March 25, 1930. C. E. CARTER 1,752,146

RECEPTACLE

Filed April 28, 1928 2 Sheets-Sheet 1

FIG. 1.

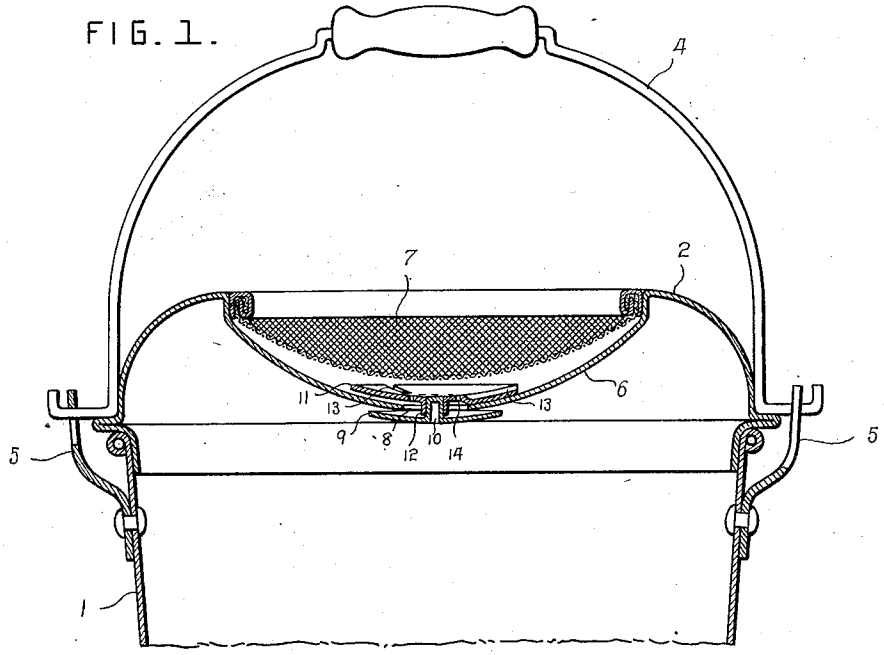



FIG. 2.

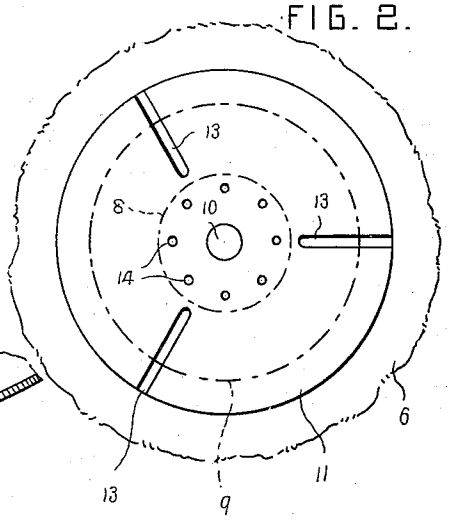
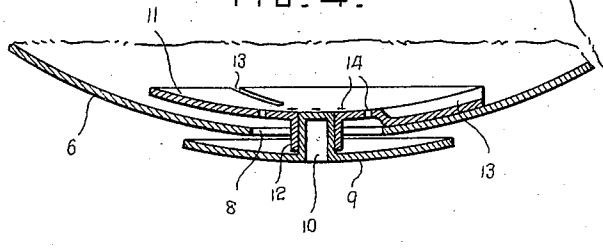



FIG. 3.




FIG. 4.




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FIG. 5.

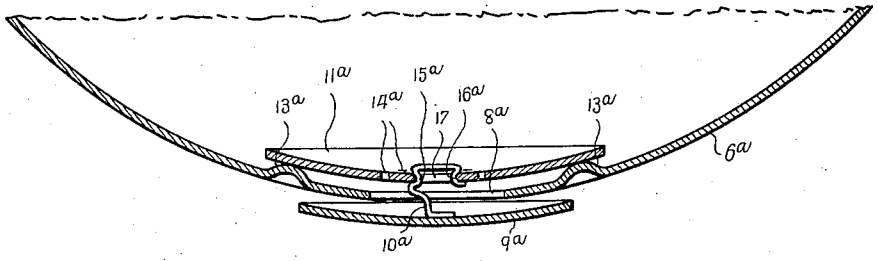



FIG. 6.

