

Description

FIELD OF THE INVENTION

This invention relates to improvements in valve-controlled apparatus used to deliver liquids from bottles, cans, and other containers.

DESCRIPTION OF THE PRIOR ART

U.S. Patent No. 4,691,850 filed Aug. 9, 1984 describes a mixing system adapted for use in mixing with a solvent or carrier fluid, such as water, concentrates of chemicals which are used in performing certain janitorial services. Such concentrates may include detergents, ammonia, disinfectants, degreasers, and deodorizers such that solutions may be mixed up by the janitorial staff to carry out the tasks prescribed.

According to the system described in that patent, the concentrates are delivered from large containers to the mixing vessel by means of tubes which are connected to both the containers of concentrate and the mixing vessel. When a container of concentrate is emptied, the empty container is replaced with a full container which contains the same concentrate that was consumed. In order to replace an empty container, the tube is detached from the container, the container is disposed of, and a full container is reattached to the tube. During the interval of time that the container is being replaced, it frequently happens that residual concentrate in the tube leaks onto the floor where the concentrate-containing containers are located. Some of these concentrates are toxic, corrosive, or flammable, and it would be desirable to keep them from finding their way to the floor. Moreover, air can enter the tubes, which further requires that pumps used for drawing concentrates from the containers into the tubes must be re-primed.

A further prior art that is of interest in US-A-3 845 787 disclosing an automated liquor dispensing system. It comprises a plurality of liquor storage bottles that are interconnected by tubes such that a tube from the top of any one bottle extends to the bottom of the next bottle downstream such that their interiors are connected in series. The first bottle of the series is connected to a positive displacement pump and the last bottle of the series has the surface of the liquor therein exposed to the atmospheric pressure. As the liquor is withdrawn by the pump from the first bottle the atmospheric pressure in the last bottle forces liquor to be transferred from each bottle in the series toward the bottle next closer to the pump thus enabling all the liquor in the bottles to be made available for dispensing by the pump.

The bottle closest to the pump is connected to the pump by a tube extending to the bottom of said bottle, said tube having a check valve device at its lower end. This check valve device may be a conventional ball valve the ball of which moves upwardly under suction; said ball descending in the absence of suction to close the valve. However if a tube with such a check valve is removed from its bottle and laid upon a horizontal surface, the ball may roll away from its sealing setting in the check valve with the result that liquid in the tube can escape.

In view of the foregoing problems it would be desirable to provide means for sealing the tubes during the interval in which they are removed whilst empty containers are being replaced with full ones.

SUMMARY OF THE INVENTION

The invention is as defined in the accompanying Claim 1 and is concerned with a liquid storage and transfer system of the kind comprising:

- (a) a container having a wall with a bottom portion and an opening in said wall for the passage of liquid out of said container;
- (b) a delivery tube assembly fitted within said opening, said delivery tube assembly being removable from said opening to facilitate changing containers and being repositionable within said opening, said delivery tube assembly having a discharge end and an intake end, said discharge end being outside said container and said intake end being inside said container; and
- (c) a shut-off valve disposed at said intake end of said delivery tube assembly, said shut-off valve being at or adjacent said bottom portion of said container, said shut-off valve being normally closed to the passage of liquid when said shut-off valve is not actuated.

All of these features are already known from US-A-3 845 787 and thus appear in the pre-characterizing part of the accompanying Claim 1.

The present invention is characterized over this known art in that it further comprises:

- (d) actuating means within said container disposed on said container wall for actuating said shut-off valve to permit the passage of liquid into said delivery tube assembly when said delivery tube assembly is repositioned within said opening.

In the preferred embodiment, the shut-off valve comprises a casing having a first opening therein, a valve head that covers said first opening when the shut-off valve is not actuated, and means for biasing said valve head against said casing to close said first opening when said valve head is not actuated. It is preferred that the wall of the container have means for aligning the shut-off valve

with the actuating means so that the actuating means can readily actuate the valve head.

