Dec. 23, 1958 D. H. GATTONE 2,865,370

DISPENSING ADAPTOR FOR DISPOSABLE AEROSOL UNITS

Filed Sept. 6, 1957

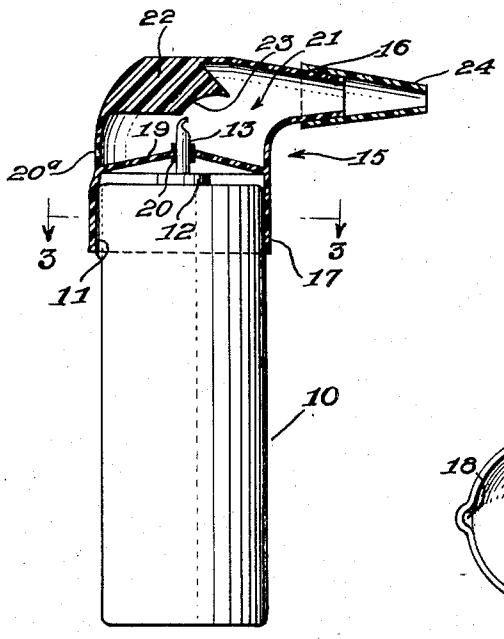


Fig. 1.

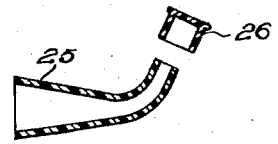


Fig. 5.

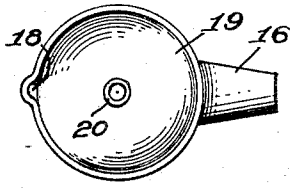


Fig. 2.

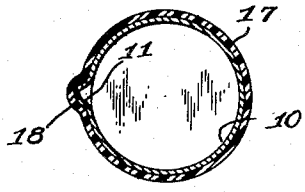


Fig. 3.

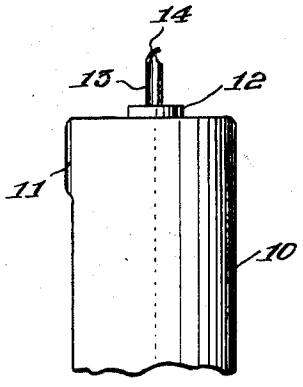


Fig. 4.

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DISPENSING ADAPTOR FOR DISPOSABLE AEROSOL UNITS

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Application September 6, 1957, Serial No. 682,506

10 Claims. (Cl. 128—173)

The present invention relates to a dispensing adaptor for use with disposable aerosol units.

Heretofore there have been many dispensing adaptors and buttons for use with valved aerosol units for soaps, detergents, insecticides and event artificial snow and the like. However, these prior dispensing adaptors and dispensing buttons have not been suitable for specialized uses, such as for administering medicaments and the like to body cavities in animals and humans, which special use requires measured dosages, nebulization and proper velocity of each dosage with proper control of particle sizes for use in inhalation therapy treatment and the like.

It is an object of this invention to provide a novel dispensing adaptor for aerosol containers or pressurized units, which is highly efficient for administering the contents of aerosol or pressurized units in a manner to permit proper nebulization and discharge of medicaments for body cavity treatment and/or for inhalation therapeutic uses of solutions, powders or combinations thereof.

Another object is to provide a dispensing adaptor, formed to detachably couple direct to a valved aerosol or pressurized unit.

Still another object is to combine in a single molded unit a dispensing adaptor, a valve actuator, a nebulizer, and an outlet directing nozzle for quick-detachable and indexed connection with a disposable aerosol package.

A further object is to provide in the dispensing adaptor unit, an aerosol projection increasing means for stepping up the velocity of a calibrated metered discharge and known pressure in an aerosol unit used therewith.

A further object is to provide means in the dispensing adaptor for collecting excess medication during use.

Yet another object is to provide interchangeable nozzle means for the dispensing adaptor to provide for individual body cavity application of aerosolized medicaments and the like.

A further object is to provide index means adapted to position the dispensing adaptor outlet properly for discharge of the aerosol unit through the adaptor's nozzle when the same is coupled to an aerosol unit for use and whereby the aerosol unit when empty is disposable and may be replaced with another unit.

