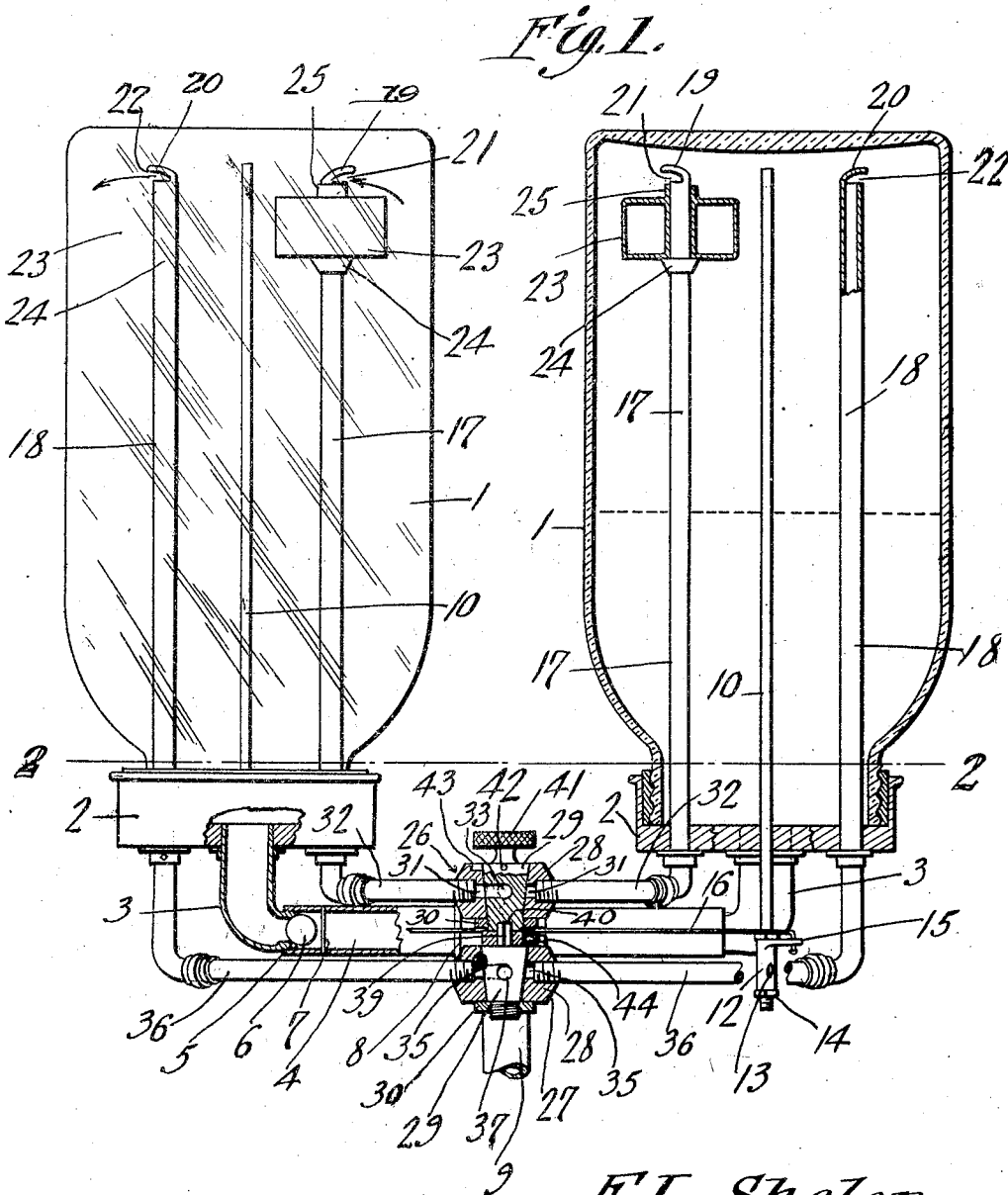


F. L. SHELOR.
OVERFLOW JAR OR TRAP.
APPLICATION FILED MAY 5, 1916.

1,244,552.

Patented Oct. 30, 1917.
2 SHEETS—SHEET 1.