The shut-off valve prevents liquids from leaking out of the delivery tube assembly when the shut-off valve is not being actuated by the actuating means and allows liquids to enter the intake end of the delivery tube assembly only when the shut-off valve is actuated by the actuating means.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view in elevation of a container, delivery tube assembly, and shut-off valve of the liquid storage and transfer system of the present invention.

FIG. 2 is a plan view of the base of the preferred embodiment of the container of the system of the present invention.

FIG. 3 is an enlarged cross-sectional view in elevation of the shut-off valve of the system of the present invention.

FIG. 4 is a cross-sectional view taken along line 4-4 of FIG. 3.

DETAILED DESCRIPTION

Referring now to FIGS. 1, 2, 3, and 4, where like numerals refer to like parts, the delivery tube assembly 5 comprises a tube or series of tubes, the function of which is to transfer liquid from a container to a second vessel. In the embodiment shown in FIG. 1, which is representative of a delivery tube assembly that comprises a series of tubes rather than a single tube, delivery tube assembly 5 comprises an intake tube 6, a connecting tube 7, and a discharge tube 8. Connecting tube 7 joins intake tube 6 to discharge tube 8. Delivery tube assembly 5 also includes a cap 9 having a vent 10 formed therein. Cap 9 is preferably a threaded cap that can be screwed onto a threaded container opening. Intake tube 6, connecting tube 7, and discharge tube 8 are typically cylindrical tubes of sufficient diameter and length to allow liquids to be drawn from the container 12 and be transferred to another vessel, e.g. a mixing vessel (not shown). However, the shape of the tubes in the delivery tube assembly is not critical, and they can have cross-sectional shapes other than cylindrical. Disposed at one end 14, i.e. the intake end, of intake tube 6 of delivery tube assembly 5 is shut-off valve 16. Delivery tube assembly 5 and its accompanying shut-off valve 16 can be removed from container 12 to facilitate replacement of one container for another. Delivery tube assembly 5 also has a discharge end 17 at one end of discharge tube 8, from which end the liquid can exit so that it can enter another vessel (not shown). During operation of the system, intake end 14 must be within con-

tainer 12 and discharge end 17 must be outside container 12. Delivery tube assembly 5 is preferably sheathed by an outer tube 18, the function of which, in combination with a sensor system (not shown), is to determine when the liquid in container 12 has dropped to a low level and indicate same. When the liquid inside container 12 falls to a nearly empty level, the pressure in the space between delivery tube assembly 5 and tube 18 will likewise decrease. Fluid level sensors capable of measuring such pressure differentials to indicate that the container is nearly empty are well-known in the art. Tube 18 also preferably functions to provide additional support for shut-off valve 16.

Shut-off valve 16 comprises a casing 20, which, for ease of manufacture, is preferably made of two parts, an inner portion 21 and an outer portion 22. Inner portion 21 fits within outer portion 22. Casing 20 has a first opening 23 therein. Located within casing 20 are a valve head 24, which normally covers first opening 23 to prevent residual liquid in delivery tube assembly 5 from flowing through first opening 23, and means 26 for biasing valve head 24 against casing 20 to close first opening 23 in casing 20. Casing 20 should be of sufficient length and cross-sectional area to contain valve head 24 and spring 26. Valve head 24 must be of a size sufficiently large to completely cover and seal first opening 23 when valve head 24 is not actuated and sufficiently small to be capable of moving freely within casing 20 to allow shut-off valve 16 to be actuated. As used herein, the terms "actuate", "actuated", and the like refer to both (1) moving valve head 24 away from the first opening 23 in casing 20 and (2) causing shut-off valve 16 to open by moving of valve head 24. The shape of valve head 24 is preferably similar to that of the cross-section of casing 20. Preferably, valve head 24 is a disk-shaped plug, and biasing means 26 is a spring, preferably made of a metal such as stainless steel. Other biasing means include resilient polymeric materials, e.g. polymeric foams. As used hereinafter, the term "spring" shall be used to denote the biasing means.

