

Sept. 21, 1954

H. G. ERICSON
LIQUID DISPENSER

2,689,669

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2 Sheets-Sheet 1

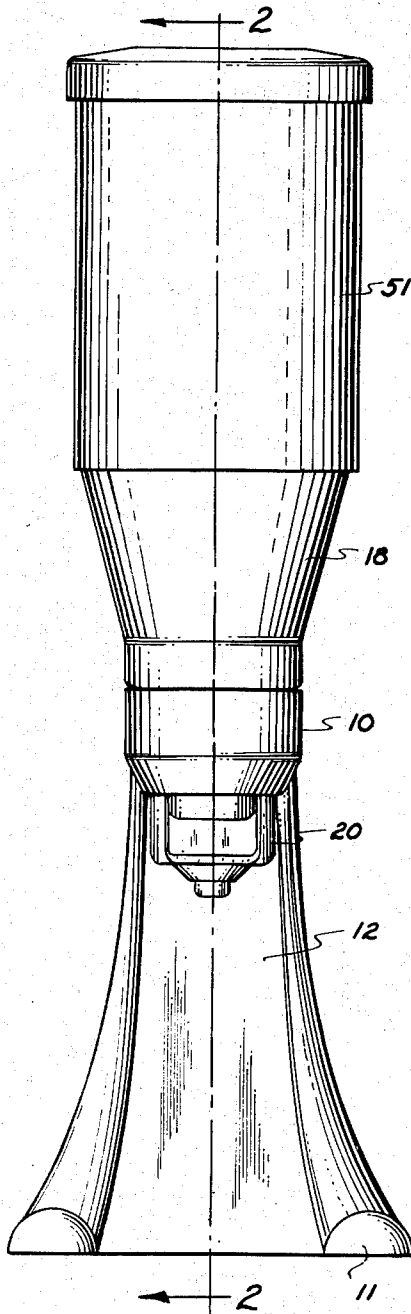


FIG. 1

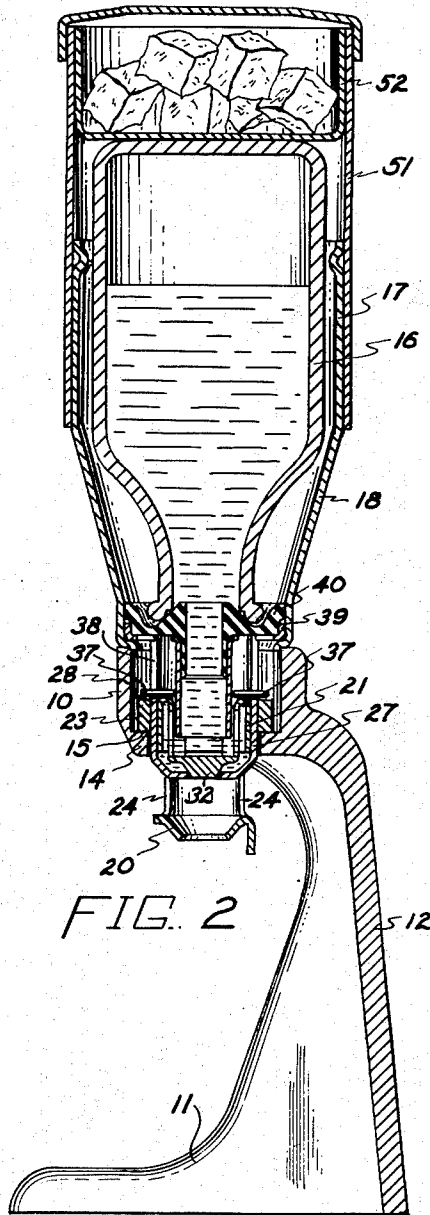


FIG. 2

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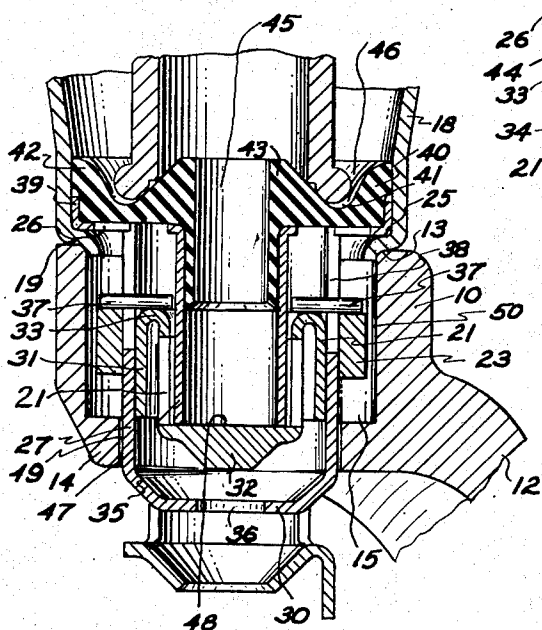
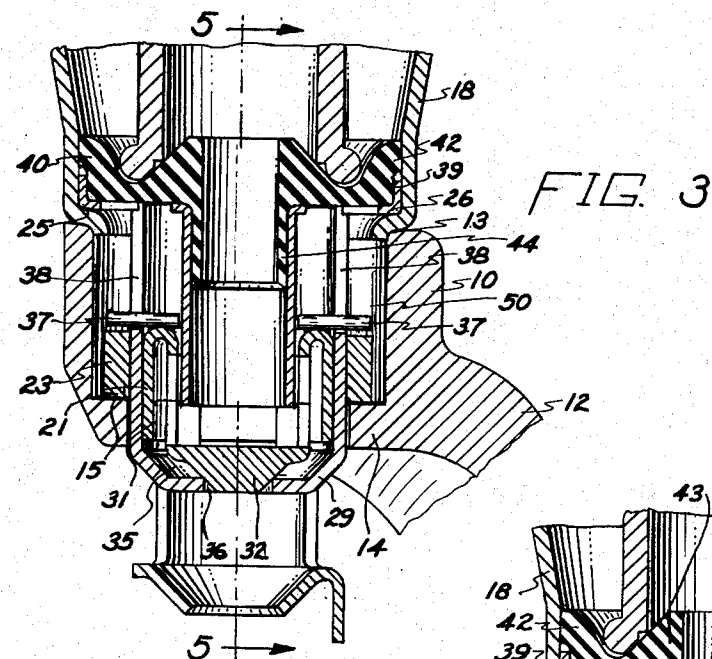


