Abstract: A repressurizing beverage dispenser (10) attaches to the threaded neck (N) of a carbonated beverage container (B) and includes a main body (12), handle (14), and a head portion (16). A pivotal valve spout (50) on the head portion is moveable between closed and open position and includes a ball-shaped portion (52) disposed in mating, sealing engagement with a resilient dish-shaped valve seat (62). Movement of the valve spout to the open position rotates the ball-shaped portion until a through passage (55) in the valve spout aligns with the central opening (38) of the cap (30). A hand operated squeeze bulb pump (62) fitted to the handle delivers air through the discharge opening (80) and pressurizes the container when the valve spout is closed, thereby preserving the carbonated beverage. The handle portion is structured to hold the squeeze bulb in a manner which prevents undesirable movement of the squeeze bulb and blockage of airflow to the beverage container.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
REPRESSURIZING DISPENSER FOR CARBONATED BEVERAGE CONTAINERS

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to repressurizing devices for beverage containers, and particularly to a repressurizing dispenser device adapted for removable attachment to the threaded neck of a conventional carbonated beverage container, wherein the device includes a handle, a valve spout, and a hand-operated pump.

Discussion of the Related Art

Many beverages, and particularly soft drinks, are impregnated with carbon dioxide gas in order to provide a refreshing effervescence which has a pleasant appeal when consuming the beverage. Often carbonated beverages are sold in two or three liter beverage containers in order to reduce the cost per ounce to the consumer. Many people find these larger size beverage containers to be more economical and convenient compared to cans because they can be recapped and stored if the beverage is not entirely consumed after the bottle is initially opened.

Notwithstanding, larger size carbonated beverage containers do present some problems to the user. In particular, it is well known that the carbonation has the tendency to escape into the atmosphere if the beverage is not contained under pressure. Because a closed beverage bottle, when half full, contains a large sealed open air space, the gas in the beverage is able to escape into this open space even when the cap is tightly secured to the bottle. Once the cap is removed, the carbonation gas in this space releases into the atmosphere. When carbon dioxide gas escapes from a carbonated beverage, the desirable sparkling
effervescence is lost and cannot be replaced. Once this happens, the carbonated beverage become flat, leaving an undesirable taste with no refreshing appeal to the consumer. In this instance, the carbonated beverage will most likely be discarded or thrown away, thereby effectively increasing the cost per used ounce to the consumer. This certainly defeats the primary purpose of purchasing carbonated beverages in larger containers, which is to provide a greater volume of product to the consumer at a lower cost per ounce.

Pumping devices have been proposed for pressurizing the open volume within a carbonated beverage bottle with ambient air. It is also known to combine a closure cap and pressurizing pump for insertion in the neck of a beverage container. U.S. Pat. No. 718,163 to Sherrard (1903) discloses a bottle tap for corked bottles. Air pressure is created in order to facilitate the discharge of the liquid therefrom. U.S. Pat. No. 28,853,207 to Yingst (1954) discloses a device for dispensing liquids. Both Sherrard’s invention and Yingst’s invention function to dispense a liquid from a bottle through a narrow tube which is inserted into the bottle. Neither the Sherrard device, nor the Yingst device, is suited to fit a two liter carbonated beverage bottle.

The Ballas U.S. Pat. No. 4,768,665, discloses a hand operated pump which uses a cylinder and piston. The Ballas pump is attachable to a threaded bottle neck. Likewise, U.S. Pat. No. 4723,670 to Robinson discloses a hand operated pump which attaches to a threaded bottle neck and which uses a cylinder and piston. Both Ballas and Robinson require removal of the device from the bottle prior to pouring the contents of the bottle into a glass or other receptacle. In addition, the size of the piston pump in Robinson is small, requiring a large number of repeated pumping strokes by the operator in order to complete repressurizing of the beverage bottle.

