W. J. DRISCOLL.

DISPENSER OF LIQUIDS.

APPLICATION FILED APR. 15, 1920.

1,409,159.

Patented Mar. 14, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

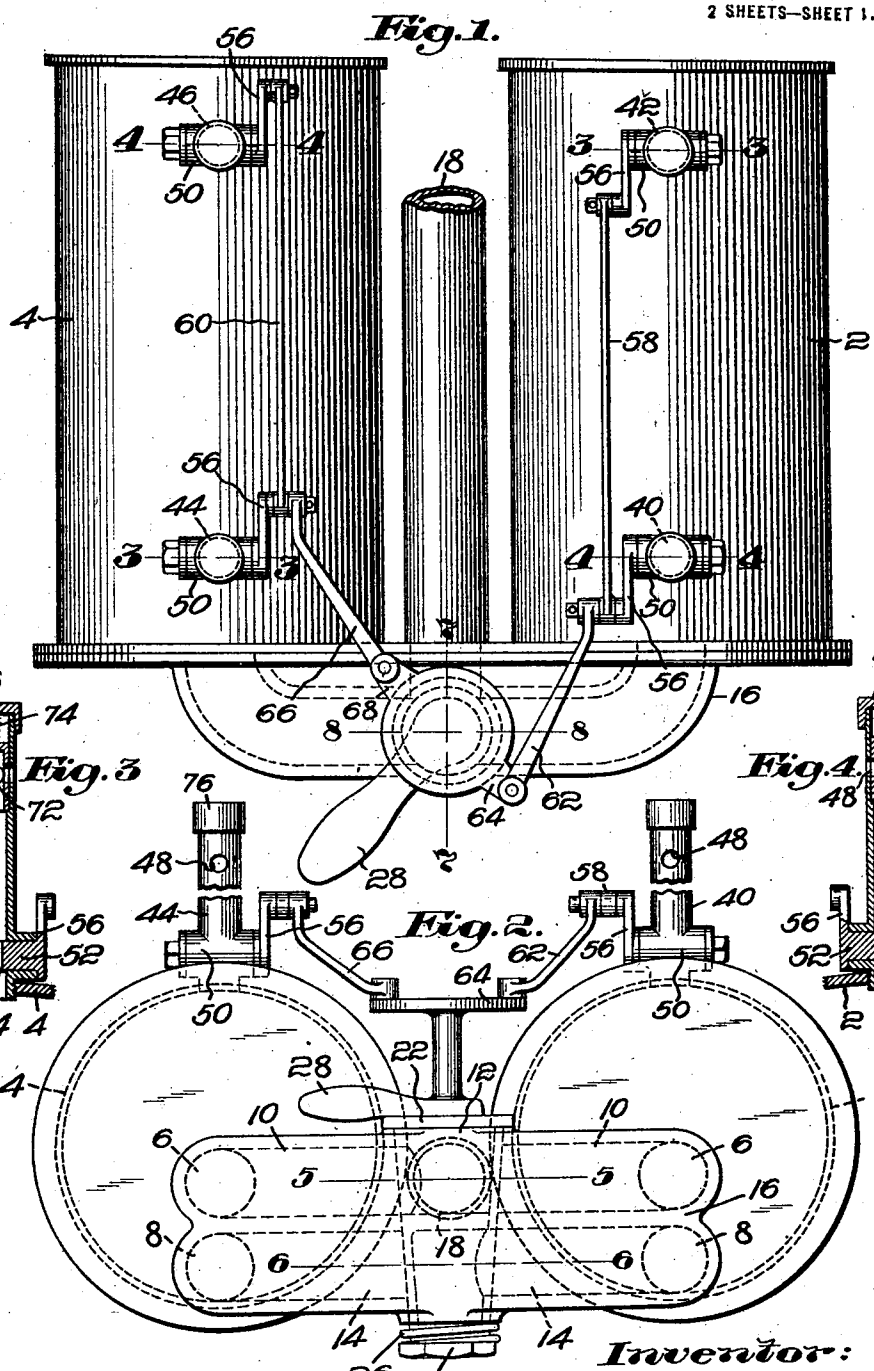


Fig. 3.

