Jan. 17, 1967 N. B. LARSEN 3,298,575

DISPOSABLE DISPENSING CONTAINER

Filed April 19, 1965

Fig. 1.

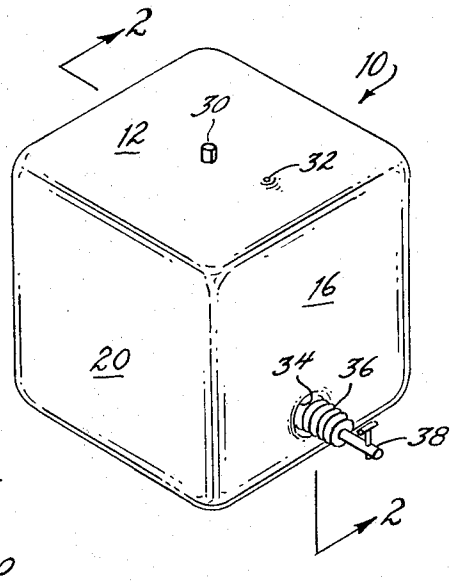
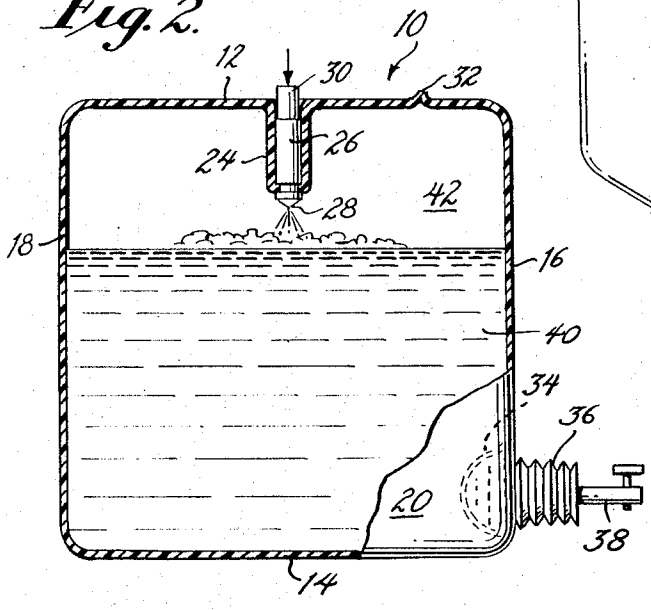


Fig. 2.



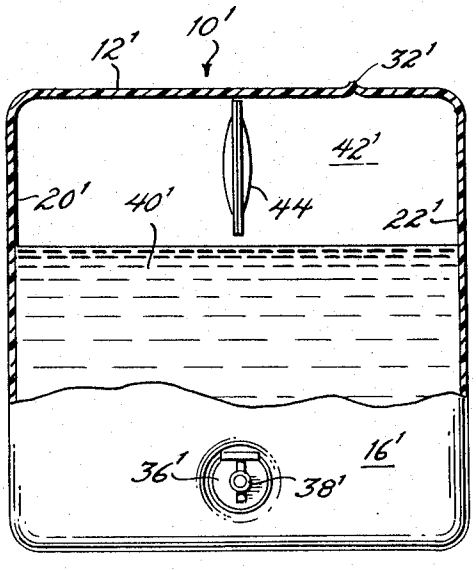
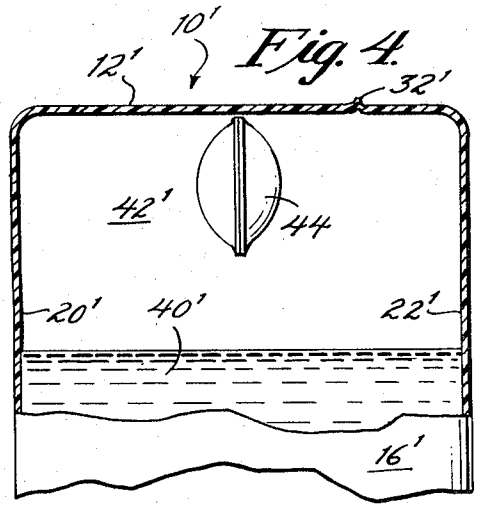


Fig. 3.