My prior invention, as described in U.S. Patent No. 5,738,254, addresses many shortcomings of the prior art devices, including those
set forth above. Notwithstanding, I have conceived of several improvements which eliminate potential problems that may occur in the use of my prior invention. Specifically, the upper end of the squeeze bulb has been specifically structured and configured to provide a multi-sided surface for congruent, keyed engagement within notched cut-outs of the handle to prevent spinning or rotation of the squeeze bulb relative to the handle. Spinning or rotational movement of the squeeze bulb relative to the handle is not desirable because it results in twisting and kinking of the flexible hose which delivers air to the bottle interior. Further, my present invention provides for an improved airtight seal between the ball-shaped member of the valve spout and the valve seat. Accordingly, my present invention provides for improvements to the structure and function of my earlier invention.

**Objects and Advantages of the Invention**

It is a principal object of the present invention to provide an improved beverage dispenser and repressurizing device for removable attachment to a beverage bottle and including a pump, a handle, and a valve which is structured to permit dispensing, sealing and repressurizing of a beverage container in a rapid, efficient manner requiring minimal effort.

Another object of the invention is to provide a repressurizing beverage dispenser for removable attachment to the threaded neck of a beverage bottle, wherein the dispenser includes a valve with a half ball-shaped member which is structured to create a seal and to increase its resistance to air pressure released as the bottle is rotated to tighten the dispenser onto the threaded neck of the bottle.

A further object of the invention is to provide a beverage dispenser with a valve having a half ball-shaped member and a built-in lever which extends outward from a front of the dispenser, enabling the valve
to be opened and closed by either a right-handed or a left-handed operator.

A further object of the invention is to provide an improved beverage dispenser, as set forth above, and including a built-in lever for operating the valve, and wherein the lever acts as a counterweight opposite of the handle so that when the dispenser is attached to a bottle, the counterweight lever will maintain the bottle balanced so that it does not tip over.

It is yet another object of the present invention to provide a valve having a half ball-shaped member and a through passage having a diameter approximately equal to the diameter of the discharge opening of a beverage container in order to ensure rapid flow of liquid from within the beverage container and through the dispenser.

It is still a further object of the present invention to provide a dispenser having a handle and a built-in, hand operated, bulb style air pump.

It is still another object of the present invention to provide a beverage dispenser, as set forth above, and including a spray guard structured to prevent the user from getting sprayed with air from the back of the dispenser, when opening the valve, due to excessive build up of air pressure within the beverage bottle.

It is yet another object of the present invention to provide a beverage dispenser with a pump, handle, and a valve combination which, when attached to a two liter beverage bottle, will not add appreciable height to the overall assembly.

It is still a further object of my present invention to provide a repressurizing beverage dispenser device for a carbonated beverage bottle, wherein the device includes a hand-operated pump, a handle, and a valve and seal assembly for maintaining an airtight seal when the beverage bottle is pressurized and wherein the device further provides
for means to prevent interruption of air flow from the pump to the beverage bottle interior when pressurizing the bottle.

It is still a further object of the present invention to provide an improved repressurizing beverage dispenser for attachment to a carbonated beverage bottle, wherein the device includes an improved valve and seal assembly for maintaining an air and liquid tight seal of the beverage bottle interior when the beverage bottle is pressurized.

Summary of the Invention

The present invention is directed to a repressurizing beverage dispenser which removably attaches to the threaded neck of a carbonated beverage container. The dispenser includes a main body which is molded to include an integral handle portion and head portion. Seal means within the head portion provide an air and liquid tight seal between the dispenser device and the discharge opening of the beverage container and include a cap and a valve assembly. The cap is fitted within the head portion and includes interior threads for threaded engagement and attachment to the threaded neck of the beverage container. A central opening through the top of the cap aligns with the discharge opening of the container. The valve assembly includes a pivotal valve spout on the head portion which is moveable between a closed position and an open position. A ball-shaped portion of the valve spout is disposed in mating, sealing engagement with a dish-shaped valve seat. The valve seat is preferably formed of an elastomeric, resilient material such as silicone. An opening in the dish-shaped valve seat aligns with the central opening of the cap and the discharge opening of the beverage container. When the pivotal valve spout is in the closed position, the ball-shaped portion is disposed in blocking, sealing relation to the central opening and discharge opening so that gas and fluid are contained within the beverage container. Movement of the valve spout to the open position serves to rotate the ball-shaped
portion relative to the valve seat until a bore formed through the valve
spout, defining a fluid passage, aligns with the central opening of the
cap, thereby permitting the beverage contents of the container to be
poured from the valve spout.

