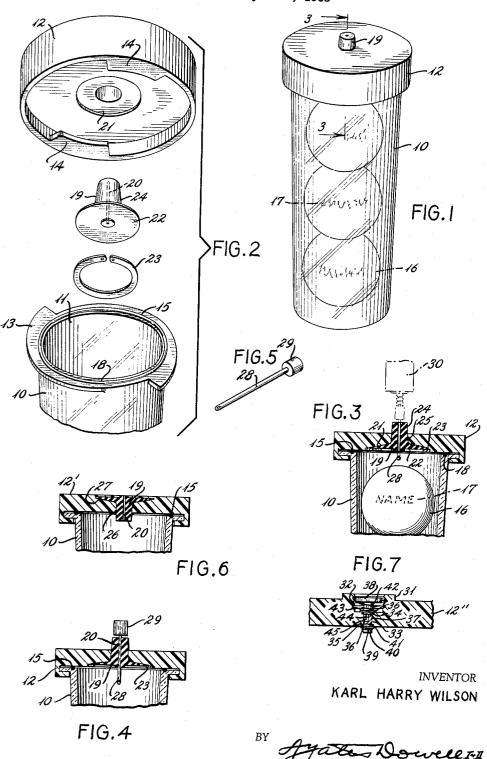
MULTIPLE USE PACKAGING CONTAINER

Filed Sept. 13, 1963



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3,233,727 MULTIPLE USE PACKAGING CONTAINER Karl H. Wilson, 1520 S. Capitol St., Pekin, Ill. Filed Sept. 13, 1963, Ser. No. 308,829 1 Claim. (Cl. 206—46)

This invention relates to packaging, transportation, and storage of commodities of various kinds, to the manner in which they are kept, to the package or receptacle in which they are contained and sealed from the exterior.

The invention relates particularly to an individual unique valve container or receptacle which can be used in a number of ways and therefore serve as several containers in one or an individual container which can be used and reused in a variety of practical ways by the consuming public as well as by manufacturers, distributors, and retail outlets.

Containers of many kinds have been employed, some designed to be discarded after a single use while others are reusable and with some of such containers sealed with contents under positive air pressure and others under negative or vacuum pressure; while still other commodities have not required either positive or negative pressure but in order to preserve the quality of the contents it has been necessary to exclude the atmosphere. There has not been a single container which could serve each of the uses desired.

It is an object of the invention to provide a multiple use packaging container in which commodities can be kept sealed from the atmosphere under any desired pressure whether positive, negative or atmospheric for any length of time, and after the opening of the container the desired pressure condition can be restored thereby to contain and preserve any desired commodity or commodities.

Another object of the invention is to provide a simple inexpensive container of plastic, glass or other material and of sufficient transparency that visual inspection can be made at any time, and from the interior of which container the atmosphere can be excluded and within 40 which pressure can be maintained at any desired value, as well as a multiple use packaging container which will improve the display of the product and promote the sale thereof.

Other objects and advantages of the invention will be 45 apparent from the following description taken in conjunction with the accompanying drawing in which:

FIG. 1 is a perspective illustrating one application of the invention;

FIG. 2, an exploded view of the top of the container 50 and a cap or closure therefor;

FIG. 3, a fragmentary vertical section on the line 3—3 of FIG. 1 with a pump used for inflating or evacuating in place;

FIG. 4, a similar view with a pin for permitting the 55 gagement on the base 21. equalization of pressure between the interior and exterior of the container;

FIG. 5, a perspective of a tool permitting equalization of pressure between the interior and exterior of the container;

FIG. 6, a fragmentary section of the upper portion of the container with the valve arranged differently and molded in the cap or cover; and,

FIG. 7, a fragmentary enlarged sectional view of the cap illustrating a modified form of valve closure.

