Feb. 21, 1933. C. L. HUNT ET AL 1,898,303

VALVE FOR LIQUID CONTAINERS

Original Filed Nov. 25, 1929 2 Sheets-Sheet 1

Fig. 1.

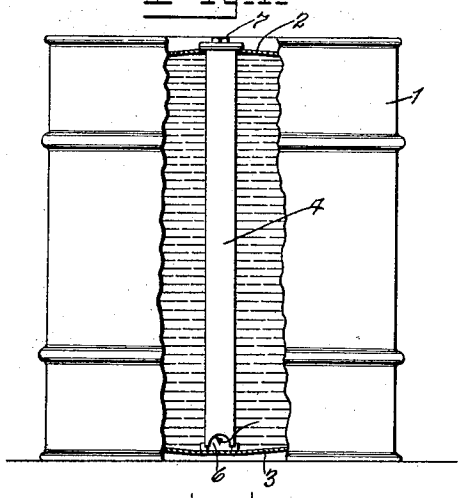


Fig. 2.

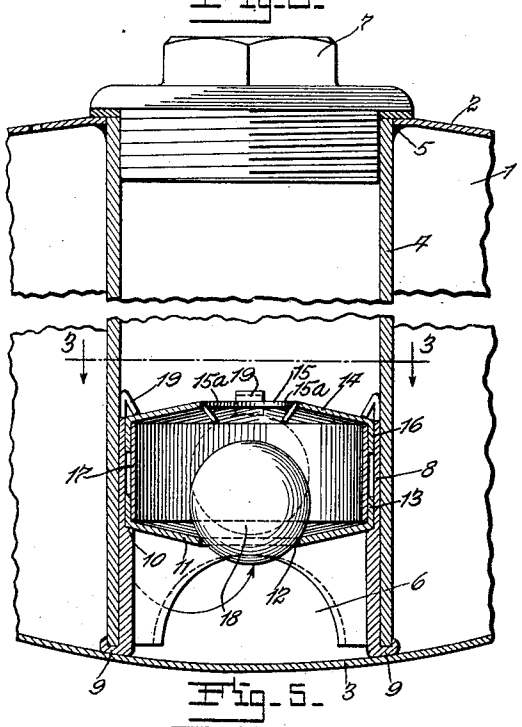


Fig. 3.

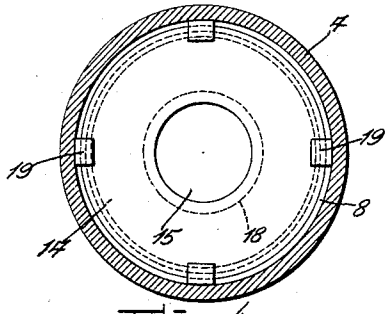


Fig. 4.

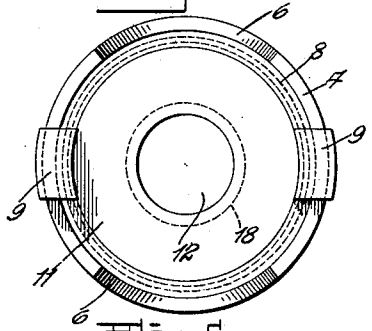


Fig. 5.

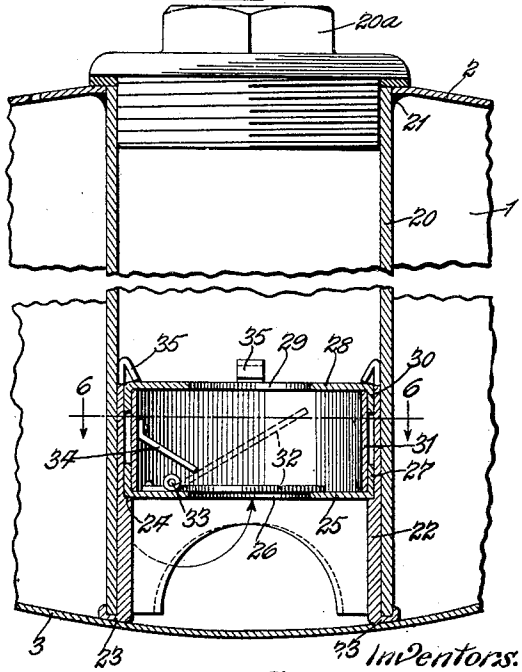
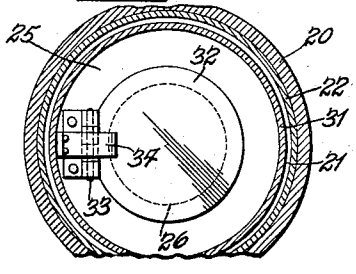


Fig. 6.