Means are provided for repressurizing the air space of the
container after moving the valve spout from the open position to the
closed, sealed position. The repressurizing means includes a hand-
operated squeeze bulb pump fitted to the handle portion. The squeeze
bulb has a central hollow body surrounding a compressible interior air
chamber, a first end portion and a second end portion. The first end
portion of the squeeze bulb is fitted with a one-directional air intake
valve member which is structured and disposed to draw air into the
compressible interior chamber of the squeeze bulb as the central hollow
body is released from the compressed state and returned to a normally
relaxed, full shape. The second end portion of the squeeze bulb is fitted
with a one-directional air exhaust valve member which directs air
outwardly from the squeeze bulb interior chamber upon compressing
the hollow body. A flexible hose connects between the exhaust valve
member on the squeeze bulb and the seal means in the head portion, in
air flow communication with the interior air space of the beverage
container. Means are provided for preventing rotation of the squeeze
bulb relative to the handle portion. This prevents the flexible hose from
becoming twisted and kinked, which would result in blockage of airflow
between the squeeze bulb interior air chamber and the air space within
the beverage container interior.

When the dispenser device of the present invention is threadably
fastened to the neck of the beverage container, a charge of air is
introduced into the bottle interior by repeatedly squeezing and releasing
the hand operated squeeze bulb pump on the handle portion until the
interior air space within the container is fully pressurized. The fully
pressurized condition will be realized when there is increased resistance
in compressing the squeeze bulb pump. Mating engagement of the ball-shaped portion of the valve spout against the valve seat provides an air and liquid tight seal, holding the air pressure and liquid contents within the beverage container. A integral lever extending from the valve spout facilitates ease of movement of the valve between the closed and open positions. When the valve spout is moved to the open position, the charge of pressurized air is released from the bottle. While maintaining the valve spout in the open position, the carbonated beverage within the container may be poured by tilting the container so that the neck is angled downwardly, thus allowing the beverage contents to flow through the passage of the valve spout and into a glass or other drinking vessel.

Brief Description of the Drawings

For a fuller understanding of the nature of the present invention, reference should be made to the following detailed description taken in conjunction with the accompanying drawings in which:

Figures 1 is a partial side elevational view showing the repressurizing beverage dispenser device of the present invention secured to the threaded neck of a beverage container with the valve spout of the device in a closed, sealing position;

Figure 2 is a partial side elevational view showing the repressurizing beverage dispenser device of the present invention secured to the top neck of the beverage container with the valve spout in an open position, thereby enabling the beverage contents to be poured from the container;

Figure 3 is a side elevational view, in partial section, showing the repressurizing beverage dispenser device of the present invention, in accordance with a preferred embodiment thereof;

Figure 4 is a top plan view of the end of the squeeze bulb pump of the device, taken from the view indicated by the hours 4-4 in figure 3; and
Figure 5 is an exploded perspective view of the repressurizing beverage dispenser device showing the individual component elements thereof;

Figure 6 is a side elevational view showing an alternative embodiment of the present invention wherein the handle portion and air pump means are molded within an integral head portion of a siphon dispenser for dispensing a carbonated beverage from a bottle or other container; and

Figure 7 is a side elevational view, in partial section, illustrating yet another embodiment of the present invention wherein the handle portion and air pump means are incorporated within a water pistol.

Like reference numerals refer to like parts throughout the several views of the drawings.

