

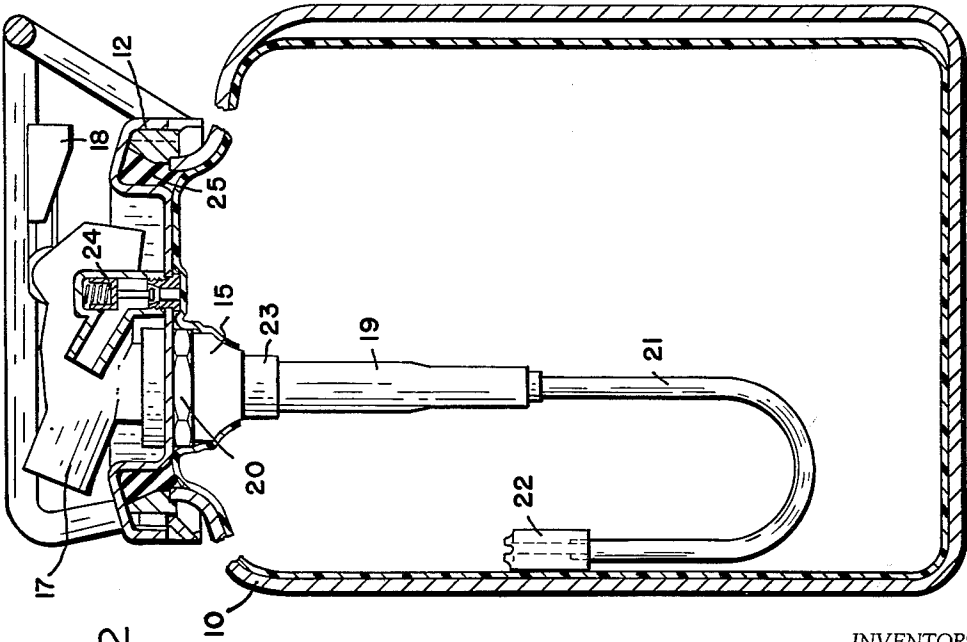
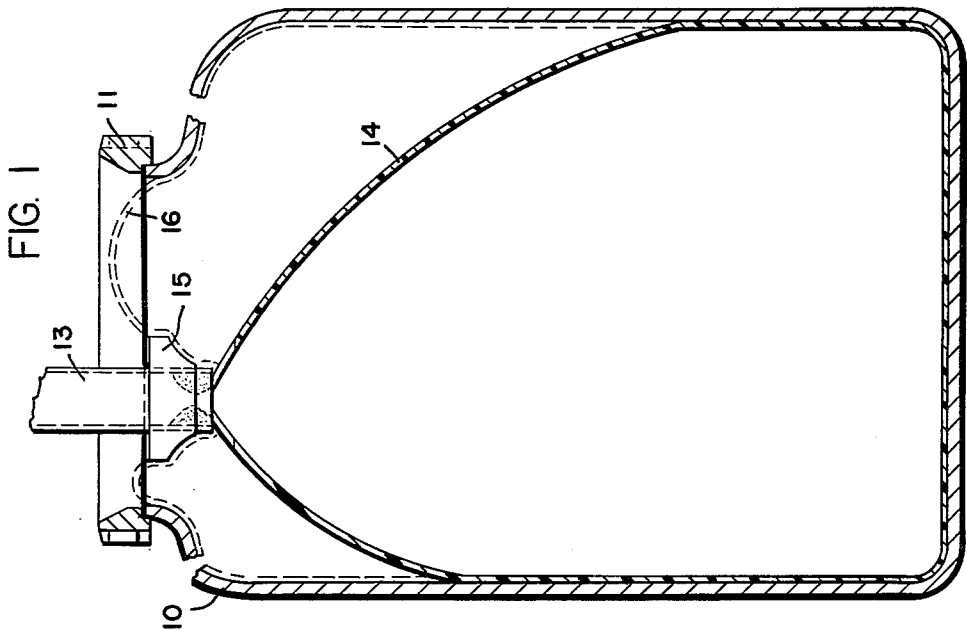
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F. WELTY ET AL