With these and other objects in view, the invention consists in the construction, arrangement and combination of parts hereinafter described and particularly pointed out in the claims, it being understood that I do not intend to limit myself to the details of construction.

In the drawings like parts throughout the several views are given like numerals and are thus identified in the following detailed description.

Figure 1 is an elevational view of a suitable pressurized container with a longitudinal cross section view of the novel dispensing adaptor means in position thereon and with several special forms of tips for interchangeable use therewith;

Figure 2 is a bottom plan view of the adaptor means removed from the container;

Figure 3 is a transverse cross section view taken on line 3—3 of Figure 1, disclosing the cooperating index means of the adaptor skirt and the container;

Figure 4 is a detail view of the upper portion of the container with the adaptor means removed; and

Figure 5 is a cross section view of a form of nozzle extension attachable to the nozzle shown in Figure 1.

Referring to the drawings in detail and first with respect to Figure 1, there is disclosed a pressurized container **10** with a longitudinal index key or rib **11**. The container may be formed of metal, glass or plastic. These aerosol units or containers are disposable and if made of metal may be interiorly treated or coated, or if glass may be coated with suitable plastic either interiorly or exteriorly.

The top of the container is formed with the usual flange or lip to stake in the valve body **12** from which extends a hollow valve stem **13**, with curved tip **14**, which acts as a cam follower as hereinafter explained. The valve used may be of any standard type and of either the continuous or the metered type, such as disclosed in prior Patent 2,788,784, issued April 16, 1957, if a continuous or if metered, such as disclosed for example in the patent application Serial No. 647,352, for Means for Administering Pressurized Medicaments, Gases, Combinations Thereof and Liquids Into Body Cavities, Herbert M. Birch and Daniel H. Gattone, inventors.

For use with the container **10** there is provided a novel nebulizing and dispensing adaptor comprising a hollow body **15** having a tapered discharge nozzle **16** angularly projecting from the body, an annular coupling means, such as a skirt **17** formed with a longitudinally extending pushed out index groove **18**. This groove **18** is adapted to slidably receive the index key or rib **11** when the adaptor is placed over the valve end of the container **10**.

The interior of the hollow body **15** is formed with a conical plate **19** centrally formed with an eye, at the apex thereof, such as a bushed opening **20**, which slidably fits over the valve stem **13**. The plate **19** from the bushed opening **20** slopes downwardly to the sides of the body **15** above the skirt portion **17** and forms an annular trap or collection chamber to catch excess medication during repeated use of the unit.

Above the plate **19** in the wall of body **15** is an opening **20a**, see Figure 1, which admits air into the body as the valve **12** is opened. This air opening increases the projection and velocity of the dispensing means discharging from the nozzle **16** and provides more effective and more complete nebulization of the medium in the nebulizer chamber **21** of the body **15**.

The dispensing adaptor body **15** is interiorly formed with an enlargement **22**, which is positioned therein, so as to be indexed with respect to the index rib **11** and groove **18**, to thereby in turn position the curved combined cam and nebulizer surface **23** of the enlargement directly above the curved cam follower surface **14** of the valve stem **13**. This index feature positively positions the discharge opening of the hollow valve stem toward the outlet of the tapered nozzle **16**, to thereby provide maximum efficiency in action as will be apparent from the following description of operation.

As illustrated in connection with Figures 1 and 5, various forms of nozzle extensions may be used such as, the extensions **24** or **25**, and may include a final small end seal cap **26** to be applied when the unit is not in use.

Operation

In the operation the user first takes a ready prepared pressurized container **10** and inserts the head thereof with the valve stem **13** into the adaptor means skirt portion **17**, so that index key or rib **11** slides into the skirt index groove **18**.

Then the user decaps the nozzle to be used and, for

example, holding the unit between thumb and forefinger directs the same toward the cavity, or he may insert same in the cavity, to be treated and thus presses downward upon the exterior top surface of the enlargement **22**. Such downward pressure causes the combined nebulizer and cam surface **23** to cam or engage with the curved end **14** of the hollow valve stem **13**, thereby opening the valve **12** and discharging pressurized medium against the surface **23** into the nebulizer chamber **21** from where it is projected through the nozzle **16** with the assistance of the air drawn into the chamber **21** through opening **20a** into the cavity treated.