Detailed Description of the Preferred Embodiment

Referring to the several views of the drawings, the repressurizing beverage dispenser device is shown and is generally indicated as 10. The device 10 is particularly suited for attachment to a bottle B containing a carbonated beverage, such as a soft drink product. The repressurizing beverage dispenser device 10 removably attaches to the threaded neck N of the carbonated beverage container. The device 10 is particularly suited for use on two-liter and three-liter carbonated beverage containers, of the type shown in figures 1 and 2 and indicated as B. Beverage containers of this nature are known to include a threaded neck which terminates at a discharge opening surrounded by a top rim. A cap is normally screwed on to the threaded neck to cover the discharge opening in order to preserve the beverage contents therein. When the beverage is consumed, the cap is removed so that the carbonated beverage contents can be poured from the discharge opening and into a glass or other drinking vessel.
The repressurizing beverage dispenser device of the present invention removably attaches to the threaded neck N of the carbonated beverage container and replaces the conventional cap which is fastened to the neck N of the bottle B when the beverage product is purchased. The device 10 includes a main body 12 which is molded to include an integral handle portion 14 and a head portion 16. In a preferred embodiment, the main body 12 is formed of a plastic composition and is molded as a two-piece structure, including a first half 20 and a second half 22. The two halves 20, 22, mate together, as illustrated in figure 5, to form the integral handle portion 14 and head portion 16 as well as to contain the remaining component elements of the device. Screws 24 are used to secure the two halves 20, 22 together. The screws pass through apertures 26 formed through the first half 20 and into threaded engagement with aligned threaded bosses 28 on the interfacing side of the second half 22 of the main body 12.

When the beverage container B is initially opened, after purchase, by removing the conventional cap from the threaded neck N, the conventional cap is discarded and the device 10 is fastened to the threaded neck N. Seal means within the head portion 16 provide an air and liquid tight seal between the dispenser device 10 and the discharge opening of the beverage container B in order to contain and preserve the beverage contents therein. The seal means includes a cap 30 and a valve assembly 48. The cap 30 is fitted within the head portion and includes interior threads 36 for threaded engagement and attachment to the threaded neck N of the beverage container B until the top rim of the beverage container neck surrounding the discharge opening mates against an inner cap end surface 37. A central opening 38 through the top of the cap aligns with the discharge opening of the beverage container B. An annular ring 40 is formed on the top of the cap, surrounding the central opening 38, and is provided with a slotted opening 42. Wing members 44 are provided on opposite sides of an
annular collar 34 of the cap, extending upwardly from a base flange 32. The wing members 44 are specifically structured to prevent rotation of the cap relative to the main body 12 when the cap 30 is threadably secured to the neck N of the beverage container B to effectively secure the device 10 to the beverage container B.

As seen in figure 5, the entire valve assembly 48, including the cap 30 is held within the head portion 16 of the device 10 between the two halves 20, 22.