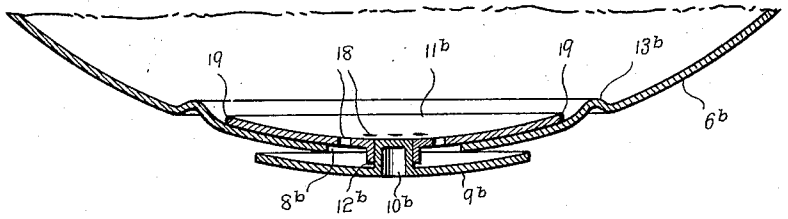



FIG. 7.

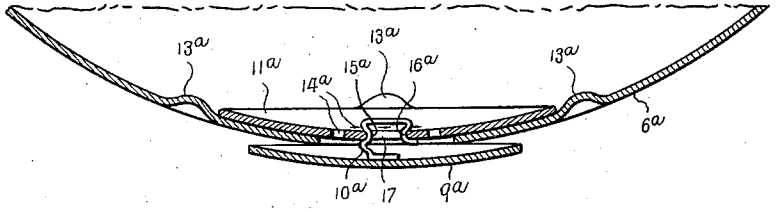
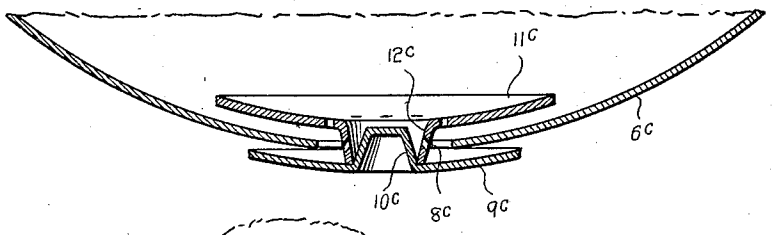



FIG. 8.



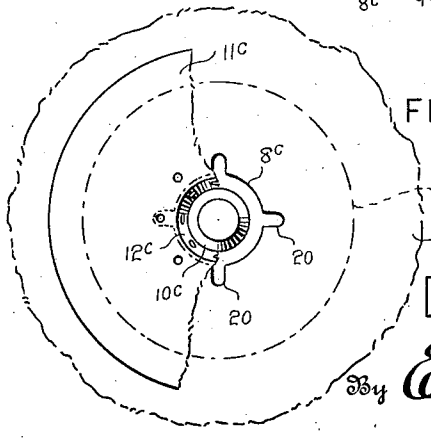




FIG. 9.

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# UNITED STATES PATENT OFFICE

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## RECEPTACLE

Application filed April 28, 1928. Serial No. 273,496.

This invention relates to improvements in non-spilling receptacles of the type especially adapted for though not limited to milk pail construction, and the essential objects in view include accentuation of sanitation and ease and effectiveness of operation.

A more detailed object is the provision for easy dismantling and ready assemblage of the control valve parts for facilitating effective cleansing.

Another object is the assurance of effective operation to prevent accidental loss of contained liquid by parts shaped to lend themselves to ease and inexpensiveness of manufacture.

With these and other objects in view as will in part hereinafter become apparent and in part be stated, the invention comprises certain novel constructions, combinations, and arrangement of parts as subsequently specified and claimed.

In the accompanying drawings,—

Figure 1 is a longitudinal, vertical section through a pail embodying the features of the present invention, parts being broken away for the saving of space.

Figure 2 is an enlarged, detailed, fragmentary top plan view of the central portion of the cover with the strainer omitted.

Figure 3 is a fragmentary, vertical section of a slightly modified embodiment of the strainer.

Figure 4 is a view similar to Figure 1 of the central portion of the cover with control valve, the parts being seen on an enlarged scale.

Figures 5, 6, 7, and 8 are sections similar to Figure 4 of slightly modified embodiments.

Figure 9 is a top plan of the parts as seen in Figure 8.

It has heretofore been proposed to provide a valve located beneath an intake opening in a receptacle so arranged and constructed as to close when the receptacle is overturned or the liquid contents otherwise so dislocated as to strike the valve; and it has also been proposed to provide such a valve as to be gravity actuated to prevent escape of contained liquid through the intake opening.

The present invention relates to the last-named type of such valves, and includes provision of simple but effective means for assuring seating of the closing valve by either gravity or liquid contact, while the parts are so constructed and shaped as to be capable of being stamped from sheet material, and designed to be easily and quickly assembled to an operative condition, and readily taken apart to facilitate washing or other cleansing.