In the preferred embodiment of this invention, casing 20 is essentially cylindrical in shape, and it comprises a circular base 28, a cylindrical wall portion 30, and a circular top 32. Base 28 is also the base of inner portion 21 of casing 20. Wall portion 30 and top 32 are also the wall and the top of outer portion 22, respectively, of casing 20. It is preferred that wall portion 30 have a plurality of spacing elements 33 molded or adhered to the outer periphery thereof, the function of which elements 33 is to allow space between casing 20 and outer tube 18, so that the sensor system previously referred to can operate satisfactorily. First opening 23 is formed in base 28. Inset at the periphery or

at a small distance from the periphery of base 28 and projecting upwardly therefrom are a plurality of ribs 34, preferably three in number. The functions of the ribs 34 are to form a channel or guide for valve head 24 to move when it is actuated and to support the spring 26. There must be sufficient space between adjacent ribs 34 so that the liquid that enters first opening 23 will have a channel to flow from opening 23 through the interior of casing 20 and into the intake end 14 of intake tube 6 of delivery tube assembly 5. Located in top 32 of casing 20 is a second opening 36 that communicates with intake end 14 of intake tube 6, typically by way of a nipple 38 that fits into end 14 of intake tube 6.

Container 12 typically has a top 40, side walls 42, and a base or bottom portion 44. It may have a cross-section of any shape, e.g. polygonal, cylindrical. Additionally, container 12 may be spherical in shape, such as, for example, in the form of a round-bottomed flask. An opening 46 is formed in container 12, normally in top 40 or side walls 42 thereof, to allow insertion of intake end 14 of delivery tube assembly 5 into container 12. Container 12 must have an actuating means, typically a projection or protuberance 48, in order to actuate valve head 24 of shut-off valve 16 to cause valve head 24 to move so as to allow shut-off valve 16 to open and to allow liquid to enter first opening 23 of casing 20. Actuating means 48 is preferably located at or near the bottom portion of container 12, i.e. on base 44 or on side walls 42 adjacent base or bottom portion 44. The walls of container 12 adjacent actuating means 48 preferably contains alignment means to allow delivery tube assembly 5 to be fitted in container 12 so that actuating means 48 will be aligned with valve head 24 of shut-off valve 16. Alignment means is preferably in the form of an annulus 50 which defines a tapered recess surrounding the actuating means 48 at or near the bottom portion 44 of container 12.

Actuating means 48 is preferably a projection of sufficient height or length that valve head 24 will move upwardly a sufficient distance when pressed against it so that liquid can enter first opening 23, pass through casing 20, and enter intake end 14 of intake tube 6 of delivery tube assembly 5.

In the embodiment shown in FIGS. 1-4, valve head 24 has a stem 52 attached thereto and projecting downwardly therefrom through first opening 23 so as to be disposed between valve head 24 and actuating means 48 on base 44 of container 12. Container 12 can be designed so as to have actuating means 48 located on a portion of its wall other than on base 44 thereof. This stem 52 is designed so as to contact actuating means 48 in order to cause valve head 24 to move in such a direction as to allow shut-off valve 16 to open to