The valve assembly 48 further includes a pivotal valve spout 50 moveably secured to the head portion and operable between a closed, sealed position and an open position. The pivotal valve spout 50 is defined primarily by a ball-shaped portion 52 and a lever 54 extending outwardly from the top half of the ball-shaped portion 52. A fluid flow passage 55 is formed through the ball-shaped portion 52 and is specifically structured and disposed for permitting flow of the beverage contents of the bottle B therethrough when pouring the beverage product from the bottle. Hinge stubs 56 on opposite sides of the ball-shaped portion 52 are structured and disposed for captivated, freely rotatable receipt within correspondingly aligned apertures 57 on the first and second halves 20, 22 of the head portion 16. Receipt of the hinge stubs 56 within the apertures 57 serves to secure the valve spout 50 to the head portion 16, while providing for selective, pivotal movement of the valve spout 50 between the closed, sealed position, as seen in figure 1, and the open position as seen in figure 2. The extending lever portion 54 facilitates ease of movement between the closed, sealed position and the open position. A front lip 58 on the head portion 16 provides a stop member to limit downward movement of the valve spout at the closed, sealed position. Similarly, a back edge 59 on the head portion 16 provides a stop member to limit movement of the valve spout 50 at the fully open position, as seen in figure 2.
The valve assembly 48 further includes a seal assembly 60 for maintaining an air tight and liquid tight seal between the valve spout 50 and the central opening 38 of the cap 30 in order to contain the beverage within the bottle B and to maintain the pressurized state of the air space within the bottle B when the valve spout 50 is in the closed position. The seal assembly 60 is comprised of a two-piece structure, including a flexible resilient seal member 62 and a rigid ring member 64. In a preferred embodiment, the flexible resilient seal member 62 is formed of an elastomeric composition, such as silicon. The rigid ring member 64 may be formed of a rigid plastic composition similar to that of the cap 30. The flexible resilient seal member 62 includes an upper portion 66, a lower portion 68 and a neck 70 defined by a section of reduced diameter extending between the upper and lower portions. A dish-shaped concave annular surface 72 is formed on the upper portion 66 in surrounding relation to an opening 73. The dish-shaped concave portion 72 defines a valve seat for mating engagement with the ball-shaped portion 52 of the valve spout 50. The flexible resilient seal member 62 is fitted to the rigid ring member 64 during assembly of the device 10. Specifically, the lower portion 68 of the seal member 62 is passed through an opening 78 of the ring member 64. The opening 78 is surrounded by an inner rim 74 having a top rim surface 76. When the seal member 62 is properly fitted to the ring member 64, the lower portion 68 of the seal member 62 is maintained below the inner rim 74 and the upper portion 66 of the seal member is maintained above the inner rim 74. The inner rim 74 surrounds the neck 70 of the seal member 72 so that an aperture 84 formed through the neck 70 aligns with an inner open end of a hollow stem 80 extending from the ring member 64. The hollow stem 80 includes an enlarged head 82 at the free distal end. The combined seal member 62 and rigid ring member 64 of the seal assembly 60 sits on the top of the cap 30 so that an underside of the lower portion 68 of the seal member 62 mates firmly
with the top surface 31 of the cap 30, thereby providing an air and liquid tight seal between the seal assembly 60 and the cap 30. When the seal assembly 60 and cap 30 are properly positioned and secured within the head portion 16 between the two halves 20, 22, the slotted opening 42 aligns with the aperture 84 and hollow stem 80 to provide air flow communication between the open distal end at the enlarged head 82 of the hollow stem 80 and the central opening 38 of the cap which communicates with the discharge opening and interior of the beverage container B.

Air pump means 90 are provided for introducing air into the interior air space of the beverage container, between the surface of the liquid beverage and the discharge opening of the container B in order to pressurize the air space when the valve assembly 48 is in the closed, sealed position, thereby maintaining the carbonated gas within the liquid beverage. The air pump means 90 includes a hand-operated squeeze bulb pump 92 secured to the handle portion 14. The squeeze bulb pump 92 includes a central hollow body 94 surrounding a compressible interior air chamber, a first end portion 96 and an opposite second end portion 98. The second end portion of the squeeze bulb pump is provided with a multi-sided outer surface for keyed receipt within congruent shaped notches 112 formed in the mating first and second halves 20, 22. In a preferred embodiment, the multi-sided outer surface of the second end portion includes four sides 99a, 99b, 99c, and 99d as best seen in figure 4. Specifically, the four sides 99a-99d are arranged to define a generally square configuration to the second end portion 98.

The first end portion 96 of the squeeze bulb pump 92 is fitted with a one-directional air intake valve member 100 which is structured and disposed to draw air into the compressible interior chamber of the squeeze bulb as the central hollow body is released from a compressed state and returned to a normally, relaxed full shape. The second end
portion 98 of the squeeze bulb pump 92 is fitted with a one-directional air exhaust valve member 102 which directs air outwardly from the squeeze bulb interior chamber when compressing and collapsing the hollow body. A hollow needle stem 104 extends from the exhaust valve member 102 to facilitate connection of a flexible air hose 106 which extends between the exhaust valve member 102 and the hollow stem 80. More specifically, the needle stem 104 is received within one end of the flexible hose 106 while the enlarged head 82 of the hollow stem is inserted within the opposite end of the hose 106, so that the flexible hose 106 remains connected in airflow transfer relation between the exhaust valve member 102 and the hollow stem 80, thereby providing airflow communication between the compressible interior air chamber of the squeeze bulb pump and the interior air space within the beverage container B.