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BULK BEVERAGE DISPENSER AND METHOD OF PREPARING SAME

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BULK BEVERAGE DISPENSER AND METHOD OF PREPARING SAME

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This invention relates generally to methods and apparatus for storing, transporting, and dispensing beverages in bulk as distinguished from arrangements utilizing small bottles and cans for this purpose. The packaging, delivery and dispensing of beverages in and from large capacity unitary containers presents obvious advantages but for carbonated beverages, particularly, serious problems arise in the continuous maintenance of the desired degree of carbonation down to the end of the dispensing phase. These problems are additional to those normally encountered in bulk beverage dispensing which include the absolute requirement of preventing taste and purity contamination and the normally desired feature of incorporating an expellant (for dispensing) integrally in the package as it is delivered to the consumer.

In order to meet the above requirements and to overcome the stated problems, we have heretofore proposed, in co-pending United States patent application, Serial No. 786,422, filed January 12, 1959, for example, to provide within a closed pressure container a fluid impervious bag or barrier of suitable material as regards purity and taste requirements in which the beverage is contained. Upon filling of this inner container with a measured quantity of beverage kept under controlled degree of carbonation by suitable temperature and back pressure control an adequate quantity of expellant is injected and retained within the space outside of the bag or barrier but within the inner confines of the pressure container. Since such expellant never comes in contact with the beverage, it may be of a wide variety of substances such as compressed air or Freon gas in liquid form, the latter being preferred since it exerts a fairly uniform and usable pressure over large volumes of expansion.

To complete the assembly of the aforementioned unitary self-contained beverage delivery and dispensing package we have heretofore proposed to provide the pressure container with a detachable and sealable cap on which is carried the beverage dispensing apparatus and faucet and also, and conveniently, a port for back-pressuring which also serves as an inlet for the expellant. We have also heretofore proposed to manufacture the bags or barriers separately and to attach the same to the dispensing apparatus of the cap after which the whole assembly is applied to the pressure container preparatory to charging of the same.

The principal object of the present invention is to facilitate the incorporation of the bag or barrier in the pressure container whereby the cost of providing the same is reduced, and whereby the highest degree of cleanliness and sterility is obtained on those surfaces with which the beverage comes in contact. Further, our method of providing such bag or barrier in the individual pressure containers or packages is readily susceptible of being incorporated, in a semi-automatic manner at least, in a package processing or charging line.

The sequential steps of our method and the resultant package product meeting the requirements and problems

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outlined above will become apparent upon consideration of the following specification and the accompanying drawing wherein there is shown our package product in partially and fully prepared steps.

In the drawing:

FIGURE 1 is a longitudinal section of a pressure chamber used by us showing the barrier bag being formed directly within the vessel; and

FIGURE 2 is a longitudinal section of a completed bulk package constructed in accordance with the principles of our invention ready to receive the charge of beverage and expellant.

In the drawing reference numeral 10 designates a jar-like container which may be made of stainless steel, aluminum, or any other material of suitable section and strength to withstand the pressures encountered (normally 100 lbs. per sq. in. maximum) and the mechanical handling to which such equipment is normally subjected. Of course, the material must have such fluid impervious qualities inherently or provided by coatings, etc. to prevent loss of expellant pressure during reasonable shelf life. The vessel 10 has a large mouth about which is permanently and tightly affixed a ring 11 having on its outer periphery suitable lugs to cooperate with fastening elements of a quick-attachable cap 12.

In accordance with the teachings of the present invention, we manufacture the barrier bags directly in the individual containers 10, and this is done by inserting a blow pipe 13 into the mouth of the container 10 which blow pipe has gathered on its lower opened end a glob of heated thermoplastic elastomer such as polyethylene. Immediately upon such insertion, controlled heated air pressure is applied to the pipe 13 and a bubble is formed in the plastic globule which expands first downwardly and then forwardly to fill the space within the container—the inner walls of the container serving as the mold for the formation of the bag barrier. A partially completed barrier is shown by the reference numeral 14 in FIGURE 1.

If the containers 10 are made of such material as has an inherent adhesive affinity for the heated plastic of the barrier 14 the inner surfaces of the containers are first dusted with suitable talc or other non-adhering material to form a non-adherence barrier between the plastic and the material of the container.