Briefly stated, the invention, is a container of an imprevious material with at least an area, if not all, of the container of a transparent substance to permit visual inspection of the contents at all times. The container has a removable cap or cover of screw or other readily removable type with an O-ring or other sealing gasket so that when the cap is applied there can be no passage of

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air therethrough under various pressures. The cap or other portion of the container is provided with an air valve so that the container can be filled and hermetically sealed and the desired pressure can be established regardless of whether it is a positive internal pressure, a negative or vacuum internal pressure, or atmospheric pressure. Also upon removal or replacement of the cap or cover the initial pressures can be restored by a suitable pump rendering it possible to resubject objects to the desired pressure which can be maintained and the condition of commodities restored where some of such pressure has been lost.

With continued reference to the drawing, a container or receptacle 10 of plastic, glass, or other transparent material, or at least having a portion transparent, has a mouth or opening 11 and a cap or closure 12 which readily may be applied and removed and when applied will maintain the contents of the container hermetically sealed.

Any desired means may be employed for fastening the cap on the container, as for example by cooperating flanges 13 on the container which are adapted to engage complementary flanges 14 on the cap. Due to the inclination of the remote surfaces of these flanges application of the cap to the container and rotation of the cap will cause it to compress an O-ring or gasket 15 between the cap and the container and provide a hermetic or airtight seal.

The container 10 may be of any desired configuration to accommodate commodities of any desired character, as for example, spherical objects such as tennis balls 16 having, if desired, brand names 17 visible through the transparent wall of the container 10. A groove 18 may be provided on the top edge of the container for the receipt and location of the O-ring.

The cap 12 is provided with an air valve 19 formed of resilient material, which, for example, may be an ordinary and well known football air valve of rubber or the like, having a self sealing central opening or passage 20 extending therethrough to seal the opening from atmospheric pressure after the inflator pin of the pressure hand or other type air or vacuum pump providing communication between the pump and the interior of the container has been removed, the inner wall of the opening 20 containing a glycerin or gelatin fluid to lubricate the inflator pin so that it can be easily inserted and withdawn thereby prolonging the life of the valve.

The container and cap may be made of plastic and as illustrated in FIGS. 2, 3, and 4, the cap is provided with a counterbored passage wherein the base 21 of the large bore is slightly conical, sloping towards the smaller bore thereof, and is of a size to receive the complementary shaped skirt or flange 22 of the valve 19, a split ring 23 being employed to retain the valve flange in seating engagement on the base 21.

The valve has a stem 24 which is snugly received in and extends beyond the end of the central smaller bore of the counterbored passage in the cap so that when the parts are assembled there can be no passage of air between the interior and exterior of the container.

As viewed in FIG. 6 a slightly modified form of the cap is seen where the cap 12' is provided with a central opening 26 and an enlarged skirt cavity 27 to receive respectively the valve 19. The cap 12' and valve 19 are then molded together to form an enclosed piece with the valve inverted in the cap providing a flushed top. In FIG. 5 a hollow needle 28 having an enlarged threaded rear end 29 is provided and in FIG. 3 the needle is threaded onto a hand pump 30 by means of which the interior of the container can be supplied with pressurized air under positive pressure or a vacuum can be created. FIG. 4 illustrates the method where the hollow needle is inserted

in the opening 20 to equalize the interior to the exterior surrounding the container so that cap 12 can easily be

Another type of cap and valve structure is illustrated in FIG. 7 wherein a cap 12" with or without a raised 5 portion 31 is provided with an internally threaded bore 32 communicating with a reduced continuing bore 33 having the same axis. The reduced continuing bore 33 has a channel 34 at one end and a channel 35 at its opposite end for receipt of O-rings or other sealing gas- 10kets 36.

A valve 37 has a head 38 at one end and a groove 39 near its opposite end for the receipt of a split ring 40 adapted to retain a washer 41 in fixed position on the valve body 37. Beneath the head 38 about the valve 15 body 37 is located a coil spring 42 which engages the washer 43 which bears against the adjacent O-ring 36. The valve body 37 and head 38 have an axial passage 44 terminating in a lateral outlet 45.

With the structure just described when the cap 12" is 20 applied to a container or receptacle such container or receptacle may be evacuated or have pressure supplied and maintained within said container by means of a

normally closed valve.