Fig. 4.

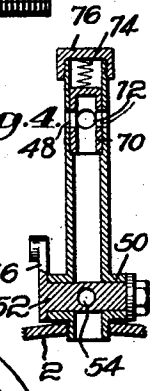


Fig. 2.

Inventor:
William J. Driscoll.
by Emery, Booth, Janney & Varney,
Attys.

W. J. DRISCOLL.

DISPENSER OF LIQUIDS.

APPLICATION FILED APR. 15, 1920.

1,409,159. Patented Mar. 14, 1922.

2 SHEETS—SHEET 2.

Fig. 5.

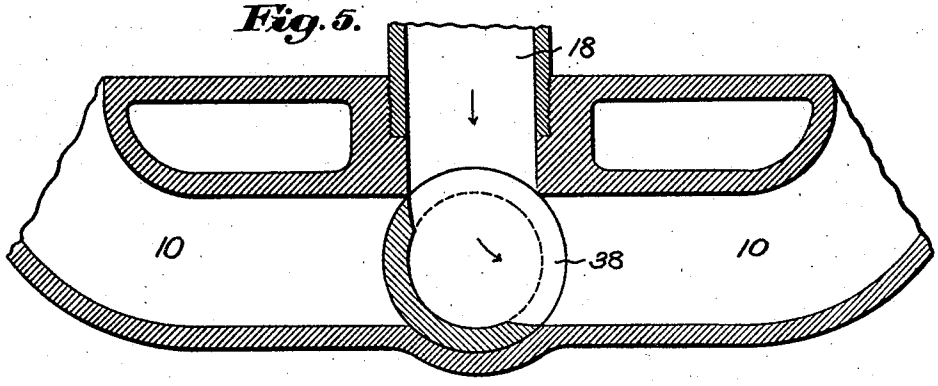


Fig. 6.

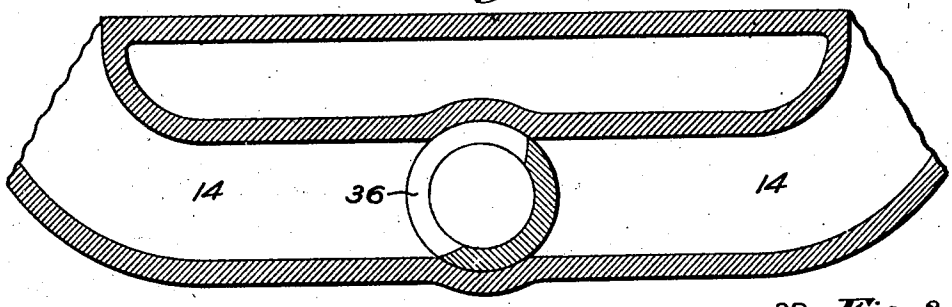


Fig. 7.

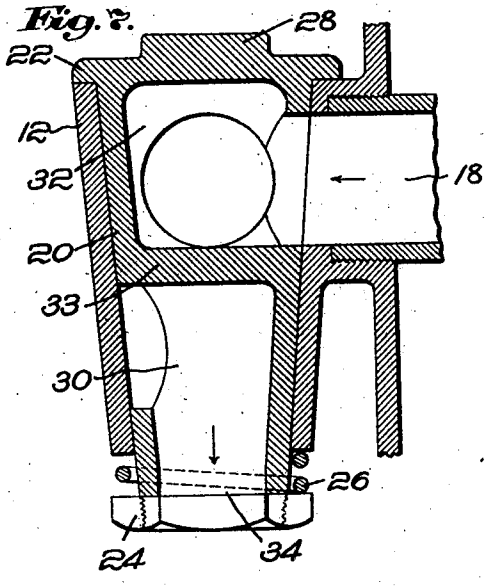
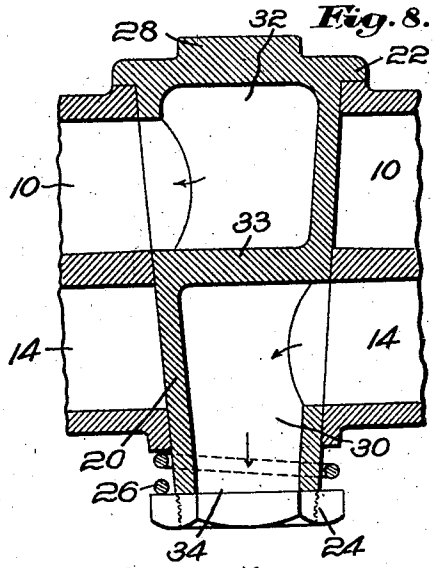