allow liquid to enter first opening 23. However, shut-off valve 16 and container 12 can be designed so as to eliminate the need for stem 52. If stem 52 is present, it must not extend beyond end 54 of shut-off valve 16 whereat first opening 23 is located. If stem 52 were to extend beyond end 54 of shut-off valve 16, accidental contact of stem 52 with the floor or any other surface would cause valve head 24 to move so as to cause shut-off valve 16 to open, allowing the liquid to leak out of delivery tube assembly 5. In the embodiment shown in FIG. 3, end 54 of shut-off valve 16 facing base 44 of container 12 further includes a plurality of projections 56 extending therefrom. Although these projections are optional, they can be designed to perform the dual function of (a) coarsely aligning shut-off valve 16 with actuating means 48, and (b) finely aligning valve stem 52 (if present) with actuating means 48. These projections are constructed so as to fit into alignment means 50. It is preferred that the shape of projections 56 be such that they urge stem 52 to align at or near the center of projection 48 to insure that shut-off valve 16 will be actuated when projections 56 are aligned by alignment means 50. If stem 52 were to strike projection 48 at a position off of its center, shut-off valve 16 may not open sufficiently to allow liquid from container 12 to be transferred satisfactorily. Adjacent projections 56 must have sufficient space between them so that liquid can pass from container 12 into first opening 23. In the embodiment shown in FIG. 3, stem 52 must not extend beyond the tips of projections 56 farthest from end 54 of shut-off valve 16. Container 12, delivery tube assembly 5, and the components of shut-off valve 16 are preferably prepared from materials that are resistant to the chemicals that make up the liquids that are to be delivered from the container. Preferred materials for the container, delivery tube assembly, and components of the shut-off valve, excepting spring 26, include polymeric materials, e.g. polyethylene, polypropylene. Preferred materials for spring 26 include stainless steel. When outer tube 18 is used, it is preferred that either outer tube 18 or delivery tube assembly 5 should be formed of a relatively rigid material so that fitting of shut-off valve 16 into alignment means 50 will be facilitated. If delivery tube assembly 5 is used alone, it is preferred that it be formed of a relatively rigid material.

Although shapes and dimensions of the component parts of the shut-off valve can vary, a preferred embodiment can have the following dimensions:

Casing:

6.35 cms (2.5 inches) length; 3.18 cms (1.25 inches) outside diameter

First opening in casing:

1.27 cms (0.500 inch) diameter

Valve stem:

0.4 cms (0.156 inch) length; 0.48 cms (0.190 inch) diameter

Biasing means:

0.1 cms (0.041 inch) wire diameter of spring; 5 coils per 2.45 cms (inch); 1.9 cms (0.750 inch) length; 1.74 cms (0.687 inch) diameter;

Valve head:

1.74 cms (0.684 inch) diameter; 0.79 cms (0.31 inch) thickness;

Actuating means:

1.12 cms (0.44 inch) length

OPERATION

To connect a container 12 of the type previously described, and filled with a liquid concentrate, to a delivery tube assembly 5 fitted with shut-off valve 16 of this invention, the user merely aligns shut-off valve 16 with alignment means 50 so that actuating means 48 will be aligned with first opening 23 in casing 20. Shut-off valve 16 is then urged downwardly toward base 44 of container 12, thereby allowing actuating means 48 to cause valve head 24 to move so as to allow fluid to enter casing 20 through first opening 23, from which casing, the liquid is delivered through second opening 36 to intake tube 6, from which tube, via connecting tube 7 and discharge tube 8, the liquid is delivered to another vessel.

When it comes time to replace container 12, shut-off valve 16 is merely urged away from base 44 of container 12, thereby allowing spring 26 to cause valve head 24 to move so as to close first opening 23 to prevent liquid from leaking from delivery tube assembly 5.

Claims

1. A liquid storage and transfer system, said system comprising:
 - (a) a container (12) having a wall (42) with a bottom portion (44) and an opening (46) in said wall for the passage of liquid out of said container;
 - (b) a delivery tube assembly (5) fitted within said opening (46), said delivery tube assembly being removable from said opening to facilitate changing containers and being repositionable within said opening, said delivery tube assembly having a discharge end (17) and an intake end (14), said discharge end being outside said container and said intake end being inside said container; and
 - (c) a shut-off valve (16) disposed at said intake end (14) of said delivery tube assembly, said shut-off valve being at or adjacent

said bottom portion (44) of said container, said shut-off valve being normally closed to the passage of liquid when said shut-off valve is not actuated;

characterized by

(d) actuating means (48) within said container disposed on said container wall for actuating said shut-off valve (16) to permit the passage of liquid into said delivery tube assembly when said delivery tube assembly is repositioned within said opening (46).