The valve is maintained in a closed position under the 25 influence of coil spring 42 bearing against the underside of head 38 and forcing washer 43 against O-ring 36 at the same time force is applied to valve body 37 causing the washer 41 to apply pressure against the lower O-ring 36 and the lateral outlet 45 in the side of valve body 37 30 engages the inside of bore 33 between the two O-rings 36 sealing the inside of the container from the outside.

The withdrawal of air from, or supplying of air to, the container may be accomplished by means of a hand pump such as the hand pump 30 illustrated in FIG. 3, the external threaded nozzle of which will thread into the threaded bore 32, and the end of the nozzle will force the head 38 and the valve body 37 axially until air can pass through the axial channel 44 and the lateral channel 45 disposed exteriorly of the cap into the container, and conversely when a vacuum pump is applied operation will be the same.

To equalize pressure between the interior and exterior of the container it is only necessary to press a small object against the head 38 forcing the valve body 37 axially until the laterial channel 45 is open to the interior of the container whereupon the positive or minus pressure within the container will be allowed to equalize through lateral and axial channels 45 and 46.

The container of the present invention has wide usage regardless of whether the interior is to be at, or above, or below atmospheric pressure for the packaging and storing of various items. For example, the container may be used for storing blood where a vacuum could be 55 created within the container to preserve the blood in its natural state while in transit. Tennis balls may be stored in the container at the factory and an internal air pressure created to preserve the life and condition of the balls in transit as well as in storage in a store before 60 being sold. When the balls have been removed from the container and used they may be replaced in the container for storing by the players themselves and sealed therein and a positive pressure created by the hand pump supplied with the container to help rejuvenate and keep the life of the ball longer than under ordinary circumstances.

In like manner, other articles to be kept under pressure or vacuum, such as coffee, nuts, candy, cakes, 70 bread and rolls, may be stored in the container and other items that have a tendency to absorb moisture such as

4 sugar and salt as well as tobacco to sustain them in a ready and fresh state.

The container has further uses in laboratories where positive pressure or vacuum is necessary in testing of chemicals or the like and for storing paints that are used around the home and have a tendency to harden after being opened. The container may further be used as a cocktail mixer or for a lunch pail where a person desires to keep the lunch in a fresh condition. Its versatility is substantially unlimited.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is illustrated in the drawing and described in the specification but only as indicated in the accompanying claim.

What is claimed is:

A multiple use package comprising a container formed of material impervious to the flow of air therethrough and open at one end thereof,

means for closing the open end of said container,

said means comprising a one-piece cap member having a counterbored passage extending therethrough from one side of said cap member to the other side thereof,

said container and cap having interlocking means integral therewith and sealing means associated therewith for interlocking and hermetically sealing said cap on said one end of the container,

the base of the larger bore of said counterbored passage being of slight conical configuration and sloping inwardly toward the smaller bore of said counterbored passage,

a valve body complementary in size and shape to said counterbored passage mounted snugly therein and extending in exposed relation to both sides of said cap member,

split ring means at one side of said cap for securing said valve member in sealed seated position on the conical base of said counterbored passage,

said valve body being of resilient material and having a self-sealing passage extending longitudinally therethrough to both sides of said cap member,

said self-sealing passage of said valve being effective to selectively maintain different pressures in said container.

said valve passage containing a lubricant material to provide for relatively free insertion or removal of a hollow needle-like member of a pressure creating means therein and also to prolong the useful life of said valve, and

said smaller diameter end portion of said valve extending beyond one side of said cap.

References Cited by the Examiner UNITED STATES PATENTS

1,730,202 1,911,125 2,656,067 2,679,140 2,920,638 3,035,436 3,101,863	10/1929 5/1933 10/1953 5/1954 1/1960 5/1962 8/1963	Geyer. 206—46 Miller 220—44 Mitchell 222—394 Heckethorn et al. 215—74 Johnson 220—44 Jackson 220—44
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FOREIGN PATENTS

22,852 10/1929 Australia.

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