Fig. 8.



Inventor:
William J. Driscoll,
by Emery, Booth, Janney & Varney,
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM J. DRISCOLL, OF BOSTON, MASSACHUSETTS.

DISPENSER OF LIQUIDS.

1,409,159. Specification of Letters Patent. Patented Mar. 14, 1922.

Application filed April 15, 1920. Serial No. 374,003.

To all whom it may concern:

Be it known that I, WILLIAM J. DRISCOLL, a citizen of the United States of America, and a resident of Boston, Brighton, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Dispensers of Liquids, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to dispensers of liquids. The invention and its aims and objects will be best understood from the following description, taken in connection with the accompanying drawings of a dispenser embodying one form of the invention selected for the purpose of illustration, the scope of the invention being more particularly pointed out in the appended claims.

In the drawings:—

Fig. 1 is a top plan view of a construction embodying one form of my invention;

Fig. 2 is a front elevation of the construction shown in Fig. 1;

Fig. 3 is a vertical section of the valve mechanism on line 3—3 of Fig. 1, showing the valve open;

Fig. 4 is a vertical section of the valve mechanism on line 4—4 of Fig. 1, showing the valve closed;

Fig. 5 is a horizontal section on line 5—5 of Fig. 2;

Fig. 6 is a horizontal section on line 6—6 of Fig. 2;

Fig. 7 is a central vertical section of the dispenser valve on line 7—7 of Fig. 1; and

Fig. 8 is a central vertical section of the dispenser valve on line 8—8 of Fig. 1.

The invention will now be described for illustrative purposes in its application to a dispenser of a type suitable for dispensing gasolene, but it will be apparent from the description to follow that as to certain of its features the invention is equally applicable to dispensers of other form and for dispensing other liquids.

In the illustrative embodiment of the invention herein shown there are illustrated two containers 2 and 4, Figs. 1 and 2, which may be of any desired capacity. These containers are each provided at one end with two openings 6 and 8, the opening 6 of each container being located above the opening 8 thereof. The opening 6 of each container communicates by means of a passage 10 with the interior of a valve casing 12, and the opening 8 of each container communicates by a similar passage 14 with the interior of said valve casing below the point where said tube 10 communicates therewith.

The passages 10 and 14 are contained in a suitable casing 16, Figs. 1 and 2, secured in any suitable manner to the ends of containers 2 and 4.

With the valve casing there communicates also a pipe 18, the opening by which said pipe 18 communicates with said casing being upon the same horizontal level as the openings through which the passages 10, 10 communicate with said casing. The pipe 18 may be connected with any suitable source of supply of the liquid to be dispensed.

In the valve casing 12 there is provided a suitable valve member 20, Figs. 7 and 8, said valve member being herein preferably of truncated cone shape, having at its upper end a flange 22 extending over the upper edge of the valve casing and having its lower end projecting from the lower end of the valve casing to receive a nut 24. Between said nut and the lower edge of the valve casing there is provided a coil-spring 26 whereby said valve member is yieldingly held in place in the valve casing. To the top of the valve member there is secured in any suitable manner a handle 28, Figs. 1 and 2, for swinging the valve.

The valve member 20 contains two valve chambers 30 and 32, separated from each other by a horizontal partition 33. The valve chamber 30 communicates with the atmosphere through an opening 34 in the lower end of said valve member, and by turning the valve member 20, said valve chamber may be caused to communicate through an opening 36 in the wall of said chamber alternately with passages 14, 14 leading from the containers 2 and 4, respectively.

