

[54] **PRESSURIZED CONTAINERS**

[75] Inventor: **Kenneth D. Vos**, Racine, Wis.

[73] Assignee: **S. C. Johnson & Son, Inc.**, Racine, Wis.

[22] Filed: **July 31, 1972**

[21] Appl. No.: **276,802**

Related U.S. Application Data

[62] Division of Ser. No. 158,194, June 30, 1971.

[52] U.S. Cl. **222/402.21, 222/513, 222/517**

[51] Int. Cl. **B65d 83/14**

[58] Field of Search 222/402.13, 402.21-402.23, 222/402.1, 320, 507, 517, 402.12, 513, 529

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Primary Examiner—Robert B. Reeves

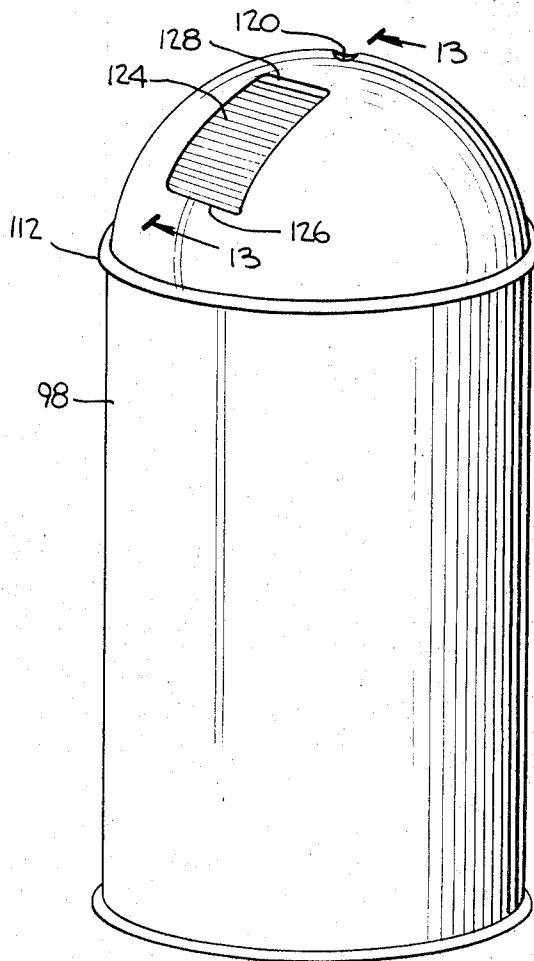
Assistant Examiner—John P. Shannon

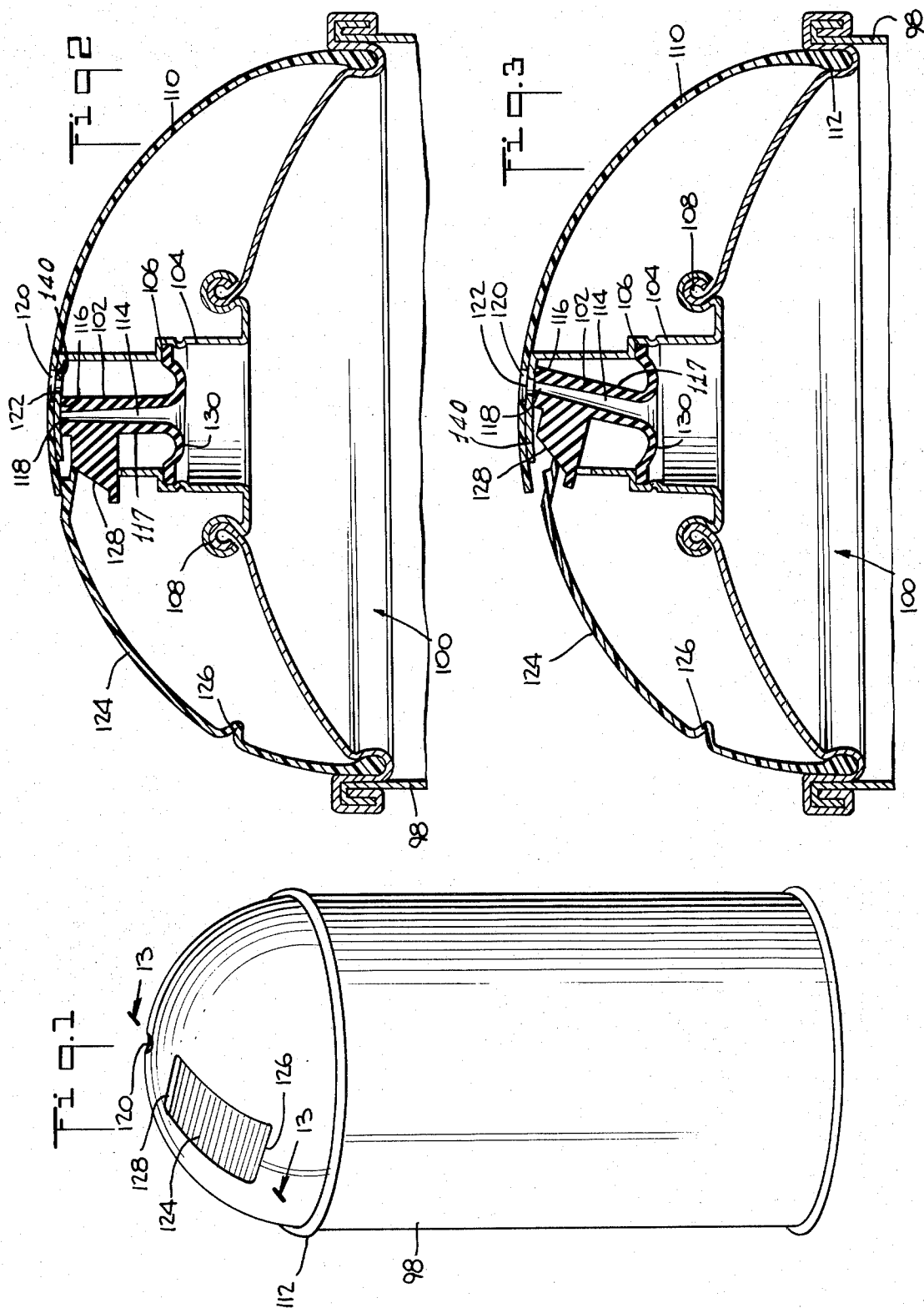
Attorney—Joseph T. Kivlin

[57] **ABSTRACT**

This invention relates to a pressurized package of the class which includes a container for receiving a product, propellant means in the container for discharging the product from the container, and a dispensing assembly mounted on the container which is characterized by an actuating lever that shifts to displace a flexible resilient valve body member from a position in which its discharge orifice-containing surface is in sealed engagement, at least partially effected by the internal container pressure, with a valve cap, to a position in which it is aligned with an exit opening of the overcap.

7 Claims, 3 Drawing Figures





PRESSURIZED CONTAINERS

This application is a division of Ser. No. 158,194, filed on June 30, 1971.

This invention relates to pressurized containers and more particularly to dispensing valves for such containers.

It is well known to employ a propellant for dispensing a product from a container in the form of an aerosol, for example. These containers are equipped with dispensing assemblies which are operated by means of manual push-down buttons that actuate conventional shut-off valves. Examples of this type of structure are shown in U.S. patent application Ser. No. 2018, filed Jan. 12, 1970. While these structures are desirable in many respects, our contribution to the art is an improvement upon the features of such structures as will become apparent as the description proceeds.

Difficulties were experienced, heretofore, in providing an effective, tight seal between the closure member and the discharge member in pressurized packages of the class described. In order to overcome difficulties with the prior art structures and in order to accomplish the desirable results, we provide a new and improved pressurized package embodying a container for receiving a product, propellant means for discharging the product from the container, and a dispensing assembly carried by the container. The dispensing assembly includes a body member having a passage which terminates at one end at the surface of the body in a discharge orifice and the other end thereof is arranged for communicating with the contents of the container. Diaphragm means for mounting the body member on the container are provided so that the pressure contents of the container act upon the diaphragm to urge the body member into reliable sealing engagement against an overcap member.

