

Dec. 16, 1969

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3,484,013

CONTAINER HAVING SUSPENSION MEANS

Filed June 8, 1967

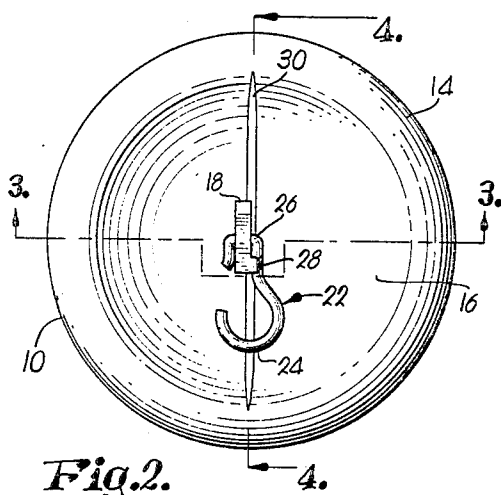


Fig. 2.

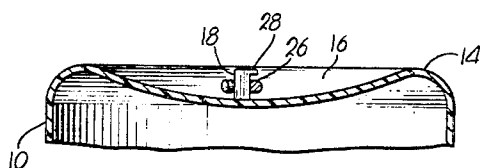


Fig. 3.

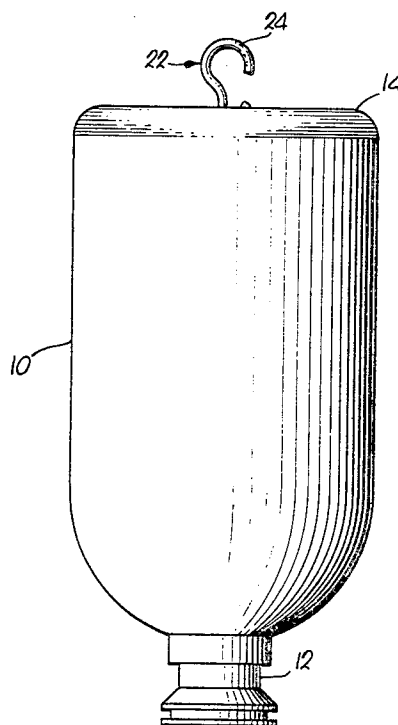


Fig. 1.

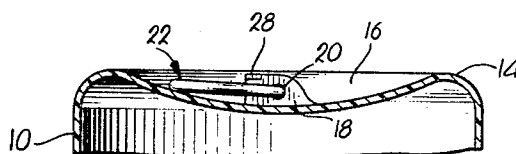


Fig. 4.

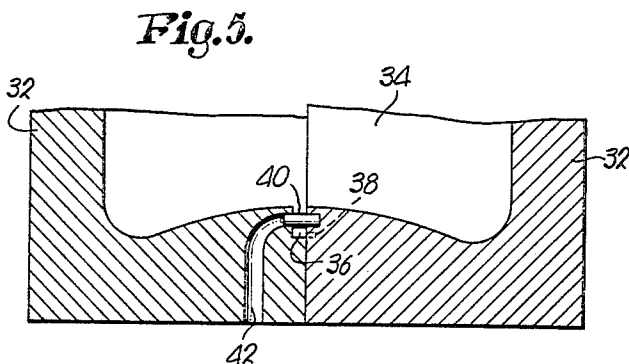


Fig. 5.

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3,484,013

CONTAINER HAVING SUSPENSION MEANS

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Filed June 8, 1967, Ser. No. 644,538

Int. Cl. B65d 23/10

U.S. Cl. 215—100

2 Claims

ABSTRACT OF THE DISCLOSURE

A plastic bottle has a concave bottom to which a suspension device is attached for movement between retracted and extended positions. The bottle may rest on its bottom and be supported in an upright position in the normal manner when the suspension device is retracted since the latter is completely housed within the concavity presented by the bottom. When the device is extended, the bottle may be suspended in an inverted position for convenient dispensing of products such as pharmaceuticals.

The bottle is formed by blow molding, and a lug is molded as an integral part of the bottom during the blow molding operation. The lug is pierced during molding to provide an aperture therein which is utilized as a means of securing the suspension device to the bottle.

The primary object of this invention is to provide a container for storing and dispensing fluid products, particularly veterinary pharmaceuticals, which may be conveniently suspended in an inverted position for dispensing of the product therefrom.

A further and important object of the instant invention is to provide a container as aforesaid in the form of a bottle which normally rests upon its bottom but which, during use thereof in the dispensing of the product contained therein, may be inverted and suspended through the use of suspension means attached to the bottom of the bottle.

Still another important aim of the invention is to provide such a bottle in which the bottom is recessed to normally house the suspension means within the concavity presented by the bottom to preclude interference of the suspension means with the normal support of the bottle when the latter is resting on its bottom.

Additionally, it is an important object of this invention to provide a bottle as aforesaid of plastic material which may be formed by a blow molding operation, and to provide a method of completely forming the bottle, including components associated with the suspension means, during the molding operation.

In the drawing:

FIGURE 1 is an elevational view of the bottle showing the same in an inverted position with the suspension device extended;

FIG. 2 is a bottom view of the bottle showing the suspension device retracted;

FIG. 3 is a fragmentary, sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a fragmentary, sectional view taken along line 4—4 of FIG. 2; and

FIG. 5 is a fragmentary, vertical sectional view of a pair of mold halves utilized in the manufacture of the bottle.