For a purpose to be later described, a plastic ferrule 15 is first snugly fitted over the lower end portion of the pipe 13 slightly upward from the lower extremity thereof. Ferrule 15 is made of the same material as blown or at least of such other material as adheres readily to the blown material. Adherence is further insured by the heat emitted from the globule plastic which is initially in and about the lower end of pipe 13. The flowing progresses until the barrier 14 expands upwardly to the position shown by the dotted lines 16 in FIGURE 1. At this time the pipe 13 is withdrawn, the ferrule 15 being suitably restrained from upward movement during such withdrawal. The film of the barrier 14, however, remains continuous on the outer periphery of the ferrule 15 so that there is provided a closed film-like barrier whose only opening is through the bore in the ferrule 15, which bore may be accurately sized by control and polish of the outer diameter of the pipe 13 as will be understood.

We have found that the physical structure of a polyethylene film blown as described above while being of adequate strength often appears to be minutely porous at least to the extent that the expellant gas and the carbonating gas of the beverage intermingle to a certain extent, particularly after appreciable shelf life. This, of course, is highly objectionable as beverages are most prone to pick up noticeable off-tastes and since it is desired to closely control the degree of carbonation in the beverage. We therefore coat the inside of the formed barrier 14 with a thin layer of plastic material which will amalgamate with the material of the blown barrier and which is known to be absolutely impervious to the passage of fluids. One such material is polyvinylidene chloride (H_2CCl_2)_n which may be applied in very thin solution form by the insertion of a suitable spray nozzle through the ferrule 15. The openings in the nozzle are so directed, and such pressures and quantities are used, to insure the thorough coating of the inside of the barrier. Immediately thereafter the excess solution is drained off—the flexibility of the barrier portion which is within the mouth of the container 10 allowing this to be readily accomplished. The solvent of the solution remaining in the barrier dries off rapidly but, if desired, this drying may be accelerated by injecting warm sterile air into the barrier by a lance extending downwardly through the ferrule 15.

The cap member 12 of FIGURE 2 with appurtenances is generally similar to that shown in our co-pending application Serial No. 56,244, filed September 15, 1960. As such, the cap 12 proper carries a dispensing faucet 17 having an operating handle 18 and having a connected beverage-supply shank 19 which extends through and is clamped to the central web of the cap member by a lock nut 20. It should be understood that suitable sealing means, not shown, is provided to prevent the escape of expellant gas from the space within the container 10 and cap 12 and outwardly of the plastic barrier. Shank 19 carries a connected restriction tube 21 having an inlet fitting 22, and as more fully explained in my said co-pending application Serial No. 56,244, the function of the fitting 22, tube 21 and shank 19 is to deliver beverage to the dispensing faucet 17 under conditions of reduced pressure and velocity so that the same may be discharged by the faucet into the consumer's glass in a lazy flow.

Shank 19 of the dispensing apparatus has a cylindrical section 23 of uniform diameter which is accurately sized to receive the interior bore of the ferrule 15. Completing the assembly of the cap structure is an inlet fitting 24, disclosed more fully in our co-pending application Serial No. 24,833, filed April 26, 1960, now abandoned, which also is carried by the central web of the cap 12 and which is provided for the purpose of back pressuring the container while the beverage is being charged therein and for charging the assembly with an expellant.

The cap 12 with faucet 17, fitting 24 molded thereon and with shank 19, tube 21 and fitting 22 depending therefrom may be considered as a subassembly of the entire package apparatus. When it is desired to apply such subassembly to a container which has previously been provided with a barrier 14 and connected ferrule 15 in the manner described above, it will be understood that the depending fitting 22, tube 21 and shank 19 may be threaded downwardly through with the bore in the ferrule 15. Immediately prior to such assembly the surface of the bore in ferrule 15 is coated with a suitable plastic-solvent adhesive composition. This wetting facilitates the drawing of the ferrule 15 over the cylindrical section 23 of the shank 19 into contact with the nut 20. Again, adequate additional material and flexibility of that portion of the plastic barrier which is generally within the projection of the mouth of the container 10 permits this operation to be accomplished either by the fingers or by the use of a suitable tool. Upon the ferrule 15 being moved to assembled position, the cap 12 is tightly applied to the ring 11—a resilient sealing ring 25 being applied to provide a fluid-tight point.