The keyed fitting of the multi-sided exterior surface configuration of the second end portion of the squeeze bulb pump within the congruently configured notches 112 in the handle portion prevent the squeeze bulb pump 92 from spinning or rotating relative to the handle portion 92 when operating the squeeze bulb pump. Specifically, upon compressing and releasing the body of the squeeze bulb pump, the opposite first and second end portions 96, 98 of the squeeze bulb pump remain stationary relative to the main body 12 of the device. Specifically, the keyed fitting of the second end portion 98 to the handle portion 14 prevents spinning or rotation of the squeeze bulb pump 92 relative to the handle portion 14, thereby preventing the flexible hose from becoming twisted and/or kinked during use of the device 10, which may otherwise result in blockage of airflow between the squeeze bulb pump and the air space within the beverage container interior. A collar 110 formed on the end of the handle portion 14 of each of the first and second halves 20, 22 surrounds and grasps the first end portion 96 of the squeeze bulb pump 92 to firmly secure the first end portion
thereto. Accordingly, the squeeze bulb pump 92 is held as an integral component of the handle portion 14.

In use, the dispenser device 10 of the present invention is threadably fastened to the neck N of the beverage container B. With the valve spout 50 moved to the closed position, as shown in figure 1, a charge of air is introduced into the interior air space of the bottle B by repeatedly squeezing and releasing the hand-operated squeeze bulb pump 92 on the handle portion 14 until the air space within the container B is fully pressurized. The fully pressurized condition will be realized when there is increased resistance in compressing the squeeze bulb pump. Mating engagement of the ball-shaped portion 52 of the valve spout 50 against the valve seat 72 provides an air tight and liquid tight seal, holding the air pressure and liquid beverage contents within the beverage container B. When the valve spout is moved to the open position, as seen in figure 2, by grasping the lever portion 54 and lifting upwardly to rotate the valve spout approximately 90 degrees, the charge of pressurized air is released from the bottle B. While maintaining the valve spout in the open position, the carbonated beverage product within the container B may be poured by tilting the container so that the neck N is angled downwardly, thus allowing the beverage contents to flow through the passage 55 of the valve spout 50 and into a glass or other drinking vessel. After pouring the beverage, the valve spout 50 is again closed to seal the interior of the bottle and the hand-operated squeeze bulb pump is repeatedly squeezed and released to repressurize the bottle interior air space.

Referring to Figure 6, an alternative embodiment of the present invention is shown wherein the handle portion 14 and air pump means 90 are incorporated within a siphon dispenser device 10'. In this embodiment, the handle portion 14 is integrally formed as part of a main body 12' having means for threadable attachment to the top of a carbonated beverage container B'. The handle portion 14 and air pump
means 90 are identical to that which was described in connection with
the embodiment of Figures 1-5. Specifically, the air pump means 90
includes a hand operated squeeze bulb pump 92 secured to the handle
portion 14. The squeeze bulb pump 92 includes a central hollow body
surrounding a compressible interior air chamber, a first end portion
96 and an opposite second end portion 98. The first end portion 96 is
fitted with a one-directional air intake valve member 100 and the
second end portion 98 is fitted with a one-directional air exhaust valve
member 102, the valve members 100, 102 functioning as described
above. A hollow needle stem 104 extends from the exhaust valve
member 102 to facilitate connection of a flexible air hose 106 which
extends from the exhaust valve member 102 and connects for a fitting
for air flow communication with the hollow interior of the beverage
container B’. The collar 110 formed on the handle portion 14 surrounds
and grasps the first end portion 96 of the squeeze bulb pump 92 to
firmly secure the first end portion thereto. While not shown in Figure 6,
the second end portion 98 is keyed to the handle portion 14 in the same
manner as described in connection with the embodiment of Figures 1-5,
so that the squeeze bulb pump is unable to rotate relative to the handle
portion 14, thereby preventing twisting and kinking of the flexible hose
106.