F. L. Shelor

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

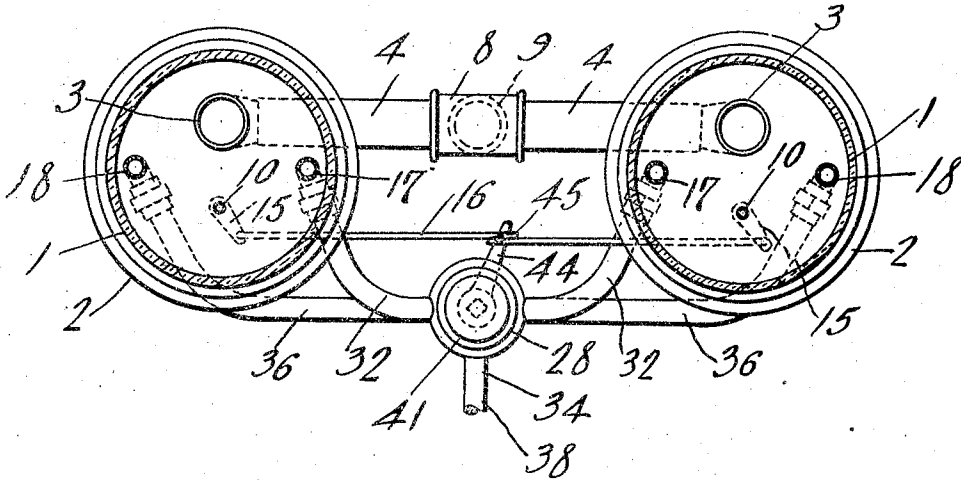


Fig. 3.

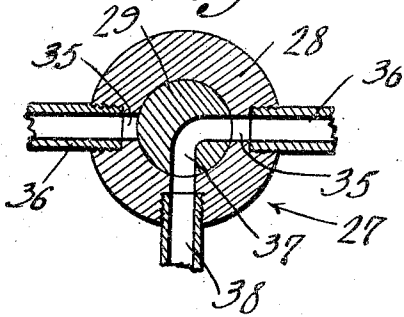
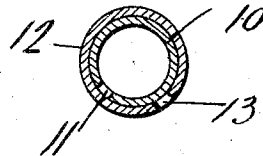


Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK LYNN SHELOR, OF SALEM, VIRGINIA, ASSIGNOR TO INTERNATIONAL FILLER CORPORATION, OF RICHMOND, VIRGINIA, A CORPORATION.

OVERFLOW JAR OR TRAP.

1,244,552.

Specification of Letters Patent.

Patented Oct. 30, 1917.

Application filed May 5, 1916. Serial No. 95,728.

To all whom it may concern:

Be it known that I, FREDERICK L. SHELOR, a citizen of the United States, residing at Salem, in the county of Roanoke and State of Virginia, have invented new and useful Overflow Jars or Traps, of which the following is a specification.

The present invention is an overflow device or trap adapted especially for use with the filling apparatus shown in my copending applications, Serial Nos. 75,797 and 75,798, filed February 2, 1916, respectively.

It is the object of the invention to provide a device adapted to be disposed in an air suction conduit such as is employed in a filling apparatus disclosed in either of said applications, between a pump and a filling nozzle or equivalent device, said device being operable to catch any liquid sucked with the air into the air conduit, whereby to collect said liquid, and prevent it reaching the pump.

Another object of the invention is a provision of the device of the nature indicated embodying a pair of overflow jars or traps and novel means whereby they are alternately filled and discharged, to provide for a continuous operation without any appreciable interruption.

A further object of the invention is the provision of novel means in a device of the character indicated, for alternately connecting the jars or traps with the pump and nozzle or other device, and to provide novel means for effecting the discharge of the accumulated liquid from the jars.

The present device is so constructed and operable that by manipulating a single knob or controlling member, the connections with the jars can be reversed, to change the filling of the jars, whereby the empty one is filled and the filled one is automatically discharged. The invention also includes means for stopping the suction of air from the jar being filled, when the liquid level rises to a predetermined point, thereby stopping the flow of liquid into the jar, and also preventing the flow of liquid into the pipe which leads to the pump.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that

changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is an elevation of the device, portions being shown in section.

Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged sectional detail of one of the three-way valves.

Fig. 4 is an enlarged sectional detail of one of the air vent valves.

In carrying out the invention, a pair of inverted jars or trap vessels 1 are employed the same being preferably constructed of glass, so as to render their contents visible, and closures or caps 2 threadedly receive the lower open ends of said jars 1. The caps 2 close said jars, and said jars are air tight.