With the apparatus assembled in the manner described above, it is now ready for charging, and this may be initiated by collapsing the plastic barrier bag 14, 16 tightly onto the shank 19, tube 21 and fitting 22 by applying air or other fluid to the interior of the container 10 but outwardly of the bag through fitting 24. For this purpose a suitable mating fitting, not shown, is assembled on the fitting 24 to retract the valve therein. This same mating fitting may be used to conduct the outflow of fluid under controlled back pressure as the bag is being filled with the inflow of beverage through the opened faucet 17. By controlling the temperature of the beverage and the back pressure at which it is charged into the package it is possible to retain substantially all of the initial original carbonation in the beverage. After a desired quantity of beverage is charged, the faucet 17 is closed and a suitable quantity of expellant is charged through fitting 24 as explained above. The charged package is now ready for delivery and, in actual practice, may be stored in the household refrigerator of the consumer. When it is desired to dispense the beverage, the container is laid on its side with the discharge nozzle of faucet 17 extending downwardly. Upon opening of the faucet 17 by the handle 18, the beverage will be dispensed due to the pressure applied to the outside of the barrier bag 14, 16 and in turn to the beverage within the bag. After emptying, the package is returned to the bottler or brewery where, if desired, the expellant may be recovered for reuse and the barrier bag either cleaned and reused or discarded and remanufactured, depending on the preference of the bottler or brewery. The present invention, by enabling the quick and inexpensive remanufacture of the barrier bags directly in the shipping containers, is most advantageous in that it facilitates the preparation of new equipment for use and enables the bottler or brewery to thereafter maintain the equipment in service with a minimum of costly handling and assembly work. Further, by the use of sterile air in the blowing and drying of the barrier bags, highly sterile and sanitary conditions are maintained. By coating the plastic bag as described, the problem of off-taste and contamination of the beverage is entirely overcome.

Having thus described our invention, we claim:

1. The method of preparing a beverage shipping and dispensing container of the kind in which a pressurizing expellant is integrally included in the container assembly and in which the container is provided with an enlarged opening; which consists of gathering a glob of heated polyethylene plastic on the lower open end of a blow pipe, inserting said end within said opening, applying air under pressure to said pipe to expand said glob into a closed inner container molded by the interior surfaces of the first mentioned container, removing said blow pipe, inserting and sealing a beverage dispensing tubular shank in the opening in said inner container caused by the withdrawal of the blow pipe, and closing off said opening except for the bore through said shank, the resultant assembly being such that a beverage may be charged into said inner container while a pressurizing expellant may be inserted in the space within the first mentioned container but outwardly of said inner container.

2. The method of claim 1 including the further step of coating the inner surface of the blown polyethylene inner container with an adherent layer of polyvinylidene chloride (H_2CCl_2)_n.

3. The method of claim 1 including the further step of tightly fitting a ferrule onto said blow pipe adjacent to the lower end thereof before the glob of heated plastic is gathered on said lower end, said ferrule being of a material to which the heated blown plastic material will adhere and bond whereby upon said withdrawal of said blow pipe the only opening into said inner container is the bore through said ferrule, said ferrule being utilized to seal about said shank upon the application of said

shank to said assembly when preparing the same for the reception of a beverage and an expellant.

4. The method of claim 3 including the further step of wetting said bore of said ferrule with a solvent-plastic adhesive composition immediately prior to insertion of said shank in said bore to thereby facilitate the sliding of said ferrule onto said shank and to insure the absolute sealing about said shank.

502,046
2,016,964
2,872,760
2,937,791
2,966,282

References Cited in the file of this patent**UNITED STATES PATENTS**

Milne et al. -----	July 25, 1893
Huffman -----	Oct. 8, 1935
Meissner -----	Feb. 10, 1959
Micallef -----	May 24, 1960
Geisler -----	Dec. 27, 1960