

Oct. 5, 1965

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3,209,751

ADJUSTABLE CAP FOR MEDICINAL DISPENSING DEVICE

Original Filed Dec. 20, 1960

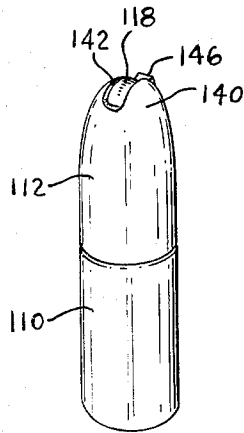


Fig. 1

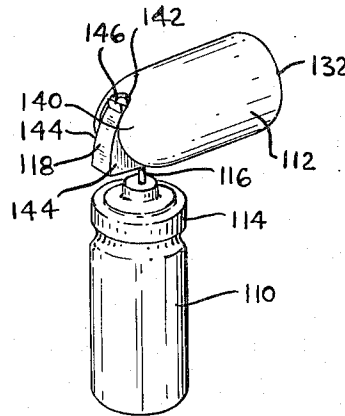


Fig. 2

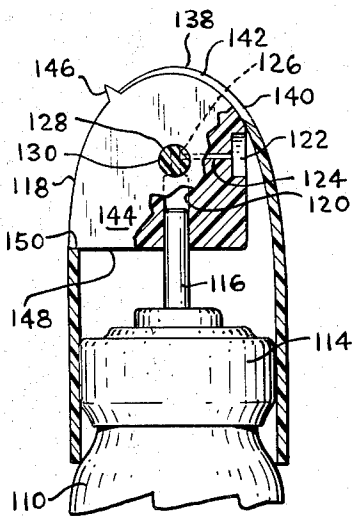


Fig. 3

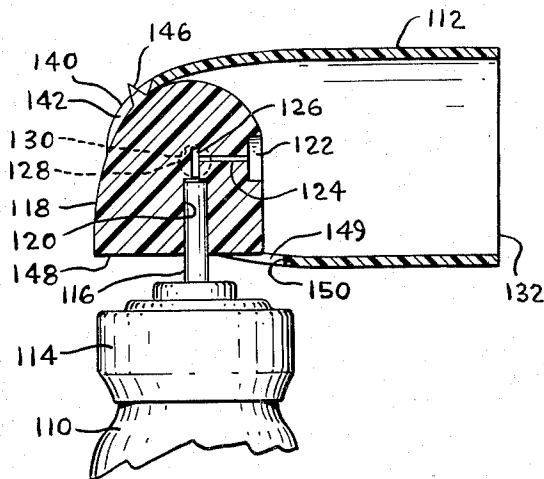


Fig. 4

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ADJUSTABLE CAP FOR MEDICINAL DISPENSING DEVICE

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Original application Dec. 20, 1960, Ser. No. 77,695, now Patent No. 3,151,618, dated Oct. 6, 1964. Divided and this application July 1, 1963, Ser. No. 291,629

3 Claims. (Cl. 128—173)

This application is a divisional application of my co-pending application Serial No. 77,695 filed December 20, 1960, now Patent No. 3,151,618.

The invention relates to a dispensing device for aerosol products, that is, for products that are confined within a container under pressure and dispensed therefrom in the form of a spray. More particularly, the invention relates to a dispensing device especially suited for use as an aid in the oral inhalation of medicinal aerosol products.

The administration of medicinal agents by inhalation has many advantages compared with alternate methods of administration. Administration is quick and easy and may be effected by the patient himself. Response to this type of administration is prompt.

Ever since the introduction of liquefied gas aerosol products it has been recognized that this type of package is particularly well suited for use in this type of drug therapy. However, the adaptation of the usual type of non-medicinal aerosol spray package to dispense a medicinal aerosol spray intended for internal human consumption presents special problems not ordinarily encountered.

Since the medicinal spray is taken internally it is necessary to provide some means for controlling and confining the spray so that it may be readily inhaled. It is also necessary to maintain a greater degree of cleanliness about the package than is usually required and means must be provided for preventing dust and dirt from contaminating the package. In addition, it is desirable that the product be quick and easy to use and one which may be used in a relatively inconspicuous manner as it is frequently necessary that such products be used at periods when complete privacy for the user can not be obtained.