To operate the siphon device 10’ of Figure 6, the squeeze bulb
pump 92 is compressed and relaxed through several cycles in order to
introduce air, under pressure, into the interior air space of the beverage
container B’. This serves to force the liquid contents upwardly through
hollow tube 120 which has an open end disposed in close spaced
relation to the bottom of the interior of the beverage container B’. The
liquid beverage flows upwardly to valve member 122 which, when
operated to an open position, permits passage of the liquid beverage,
under force, through the discharge opening 124.
Figure 7 illustrates yet another embodiment of the present invention, wherein the handle portion 14 and air pump means 90 are incorporated within a water pistol. The structure of the handle portion 14 and air pump means 90 are identical to the above-described embodiments of Figures 1-6. In this particular embodiment, the handle portion 14 is integrally formed with the body of water pistol 200. The one-directional air exhaust valve member 102 on second end portion 98 connects with air hose 106. The opposite end of the air hose 106 is connected in airflow communication with water tank 210 which is filled with water by removing fill cap 212. In operation, the squeeze bulb pump 92 is operated by compressing and releasing the squeeze bulb to direct forced air into the water tank 210 through hose 106, thereby causing the air tank to become pressurized. A discharge hose or conduit 214 leads from the bottom of the water tank 210 to conduit 220 and is interrupted by a valve member 216. The valve member 216 is operable by a trigger 218 and is normally disposed in a relaxed, closed position, to block water flow from hose 214 to conduit 220. Upon operating the trigger 218 with the index finger or thumb, the valve 216 is opened, permitting fluid flow passage of the water, under pressure, from the water tank 210 through hose 214 and through conduit 220 and exiting in a stream through discharge opening 224. It should be noted that the trigger 218 can be relocated from the position shown in Figure 7, so as to be more accessible to actuation by the thumb of the user, thereby enabling the user to maintain a grip on the handle 14 while squeezing the squeeze bulb pump 92 and operating the trigger 218.

While the instant invention has been shown and described in accordance with a practical and preferred embodiment thereof, it is recognized that departures from the instant disclosure are contemplated within the spirit of the invention and, therefore, the scope of the
invention should not be limited except as defined within the following claims as interpreted under the doctrine of equivalents.
Claims

1. A device for removable attachment to a beverage container of the type including a threaded neck surrounding a discharge opening in fluid communication with an interior chamber containing a carbonated beverage, said device comprising:
   a main body including a handle portion and a head portion;
   thread means within said head portion for threaded engagement with the threaded neck of the beverage container;
   manually operated pump means on said handle portion for introducing a charge of pressurized air into said interior of the beverage container;
   air delivery means interconnected to said pump means for directing air flow from said pump means to the interior chamber of the beverage container;
   a valve spout on said head portion and operable between a closed, sealed position to contain the beverage and said charge of pressurized air within said interior of said beverage container, and an open position to permit dispensing of the beverage through the discharge opening and from said valve spout;
   seal means for providing an airtight seal between said device and the discharge opening of the beverage container to contain the charge of pressurized air and the beverage within the interior chamber of the beverage container when said valve spout is in said closed, sealed position; and
   said manually operated pump means including a squeeze bulb comprising:
   a central body surrounding a compressible interior air chamber and operable between a normally relaxed full state and a compressed state;
   a first end portion;
a second end portion;

one-directional intake valve means on said first end portion for drawing air into said interior air chamber upon said central body returning to said relaxed state from said compressed state;

one-directional exhaust valve means on said second end portion for directing air outwardly from said interior air chamber and to said air delivery means upon said central body being compressed from said relaxed state to said compressed state; and

coupling means for securing said squeeze bulb to said handle portion and including means for holding said second end portion in fixed position relative to said handle portion to prevent obstruction of the airflow through said air delivery means upon operation of said squeeze bulb pump between said relaxed state and said compressed state.

2. The device as recited in claim 1 wherein said coupling means includes means for keyed receipt of said second end portion of said squeeze bulb within said handle portion to prevent rotation of said squeeze bulb relative to said handle portion upon operation of said manually operated pump means between said normally relaxed full state and said compressed state.

3. The device as recited in claim 2 wherein said keyed receipt of said second end portion is defined by a multi-sided outer surface of said second end portion of said squeeze bulb and a congruently formed notched opening in said handle portion.