Inventors:
Charles L. Hunt,
Peter J. Hill,
by Kippey & Kingsland.
Their Attorneys

Feb. 21, 1933. C. L. HUNT ET AL. 1,898,303

VALVE FOR LIQUID CONTAINERS

Original Filed Nov. 25, 1929 2 Sheets-Sheet 2

Fig. 7.

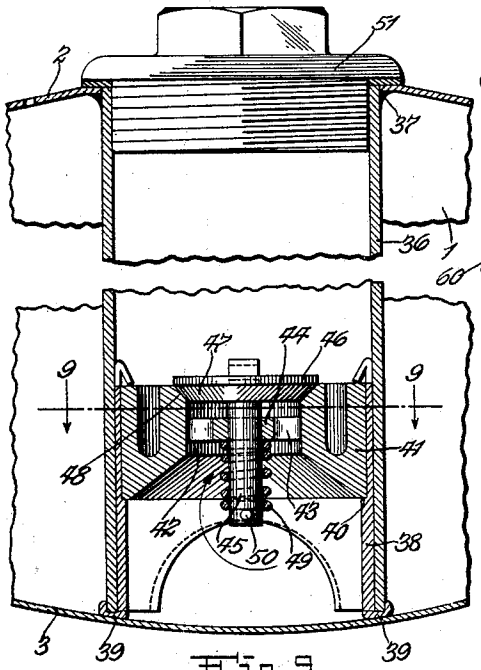


Fig. 8.

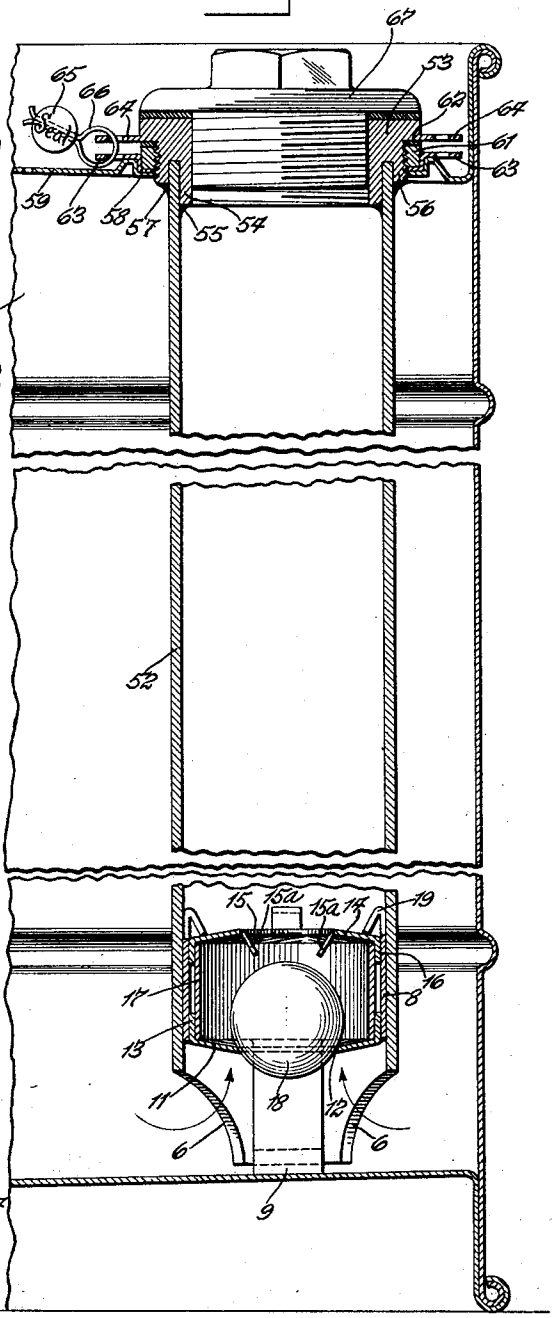


Fig. 9.