In keeping with the throw-away aspect of this type of package it is necessary that the container for the product be inexpensive. Accordingly, the means for achieving these objectives must be simple and must not add any substantial costs to the packaging of the product. At the same time these means must be aesthetically pleasing in design so as not to impair the sales appeal of the product created by the appearance of the package.

The provision of a dispensing device for aerosol spray products in which these and other objectives are achieved constitutes the general object of the present invention.

Briefly, and in general, the present invention comprises a dispensing device that is provided with means for producing and controlling the discharge of the product from the container in the form of a spray. Suitable valve means, together with a manually operable actuator therefor, are provided on the container to accomplish the discharge of the product as desired, the discharge orifice for the product being located in the actuator for the valve.

A suitable nozzle is provided externally of the actuator for the purpose of confining the product spray after it has left the orifice in the actuator. The nozzle is secured to the package, preferably at the valve actuator, so as to form a part thereof and is so adapted as to serve as a closure for the package. In order to maintain a unity in the design of the package the nozzle is arranged to

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form an upright continuation of the container portion of the package.

The discharge orifice for the package may be located anywhere on the periphery of the actuator and preferably to one side of the vertical axis of the package. The nozzle is secured to the valve actuator in a manner to permit pivotal movement of the nozzle relative to the actuator whereby the nozzle may be disposed with its axis substantially in alignment with the discharge orifice in the actuator. A pivotal connection is accordingly, provided for the valve actuator and the nozzle at a point on the vertical axis of the package and the nozzle is adapted to also serve as a closure for the package. Pivotal movement of the nozzle relative to the actuator is effected after first removing the nozzle and closure from the package.

For the purpose of illustrating the manner in which the invention may be practiced, a presently preferred embodiment of the invention is shown in the drawings and this embodiment will be described in detail hereinafter. However, it is to be understood that the general and detailed descriptions of the device shown in the accompanying drawings are by way of example only and do not define or restrict the scope of the invention, the claims appended hereto being relied upon for that purpose.

Of the drawings:

FIG. 1 is a perspective view of a medicinal aerosol package employing a dispensing device embodying the invention;

FIG. 2 is a similar view of the package of FIG. 1 with the dispensing device in operative position;

FIG. 3 is a sectional view through the dispensing device of the package of FIG. 1 with the device in non-operative position; and

FIG. 4 is a sectional view through the dispensing device of the package of FIG. 1 with the device in operating position.

A preferred form of the invention is employed by the medicinal aerosol package shown in FIGS. 1-4. This package, comprises two principal parts, a container 110 in which the medicine and a suitable propellant are confined under pressure, and a nozzle 112 that serves as a closure for the package at the upper end of the container. A cap and valve assembly 114 is provided for this package and has a valve with a hollow valve stem 116 extending above the cap assembly.

A manually operable actuator 118 is provided for the valve stem and has an internal passageway 120 adapted to fit over the upper portion of the valve stem 116 in frictional engagement therewith. The actuator 118 is provided with an orifice 122 at one side and the orifice 122 connects, through passageway 124, with an extension 126 of the actuator's internal passageway 120 so as to provide a continuously open path in the actuator through which the product and propellant escaping through the valve stem may pass.

The nozzle 112 is hollow and is pivotally connected to the actuator 118 approximately at the midpoint thereof, the connection being made by means of short pins 128, 128 provided on opposite sides of the nozzle 112 which are pivotally journaled in suitable openings 130, 130 in the actuator 118. The openings 130, 130 do not extend through the actuator. One end 132 of the nozzle 112 is open and the diameter of the nozzle, at this end, is substantially equal to that of the container 110 for the package, being just slightly larger than the diameter of the cap and valve assembly 114 so that the open end 132 of the nozzle 112 may be inserted over the assembly to form a closure for the package. In order to render the nozzle aesthetically pleasing, its shape is such as to gradually taper inwardly towards its upper end 140, the end opposite the open end 132.

