure to the outer or rear end wall **32** of the container **16** in the manner illustrated in FIG. 2, so as to shift the dispenser from right to left. The extent of shifting movement is limited by an annular shoulder **34** of the dispenser, which engages the inner surface of the annular shoulder **22** of the holder **10**.

Cooperable with the plunger portion **12** of the holder **10** is an elongate tubular cylinder member **36** having a bore **38** in which the apertured plunger **12** is received and in which it is reciprocable. The cylinder member **36** is also preferably constituted of molded plastic substance, such as rigid acetate or butyrate plastic or similar formulations. Also the cylinder member **36** is preferably formed of clear plastic whereby it is completely transparent to enable the user to view the inside space of the member.

The cylinder member **36** has handle means at one end, in the form of an annular external flange **42**, such flange being sufficiently wide to enable it to be readily grasped.

The cylinder member 36 is adapated for insertion in the body cavity when held by the handle means 42, and has a rounded end or tip 44 to facilitate such insertion, said rounded tip having an annular external groove or displaced configuration 46 arranged to enable a closely fitting or nesting relationship to occur between the corresponding ends of the cylinder member and plunger portion respectively, as illustrated in FIG. 3.

Combined movement limiting or stop means and packing means are provided on the cylinder member 36 and the plunger portion 12, these being preferably in the form of cooperable annular internal and external beads 48 and 50, located respectively on the member 36 and the plunger portion 12. As seen in FIG. 1, the beads 48 and 50 when in engagement with each other normally prevent removal of the cylinder member 36 from the plunger portion 12 of the holder member 10. The beads 48 and 50 further effect a positioning of the cylinder member 36 on the plunger portion 12 whereby there may exist a temporary storage chamber 54, FIG. 1, in the cylinder member beyond the tip portion 24 of the plunger 12. Communication is had with the said chamber 54 through the front opening 18 of the plunger portion 12 whereby the pressurized aerosol substance from the dispenser 16 may be discharged to fill the chamber 54 upon suitable actuation of the dispenser, as illustrated in FIG. 2. Such actuation, as aforesaid, involves applying finger pressure to the outer end of the dispenser 16 to shift the latter from right to left into the discharging position as determined by engagement between the shoulders 22 and 34.

The front end portion 44 of the cylinder member 36 is provided with a plurality of discharge openings 56 communicating with the temporary storage chamber 54, whereby the contents of such chamber may be discharged from the cylinder member to the exterior of the latter, or into the body cavity.

When a user actuates the aerosol dispenser 16 as illustrated in FIG. 2, she observes the filling of the temporary storage chamber 54 and removes pressure from the dispenser 16 in time to prevent appreciable discharge of fluid substance from the openings 56 while at the same time making sure that the entire chamber 54 is completely filled with the substance. The user now inserts the applicator, specifically the cylinder member portion 36 thereof, in the body cavity by holding such member at the annular flange 42, making sure to position the cylinder member in the fully inserted position as shown. Thereafter, the user applies the finger pressure to the annular flange 17 of the holder 10 to effect a shifting of the same in a right-to-left direction as viewed in the figures, causing the plunger portion 12 thereof to be fully received in the cylinder member 36 and causing a final ejection of the fluid substance which has been initially discharged into the temporary storage chamber 54. This operation is illustrated clearly in FIG. 3 and involves relative movement between the holder 10 and cylinder member 36 while the aerosol dispenser 16 remains relatively immovable in the holder, occupying its non-discharging position as clearly shown in FIGS. 1 and 3.

Upon the final ejection of the fluid substance from the cylinder member 36, the applicator device is withdrawn from the body cavity and the exterior surfaces cleansed in any suitable manner. The device is then in readiness for a subsequent use.

If desired, the cylinder member 36 may be completely removed from the holder 10 by forcing the internal and external beads 48, 50 past each other, whereupon a more thorough cleaning of the cylinder member 36 may be effected in any desired manner.

The member 36 is then replaced on the holder 10 to the position illustrated in FIG. 1. Or, the cylinder member 36 may occupy the position shown in FIG. 3 for storage purposes, until such time as the applicator device is to be again placed in use.

It will now be seen from the foregoing that I have provided an improved aerosol type applicator device for use in placing measured quantities of fluid substance in a body cavity. The present applicator when properly operated will always provide the desired measured amount or dose of the aerosol substance, for injection in the cavity. Further, many repeated doses or injections of the aerosol substance may be had, depending on the capacity of the aerosol dispenser 16, each such repeated dose being characterized by a full measure or accurate quantity of the fluid substance.

It may be now understood that the applicator device enables such doses to be injected with the utmost convenience and ease. Further, the applicator device is sanitary, may be easily and thoroughly cleaned, and accordingly is safe to use. Moreover, the device is simple to understand and operate, and involves relatively few parts whereby it is economical to fabricate and produce. Because of its low cost, it may be completely discarded or thrown away when the last fluid substance is obtained from the dispenser 16, without involving appreciable waste.

Variations and modifications may be made within the scope of the claims, and portions of the improvement may be used without others.

I claim:

1. An aerosol-type applicator for discharging a predetermined quantity of fluid material into a body cavity, comprising in combination:

(*a*) an aerosol dispenser including an elongate tubular pressurized container and an axially movable and depressible valve stem at one end of the container,

(*b*) a tubular holder having an open end and having an elongate plunger including at the opposite end of the holder an apertured end portion constituted as part of the said plunger,

(*c*) the apertured end portion of the holder having means engageable and cooperable with the valve stem of the pressurized container to open the valve when the container is shifted inward in the holder,

(*d*) said holder wholly receiving and carrying the valved end of the pressurized container and also a large fraction part of the latter whereby a discharge of aerosol substance from the dispenser out through the said apertured plunger end portion may be effected by relative movement between the plunger and pressurized container,

(*e*) an elongate cylinder member having a bore in which the apertured plunger end and elongate plunger are closely, slidably received and in which the plunger is reciprocable, said cylinder member having handle means at one end and being adapted for insertion in the body cavity when held by said handle means,

(*f*) the other end of said cylinder member having a rounded exterior and an orifice through which the substance discharged from the pressurized container and plunger end may be ejected when the said plunger end and plunger of the holder are advanced further into the cylinder member,

(*g*) said holder having a body portion within which the remaining fractional part of the pressurized container is substantially wholly contained,

(*h*) said holder having at its open end a handle flange extending substantially radially outward,

(*i*) the outer end of the pressurized container being closely juxtaposed to the said handle flange to enable it to be conveniently engaged simultaneously with the handle fiange by the fingers of the user,

(*j*) said holder comprising a close-fitting guide for the container, restricting movement of the latter to an axial direction within the holder and preventing all sidewise movement of the container,

(*k*) a stop shoulder on the interior of the holder, for engagement with a portion of the dispenser to halt the movement of the same and the container thereof when these reach the discharge position.

2. An aerosol applicator as in claim 1, wherein:

(*a*) the stop shoulder of the holder has an outer, back surface engageable with the handle end of the cylinder member to constitute a stop which establishes the limit of advance movement of the said plunger end.

3. An aerosol applicator as in claim 1, wherein:

(*a*) the apertured end of the holder is bulbous,

(*b*) the interior of the said other end of the cylinder member is concave to provide a close fit for the bulbous apertured end of the holder.

4. An aerosol applicator as in claim 3, wherein:

(*a*) the bulbous end of the holder and the said other end of the cylinder member have annular mating displaced configurations, and

(*b*) the orifice of the cylinder member is disposed in the annular configuration thereof.

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