The invention will be readily understood by detailed reference to the accompanying drawings in which 1 indicates a milk pail or other receptacle having a cover 2, preferably of the peripherally flanged type, and locked in place during use by the elongated hook-shanks 3 of bail 4 engaging ears 5. Removal of cover 2 is effected by springing the end portions of bail 4 apart, or outward toward ears 5 until they no longer overhang cover 2, whereupon the cover may be lifted freely from receptacle 1.

The cover 2 is formed into a bowl-shaped funnel 6, into the upper portion of which is snapped the screen 7. Screen 7 may be of wire mesh, as seen in Figure 1, or of a foraminous plate 7′, as seen in Figure 3, or otherwise as best adapted to any particular work required and according to sanitation demanded. The center of funnel bowl 6 is apertured, at 8, to allow liquid delivered to the funnel to descend into receptacle 1. The aperture 8 is guarded by an automatically closing valve 9 adapted to function either by gravity or by the impact of liquid from within receptacle 1. The valve 9 consists primarily of a concavo-convex disc conforming in its upper face contour with the lower face contour of the funnel 6 about the aperture 8. The disc valve 9 is suspended by means loosely anchoring the valve to the upper face of the funnel 6 in a manner to leave the valve free to drop toward the under face of the funnel 6 when the funnel is overturned or tilted sidewise, and to drop away from the under face of said funnel when the funnel is repositioned in its upright location. The manner of suspension and detailed construction of connection are susceptible of a wide range of variations, as will be obvious or become so.

A specific embodiment of a preferred form of such anchorage includes a sleeve 10 upstanding from, fixed to, and preferably formed integral with the disc 9 as if drawn from the material of the disc by a die stamping process. The showing of thicknesses in the accompanying drawings, and particularly in Figure 4, and like figures, is purposely considerably exaggerated to enable clear disclosure, but it should be borne in mind that the structures shown are preferably formed of thin sheet material, such as tin plated sheet iron, commonly known in commerce as tin. Because of the needed exaggeration in the showing of thickness, a proportional exaggeration in the size of some of the parts, as, for instance, the length of the sleeve 10 must appear, but, in fact, the sleeve 10 is comparatively short, not exceeding seven-sixteenths of an inch in the average structure, and the sleeve is preferably drawn from the material of the disc 9 as a matter of economy and facility in manufacturing operations. The sleeve may, of course, be otherwise formed and connected. The upper end of the sleeve 10 is left closed for reasons hereinafter made apparent. Above the upper surface of the funnel 6 is arranged a dished disc 11 concaved in the same direction as the disc 9, so that its under face will generally conform to the concaved contour of the upper face of funnel 6, but variations in the face contour as well as the edge contour of disc 11 will be obviously possible to any degree within the requirements of the function of disc 11. Centrally of the disc 11, a sleeve 12 depends from and is fixed to the disc, and is preferably formed integral therewith, as by die stamping the sleeve 12 directly from the material of the disc 11. The lower end of the sleeve 12 is open, and the bore of the sleeve 12 is proportioned to snugly and frictionally receive the sleeve 10, the parts being so proportioned that the friction will be great enough between the sleeve 10 and sleeve 12, when telescoped, to cause the sleeve 12 to effectively support the sleeve 10, and the valve 9 carried thereby, while permitting the valve 9 and sleeve 10 to be withdrawn by any pressure greater than the resistance of such friction. Ordinarily, the friction will be small enough to allow the operator to manually withdraw the sleeve 10 from sleeve 12 without inconvenience or particularly great exertion.

The disc 11, if constructed to fit snugly against the upper surface of the funnel 6, would tend to interfere with the flow of liquid to the aperture 8 and, to prevent such close fitting, the disc 11 is preferably supported in spaced relation to the upper surface of the funnel 6. The spacers employed are susceptible of a wide range of variation, as will become apparent from a consideration of the showings in Figures 6 to 8, inclusive. As seen in Figure 4, projections are stamped from the material of the disc 11 downward toward the upper face of funnel 6, and such projections serve as feet or supports. Such projections are capable of a wide range of contour and form, but as shown consist of radial beads 13, 13, so spaced as to support the disc 11 clear of contact with the upper face of funnel 6 and allow free flow of liquid entering the funnel beneath the disc 11 and through the aperture 8. While three of the beads 13 are shown, and each is seen as extending substantially for the radius of the disc, a greater or less number may be employed, and a different length bead utilized, when preferred.