The valve chamber 32 communicates at all times with the supply pipe 18 through an opening 38 in the wall of said valve chamber, and by turning the valve member 20, said chamber 32 may be caused to com-

municate through said opening 38, alternately with passages 10, 10 leading from the containers 2 and 4, respectively.

The mode of operation of the apparatus so far described will be readily understood. From Figs. 5 and 6 it will be seen that the opening 36 of the valve chamber 30 and the opening 38 of the valve chamber 32 are diametrically opposed. Assuming, therefore, that the valve has been turned into the position shown in Figs. 1, 5 and 6, the valve chamber 30 will be in communication with the container 4 through passage 14, and any liquid contained in said container will therefore be discharged from the apparatus through the discharge opening 34 in the lower end of the valve member 20. On the other hand, the opening 38 of the valve chamber 32 will be in communication with the supply pipe 18 and with passage 10 leading to the container 2. Liquid will, therefore, flow from the source of supply into the container 2. If now the valve member 20 be turned 90° contra-clockwise the opening 36 of the valve chamber 30 will be brought into communication with the container 2 through the passage 14, while still remaining in communication with the discharge opening 34, and the opening 38, 38 of the valve chamber 32 will be brought into communication with the passage 10 leading to the container 4 while still remaining in communication with the passage 18. Liquid will thus be discharged from the container 2 through the discharge opening 34 of the apparatus, which extends through the nut 24, the latter serving merely as a shoulder for the spring 26, and on the other hand liquid will flow from the supply pipe 18 into the container 4.

It will thus be seen that in the illustrated form of dispensing apparatus described two containers are alternately filled from a common source of supply and are alternately emptied of their contents, the filling and emptying of said containers being controlled by a single dispensing valve in such manner that one container is being replenished while the other is being emptied, one container thus being always provided with liquid ready to be dispensed.

In dispensers difficulty has heretofore been experienced in ensuring that the exact amount which the apparatus is intended to dispense, and no more or no less, shall be dispensed at each operation.

In accordance with the present invention means are provided to meet this difficulty. Said means may conveniently comprise the following instrumentalities:—Two vent tubes 40 and 42 are provided in the top wall of the container 2, and similar vent tubes 44 and 46 are provided in the top wall of the container 4. Each of these vent tubes is provided adjacent its upper end with vents 48, each tube being herein provided with four such vents suitably spaced around the tube. Adjacent its lower end each of said vent tubes is provided with a cylindrical casing 50, preferably formed integral with the tube portion, and in each of said cylindrical casings there fits rotatably a cylindrical valve member 52, Figs. 3 and 4, provided with a transverse passage 54.

Each valve member 52 is provided with a crank arm 56, the crank arms 56 of the valves on the container 2 being pivotally connected by a link 58, and the cranks of the valve members on the container 4 being connected by a link 60. The cranks 56 of the vent tubes 40 and 44 of the containers 2 and 4, respectively, are connected, the former by a link 62 with an arm 64, and the latter by a link 66 with an arm 68, both of said arms 64 and 68 being rigidly connected with the flange at the top of the valve member 20 at diametrically opposed sides of said flange.

The passages 54 in the four valve members are so disposed, and the said valve members are so positioned, and their connections with each other and with the dispensing valve member 20 are so arranged, that when the valve member 20 is in the position indicated in Figs. 1, 5 and 6, in which the valve chamber 32 is in communication with the supply pipe 18 and the container 2, and the valve chamber 30 is in communication with the container 4, the valves in the vent tube 42 of the container 2 and vent tube 44 of the container 4 will be open, and the valve in the vent tube 40 of container 2 and vent tube 46 of the container 4 will be closed. The air necessary to permit the discharge of the contents of the container 4 will thus enter through the vent tube 44, while the necessary vent for the escape of the air consequent upon the filling of the container 2 will be provided by the open valve in the vent tube 42 of said container.