Fig. 4.



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DISPOSABLE DISPENSING CONTAINER

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4 Claims. (Cl. 222—399)

This invention relates to a lightweight disposable or expendable container. Preferably, the container is a square or rectangular one-gallon container for draught type beer.

The container of the present invention is an inexpensive disposable type container which may be blow-molded from a polymeric material such as polyethylene or polypropylene. Alternatively, the container may be made from a polymer coated paper product such as cardboard or paperboard, or may be made from steel foil.

The container is designed to be merchandised with a gallon of beer therein with a pressure chamber above the beer. A means is supported by and forms a part of the container for selectively introducing an oxygen-free gas into the chamber. Preferably, the oxygen-free gas is an inert gas such as carbon dioxide. The purpose of the gas is to prevent spoilage of the beer while providing a discharge assistant. A selectively operable discharge means such as a valved spigot is preferably provided on the container. When the beer is completely discharged from the container, the same is discarded.

The means for introducing the inert gas such as carbon dioxide into the chamber above the beer may be selectively operable from without the container. Alternatively, the means may be automatic and fixedly disposed within the container above the liquid level as will be made clear hereinafter.

It is an object of the present invention to provide an expendable container for draught-type beer.

It is another object of the present invention to provide a draught beer container which avoids the inconveniences associated with such devices heretofore such as the necessity for pumps, returning the container for the deposit, ease of handling and operation, etc.

It is another object of the present invention to provide a disposable beer container having means for pressurizing the chamber above the level of the beer therewithin to prevent spoilage and provide a discharge assistant.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there are shown in the drawings forms which are presently preferred; it being understood, however, that this invention is not limited to the precise arrangement and instrumentalities shown.

FIGURE 1 is a perspective view of a container in accordance with the present invention.

FIGURE 2 is a sectional view taken along the line 2—2 in FIGURE 1.

FIGURE 3 is a front elevation view partly in section of another embodiment of the present invention.

FIGURE 4 is a view similar to FIGURE 3 but illustrating the operative disposition of the semi-permeable membrane.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a container in accordance with the present invention designated generally as **10**.

The container **10** is a disposable or expandable container which may be made from either a blow-molded polymeric material, a polymer coated paper product, or steel foil. Suitable polymeric materials include polyethylene, polypropylene, nylon, etc. The container **10** is generally in the form of a cube and preferably has a capacity so as to contain a gallon of bear therewithin with a pressure chamber thereabove.

The container **10** includes a top wall **12**, bottom wall **14**, front wall **16**, back wall **18**, and side walls **20** and **22**. A well **24** is integral with the top wall **12** and depends therefrom. The well **24** terminates at its lower end in an inwardly directed flange. An inert gas source **26** is supported by the well **24** and forms an integral part of the container **10**. Gas source **26** may be a pressurized container having a valved discharge port **28** communicating with the pressure chamber **22** and an external actuator **30**. By application of pressure in the direction of the arrow, actuator **30** will open the valve so that an inert oxygen-free gas such as carbon dioxide under pressure will be introduced from source **26** into the chamber **42**.

The container **10** is preferably provided with a filling hole **32** in the top wall **12**. The filling hole **32** facilitates the introduction of beer **40** within the container **10**. Thereafter, the filling hole **32** may be permanently closed in any convenient manner. When the container **10** is made from a thermoplastic polymeric material, the filling hole **32** may be heat sealed so as to close the same as illustrated. Other equivalent means may be utilized to close the filling hole **32**.

The front wall **16** is provided with an integral well **34** extending inwardly. The well **34** has an opening at its innermost end. A bellows **36** has its annular periphery secured around the opening in the well **34** in any convenient manner. By making bellows **36** from a thermoplastic polymeric material as described above, the end of the bellows may be heat-sealed to the well **34**. By using a bellows **36**, as part of a discharge means, the same may be conveniently collapsed into the wall **34**. This will facilitate storage and stacking within storage areas such as warehouses and the like. The discharge means preferably includes a selectively operable spigot **38**.

As pointed out above, the capacity of the container **10** is slightly more than the quantity of beer **40** thereby providing a pressure chamber **42** above liquid level.