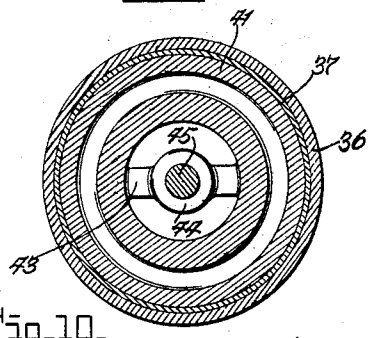
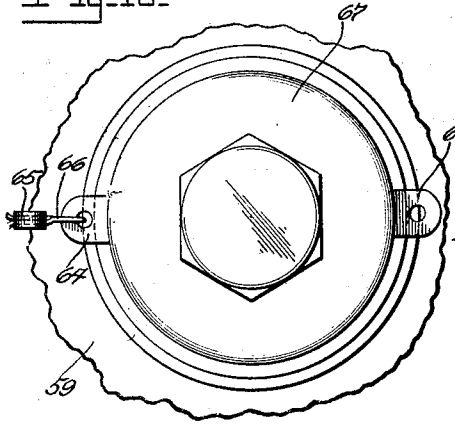


Fig. 10.



Inventors.
Charles L. Hunt,
Netter J. Hill,
by Rippey & Kingsland.
Their Attorneys

Patented Feb. 21, 1933 1,898,303

UNITED STATES PATENT OFFICE

CHARLES L. HUNT AND NETTER J. HILL, OF ST. LOUIS, MISSOURI, ASSIGNORS TO NON-REFILLABLE CONTAINER, INC., OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI

VALVE FOR LIQUID CONTAINERS

Application filed November 25, 1929, Serial No. 409,474. Renewed December 27, 1932.

This invention relates to valves for liquid containers and has special reference to containers for confining liquid to be shipped or transported while in the containers, and for confining liquid to be withdrawn from the containers for use or sale.

An object of the invention is to provide a container with an improved device controlling withdrawal of the liquid from the container and making it impossible or highly difficult to refill the container, comprising a pipe extending through one end of the container toward the opposite wall and having its inner end open, so that the contents of the container may pass into the pipe for withdrawal, in combination with a novel valve device mounted in and supported by the inner end of the pipe, permitting withdrawal of the contents of the container and making it impossible and highly difficult to refill the container.

Another object of the invention is to provide means of the type and character mentioned in various specific forms, so as to obtain the desired results in the most efficient manner.

Other objects will appear from the following description, reference being made to the accompanying drawings in which—

Fig. 1 is a view showing a container equipped with the present invention.

Fig. 2 is an enlarged vertical sectional view showing one form of the invention.

Fig. 3 is a cross sectional view on the line 3—3 of Fig. 2.

Fig. 4 is an inner end elevation of the valve controlled withdrawal pipe.

Fig. 5 is a vertical sectional view of another form of the invention.

Fig. 6 is a cross sectional view on the line 6—6 of Fig. 5.

Fig. 7 is a vertical sectional view showing another form of valve capable of satisfactory use as a part of this invention.

Fig. 8 is a vertical sectional view showing the valve controlled pipe and a novel form of detachable connection and seal for holding said pipe in proper relationship with the container.

Fig. 9 is a cross sectional view approximately on the line 9—9 of Fig. 7.

Fig. 10 is an outer end elevation of the construction shown in Fig. 8.

The container, as shown in Figs. 1 to 8, inclusive, is a barrel of familiar construction including a shell 1, a top wall 2 and a bottom wall 3. The top and bottom walls are shown outwardly convexed and the withdrawal pipe is shown mounted axially in the barrel, which relationship may be changed and varied, as desired, without departure from the invention.