To accomplish the drainage or discharge of liquid from the jars 1, depending elbows 3 are attached to the caps 2 and provide lower outlets for the jars, and pipe sections 4 are attached to the lower ends of the elbows 3, and said ends of the elbows provide valve seats 5 against which ball valves 6 are seatable. A pin 7 is preferably carried by each pipe section 4 near the valve seat 5, to hold the respective valve 6 adjacent its seat. The adjacent ends of the pipe sections 4 are connected by a T-coupling with the pipe section 9 which can extend downwardly to a tank or reservoir, which may be the tank from which the liquid is pumped, which will be apparent by reference to said applications. The valves 6 seat toward the jars, in order that the suction or partial vacuum within the jars will tend to seat the valves 6 and hold them seated.

A vertical air vent tube 10 extends through each cap 2 and terminates adjacent the upper end of the respective jar 1, and the tube 10 is provided adjacent its lower protruding end with an aperture 11. A sleeve valve 12 is rotatable upon the lower protruding end of each tube 10 to cover the aperture 11 under certain conditions, and said sleeve valve 12 has an aperture adapted to be brought into and out of registration with the aperture 11. The valves 12 are supported by nuts or other supporting elements 14 engaged upon the lower ends of

the tubes 10, and said valves 12 have outstanding arms 15 connected by a link or rod 16, whereby the valves are operated simultaneously, but the valves are moved to open and closed positions alternately. Thus, when the link 16 is moved toward the left, as seen in Fig. 1, the right hand valve 12 will be moved to bring its aperture 13 into register with the corresponding aperture 11, while the left hand valve 12 (not shown in Fig. 1) will be moved to closed position, and vice versa.

Also extending through the cap 2 of each jar are vertical outflow and inflow tubes 18 and 17, respectively, which have their upper ends terminating adjacent the upper end of the jar. The upper ends of said tubes 17 and 18 are provided with the respective overhanging hoods 19 and 20 projecting away from one another, and providing the respective lateral side openings or apertures 21 and 22 directed toward opposite sides of the jar. Thus, any liquid flowing into the jar from the tube 18 through the aperture 22 will be directed away from the tube 17 toward that side wall of the jar 1 remote from said tube 17, and the air will be drawn from the jar 1 from that side wall thereof opposite the tube 18. This eliminates the liability of the liquid splashing from the tube 18 to the tube 17, and being sucked down the tube 17.

In order to shut off the flow of air from each jar into the tube 17 when the level of the liquid rises above a certain point, or near the upper ends of the tubes, a suitable float 23 is mounted for vertical sliding movement upon the tube 17 adjacent the upper end thereof, and is normally seated upon a shoulder 24 with which said tube is provided. Said float 23 carries or is carried by an upstanding sleeve valve 25 slidable upon the tube 17, and normally disposed below the aperture 21, but when the float 23 is raised, the sleeve valve 25 will move upwardly and close the aperture 21, whereby to cut off the flow of air into the tube 17 from the jar 1, and to therefore stop the further suction of air and liquid into the jar from the tube 18.

The alternate filling of the jars 1 is accomplished by means of a pair of three-way valves 26 and 27, which are superposed as illustrated, and which are practically of duplicate construction. Each of the three-way valves embodies a body 28 in which a tapered plug 29 is rotatable, and a nut or other retaining element 30 is engaged upon the lower smaller end of the plug and bears upwardly against the body to hold the plug seated snugly within the body. The body 28 of the upper valve 26 is provided with diametrically opposite ports 31 connected by pipe sections 32 with the lower protruding ends of the tubes 17, and the plug 29 of the