Obviously, any medicament may be discharged from the container **10**, such medicament may be all liquid or a combination of liquid and micronized powdered antibiotics or a liquid with a gas or combination of gases, as prescribed. Obviously the propellant used depends upon the nature of the medicament.

Thus there is provided a self-nebulizing dispensing adaptor for aerosol throw away units, which are filled with mediums, such as liquid medicaments, or the like, which may be either for ethical or over the counter commercial distribution.

Although only one embodiment of the invention has been illustrated and described in detail, it is to be expressly understood that the invention is not limited thereto. Various changes may be made in the design and arrangement without departing from the spirit and scope of the invention, as will now likely occur to others skilled in the art. For a definition of the limits of the invention, reference should be had to the appended claims.

What is claimed is:

1. A dispensing adaptor for use with disposable aerosol units having a hollow valve stem, comprising a hollow body formed with a coupling skirt, a centrally apertured plate mounted in the body above the skirt engageable over the valve stem, valve operating means carried by the body positioned above the end of the valve stem, and a discharge nozzle extending from the said body, said valve operating means including a curved surface, said surface being directed toward the discharge end of said discharge nozzle by index means formed in said aerosol units and said skirt portion of the body.

2. A dispensing adaptor for use with disposable aerosol units having a hollow valve stem, comprising a hollow body formed with a coupling skirt, a centrally apertured plate mounted in the body above the skirt engageable over the valve stem, valve operating means carried by the body positioned above the end of the valve stem, and a discharge nozzle extending from the said body, said valve operating means being an enlargement formed on a wall of the hollow body and including a combined cam and nebulizer surface.

3. A dispensing adaptor for use with disposable aerosol units having a hollow valve stem, comprising a hollow body formed with a coupling skirt, a centrally apertured plate mounted in the body above the skirt engageable over the valve stem, valve operating means carried by the body positioned above the end of the valve stem, and a discharge nozzle extending from the said body,

said valve stem being curved over at its tip for engagement with said valve operating means.

4. A dispensing adaptor for use with disposable aerosol units having a hollow valve stem, comprising a hollow body formed with a coupling skirt, a centrally apertured plate mounted in the body above the skirt engageable over the valve stem, valve operating means carried by the body positioned above the end of the valve stem, and a discharge nozzle extending from the said body, said body being formed with an air opening, and said plate sloping downwardly to the sides of the body in the provision of a collection chamber.

5. The dispensing adaptor described in claim 1, wherein the said index means comprises an interengaging longitudinally extending key and a longitudinally extending groove.

6. A position indexed aerosol container having a valve with a hollow valve stem, comprising a body with a longitudinal key formed from the side thereof, said valve being formed with a cam follower surface.

7. In combination, a dispensing adaptor for an aerosol unit, said adaptor having an angular discharge nozzle from a hollow body, said body being formed with a longitudinal index guide groove; and an aerosol container having a valve with a hollow valve stem, said stem having a curved tip, to thereby direct the stem opening toward the said nozzle, and a longitudinal index key formed from said container slidably engageable in said index guide groove adapted to positively position said stem outlet toward the nozzle.

8. The combination described in claim 7, wherein the said nozzle includes interchangeable nozzle units engageable therewith.

9. A dispensing adaptor for use with disposable aerosol units having a hollow valve stem, comprising a hollow body formed with a coupling skirt, a centrally apertured plate mounted in the body above the skirt engageable over the valve stem, valve operating means carried by the body positioned above the end of the valve stem, and a discharge nozzle extending from the said body, said body being formed with an air opening.

10. In combination, a dispensing adaptor for an aerosol unit, said adaptor having an angular discharge nozzle from a hollow body, said body being formed with a longitudinal index guide groove; and an aerosol container having a valve with a hollow valve stem, said stem having a curved tip, to thereby direct the stem opening toward the said nozzle, and a longitudinal index key formed from said container slidably engageable in said index guide groove adapted to positively position said stem outlet toward the nozzle, said body being formed with an air inlet opening.

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