4. The device as recited in claim 1 wherein said seal means comprises:

a flexible resilient seal member including an upper portion, a lower portion, an opening communicating with the discharge opening of the beverage container, and a dish-shaped concave portion on said
upper portion and defining a valve seat for mating engagement with said valve spout.

5. The device as recited in claim 4 wherein said seal means further comprises:

a rigid ring member fitted to said resilient seal member between said upper portion and said lower portion thereof, said rigid ring member including means for airflow connection with said air delivery means for permitting airflow from said airflow delivery means to the interior chamber of the beverage container.

6. The device as recited in claim 5 wherein said rigid ring member defines means for providing structural integrity to said flexible resilient seal member to prevent collapsing and distortion of said flexible resilient seal member upon operation of said valve spout between said open and closed positions so that said dish-shaped concave portion is maintained in sealed engagement with said valve spout.

7. The device as recited in claim 6 wherein said seal means further comprises:

a cap fitted within said head portion of said main body and including interior threads for threaded engagement and attachment to the threaded neck of the beverage container and said cap including a central opening structured and disposed for alignment with the discharge opening of the beverage container, and an annular top surface surrounding said central opening, said annular top surface being structured and disposed for mating, sealed engagement with said lower portion of said flexible resilient seal member.

8. A pump handle device comprising:

a rigid handle portion;

manually operated pump means fitted to said handle portion and including a squeeze bulb comprising:
a central body surrounding a compressible interior air chamber and operable between a normally relaxed full state and a compressed state;

a first end portion;

a second end portion;

one-directional intake valve means on said first end portion for drawing air into said interior air chamber upon said central body returning to said relaxed state from said compressed state;

one-directional exhaust valve means on said second end portion for directing air outwardly from said interior air chamber and to said air delivery means upon said central body being compressed from said relaxed state to said compressed state; and

coupling means for securing said squeeze bulb to said handle portion and including means for holding said second end portion in fixed position relative to said handle portion and further including means for holding said first end portion of said squeeze bulb to said handle portion.

9. The pump handle device as recited in claim 8 wherein said coupling means is structured and disposed to prevent obstruction of airflow exiting said one-directional exhaust valve means.

10. The pump handle device as recited in claim 9 further comprising:

air delivery means interconnected to said pump means for directing airflow from said pump means to a separate chamber.

11. The pump handle device as recited in claim 10 wherein said coupling means is structured and disposed to prevent obstruction of airflow through said air delivery means.

12. The pump handle device as recited in claim 11 wherein said air delivery means comprises a flexible air hose.
13. The pump handle device as recited in claim 12 wherein said coupling means is structured and disposed to prevent twisting and kinking of said flexible air hose.
# INTERNATIONAL SEARCH REPORT

**International application No.**

**PCT/US01/44404**

### A. CLASSIFICATION OF SUBJECT MATTER

- **IPC(7)**: F04F 1/00; B65D 83/14
- **US CL**: 222/209, 400.8

According to International Patent Classification (IPC) or to both national classification and IPC.

### B. FIELDS SEARCHED

- **Minimum documentation searched (classification system followed by classification symbols)**
  - U.S.: 222/209, 400.7, 400.8

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used):

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
<tr>
<td>Y</td>
<td>US 3,105,619 A (ROHRMULLER) 01 October 1963 (01.10.1963), col. 2, line 1 to col.</td>
<td>1</td>
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<td></td>
<td>3, line 33.</td>
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<td>Y</td>
<td>US 1,106,937 A (GOFF) 11 August 1914 (11.08.1914), figure 4.</td>
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<td>X</td>
<td>US 1,852,685 A (TREMBLAY) 05 April 1932 (05.04.1932), Page 1, line 37 to page 2,</td>
<td>8-13</td>
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<td></td>
<td>line 30.</td>
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<td>US 5,394,789 A (EVANS et al.) 07 March 1995, column 2, line 5 to column 4, line</td>
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<td>A</td>
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<td>A</td>
<td>US 3,430,817 A (FALKENBERG) 04 March 1969 (04.03.1969), figure 1.</td>
<td>1-13</td>
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</table>

- Further documents are listed in the continuation of Box C.

- **See patent family annex.**

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