upper valve 26 has a passage 33 adapted to be brought alternately into registration with the ports 31 and pipe sections 32. Connected to the body 28 of the upper valve 26 is an air suction pipe 34 leading to a pump (not shown). The body 28 of the lower valve 27 is provided with diametrically opposite ports 35 connected by pipe sections 36 with the lower protruding ends of the tubes 18. The plug 29 of the lower valve 27 has a passage 37 adapted to be brought alternately into register with the ports 35 and pipe sections 36, and an air suction pipe 38 is connected to the lower body 28 and is adapted to be connected to a filling nozzle or other equivalent device. The upper larger end of the lower plug 29 has an upstanding non-circular stud 39 received by a non-circular recess 40 in the lower end of the upper plug 29, whereby both plugs 29 rotate simultaneously, and the upper end of the upper plug 29 has a knurled finger piece or knob 41 for conveniently rotating said plugs from one position to another. It is preferable to provide the upper plug 29 with a pin 42 working in a slot 43 of the upper body 28 to limit the movement of the plugs properly. When the plugs 29 are rotated in one direction, the passage 33 establishes communication between the pipe section 32 at one side and the pipe 34, and the passage 37 establishes communication with the pipe section 36 at the same side and the pipe 38, and when said plugs are reversed, they establish communication between the pipe 34 and the other pipe section 32 and between the pipe 38 and the other pipe section 36, whereby the pipes 34 and 38 are alternately connected with the jars.

The air vent valves 12 are operated simultaneously with the plugs 29, since an arm 44 is engaged upon the stud or lug 39 and projects toward the link 16, and said link is provided with a loop or eye 45 receiving the end of the arm 44, whereby the valves 12 are operated when the plugs 29 are.

In operation, supposing that the plugs 29 are rotated so that the pipes 34 and 38 are brought into communication with the respective tubes 17 and 18 of the left hand jar 1 in Fig. 1, said pipes 34 and 38 will be disconnected from the tubes 17 and 18, respectively, of the right hand jar 1, and the left hand air vent valve 12 will be closed while the right hand one will be opened. Any liquid which is within the right hand jar 1 will flow downwardly through the respective elbow 3 and will unseat the valve 6 so that the liquid can flow down the pipe 9 to the tank or reservoir, air being admitted into the right hand jar 1 through the respective air vent tube 10. The air vent tube 10 of the left hand jar 1, however, is closed, and when the pump is in operation the air suction will extend from the pipe 34 leading

from the pump into the tube 17 of the left hand jar 1, and from said tube will extend into the left hand jar and thence by way of the tube 18 and pipe 38 to the filling nozzle or other device. Should any liquid flow with the air through the pipe 38 and tube 18 into the left hand jar 1, it will drop from the aperture 22 into the jar 1, to be collected therein, while the air can flow freely within the jar from the tube 18 to the tube 17. The present device thus provides a trap for catching the liquid, to prevent the liquid being sucked into the pump, and to prevent waste. The suction or partial vacuum created within the left hand jar 1 overcomes the weight or head of the liquid within the jar, whereby the respective valve 6 is held seated, to prevent the premature discharge of the liquid, during the time that the jar is being filled. Should the operator fail to operate the plugs 29 when the left hand jar 1 becomes filled, and should the liquid level approach the upper ends of the tubes 17 and 18, the float 23 will be raised, so that its valve 25 closes the aperture 21, and thereby prevent the further flow of air into the tube 17 from the jar. This prevents the complete filling of the jar with liquid, which would permit liquid to flow down the tube 17 into the pipe 34 leading to the pump. Due to the fact, that the sleeve 25 when closed cuts off the air suction from the pipe 38 leading to the filling nozzle or equivalent device, this will serve as a signal to the operator that the jar is filled, and he must attend to the device to renew the filling operation.

Whenever the operator observes that one jar 1 is sufficiently filled with liquid, the knob 41 is rotated to reverse the plugs 29 and air vent valves 12, whereby the pipes 34 and 38 now communicate with the tubes 17 and 18, respectively, of the right hand jar 1 in Fig. 1, and the air suction being cut off from the left hand jar 1, will permit the liquid to discharge from the left hand jar. The right hand valve 12 is closed, and the air will now be sucked from the right hand jar and the liquid collected in said jar, while the left hand valve 12 is open to permit air to flow into the left hand jar 1, so that the liquid can drain out past the respective valve 6 which is unseated as soon as the air suction is stopped and the vent tube 10 opened to admit air.

The valves can be readily reversed by a single operation, whereby the jars are alternately filled and emptied, to provide a continuous air suction without any appreciable interruption. The device can be supported or mounted in any suitable manner, and can be used for various purposes other than in connection with a filling apparatus, although it is especially adapted for the latter purpose.

Having thus described the invention, what is claimed as new is:

1. A device of the character described embodying a vessel, inflow and outflow tubes projecting within the vessel and having their inner ends terminating above the liquid level and provided with inflow and outflow portions directed away from one another, means for draining the liquid from the vessel and operable by suction in the vessel for preventing the draining of the liquid therefrom unless the suction is relieved, and means for relieving the suction in the vessel and admitting air thereinto.