A withdrawal pipe 4 extends through a hole in the top wall 2 and terminates adjacent to the bottom wall 3. This pipe may be permanently secured to one or to both walls of the container and, as shown, is permanently secured to the top wall 2, an impervious joint between said pipe 4 and said top wall 2 being obtained by a ring of solder 5 applied to the joint.

The lower end of the pipe 4 is shown spaced slightly from the bottom wall 3 of the container and also provided with notches or openings 6, said space and said notches or openings forming a passage so as to permit the liquid contents of the container to enter the lower end of the pipe 4 to be withdrawn, or to permit the liquid to pass through the pipe 4 and through said passage to fill the container initially. The inside of the pipe 4, at its upper end, is threaded and is closed by a removable plug 7 during shipment or when the container is in storage. This plug may be removed and the usual threaded attachment of a pump (not shown) may be screwed into the end of the pipe 4 to withdraw the liquid contents from the container.

A support for a valve seat is attached to the inner end of the pipe 4. This support may be made of various forms. The support, shown in Fig. 2, comprises a ring 8 mounted on the inside of the pipe 4 at the inner end of said pipe and having extensions 9 bent across and embracing spaced portions of the inner end of the pipe 4. These bent extensions 9 are clamped upon the end of the pipe 4 and exemplify means for rigidly holding the ring 8 in connection with said pipe 4.

The ring 8 is formed with an internal shoulder 10 and this shoulder 10 forms a seat for a valve support. In the embodiment shown in Fig. 2, the valve support is a cage comprising an inner wall 11 provided with a central hole 12 and with a circumferential flange 13; an outer wall 14 having a central hole 15 and a circumferential flange 16; and a ring or cylindrical portion 17 onto which the flanges 13 and 16 are telescoped and secured, so as to provide a unitary structure for supporting and confining a spherical valve body 18. The valve 18 is prevented from closing the hole 15 by abutments 15a. The ring 8, at its outer end, has extensions 19 that are bent inwardly to form abutments for the wall 14, so as to prevent outward movement or displacement of the valve support from its seat on the shoulder 10.

The valve 18 is confined within this valve support and when the container is in upright position, said valve seats upon the marginal edge of the plate 11 around the hole 12, so as to close said hole and thus effectively prevent liquid from being poured into the container. The valve is too large to pass through either of the holes 12 or 15, so that it is impossible for the valve to work out of the support. Operation of a suction pump will, as is clear, withdraw all liquid from the container approximately to the lower side of the valve device. For, when the pump operates, the valve 18 is opened and the liquid contents pass, or are drawn, into the pipe 4 above the valve and thence outwardly through the pipe 4.

In Figs. 5 and 6, a hinged or pivoted type of valve is shown in connection with the valve support for permitting withdrawal of the liquid contents of the container and preventing refilling of the container. As shown in Fig. 5, a pipe 20 extends through a hole in the top wall 2 toward the bottom wall 3, an impervious joint with the top wall being obtained by a ring of solder 21. The valve support comprises a ring 22 mounted within the inner end of the pipe 20 and having extensions 23 bent across and embracing spaced portions of the inner end of the pipe 20. These bent extensions 23 are clamped upon the end of the pipe 20 and exemplify means for rigidly holding the ring 22 in connection with said pipe 20.

The ring 22 is formed with an internal shoulder 24 and this shoulder 24 forms a seat for a valve support. In the embodiment shown in Fig. 5, the valve support is a cage comprising an inner wall 25 provided with a central hole 26 and with a circumferential flange 27; an outer wall 28 having a central hole 29 and a circumferential flange 30; and a ring or cylindrical portion 31 onto which the flanges 27 and 30 are telescoped and secured, so as to provide a unitary structure for supporting and confining a disc valve 32. The disc valve 32 is connected with the plate 25 by a hinge device 33, which permits the disc 32 to move from and to closed and open positions. In closed position, the valve plate 32 is seated upon the plate 25 and completely closes the hole 26. In open position, the valve plate 32 is inclined, extent of movement of said valve plate 32 toward open position being limited by an abutment 34 attached to the ring 31. The ring 22, at its outer end, has extensions 35 that are bent inwardly to form abutments for the wall 28, so as to prevent outward movement or displacement of the valve support from its seat on the shoulder 24.