The dished disc 11 is comparatively narrow in diameter and capable of holding only a relatively small quantity of liquid, but to prevent accumulation of liquid therein, I preferably perforate the disc 11, as at 14, 14, with apertures arranged about the sleeve 12 and outside the extended lines thereof so as to permit liquid falling within the concave of disc 11 to readily descend and escape through the aperture 8.

In operation, when liquid is delivered through the screen 7, it descends in the funnel 6, passes beneath the disc 11, escapes through the aperture 8, and flows over the margins of the guard disc 9, and falls therefrom into the receptacle 1. During such operation, a slight amount of the liquid will remain in the disc 9, which is not avoidable, but if the operator starts to lift the lid or cover 2 and in doing so tilts the same slightly, the entire contents of the disc 9 will be quickly spilled into the receptacle 1. If at any time during the operation of delivering liquid to the funnel 6, by accident or otherwise, the receptacle 1 be tilted to any substantial degree or be overturned, the gravity action of the discs 9 and 11 will cause the disc 9 to quickly seat itself and close the aperture 8 so that reverse streaming of liquid through the aperture 8 is prevented and loss of liquid from receptacle 1 avoided. The receptacle is, therefore, especially well adapted for use as a milk pail. After some use, when it becomes desirable to cleanse the parts, the operator may remove the cover 2 and remove the screen 7. Then the disc 11 is accessible from one side of the funnel 6 and disc 9 from the other. The operator grasps the two discs in his hands or rather with the fingers and pulls them apart against the frictional engagement of sleeve 10 with sleeve 12. Sleeve 10 is thus withdrawn from its telescoped position, as seen in Figure 4, and the parts may then be thoroughly cleansed and rendered aseptic. After the cleansing operation, the parts are reassembled by a reverse action from the dismantling operation just described, and are then ready for further use.

In Figure 5 is illustrated a modified em-

bodiment incorporating some of the variations above suggested, but as the invention does not relate specifically to the structure of the pail or its cover, but to the valve control and cooperating parts, it is unnecessary to repeat the showing of known parts. It will be understood that the bowl-shaped funnel $6^a$ is identical with the funnel 6 in all those parts not illustrated, and is provided with the central discharge opening $8^a$ beneath which is arranged the guard valve $9^a$. Above the upper surface of the funnel is arranged the supporting disc $11^a$ which is sustained on bulbous upstanding projections $13^a$ preferably stamped from the material of the funnel $6^a$, but susceptible of being otherwise formed. As many projections $13^a$ may be employed as desired, there being preferably at least three, but the disc may be caused to function with a less number. A strip of spring material $10^a$ is fixed to the upper face of the valve $9^a$, as by being welded or otherwise appropriately connected thereto, and upstands to and is detachably connected with the disc $11^a$. The detachable connection may be accomplished in any of various ways, the preferred manner being indicated in Figure 5, and consisting of having the spring strip $10^a$ bent at an appropriate point in its length to form a lateral recess $15^a$, and then bent at right angles to its vertical length and again having its terminal portion bent to form a recess $16^a$, the said recesses $15^a$ and $16^a$ being so spaced as to accommodate the edges of an aperture 17 formed through and preferably approximately centrally of the disc $11^a$. The contour of that portion of strip $10^a$ formed with the two recesses $15^a$ and $16^a$ is so shaped as to cause said portion to function somewhat after the manner of an ordinary snap button so as to be adapted to snap into and out of the aperture 17, and thus to detachably lock the valve disc $9^a$ to the valve disc $11^a$. Disc $11^a$ is preferably formed with draining apertures $14^a$ functioning the same as apertures 14 in the structure above described.

The operation of the parts seen in Figure 5 is identically the same as that above described, except that the connection and disconnection of the valve disc and its supporting disc are accomplished through the snap button action of the connecting member, and the disc $11^a$ rides on projections carried by the funnel rather than on projections carried by itself.