As the beer **40** is being discharged through the spigot **38**, the inert gas within chamber **42** assists in discharge of the beer **40**. As the discharge pressure decreases due to withdrawal of the beer **40**, the pressure may be increased by applying finger pressure against actuator **30**. Spoilage of the beer **40** is prevented by the inert oxygen-free gas such as carbon dioxide. If desired, the gas source **26** may be of the aerosol type and may have a discharge control valve which will prevent overpressurization of the chamber **42**. When the beer **40** is completely discharged, the container **10** is discarded.

In FIGURES 3 and 4, there is illustrated another embodiment of the present invention designated generally as **10'**. The container **10'** is identical with the container **10** except that as will be made clear hereinafter. Accordingly, corresponding elements are provided with corresponding primed numerals.

The container **10'** is identical with the container **10** except for the inert gas source. In container **10'**, there is fixedly supported in the chamber **42'** an envelope **44**. Envelope **44** is a semi-permeable heat-sealed envelope which may be made from polyethylene, Mylar, polyvinyl alcohol, Nylon 6, ethyl-vinyl acetate, polyvinyl butyral, etc., depending upon the type of vapor transmission desired.

The envelope **44** preferably contains a quantity of a suitable reactant with moisture, such as aluminum carbide and sodium bicarbonate to create a reversible reaction through the walls of the envelope **44** in the form of carbon dioxide. By varying the quantities of the reactants, the pressure in the container **10'** may be varied. As the container **10'** is evacuated due to discharge of the

beer, additional diffusion will continue. As shown in FIGURE 4, the envelope 44 is in its expanded condition as a result of moisture reacting with the reactants. The semi-permeable membranes of the envelope 44 permit gas to pass therethrough but do not permit the passage of liquids and solids.

Thus, the source of inert oxygen-free gas for the container 10' is automatic as opposed to being selectively operable. As the pressure within chamber 42' decreases due to discharge of the beer, the pressure is automatically reestablished by the generation of additional carbon dioxide.

The envelope 44 may be secured to and within the container 10' by and during the application of a rigid internal hot-melt coating. The coating will strengthen the container and may be used to secure the envelope 44 and/or the bellows 36' to a wall of the container 10'. Alternatively, said envelope 44 and/or bellows 36' may be joined to the container by a commercially available heat sealing method using thermoplastic polymeric materials for the components to be joined.

The beer 40' may be introduced into the container 10' at a relatively high temperature and the moisture thereof will immediately start the reaction to pressurize chamber 42' as soon as the container is sealed. A pressure of between about 10 to 20 p.s.i.g. is sufficient, with the same being replenished as the beer is discharged. In order to replenish the pressure in chamber 42, the gas source 26 may contain about 2 ounces of liquefied carbon dioxide which if completely discharged all at once would pressurize chamber 42 to a pressure of about 130 p.s.i.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. An article of manufacture comprising a lightweight non-corrosive container, means supported by and at least partially disposed within said container for introducing an inert oxygen-free gas into said container for pressurizing space above a liquid adapted to be disposed in the container, and a selectively operable discharge means

supported by said container, whereby the pressure of an oxygen-free gas may assist in discharging a liquid from said container by way of said discharge means, and said means for introducing gas into said container including a semi-permeable envelope within said container, said envelope containing reactants with moisture to create a reversible reaction resulting in a gas capable of passing through the envelope.

2. An article of manufacture in accordance with claim 1 wherein said means for introducing gas into said container includes a selectively operable gas source having a discharge port communicating with the interior of said container and having an actuator on the exterior of said container.

3. An article of manufacture in accordance with claim 1 wherein said reactants include aluminum carbide and sodium bicarbonate.

4. An article of manufacture comprising an expendable lightweight non-metallic container, said container being rectangular in configuration, a gas pressure means supported by said container for introducing carbon dioxide into said container to prevent the spoilage of beer within the container and to act as a discharge assistant, and a selectively operable discharge spigot supported by said container adjacent the bottom below the liquid level for facilitating the discharge of beer from the container, said spigot being connected to said container by a bellows, and said container having a cavity for receiving said bellows and spigot in a collapsed position thereof.

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