The dispenser valve 20 will be maintained in this position until the container 4 has been completely emptied, and the container 2 is completely filled, and in addition the liquid therein has risen above the valve 52 in the vent tube 42. The liquid thus rising in the vent tube 42 is an assurance that the container has been filled to its complete capacity.

If now the dispenser valve 20 be swung in contra-clockwise direction, Fig. 1, the opening 36 of valve chamber 30 will communicate with container 2, and the opening 38 of valve-chamber 32 with container 4, the valve in the vent tube 40 of the container 2, and the valve in the vent tube 46 of the container 4, will be opened, while on the other hand the valve in the vent tube 42 of the container 2, and the valve in the vent-tube 44 of the container 4 will be closed. The contents of the container 2 will thus be discharged from the apparatus through the

chamber 30 of the dispensing valve, the air vent necessary for this purpose being provided by the open valve in the vent tube 40, while the container 4 will be filled from the supply pipe 18 through the valve chamber 32, the necessary vent for the escape of the air in said chamber being provided by the open valve in the vent tube 46. It will be noted that the valve in the vent tube 42 of the container 2 having been closed as the valve in the vent tube 40 of said container was opened, the liquid which had mounted in the vent tube 42, as above described when said container was filled, is retained in said vent tube and is not discharged with the contents thereof. It will thus be seen that only the contents of the container 2 are discharged. The liquid in the vent tube 42 will not be discharged therefrom until, the container 2 having been emptied and the container 4 filled, the position of the dispenser valve 20 is reversed to cause refilling of the container 2, by which operation of the dispenser valve the valve in the vent tube 42 will be opened. The amount of liquid contained in the vent tube 42 thus falls into the container 2 before it is filled.

The same operation is true of the container 4. When said container has been filled the liquid will mount into the vent tube 46, the valve of which is open at that time, and when the dispenser valve is moved into position to cause said container 4 to be emptied, the valve in said vent tube 46 being thus closed, the liquid therein will be retained until said container 4 having been emptied, the dispenser valve is swung into the opposite direction to cause it to be filled, this operation opening the valve in said vent tube 46, thus allowing the liquid therein to fall into the container while it is being filled.

It will thus be seen that by this invention efficient means is provided for ensuring that only the true, predetermined and desired amount of liquid shall be dispensed at each operation of the machine.

The level of the containers with relation to the source of supply of the liquid to be dispensed will preferably be so regulated that the liquid will never rise in the vent tubes to the height of the vents 48. In order, however, to prevent, in so far as it is possible, any escape of liquid from said vent tubes, should the liquid rise therein as high as the vents 48, means are herein provided automatically to close said vents, should such undue rise of liquid in said vent tubes occur. Herein said means may comprise a sliding tube 70 having a sliding fit within the vent tube, said tube 70 being open at its lower end and closed at its upper end and provided with four vents 72. At its upper end said tube 70 is suspended by a helical spring 74 from a cap 76 having screw-threaded connection with the upper end of the vent tube, the arrangement being such that when said cap is in position the tube 70 will be suspended at such a height that its vents 72 will register with the vents 48 of the vent tube. If, however, the liquid should rise in the vent tube to a height to reach the vents 48, it will carry the tube 70 upward with it against the action of the spring 74, the unperforated walls of said tube 70 below the vent 72 thus closing the vents 48 and preventing the escape of liquid therefrom. When in the operation of the valve 52 the liquid is allowed to escape from said vent tube the sliding tube 70 will be pressed downwardly by the spring 74 into position to cause its vents 72 again to register with the vents 48 of the vent tube.

The invention has been herein described in its application to a construction comprising more than one container, but it will be apparent that it is not limited to such application, but that as to certain of its features it is equally applicable to dispensers having only one container or more than two containers.

It will be apparent that it is not indispensable that all of the features of the invention be used conjointly, since they may be used to advantage separately in various combinations and sub-combinations. It will also be understood that, while the invention is herein described as embodied in the details illustrated, it is not to be considered as circumscribed by or limited to these details, or any of them, but that said details may be variously modified within the true scope of the invention which is definitely set forth by the claims.