In one form of our invention the dispensing assembly includes a body member having a flexible resilient portion connected to the container about an opening in its top surface, the connection being fluid tight. An overcap encompasses the body member and is fixedly attached to the top of the container. The body member has a passageway terminating at one end in a discharge orifice at one surface thereof which abuts against a valve cap and having its other end communicating with the contents of the container. The body member is fabricated from a flexible resilient material, and means, mounted to the overcap, are provided for moving the body member to a position wherein the discharge orifice, an exit aperture in the valve cap, and an exit opening in the overcap are in alignment for discharging product from the container. In addition, means are provided for returning the body member to its position wherein the valve cap covers and seals the discharge orifice to prevent the flow of product from the container. In this embodiment the pressure of the contents of the container act upon the body member to flex the resilient portion thereof to urge the orifice-containing surface against the valve cap at least in the vicinity of the orifice.

There has thus been outlined rather broadly the important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be

described more fully hereinafter. Those skilled in the art will appreciate that the conception on which this disclosure is based may readily be utilized as the basis for the designing of other structures for carrying out the several purposes of the invention. It is important, therefore, that this disclosure be regarded as including such equivalent constructions as do not depart from the spirit and scope of the invention.

Several embodiments of the invention have been chosen for purposes of illustration and description, and are shown in the accompanying drawings, forming a part of the specification wherein:

FIG. 1 is a perspective view of a pressurized package showing an embodiment of dispensing assembly constructed according to the invention;

FIG. 2 is an enlarged sectional view taken along the line indicated at 2—2 in FIG. 1 and showing the dispensing assembly in its closed position; and

FIG. 3 is an enlarged sectional view similar to FIG. 2, but showing the dispensing assembly in its open or discharging position.