2. The system of Claim 1 wherein said shut-off valve (16) comprises a casing (20) having a first opening (23) therein, a valve head (24) that covers and closes said first opening (23) when said valve head (24) is not actuated, and a means for biasing said valve head against said casing (20) to close said first opening (23) when said valve head (24) is not actuated.
3. The system of Claim 2 wherein said casing (20) comprises a cylindrical body having a circular base (28), side walls (30), and a circular top (32), said first opening (23) in said casing being in said circular base, said casing having a second opening (36) in said circular top that communicates with said delivery tube assembly, said casing (20) further including a plurality of ribs (34) disposed at or closely inset from the periphery of said circular base (28) and projecting upwardly from said circular base, said ribs (34) providing a guide for said valve head (24) and a support for said biasing means (26), said ribs (34) further being spaced sufficiently apart so that liquid can flow through said casing (20) when said shut-off valve (16) is actuated.
4. The system of Claim 2 wherein said valve head (24) includes a valve stem (52) which contacts said actuating means (48) to urge said shut-off valve (16) open.
5. The system of Claim 2 wherein said actuating means (48) comprises a projection which contacts said valve head (24) to urge said shut-off valve (16) open.
6. The system of Claim 4 wherein said actuating means (48) comprises a projection which contacts said valve stem (52) to urge said shut-off valve (16) open.
7. The system of Claim 1 further including means (50) for aligning said shut-off valve with said actuating means.

1.27 cms (0.500 inch) diameter

Valve stem:

0.4 cms (0.156 inch) length; 0.48 cms (0.190 inch) diameter

Biasing means:

0.1 cms (0.041 inch) wire diameter of spring; 5 coils per 2.45 cms (inch); 1.9 cms (0.750 inch) length; 1.74 cms (0.687 inch) diameter;

Valve head:

1.74 cms (0.684 inch) diameter; 0.79 cms (0.31 inch) thickness;

Actuating means:

1.12 cms (0.44 inch) length

OPERATION

To connect a container 12 of the type previously described, and filled with a liquid concentrate, to a delivery tube assembly 5 fitted with shut-off valve 16 of this invention, the user merely aligns shut-off valve 16 with alignment means 50 so that actuating means 48 will be aligned with first opening 23 in casing 20. Shut-off valve 16 is then urged downwardly toward base 44 of container 12, thereby allowing actuating means 48 to cause valve head 24 to move so as to allow fluid to enter casing 20 through first opening 23, from which casing, the liquid is delivered through second opening 36 to intake tube 6, from which tube, via connecting tube 7 and discharge tube 8, the liquid is delivered to another vessel.

When it comes time to replace container 12, shut-off valve 16 is merely urged away from base 44 of container 12, thereby allowing spring 26 to cause valve head 24 to move so as to close first opening 23 to prevent liquid from leaking from delivery tube assembly 5.

Claims

1. A liquid storage and transfer system, said system comprising:

(a) a container (12) having a wall (42) with a bottom portion (44) and an opening (46) in said wall for the passage of liquid out of said container;

(b) a delivery tube assembly (5) fitted within said opening (46), said delivery tube assembly being removable from said opening to facilitate changing containers and being repositionable within said opening, said delivery tube assembly having a discharge end (17) and an intake end (14), said discharge end being outside said container and said intake end being inside said container; and

(c) a shut-off valve (16) disposed at said intake end (14) of said delivery tube assembly, said shut-off valve being at or adjacent

said bottom portion (44) of said container, said shut-off valve being normally closed to the passage of liquid when said shut-off valve is not actuated;

characterized by

(d) actuating means (48) within said container disposed on said container wall for actuating said shut-off valve (16) to permit the passage of liquid into said delivery tube assembly when said delivery tube assembly is repositioned within said opening (46).

2. The system of Claim 1 wherein said shut-off valve (16) comprises a casing (20) having a first opening (23) therein, a valve head (24) that covers and closes said first opening (23) when said valve head (24) is not actuated, and a means for biasing said valve head against said casing (20) to close said first opening (23) when said valve head (24) is not actuated.