Claims—

1. In a dispensing apparatus, in combination, a container; intake and discharge vents therefor; means to open and close said vents; and operating means for said vent opening and closing means.

2. In a dispensing apparatus, in combination, a container; two vents therefor; means to open and close said vents; a dispensing valve; and means operated by operation of said dispensing valve to open one and close the other of said vents.

3. In a dispensing apparatus, in combination, a container; two vents therefor; opening and closing means for said vents; and operating means for said vent opening and closing means, the construction and arrangement being such that when said operating means is operated to open one vent it will close the other.

4. In a dispensing apparatus, in combination, a container; a dispensing valve provided with a receiving valve-chamber and a discharge valve-chamber; a discharge opening for the apparatus; operating means for said dispensing valve to cause said container to communicate alternately through said re-

ceiving valve-chamber with a supply of the liquid to be dispensed and through said discharge valve-chamber with the discharge opening of the apparatus; two vents for said container; a valve in each vent; and connections whereby operation of said dispensing valve to cause said container to communicate with the supply of liquid to be dispensed will close one vent valve and open the other; and operation of said dispensing valve to cause said container to communicate with the discharge opening of the apparatus will close the vent valve that is open and open the vent valve that is closed.

5. In a dispensing apparatus, in combination, two containers; a dispensing valve provided with a receiving valve-chamber and a discharge valve-chamber; a discharge opening for the apparatus; operating means for said dispensing valve, to cause each container to communicate alternately through said receiving valve-chamber with a supply of the liquid to be dispensed and through said discharge valve-chamber with the discharge opening of the apparatus; two vents for each container; a valve in each vent; and connections whereby operation of said dispensing valve to cause a container to communicate with the supply of liquid to be dispensed will close one vent-valve of said container and open the other one thereof and operation of said dispensing valve to cause a container to communicate with the discharge opening of the apparatus will close the open vent-valve of said container and open the closed vent-valve thereof.

6. In a dispensing apparatus, in combination, a container; a dispensing valve provided with superposed receiving and discharge valve-chambers; a discharge opening for the apparatus; operating means for said dispensing valve to cause said container to communicate alternately through said receiving valve-chamber with a supply of the liquid to be dispensed and through said discharge valve-chamber with the discharge opening of the apparatus; two vents for said container; a valve in each vent; and connections whereby operation of said dispensing valve to cause said container to communicate with the supply of liquid to be dispensed will close one vent valve and open the other; and operation of said dispensing valve to cause said container to communicate with the discharge opening of the apparatus will close the vent valve that is open and open the vent valve that is closed.

7. In a dispensing apparatus, in combination, two containers; a dispensing valve provided with superposed receiving and discharge valve-chambers; a discharge opening for the apparatus; operating means for said dispensing valve to cause each container to communicate alternately through said receiving valve-chamber with a supply of the liquid to be dispensed and through said discharge valve-chamber with the discharge opening of the apparatus; two vents for each container; a valve in each vent; and connections whereby operation of said dispensing valve to cause a container to communicate with the supply of liquid to be dispensed will close one vent valve of said container and open the other one thereof and operation of said dispensing valve to cause a container to communicate with the discharge opening of the apparatus will close the open vent valve of said container and open the closed vent valve thereof.

8. In a dispensing apparatus, in combination, a container, a valve constructed to operate as a supplying and dispensing valve for said container, vents for said container, means to open and close said vents, and means operatively connecting said vent opening and closing means with said valve to effect the opening of one vent when said valve is to operate as a supply valve and to open the other vent when said valve is to operate as a dispensing valve.

9. In a dispensing apparatus, in combination, a container; a vent therefor; a valve in said vent; a dispensing valve; means operated by operation of said dispensing valve to operate said vent-valve, a port in said vent, and automatic means operable when said vent-valve is open, to close said port.

10. In a dispensing apparatus, in combination, a container, a vent therefor having a port leading to atmosphere; and a spring positioned valve having a port corresponding with the port of said vent and operable by the liquid to be dispensed for closing said port.

In testimony whereof, I have signed my name to this specification.

WILLIAM J. DRISCOLL.