A container in the form of a bottle 10 of flexible, synthetic resin material has a neck 12 and a concave bottom 14. The neck 12 forms an outlet for dispensing the contents of the bottle, which would normally be a fluid product of some type. In particular, the bottle of the instant invention is especially adapted for use as a container and dispenser of veterinary pharmaceuticals, but it is obvious-

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ly not limited to such application. In general, the fluid contents may comprise liquids or particulate solids capable of flowing from bottle 10 through neck 12.

When employed as a container and dispenser of pharmaceutical products, neck 12 would be closed by a plug or stopper (not shown) having a rubber diaphragm which permits the needle of a syringe to be inserted into bottle 10 through the diaphragm, whereupon the syringe may be charged with the pharmaceutical and then withdrawn. Diaphragms of this type are self-sealing and hence the bottle 10 may be maintained in an inverted position as illustrated in FIG. 1 without discharging its contents.

The concave recess 16 defined by bottom 14 is most clearly revealed in FIGS. 3 and 4, where it may be seen that a lug 18 is integral with bottom 14, projects therefrom, and is substantially centrally disposed with respect to recess 16. Lug 18, however, does not project into the plane defined by the circular periphery of bottom 14 upon which bottle 10 rests when disposed in its normal, upright position.

Lug 18 has a central aperture 20 therein which receives one end of an elongated suspension device 22 which is configured to provide a hook 24 at its opposite end. The part 26 of device 22 extending through aperture 20 co-operates therewith to rotatably mount device 22 for movement between the retracted position illustrated in FIGS. 2-4 and the extended position illustrated in FIG. 1. The device 22 may be formed of heavy gauge, solid wire stock or the like.

A lip 28 is integrally formed on lug 18 at the outer extremity thereof and is spaced laterally of aperture 20. The lip 28 is disposed in the path of travel of device 22 as the latter is shifted between its two positions. Thus, lip 28 serves as a retainer for device 22 to preclude movement of the latter away from its normal, retracted position, as is clear from FIGS. 2-4.

Bottle 10 is formed from a thermoplastic such as polyethylene by blowing molding, a mold line 30 being particularly evident in bottom 14 and illustrated in FIG. 2. The lug 18 is entirely on one side of mold line 30 and is formed through the use of a mold configuration illustrated in FIG. 5. A pair of mold halves 32 are shown in engagement with each other where they define a primary molding cavity 34. A secondary cavity 36 is formed by a notch in the left-hand mold half 32 upon interengagement of the two mold halves. Secondary cavity 36 forms the lug 18 and a slot 38 in the right-hand mold half 32 communicates with cavity 36 to form the integral lip 28. A pin 40 is carried by the right-hand mold half 32 and, as the two mold halves are brought into interengagement, the pin 40 extends through secondary cavity 36 and into a relief passage 42 in the left-hand mold half 32.

In the blow molding of bottle 10, the parison of heated thermoplastic is introduced between the mold halves 32 with the latter spaced apart. As the mold halves are brought into interengagement to pinch and thereby close the lower end of the parison, lug 18 and lip 28 are formed by the material pinched between the mold halves. Those skilled in the art will appreciate that the parison would be centrally aligned with the mold halves and, since the secondary cavity 36 is substantially centrally disposed at the bottom of the mold, pinching of the parison would form the lug 18 prior to the actual introduction of air into the parison to effect blow molding of the bottle 10.

The significance of pin 40 may now be appreciated. As mold halves 32 are brought into interengagement, pin 40 serves as a punch to pierce the material filling secondary cavity 36, thereby forming aperture 20 in lug 18 as the thermoplastic cools. Relief passage 42 provides clearance for the pin and permits the discharge of mate-

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rial punched out by pin 40. Since the pin 40 remains in place as the thermoplastic cools, the material solidifies around pin 40 so that, upon separation of mold halves 32, the aperture 20 remains. Thus, a separate drilling operation to provide the aperture 20 in lug 18 after the bottle is molded is not required.

In the utilization of bottle 10, suspension device 22 is disposed in its normal, retracted position housed within recess 16 during shipment of bottle 10 and storage thereafter. When it is desired to dispense the contents of bottle 10, assuming that such contents comprise a pharmaceutical product, the bottle may rest upon bottom 14 with the pharmaceutical then being withdrawn through neck 12 with the bottle in an upright position. Alternatively, suspension device 22 may be shifted to its extended position illustrated in FIG. 1 to permit the hook 24 to be attached to an overhead support or a suitable standard. In swinging device 22 to its extended position, the device is forced past lip 28 due to the flexible nature of the plastic material.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In combination:

- a container for a fluid product, said container being molded from a plastic material and provided with a bottom having a dished recess therein whereby to present a concavity having a peripheral edge;
- a lug molded integrally with said bottom of the container and extending outwardly therefrom, said lug

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being disposed entirely between said bottom and the plane defined by the peripheral edge of the concavity, the lug having an aperture formed therein; and
 a suspension device swingably mounted in the aperture of said lug for movement between a normal position, where the device is in engagement with said bottom and disposed entirely within said recess to permit said container to rest on its bottom and be supported thereby in an upright position and an operative position where the suspension device extends from said recess to permit the container to be suspended.

2. The invention of claim 1, there being flexible means formed integrally with said lug and engageable with said device for releasably retaining the latter in said normal position.

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U.S. Cl. X.R.

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