3. The system of Claim 2 wherein said casing (20) comprises a cylindrical body having a circular base (28), side walls (30), and a circular top (32), said first opening (23) in said casing being in said circular base, said casing having a second opening (36) in said circular top that communicates with said delivery tube assembly, said casing (20) further including a plurality of ribs (34) disposed at or closely inset from the periphery of said circular base (28) and projecting upwardly from said circular base, said ribs (34) providing a guide for said valve head (24) and a support for said biasing means (26), said ribs (34) further being spaced sufficiently apart so that liquid can flow through said casing (20) when said shut-off valve (16) is actuated.

4. The system of Claim 2 wherein said valve head (24) includes a valve stem (52) which contacts said actuating means (48) to urge said shut-off valve (16) open.

5. The system of Claim 2 wherein said actuating means (48) comprises a projection which contacts said valve head (24) to urge said shut-off valve (16) open.

6. The system of Claim 4 wherein said actuating means (48) comprises a projection which contacts said valve stem (52) to urge said shut-off valve (16) open.

7. The system of Claim 1 further including means (50) for aligning said shut-off valve with said actuating means.



8. The system of Claim 1 wherein said actuating means (48) is located at the bottom portion (44) of a wall of said container. (12).
9. A container (12) capable of being adapted to a delivery tube assembly (5) having disposed at one end thereof a shut-off valve (16), said container having a wall with a bottom portion (44) and an opening (46) in said wall for the passage of liquid out of said container, characterized by means (48) for actuating said shut-off valve (16) at or near said bottom portion (44).
10. The container of Claim 9 further having means (50) for aligning said shut-off valve (16) with said actuating means (48).
11. The container of Claim 9 wherein said actuating means (48) is a projection of sufficient length for actuating said shut-off valve (16).