In Figs. 7 and 9, a still different type of valve support and valve are shown. In this construction, a pipe 36 extends through a hole in the top wall 2 toward the bottom wall 3, an impervious joint with the top wall being obtained by a ring of solder 37. The valve support comprises a ring 38 mounted within the inner end of the pipe 36 and having extensions 39 bent across and embracing spaced portions of the inner end of the pipe 36. These bent extensions 39 are clamped upon the end of the pipe 36 and exemplify means for rigidly holding the ring 38 in connection with said pipe 36.

The ring 38 is formed with an internal shoulder 40 and this shoulder 40 forms a seat for a valve support. In the embodiment shown in Figs. 7 and 8, the valve support comprises a body 41 confined within the outer portion of the ring 38 and seated upon the shoulder 40 and having therethrough a port 42. The port 42 is crossed by a web 43 formed with a central guide 44 through which a valve stem 45 extends for longitudinal sliding and for turning movements. The outer end of the valve stem 45 has attached thereto a disc valve 46 having a beveled seating surface 47 arranged to seat upon the valve seat 48 formed around the outer portion of the port 42. The valve stem 45 projects through the guide 44 and its inner portion is encircled by a spring 49. One end of the spring 49 abuts against the guide 44 and the opposite end of said spring 49 bears against an abutment 50, which may be a pin extending diametrically through the stem 45, as shown. The power and resiliency of the spring 49 is sufficient to hold the valve 46 seated upon the valve seat 48, but will yield to the pressure of the liquid within the container when a pump is operated to withdraw the liquid from the container. For, in this embodiment of the invention, a plug 51 is screwed into the outer end of the pipe 36 and is removable to permit the attachment of a pump member, as the plug 7 is removable from the construction shown in Fig. 2 and as the plug 20a is removable from the construction shown in Fig. 5.

The valve device, shown in connection

with the pipe 52 (Fig. 8), is like the valve device shown in Fig. 2 and has the same reference numerals applied thereto. The outer end of the pipe 52 is attached to a fitting 53. In the specific embodiment shown, the fitting 53 has a portion 54 telescoping within the outer end of the pipe 52, and provided with a hermetic joint by means of a ring of solder 55 located at the inner end of the part 54. The end of the pipe 52 extends into an annular groove in the fitting 53, the portion 56 of said fitting that encircles the outer end of the pipe 52 being provided with a ring of solder 57 to obtain an impervious joint.

A metallic ring 58 is rigidly attached to the top wall 59 of the container 60 and is also rigid with an internally threaded ring 61. The part 56 of the fitting 53 is externally threaded and screws into and through the rings 61 and 58, an impervious joint being obtained by a gasket 62 clamped between the fitting 53 and the ring 61. The ring 58 has a number of ears 63 having holes therethrough, and the fitting 53 has a number of ears 64 having holes therethrough. A frangible seal body 65 is formed about and to embed the ends of a strip 66 of metal, or other appropriate material, which strip is passed through the holes in the ears 63 and 64. Thus, a destructible seal is provided which may be attached to the device, so as to prevent removal of the pipe 52 from the container without leaving evidence indicating that fact. A plug 67 is screwed into the fitting 53 and may be removed to permit insertion of the usual threaded attachment of a pump.

It is now clear that our invention may be embodied in various forms in which the valve is supported in and forms a part of the pipe device and which may be attached to the container as a unit. That is to say, the pipe device and the valve supported therein constitute a self-contained unit removable from and attachable to the container, so that no care is required to obtain proper location of the pipe with respect to the valve after the pipe and valve are assembled together before attachment to the container. The construction may be varied in other respects as specifically shown and described. We do not restrict ourselves in any unessential respects, but what we claim and desire to secure by Letters Patent is:

1. In a device of the character described, a pipe having an inner end and an outer end, a supporting element secured within the inner end of said pipe, a valve support mounted within said supporting element, a seat for said valve support formed integrally with said supporting element and preventing movement of said valve support toward the inner end of said pipe, and abutments integral with said supporting element extending inwardly and engaging the outer end of said valve support and preventing movement of said valve support toward the outer end of said pipe.