In Figure 6 the funnel $6^b$ is formed with aperture $8^b$ and guard valve $9^b$ having the upstanding sleeve $10^b$ telescoping in the pendent sleeve $12^b$ projecting downward from the supporting disc $11^b$. In this structure, the disc $11^b$ is formed with drain apertures 18 of a number and size proportioned to allow the entire discharge into the funnel $6^b$ to pass therethrough and through the opening $8^b$. This is due to the fact that the disc $11^b$ is seated snugly against the upper face of the funnel $6^b$. The funnel $6^b$ is formed with an annular bead $13^b$ surrounding and just beyond the margin of the disc $11^b$ and having its walls approaching the disc sufficiently gently inclined to insure easy sliding of the disc $11^b$ across whichever portion of said gently sloping wall appears beneath a given portion of the edge of the disc $11^b$ when the parts are tilted or upturned. The periphery of the disc $11^b$ may be rounded, as seen at 19, to insure avoidance of a shoulder or other impediment to the ready sliding of the disc $11^b$ across the bead $13^b$ when required. The bead $13^b$ may be formed in any of various ways, but the preferred manner of construction is by stamping the same directly from the material of the funnel $6^b$, as clearly seen in Figure 6.

In operation, the functioning of the parts is the same as described with respect to Figure 4, except that all of the flow is accommodated through the apertures 18, so that the disc $11^b$ is not required to be supported above the surface of the funnel $6^b$, but when the funnel is tilted substantially or overturned, the disc $11^b$ acting under gravity slides over the bead $13^b$ and is thus caused to effect longitudinal movement of the sleeves $12^b$ and $10^b$ and produce a seating of the valve $9^b$, so that return flow through opening $8^b$ is prevented.

In Figure 7 is illustrated a structure corresponding identically with the structure seen in Figure 5, and the same reference numerals and description will apply, except that the apertures $14^a$ of Figure 7 are made sufficiently large for the full flow of liquid after the manner of the functioning of the apertures 18 of Figure 6, and also excepting that the disc $11^a$ of Figure 7 rests flush against the upper face of the funnel $6^a$ and the bulbous upward projections $13^a$ are arranged just outside the periphery of the disc $11^a$, so that, when $11^a$ moves laterally under a tilting movement of funnel $6^a$, the disc will ride over one or more of the bulbous projections $13^a$ and thus effect a drawing of the valve $9^a$ to its seated position after the manner of the functioning of the disc $11^b$ in Figure 6 in riding over the bead $13^b$ and drawing the valve $9^b$ to its seat.

In Figures 8 and 9 the funnel $6^c$ is formed with its central aperture $8^c$ and with lateral notches 20 opening into said aperture $8^c$. Above the upper surface of the funnel $6^c$ is arranged the supporting disc $11^c$ having a pendent sleeve $12^c$, but, in this instance, the sleeve is not in cylindrical form as in the other structures above described. Instead, the sleeve $12^c$ is a truncated pendent cone so tapered that the cone will rest against the margins of the aperture $8^c$ before the disc $11^c$ reaches contact with the upper face of the funnel $6^c$. Contact of these parts, therefore,

does not occur except when the disc 11e is displaced, and then only a partial contact is effected. The supporting of the disc 11e by engagement of the sleeve 12e against the margins of aperture 8e allows free access of liquid flowing into the funnel 6e to the notches 20 through which the liquid flows. Arranged beneath the aperture 8e and the notches 20 is a guard valve disc 9e having an upstanding sleeve 10e proportioned to be thrust frictionally into the lower end of the conical sleeve 12e and to be frictionally gripped thereby for sustaining the disc 9e and for manipulating the same during operation. In the event of any substantial tilting of the funnnel 6e the disc 11e moves by gravity edgewise, and such edgewise movement, because of the taper of sleeve 12e, effects an advance movement causing the disc 9e to be drawn to a seated position against the under face of the funnel 6e and itself closes both the notches 20 and the aperture 8e. Obviously, dismantling of the parts is accomplished, as above described with respect to the parts seen in Figure 4.

It is important to observe that whatever the specific embodiment of the invention of the various forms illustrated in the drawings and of the numerous forms in which the invention may be expressed, the valve plate beneath the intake member or receptacle cover is proportioned with respect to the supporting or actuator plate above said intake member to enable the upper or actuator plate acting by gravity to influence and effect the desired action of the valve plate beneath. To this end, the upper plate while mounted on the intake member is free to float or slide edgewise thereon to give such expression to gravity action as to effect a closing movement by the valve. This action also depends on the presence of an aperture in the intake member sufficiently larger than the cross section of the connection between the valve plate and its supporting actuator plate to allow of the needed floating movement just mentioned.

