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DISPENSING PACKAGE FOR FLUIDS

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FIG. 1

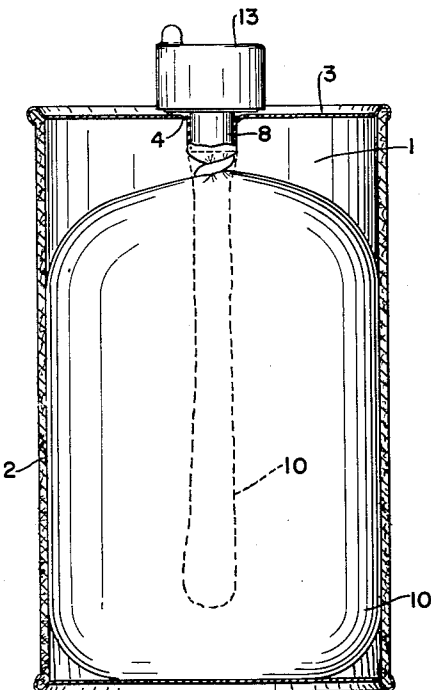


FIG. 2

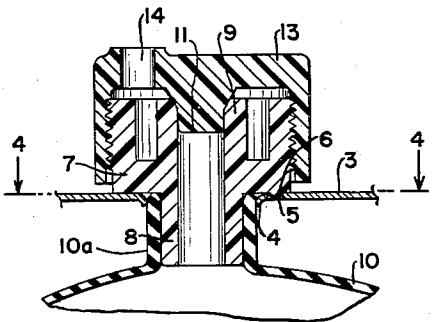


FIG. 3

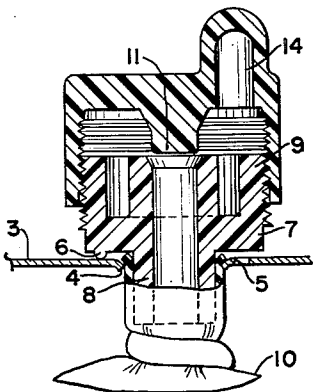


FIG. 4

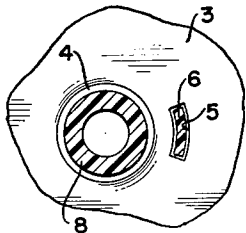
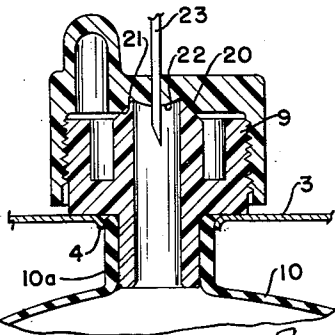


FIG. 5



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DISPENSING PACKAGE FOR FLUIDS

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6 Claims. (Cl. 222—95)

This invention relates to dispensing packages of the character wherein the contents of the package are under pressure which serves to expel the contents when the discharge outlet of the package is opened. Such packages are principally used for fluids admixed with volatile compounds which by their expansion serve to expel the mixture from the receptacle.

It has also been proposed to utilize such receptacles for fluids not admixed with volatile compounds by placing the commodity to be dispensed in a flexible plastic bag and charging the can surrounding the bag with gas under sufficient pressure to expel the commodity when the discharge valve is opened. These two-compartment receptacles are more expensive than the ordinary valved can and have not proven satisfactory in use.

These containers are of sufficient strength to withstand the internal pressure necessary to properly expel the contents.

By my invention I do away altogether with the fluid tight metal can of sufficient wall strength to withstand the pressure required to expel the commodity from the receptacle but instead employ a simple paper carton which requires no extra wall strength and which need not be either waterproof or gas-tight. The container in fact serves merely as a protection for a bag formed of highly extensible thin sheet rubber, such as employed for children's balloons.

My improved package thus has the particularly important advantage that neither gas under pressure nor volatile fluids are required for the package but instead the commodity itself is charged directly through the filling spout under sufficient pressure to expand the rubber bag which is then closed by imparting a single turn to the neck of the bag. The entire filling operation can be carried out by the same automatic machinery now employed for filling containers from which the commodity is not self-dispensing.

My improved container also embodies a simple plastic closure which is far cheaper in cost than the valves now customarily employed for the so-called pressurized packages.

In the accompanying drawings I have shown a preferred form of my improved dispensing container, and in said drawings,

Fig. 1 is a vertical section of the filled container;

Fig. 2 is an enlarged vertical section of the neck of the container;

Fig. 3 is a similar view with the cap unscrewed;

Fig. 4 is a section on line 4—4 of Fig. 2; and

Fig. 5 is a sectional view of a modification.

Referring to the drawings, particularly to Fig. 1, 1 indicates an outer container which comprises an ordinary so-called paper wall can wherein the body 2 is formed of a section of paper tubing of the desired diameter and strength and the ends are formed of metal disks 3 whose edges are crimped over the edges of the paper tube. Such receptacles are widely used and further description is believed to be unnecessary. One

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metal end of the paper wall can is formed with a central opening 4 adjacent one side of which is a slot 5 for the purpose of receiving a lug 6 formed on the under side of a plastic neck member 7 as shown in Fig. 2.

The neck member 7 comprises a central portion 8 of reduced diameter which projects from the under face of the member 7 into the opening 4 in the top of the can. Attached to this reduced portion 8 is an elongated rubber bag 10 which is of a length somewhat less than that of the can and of a composition to be readily extended under pressure to a diameter equal to that of the can without likelihood of rupturing the rubber. The neck 10^a of the rubber bag 10 is of thicker rubber than the bag portion and is smaller in diameter than the neck portion 8 so as to tightly grip the part 8 when stretched over it. After the bag is fitted to the part 8 the bag is pushed into the can through the hole 4 and the part 8 pushed down until the lug 6 projects into the slot 5 to thereby hold the portion 8 against rotation relative to the can. When the bag is pushed in place as described the portion 8 with the surrounding neck of the rubber bag fits snugly in the opening 4.