2. In a device of the character described, a pipe having inner and outer ends, a supporting element secured within the inner end of said pipe, a valve support having inner and outer ends and mounted within said supporting element, a seat for said valve support formed integrally with said supporting element and preventing movement of said valve support toward the inner end of said pipe, abutments integral with said supporting element extending inwardly and engaging the outer end of said valve support and preventing movement of said valve support toward the outer end of said pipe, and a valve supported between the inner and outer ends of said valve support controlling the passage of fluid through said support.

3. In a device of the character described, a pipe having inner and outer ends, a supporting member attached to the inside of the inner end of said pipe, a shoulder on the inside of said supporting member, a valve support seated on and supported by said shoulder from further movement toward the inner end of said pipe, and abutments integral with the outer end of said supporting member and extending laterally inwardly and engaging the outer end of said valve support.

4. In a device of the character described, a pipe having an inner end and an outer end, a rigid supporting element within the inner end of said pipe, a valve support having inner and outer ends and mounted within said supporting element and provided with a valve seat, a seat for said valve support integral with said supporting element and preventing movement of said valve support toward the inner end of said pipe, abutments integral with said supporting element and extending inwardly and engaging the outer end of said valve support and preventing movement of said valve support toward the outer end of said pipe, a valve movable to and from said valve seat, and means for holding said valve in cooperative relation to said valve support for movement to and from said valve seat.

5. In a device of the character described, a pipe having inner and outer ends, a supporting element mounted within the inner end of said pipe, means for holding said supporting element in rigid connection with said pipe, a valve support having inner and outer ends and mounted within said supporting element, a seat for said valve support formed integrally with said supporting element and preventing movement of said valve support toward the inner end of said pipe, abutments integral with said supporting element extending inwardly and engaging and preventing movement of said valve support toward

the outer end of said pipe, a valve supported between the inner and outer ends of said valve support controlling the passage of fluid through said support, and means for preventing said valve from becoming detached from said support.

6. In a device of the character described, a pipe having inner and outer ends, a supporting member in rigid connection with the inside of the inner end of said pipe, a valve support mounted within said supporting member, abutments integral with said supporting member and engaging opposite ends of said valve support and cooperating to hold said valve support in rigid position in said supporting member, a valve in connection with said valve support controlling the passage of fluid therethrough, and means for preventing said valve from becoming detached from said valve support.

7. In a device of the character described, a pipe having inner and outer ends, a supporting element secured within the inner end of said pipe, a valve support having inner and outer ends and mounted within said supporting element, abutments integral with said supporting element engaging and holding said valve support in rigid connection therewith, a spherical valve mounted between the inner and outer ends of said valve support controlling the passage of fluid therethrough, and means for limiting extent of movement of said valve with respect to said valve support.

8. In a device of the character described, a pipe having inner and outer ends, a supporting element secured within the inner end of said pipe, a valve support mounted within said supporting element, abutments in connection with said supporting element engaging and holding said valve support in rigid position therein, a valve pivoted to said valve support and controlling the passage of fluid therethrough and being movable from closed to open position, and means limiting extent of movement of said valve toward open position.

9. In a device of the character described, a pipe having inner and outer ends, a supporting element secured within the inner end of said pipe, a valve support mounted within said supporting element, a seat for said valve support formed integrally with said supporting element and preventing movement of said valve support toward the inner end of said pipe, means in connection with said supporting element holding said valve support rigidly on said seat, a valve seat on said valve support, a valve movable to and from said valve seat to control the passage of fluid therethrough, and a device limiting extent of movement of said valve from said valve seat and holding said valve yieldingly on said valve seat.

10. In a device of the character described, a pipe having an inner and outer end, a supporting element attached to the inner end of said pipe, a valve support mounted within said supporting element, a valve cooperating with said support for controlling the passage of fluid therethrough, and means on said supporting element engaging said valve support and preventing movement thereof relative to said pipe.

CHARLES L. HUNT.
NETTER J. HILL.