Patentansprüche

1. Anlage zur Aufbewahrung und Abgabe von Flüssigkeiten, wobei die Anlage umfaßt:
(a) einen Behälter (12) bestehend aus einer Wand (42) mit einem Bodenbereich (44) und einer Öffnung (46) in der Wand, durch die Flüssigkeit aus dem Behälter fließen kann;
(b) eine Zuleitungsrohranordnung (5), die in der Öffnung (46) vorgesehen ist, wobei die Zuleitungsrohranordnung von der Öffnung abgenommen werden kann, um das Auswechseln der Behälter zu erleichtern, und wieder in der Öffnung positioniert werden kann, wobei die Zuleitungsrohranordnung ein Auslaßende (17) und ein Einlaßende (14) aufweist, wobei das Auslaßende außerhalb des Behälters und das Einlaßende innerhalb des Behälters angeordnet ist; und
(c) ein Absperrventil (16), das an dem Einlaßende (14) der Zuleitungsrohranordnung angeordnet ist, wobei das Absperrventil an oder neben dem Bodenbereich (44) des Behälters vorgesehen ist, und das Absperrventil normalerweise für den Durchlauf von Flüssigkeit gesperrt ist, wenn sich das Absperrventil in seiner Ruhestellung befindet; gekennzeichnet durch
(d) eine Betätigungseinrichtung (48) in dem Behälter, die an der Behälterwand angeordnet ist, um das Absperrventil (16) dahingehend zu betätigen, daß Flüssigkeit in die Zuleitungsrohranordnung fließen kann, wenn die Zuleitungsrohranordnung wieder in der Öffnung (46) positioniert ist.
2. Anlage nach Anspruch 1, dadurch gekennzeichnet, daß das Absperrventil (16) ein Gehäuse (20) umfaßt mit einer darin befindlichen ersten Öffnung (23), einem Ventilteller (24), der die erste Öffnung (23) abdeckt und schließt, wenn sich der Ventilteller (24) in seiner Ruhestellung befindet, und eine Einrichtung, die den Ventilteller gegen das Gehäuse (20) vorspannt, um die erste Öffnung (23) zu schließen, wenn sich der Ventilteller (24) in seiner Ruhestellung befindet.
3. Anlage nach Anspruch 2, dadurch gekennzeichnet, daß das Gehäuse (20) einen zylindrischen Körper mit einem kreisförmigen Boden (28), Seitenwänden (30) und einem kreisförmigen oberen Teil (32) aufweist, wobei die erste Öffnung (23) in dem Gehäuse in dem kreisförmigen Boden vorgesehen ist, und das Gehäuse besitzt eine zweite Öffnung (36) in dem kreisförmigen oberen Teil, die mit der Zuleitungsrohranordnung in Verbindung steht, wobei das Gehäuse (20) ferner eine Vielzahl von Rippen (34) aufweist, die an oder etwas zurückgesetzt von dem Umfang des kreisförmigen Bodens (28) angeordnet sind und sich von dem kreisförmigen Boden nach oben erstrecken, wobei die Rippen (34) eine Führung für den Ventilteller (24) bilden und eine Halterung für die Vorspanneinrichtung (26), und die Rippen (34) sind ferner soweit voneinander beabstandet, daß Flüssigkeit durch das Gehäuse (20) fließen kann, wenn sich das Absperrventil (16) in seiner Ruhestellung befindet.
4. Anlage nach Anspruch 2, dadurch gekennzeichnet, daß der Ventilteller (24) einen Ventilschaft (52) aufweist, der mit der Betätigungseinrichtung (48) in Kontakt kommt, um das Absperrventil (16) aufzudrücken.
5. Anlage nach Anspruch 2, dadurch gekennzeichnet, daß die Betätigungseinrichtung (48) einen Vorsprung aufweist, der mit dem Ventilteller (24) in Kontakt kommt, um das Absperrventil (16) aufzudrücken.
6. Anlage nach Anspruch 4, dadurch gekennzeichnet, daß die Betätigungseinrichtung (48) einen Vorsprung aufweist, der mit dem Ventilschaft (52) in Kontakt kommt, um das Absperrventil (16) aufzudrücken.
7. Anlage nach Anspruch 1, ferner umfassend eine Einrichtung (50), die das Absperrventil mit der Betätigungseinrichtung ausrichtet.
8. Anlage nach Anspruch 1, dadurch gekennzeichnet,



zeichnet, daß die Betätigungseinrichtung (48) im Bodenbereich (44) einer Wand des Behälters (12) angeordnet ist.

9. Behälter (12), der an eine Zuleitungsrohranordnung (5) angepaßt werden kann, an deren einem Ende ein Absperrventil (16) vorgesehen ist, wobei der Behälter eine Wand mit einem Bodenbereich (44) und einer Öffnung (46) in der Wand besitzt, durch die Flüssigkeit aus dem Behälter fließen kann, gekennzeichnet durch eine Einrichtung (48) zum Betätigen des Absperrventils (16) an oder in der Nähe des Bodenbereichs (44).
10. Behälter nach Anspruch 9, ferner umfassend eine Einrichtung (50), die das Absperrventil (16) mit der Betätigungseinrichtung (48) ausrichtet.
11. Behälter nach Anspruch 9, dadurch gekennzeichnet, daß die Betätigungseinrichtung (48) ein Vorsprung ist, der lang genug ist, um das Absperrventil (16) zu betätigen.