A slot 142 is formed in the upper end 140 of the nozzle 112 and extends part way down one side, the width of the slot being substantially the same as the width of the actuator 118. The portions of the nozzle 112 lying at either side of the slot 142 are, thus, disposed at the sides 144 of the actuator 118. The actuator 118 is provided with a peripheral projection 146 adjacent the top portion thereof which extends into the slot 142 formed in the nozzle. The height of the projection is greater than the depth of the slot and the projection serves as a means for effecting relative pivotal movement between the actuator 118 and the nozzle 112 whereby the axis of the nozzle may be disposed substantially in alignment with the discharge orifice 122 in the actuator.

In operation the nozzle 112 is normally disposed so that its axis is substantially coincident with the vertical axis of the package. When so disposed, the nozzle 112 may be utilized as a closure for the package by inserting the open end 132 of the nozzle over the cap and valve assembly 114. In this position the valve stem 116 extends part way into the internal passageway 120 formed in the actuator 118. The position of the actuator 118 within the nozzle 112 is such that the actuator 118 closes off the slot 142 from the interior of the nozzle and a tight closure is effected whereby dirt is prevented from entering the actuator or the cap and valve assembly 114.

When it is desired to use the package, the nozzle 112 is removed from the container 110. The actuator 118 is pivoted through approximately 90° with respect to the nozzle so as to dispose the internal passageway 120 outwardly of the slot 142 formed in the nozzle 112 and to dispose the orifice 122 in the actuator substantially in alignment with the axis of the nozzle. The actuator 118 is then reinserted onto the valve stem 116. The user then places his mouth over the free end 132 of the nozzle 112, presses downwardly on the nozzle adjacent the actuator 118 and inhales the spray discharged through the orifice 122 into his throat and lungs. When the actuator 118 and the nozzle 112 are in their operative positions a clearance opening 149 occurs between the actuator 118 and the bottom 150 of the slot 142 through which air may be drawn during the inhalation of the product by the user.

Replacement of the nozzle 112 on the container 110 is facilitated by the fact that the lower edge portion 148 of the actuator 118 abuts against the bottom 150 of the slot 142. When this abutment occurs the internal passageway 120 is automatically aligned with the valve stem 116 and the nozzle and actuator may be inserted over the cap and valve assembly on the container without difficulty.

What is claimed is:

1. A device for orally dispensing a product confined under pressure in a container having a valve for control-

ling the discharge of the product therefrom, said device comprising a hollow nozzle having an open end, an actuator for the valve pivotally mounted in said nozzle adjacent an end opposite said open end so as to be pivotally movable with respect to said nozzle, said actuator having an internal opening for engagement with the valve and a discharge orifice in communication therewith and positioned at approximately a right angle thereto, the open end of the nozzle being adapted to fit over the container, said internal opening in the actuator being disposed substantially coincident with the axis of the nozzle when the nozzle is placed on the container, and an opening in one end of the nozzle to accommodate pivotal movement of the actuator relative to the nozzle whereby the discharge orifice may be pivoted through approximately 90° to dispose the orifice substantially opposite the open end of the nozzle and the internal opening at approximately a right angle to the axis of the nozzle.

2. A dispensing device as set forth in claim 1 wherein said actuator is provided with a projection extending through the opening in said nozzle whereby pivotal movement of the actuator relative to the nozzle may be effected.

3. In a package for orally dispensing a product confined under pressure in a container having a valve including a discharge stem for controlling the discharge of product from said container, said valve also having a ferrule by which it is secured to the mouth of the container to close the container; an oral dispensing device comprising a hollow nozzle having an open end telescopically receiving said valve and valve stem and frictionally engaging said valve ferrule to provide a closure constituting a smooth continuation of the side walls of said container; and an actuator engaging with said valve stem, having a discharge duct with a terminal orifice therein; said nozzle having a rear opening opposite said open end and said actuator being pivoted about an axis normal to the axis of the valve stem and mounted in said opening for movement relative to said nozzle between a position in which the discharge orifice of said actuator is disposed axially of said nozzle and substantially at right angles thereto; said actuator having a contoured portion which, in said right angled position of the actuator, is exposed at said rear opening of said nozzle, closing the same to present an essentially continuous surface throughout the periphery of said package.

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