2. A device of the character described embodying a vessel, inflow and outflow tubes communicating with the upper portion thereof, one of the tubes having an aperture in one side, a sleeve valve slidable upon said tube, and a float connected to said valve for raising it to cover said aperture when the vessel is filled with liquid up to a certain level.

3. A device of the character described comprising a vessel, inflow and outflow tubes projecting upwardly therein, one tube provided adjacent its upper end with a lateral aperture, a sleeve valve slidable upon said tube, said tube having a shoulder for supporting said valve immediately below said aperture, and a float connected to said valve for raising it when the vessel is filled up to a certain level.

4. A device of the character described comprising a vessel having a lower closure, inflow and outflow tubes projecting upwardly from said closure and provided at their upper ends with hoods projecting away from one another and providing apertures facing opposite sides of said vessel.

5. A device of the character described comprising a vessel having a lower closure, inflow and outflow tubes projecting upwardly from said closure, an air vent tube projecting upwardly from said closure, a valve upon the lower portion of the air vent tube for opening and closing the same, and a drain outlet member connected to said closure and having a valve seat, and a valve seatable against said seat toward said vessel to be seated by the creation of a partial vacuum in the vessel.

6. A device of the character described comprising a pair of vessels, an inflow and an outflow tube communicating with each vessel, a pair of pipes, valves for alternately connecting said pipes with the tubes of the two vessels, a drain outlet member connected to the lower end of each vessel and having a valve seat, a valve for each drain outlet member seatable against said seat toward the respective vessel to be seated by the creation of a partial vacuum within the vessel, air vent members communicating with the vessels, and valves for open-

ing and closing the air vent members and operatively connected with the aforesaid valves to be alternately opened and closed.

7. A device of the character described comprising a pair of vessels having lower closures, an inflow and an outflow tube projecting upwardly from each closure, a pair of pipes, valves between said pipes and tubes and operable to establish communication alternately between said pipes and the tubes of the two vessels, air vent tubes projecting upwardly from said closures, valves upon the lower portions of said air vent tubes and operatively connected with the aforesaid valves to be alternately opened and closed, drain outlet members connected to said closures and having valve seats, and valves seatable against said seats toward the respective vessels.

8. A device of the character described, embodying an inverted vessel, a lower closure to which the vessel is connected detachably, and inflow and outflow tubes projecting upwardly from said closure and having inflow and outflow portions directed away from one another.

9. A device of the character described, embodying a vessel, an outflow member therefor for sucking air therefrom from above the liquid level, an inflow member for the vessel to conduct air and liquid therinto above the liquid level, the vessel having a drain outlet, a valve for the drain outlet adapted to be held seated by suction within the vessel, a valve for closing the outflow member, and a float within the vessel for operating the second mentioned valve when the liquid level rises within the vessel to a predetermined point.

10. A device of the character described, comprising a pair of vessels, each having an air and liquid inlet and an air outlet, a pipe to communicate with a filling device and

communicating with the inlets of both vessels, draining means for each vessel held closed by suction therein, an air suction pipe to communicate with a pump, means for alternately connecting the air suction pipe with the air outlets of the vessels and for admitting air from the atmosphere to either vessel when its air outlet is out of communication with the air suction pipe, means for preventing the reverse flow from either vessel to the first mentioned pipe when the outlet thereof is out of communication with the air suction pipe, a valve in each vessel for closing the air outlet, and a float in each vessel for closing the respective valve when the liquid level rises a predetermined amount.

11. A device of the character described, embodying a vessel, an outflow member for the suction of air from the upper portion of the vessel, an inflow member for conducting air and liquid into the upper portion of the vessel, said members opening above the liquid level in said vessel for the flow of air from the inflow to the outflow member without passing through the liquid, means for draining the liquid from the vessel and operable by the suction in the vessel for preventing the draining of the liquid therefrom unless the suction is relieved, means for shutting off the flow of air through the outflow member, and float controlled means within the vessel for closing the outflow member before the liquid level rises to a point to enter either the inflow or outflow member.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FREDERICK LYNN SHELOR.

Witnesses:

JNO E. GRAHAM,
J. A. FINK.