The outer wall of neck member 7 is threaded as shown to receive the threaded cap 13 which serves as the dispensing valve. As will be seen in Fig. 3, the neck member 7 has within the threaded outer flange an inner extension 9 of reduced diameter, the bore of which is tapered, as shown. Fitting in this tapered bore is a tapered stem 11 on the inner face of the cap 13 whereby when the cap is screwed down the tapered stem will close the tapered bore, forming a seal which is fluid tight.

The top wall of the cap 13 is provided with a discharge opening 14 alongside the stem so that when the cap is screwed partially off the neck member 7 the bore through the extension 9 will be opened sufficiently for the contents of the bag to be expelled through the discharge opening. The discharge opening 14 is covered by an upstanding cap 15 which is clipped off by the purchaser when the contents of the container are to be used, as shown in Fig. 2.

After the bag is assembled in the can in the manner described the liquid to be dispensed in the can is forced through the neck opening into the bag 10, thereby expanding the bag until it substantially fills the can. The can is then given one turn while holding the neck member 7 stationary, which turn brings the projection 6 into registry with the notch 5 and also serves to twist the neck of the bag to a sufficient extent to prevent the expulsion of the contents. The can may then be removed from the filling station of the filling machine and the cap screwed into place to tightly close the discharge passage. After the cap is applied as described the neck member 7 is lifted sufficiently to release the projection from the notch and the neck untwisted. The neck is then pushed back snugly into position so that in the use of the container by the purchaser the neck member 7 will be held against rotation to facilitate the loosening and tightening of the cap.

My improved dispensing package is particularly suitable for use in connection with the new method of packaging described and claimed in my co-pending application Serial No. 553,473, now Patent No. 2,855,006. For this purpose it is desirable to somewhat modify the structure of the cap and such modifications are shown in Fig. 5. Instead of providing a cap with a central valve plug for closing the passage through the neck of the cap, the cap is formed with a tapered valve seat 20 which fits against a complementary tapered surface 21 on the outer wall of the upstanding portion 9 of the neck member. The cap as a whole or its midportion 22 is formed of a self-sealing compound and the portion overlying the neck opening is of convex contour as shown

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in Fig. 5, so that unbalanced pressure against the convex surface will insure a tight closure of the hole which is punched through the top of the cap when the container is filled in accordance with the method described and claimed in the above mentioned application.

In carrying out the method described in the application referred to above, the containers are provided with a wall portion formed of a self-sealing rubber or plastic compound and are closed while empty. A hollow needle, is thrust through the self-sealing portion and the fluid with which the package is filled is delivered through the needle in the measured quantity desired. In the application above mentioned the container disclosed is not of extensible material and contains air which is allowed to escape during the filling operation by the provision of a double hollow needle.

In using the container of this application a single hollow needle as shown at 23 in Fig. 5, may be employed. In carrying out the filling operation the interior of the extensible bag is first sterilized by delivering superheated steam through the needle at a sterilizing temperature and pressure. The steam is then withdrawn, preferably by a vacuum pump, to withdraw all the steam and also the contained air, thus fully collapsing the extensible bag. The needle is then connected to the reservoir containing the fluid to be packaged, which reservoir is maintained under sufficient pressure to expand the extensible container 10 until further expansion is restrained by the walls of the outside container. The containers are preferably charged through a measuring valve so that a pre-determined volume of fluid will be delivered at each filling operation. After the container is filled with the desired charge the needle is withdrawn and the filled and sealed container is ready for shipment.

Rubber is particularly suitable for the container 10 because rubber compounds have been developed for the manufacture of rubber articles used in the field of medicine which can be readily sterilized and are themselves germicidal to a substantial degree. Such compounds give off no odor and impart no off taste to contacting substances which may be packaged in the container.

In the foregoing specification and accompanying drawings I have disclosed not only my improved package with the container of highly expansible elastic material, but also a novel dispensing valve particularly adapted for such containers. It will be understood, however, that my improved container of expensible material may be used with other forms of dispensing valve and that my improved dispensing valve may be used with ordi-

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nary containers such as now used for expelling commodities. It will also be understood that the structural details of my improved dispensing package may be variously modified and that my invention is not limited to such details except insofar as recited in the appended claims.

I claim:

1. In a container of the class described, the combination of an outer rigid wall structure comprising metal end walls and paper side walls, one of said end walls having an opening therein, a neck member having a passage extending therethrough mounted in the opening in said one end wall, an elongated extensible bag of thin walled highly elastic rubber attached to the inner end of said neck member, the outer end of said neck member extending beyond said one end wall and having an outer diameter greater than the diameter of said opening, a cap threaded on said neck, said cap having an inwardly-extending axial projection adapted to close said passage when turned in one direction and to open said passage when turned in the opposite direction and a discharge opening in the wall of said cap at one side of said projection.
2. The container of claim 1 wherein the discharge opening is formed with an upstanding tubular closure integral with the cap material surrounding said opening.
3. The container of claim 1 wherein the neck is freely rotatable with respect to the end of the container.
4. The container of claim 1 wherein said elongated extensible bag is formed of a compound having germicidal properties.
5. The container of claim 1 wherein a portion of the wall enclosing the contents of said elongated extensible bag is self-sealing when punctured.
6. The container of claim 1 wherein an exposed portion of the wall of said cap is self-sealing when punctured.

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