Revendications

1. Système de transfert et de stockage de liquide, ledit système comprenant :
 - (a) un récipient (12) comportant une paroi (42), une partie de fond (44) et une ouverture (46) ménagée dans ladite paroi pour le passage du liquide hors dudit récipient ;
 - (b) un ensemble à tube de distribution (5) ajusté dans ladite ouverture (46), ledit ensemble à tube de distribution étant susceptible d'être retiré de ladite ouverture pour faciliter le changement de récipient et étant repositionnable dans ladite ouverture, ledit ensemble à tube de distribution ayant une extrémité d'évacuation (17) et une extrémité d'alimentation (14), ladite extrémité d'évacuation étant à l'extérieur dudit récipient et ladite extrémité d'alimentation étant à l'intérieur dudit récipient ; et
 - (c) une valve de fermeture (16) disposée à ladite extrémité d'alimentation (14) de l'ensemble à tube de distribution, ladite valve de fermeture étant sur ou à proximité de la partie de fond (44) dudit récipient, ladite valve de fermeture étant normalement fermée au passage du liquide lorsque ladite valve de fermeture n'est pas actionnée, caractérisé en ce qu'il comprend :
 - (d) des moyens d'actionnement (48) à l'intérieur du récipient et disposés sur la paroi de récipient pour actionner la valve de fermeture (16) et permettre le passage du liquide

dans l'ensemble à tube de distribution lorsque ledit ensemble à tube de distribution est repositionné dans ladite ouverture (46).

2. Système selon la revendication 1, dans lequel la valve de fermeture (16) comprend une douille (20) munie d'une première ouverture (23), une tête de valve (24) qui couvre et ferme ladite première ouverture (23), lorsque la tête de valve (34) n'est pas actionnée et des moyens pour solliciter la tête de valve contre ladite douille (20) de manière à fermer ladite première ouverture (23) lorsque la tête de valve (24) n'est pas actionnée.
3. Système selon la revendication 2, dans lequel ladite douille (20) comprend un corps cylindrique comportant une base circulaire (28), des parois latérales (30), et une partie supérieure circulaire (32), la première ouverture (23) du tube étant ménagée dans la base circulaire, ladite douille présentant une seconde ouverture (36) dans la partie supérieure circulaire qui communique avec l'ensemble à tube de distribution, ladite douille (20) comportant en outre une pluralité de nervures (34) disposées ou insérées près de la périphérie de la base circulaire (28) et faisant saillie vers le haut à partir de ladite base circulaire, lesdites nervures (34) formant un guidage pour ladite tête de valve (24) et un support pour les moyens d'amenée (26), lesdites nervures (34) étant en outre espacées suffisamment de façon que le liquide puisse circuler à travers ladite douille (20) lorsque la valve de fermeture (16) est actionnée.
4. Système selon la revendication 2, dans lequel la tête de valve (24) comprend une tige de valve (52) qui vient en contact avec le moyen d'actionnement (48) pour réaliser l'ouverture de la valve de fermeture (16).
5. Système selon la revendication 2, dans lequel les moyens d'actionnement (48) sont munis d'une saillie qui vient en contact avec la tête de valve (24) pour réaliser l'ouverture de la valve de fermeture (16).
6. Système selon la revendication 4, dans lequel les moyens d'actionnement (48) sont munis d'une saillie qui vient en contact avec la tige de valve (52) pour réaliser l'ouverture de la valve de fermeture (16).
7. Système selon la revendication 1, comprenant en outre des moyens (50) pour aligner la valve de fermeture au moyen d'actionnement,



8. Système selon la revendication 1, dans lequel les moyens d'actionnement (48) sont disposés sur la partie de fond (44) d'une paroi dudit récipient (12).

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9. Récipient (12) capable d'être adapté à un ensemble à tube de distribution (5) comprenant une valve de fermeture (16) à une de ses extrémités, ledit récipient comportant une paroi munie d'une partie de fond (44) et d'une ouverture (46) ménagée dans ladite paroi pour le passage d'un liquide hors dudit récipient, caractérisé en ce qu'il comprend des moyens (48) pour actionner la valve de fermeture (16) sur ou près de la partie de fond (44).

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10. Récipient selon la revendication 9, comprenant en outre des moyens (50) pour aligner la valve de fermeture (16) au moyen d'actionnement (48).

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11. Récipient selon la revendication 9, dans lequel les moyens d'actionnement sont constitués par une saillie de longueur suffisante pour actionner la valve de fermeture (16).

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