I claim:—

1. In liquid control apparatus for receptacles, the combination, with an apertured intake member, of a valve beneath said member located adjacent the aperture in position for closing the same when the valve contacts with the apertured member, a gravity-responsive, edgewise movable valve actuator above the apertured member, and supporting means connecting the valve and its actuator.

2. In liquid control apparatus for receptacles, the combination, with an apertured intake member, of a valve beneath said member located adjacent the aperture in position for closing the same when the valve contacts with the apertured member, a gravity-responsive, edgewise movable valve actuator above the apertured member, and an operative connection extending through the aperture and connecting the valve and its actuator for causing the valve to be seated against the apertured member when the actuator is gravity shifted.

3. In liquid control apparatus for receptacles, the combination, with an apertured intake member, of a valve beneath the aperture, an edgewise movable, gravity-responsive valve actuating and supporting means above the apertured member, and a detachable connection between the supporting means and valve for sustaining the valve in operative relation to the aperture.

4. In liquid control apparatus for receptacles, the combination, with an intake member having an intake aperture, of a valve plate disposed beneath said aperture, a valve support arranged above the intake member, and a detachable telescopic connection between said valve plate and support, the valve support and valve plate being alined with the aperture and the valve support being apertured for permitting liquid to flow through the support and through the aperture.

5. In liquid control apparatus for receptacles, the combination, with an intake member having an intake aperture, of a valve plate disposed beneath said aperture, a valve supporting actuator arranged above the intake member, and a detachable telescopic connection between said valve plate and supporting actuator, said valve plate and supporting actuator being formed of sheet material and the telescopic connection being formed integral with the respective valve plate and supporting actuator.

6. In liquid control apparatus for receptacles, the combination with, an intake member having an intake opening, of a valve plate disposed beneath said opening, a valve supporting actuator arranged above the intake member, and a detachable connection between said valve plate and supporting actuator, said supporting actuator being formed with a projection extending toward the intake member for sustaining the supporting actuator spaced above the intake member.

7. In liquid control apparatus for receptacles, the combination, with an apertured intake member, of a valve plate beneath the intake member, a valve supporting actuator above the intake member, a detachable connection between the valve supporting actuator and valve plate, and means for directing edgewise movement of the valve supporting actuator for imparting an increment of lateral movement thereto incident to such edgewise movement.

8. In liquid control apparatus for receptacles, the combination, with an intake member having an intake aperture, the intake member being formed with notches opening into the aperture, a valve beneath the aperture of the intake member, a supporting plate for the valve arranged above the intake member

and having drain apertures, a conical sleeve projecting from the supporting plate through the aperture in position for resting against the edges thereof and allowing liquid to flow through said drain apertures and through said notches, and means of detachable connection of the valve with said supporting plate.

9. In liquid control apparatus for receptacles, the combination, with an apertured intake member, of a valve beneath said member in position for closing the same when the valve contacts with the apertured member, a valve actuating and supporting plate above the intake member and mounted to float freely relative thereto, and means connecting said plate to the valve for causing contact of the valve with the apertured member incident to floating movement of the plate.

10. In liquid control apparatus for receptacles, the combination, with an apertured intake member, of a valve beneath said member in position for closing the same when the valve contacts with the apertured member, a valve actuating and supporting plate above the intake member and mounted to float freely relative thereto, and means connecting said plate to the valve for causing contact of the valve with the apertured member incident to floating movement of the plate, the connection between the plate and valve being through the aperture and being reduced relative to the size of the aperture for permitting the floating of the plate.

11. In liquid control apparatus for receptacles, the combination, with an apertured, concaved intake member, of a valve beneath said member in position for closing the same when the valve contacts with the apertured member, a valve actuating and supporting plate above the intake member and mounted to float freely relative thereto, and means connecting said plate to the valve for causing contact of the valve with the apertured member incident to floating movement of the plate, the connection between the plate and valve being through the aperture and being reduced relative to the size of the aperture for permitting the floating movement of the plate and the plate being shaped to correspond with the concavity of the intake member.

12. In liquid control apparatus for receptacles, the combination, with an apertured intake member, of a valve beneath the member, and an actuator for the valve connected thereto through said aperture and mounted for gravity movement on the intake member and proportioned to move the valve incident to such gravity movement.

In testimony whereof I affix my signature.

CHARLES E. CARTER.