Referring in detail to the figures illustrating a preferred embodiment of the invention, there is shown a pressurized package including a container 98 which carries therein a fluid product or composition, not shown, propellant means, not shown, for discharging the product therefrom, and a dispensing assembly indicated generally at 100 in FIGS. 2 and 3. The dispensing assembly includes a body member or center pin 102 which is crimped and sealed in a valve cup 104 as at 106, the valve cup being crimped and sealed with respect to the container at 108. Valve cup 104 forms a part of the top of the container and defines an opening at the edge at 106. An overcap 110 is fixedly attached to the top of the container at 112.

The body member 102 has a central stem portion 117 defining a passageway 114 communicating with the contents of the container and terminating at one end at a surface 116 in a discharge orifice 118. Body member 102 has an annular or ringed diaphragm portion or flexible portion 130 extending radially from the base of stem portion 117. Diaphragm portion 130 and the base of stem 117 are in communication with the contents of the container. The overcap 110 is provided with an exit opening 120 and the valve cup 104 has a valve cap portion 140 which has an exit aperture 122 therethrough. Valve cap 140 is fixed to the container and has an inside surface against which the orifice-containing surface 116 abuts.

The overcap 110 embodies a button portion 124 hingedly attached thereto, as at 126. The end of the button portion 124 engages an inclined surface 128 of the center pin 102 for purposes of moving the center pin and thereby opening or closing the pressurized package.

In operation, when it is desired to discharge product from the pressurized package, the button portion 124 is manually depressed, whereby the end of the button 124 engages and slides along the inclined surface 128 to tilt the center pin 102 to the right as viewed in FIG. 3, thereby aligning the discharge orifice 118 of the center pin 102 with the exit aperture 122 of the valve cap 140 and the exit opening 120 of the overcap 110 so that the propellant means in the container can effectively discharge the product or fluid composition contained therein. When it is desired to terminate the discharge of the product from the container, the button portion

124 is released and the center pin 102 moves back to its position, as seen in FIG. 2, wherein the discharge orifice 118 engages the valve cap 140 in a position remotely disposed with respect to the exit aperture 122 for sealing the end of the discharge orifice 118 and terminating the flow of product from the container. The center pin 102 is fabricated from a resilient and flexible material such as rubber or substitutes thereof, for example. This pin could also be fabricated from nylon or polypropylene, but would then need a gasket for sealing purposes on the end surface 116. The flexible portion of the center pin causes the center pin to be able to move from its position as seen in FIG. 3 to its position as seen in FIG. 2, upon release of the button portion 124, for terminating the discharge of product from the container. In addition, the flexible portion 130 serves to allow the pressure of the contents within the container to act upon the center pin 102 to urge the orifice-containing surface 116 against the valve cup 104, thereby to provide an effective, efficient seal.

It will thus be seen that the present invention does indeed provide an improved pressurized package which is superior in simplicity, economy, and efficiency as compared to prior art such packages.

Although certain particular embodiments of the invention are herein disclosed for purposes of explanation, various modifications thereof, after study of this specification, will be apparent to those skilled in the art to which the invention pertains.

WHAT IS CLAIMED AND DESIRED TO BE SECURED BY LETTERS PATENT IS:

1. A pressurized package of the class embodying a container for carrying a fluid product, propellant means for discharging the product from the container, and a dispensing assembly, said container having a top wall portion defining an opening therethrough with an opening edge about said opening, said dispensing assembly comprising: a body member attached in fluid-tight relation to said opening edge, a flexible, resilient diaphragm portion of said body member extending over said opening, said body member having a stem portion extending from said diaphragm portion and defining a passage-way terminating at one end in a dis-

charge orifice defined in an orifice-containing surface of said stem, said stem having an opposite end attached to said diaphragm portion and communicating with the interior of the container; a valve cap fixedly attached to the top of the container and having an inside surface against which said orifice-containing surface abuts, said valve cap defining an exit aperture therethrough; means for displacing a portion of said body member such that said discharge orifice and said exit aperture are in alignment for discharging product from said container, said body member being fabricated from a flexible resilient material to facilitate both displacement of said body member and return of said body member to its abutting position wherein said valve cap covers and seals said discharge orifice to prevent the flow of product from said container and wherein the pressure of the contents of said container acts upon said body member to flex said diaphragm portion to urge said orifice-containing surface against said valve cap.

2. The package of claim 1 wherein said body member includes an annular ringed diaphragm portion, said stem portion being centrally located with respect to said diaphragm portion.

3. The package of claim 2 wherein said body member is a single piece entirely fabricated from said flexible resilient material.

4. The package of claim 1 further comprising an overcap encompassing said body member and being fixedly attached to the top of the container, said overcap defining an exit opening therethrough aligned with said exit aperture, said displacing means being movably connected to said overcap.

5. The package of claim 4 wherein said body member includes an annular ringed diaphragm portion, said stem portion being centrally located with respect to said diaphragm portion.

6. The package of claim 5 wherein said displacing means is engaged with said stem.

7. The package of claim 6 wherein said body member is a single piece entirely fabricated from said flexible resilient material.

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