FIG. 4

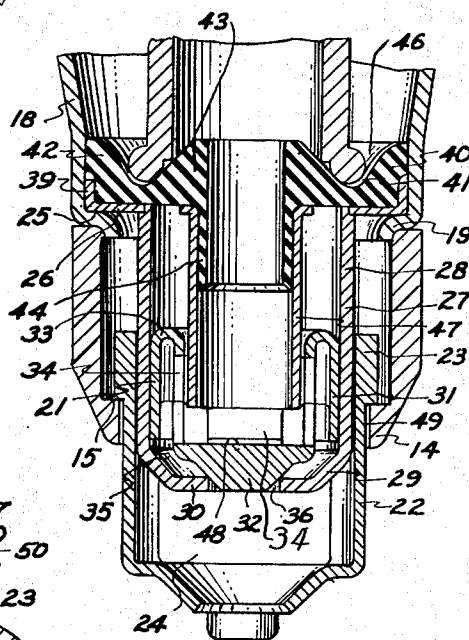


FIG. 5

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LIQUID DISPENSER

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Minn., a copartnership

Application January 23, 1950, Serial No. 140,109

7 Claims. (Cl. 222-183)

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This application is a continuation in part of my pending application Serial No. 11,881, for Liquid Dispenser, filed February 28, 1948, now abandoned.

The invention herein has relation to a device for dispensing liquid substances. In the disclosure as made, the device is especially useful for the purpose of dispensing cream.

In the accompanying drawings forming a part of this specification,

Fig. 1 is an elevational view of a liquid dispenser made according to the invention as when applied to use;

Fig. 2 is a vertical central sectional view of the liquid dispenser, taken on line 2-2 in Fig. 1;

Fig. 3 is an enlarged fragmentary vertical central sectional view corresponding with the disclosure of a midportion of Fig. 2;

Fig. 4 is a view generally similar to the disclosure of Fig. 3, but showing parts in different positions; and

Fig. 5 is a detail sectional view, taken as on line 5-5 in Fig. 3.

A supporting frame of or for the liquid dispenser is constituted as an annular member 10 retained by a supporting stand in such manner that an opening through said annular member will be vertically disposed. As disclosed, a supporting stand for the frame or annular member 10 consists of a base 11 to be rested on a horizontal surface and an upright 12 integral with said base and also integral with said frame or annular member. The supporting frame or annular member 10 defines or provides a horizontal upwardly facing annular surface 13 surrounding the upper end of the vertical opening through said frame or annular member, a lower portion of said vertical opening is of reduced diameter by reason of the provision of an interiorly extending annular flange 14 upon the lower end of the frame or annular member, and said annular flange 14 defines or provides a horizontal upwardly facing annular surface 15, within said frame or annular member and in spaced, concentric relation to the annular surface 13, surrounding the upper end of the portion of the vertical opening which is of reduced diameter.

A holder for a vessel, such as a cream bottle 16, having liquid substance to be dispensed consists of an upper hollow cylindrical portion 17, an intermediate downwardly tapering annular portion 18 and a lower interiorly extending annular flange portion 19 adapted to be squarely rested upon the annular surface 13 of the supporting frame or annular member 10 when said

holder is situated above and in vertical alignment with the opening through said frame or annular member.

A lifter 20 adapted to be manually actuated to cause a valve member 21 of the liquid dispenser to be elevated is constituted as an annular element 22, loosely slidably fitted, against the possibility of rotative movement, in the lower reduced portion of the vertical opening through the supporting frame or annular member 10, having an exteriorly extending annular flange 23 upon the upper end thereof adapted normally to rest upon the annular surface 15 of said frame or annular member 10. The annular element 22 of the lifter 20 is as disclosed cut away, as at 24, at opposite sides thereof, and the lower end of said annular element 22 is open and integrally supports a usual piece, disposed below the elevation of the supporting frame or annular member 10, to be engaged in the accomplishment of actuation of said lifter.

The lower interiorly extending annular flange portion 19 of the vessel or bottle holder provides or defines an upwardly facing annular surface 25, within said vessel or bottle holder and opposite the surface of said annular flange portion rested upon the annular surface 13, for supporting an exteriorly extending annular flange 26 integral with a cup shape housing 27 of the liquid dispenser.

The housing 27 additionally consists of an intermediate portion constituted as a hollow cylindrical member 28 open at its upper end and a lower portion constituted as a closure wall 29 for the lower end of said hollow cylindrical member. The hollow cylindrical member 28 is loosely situated in the upper portion of the lifter 20 and a lower part of said hollow cylindrical member extends downwardly to position below the lower end of the supporting frame or annular member 10. An outer annular part of the closure wall 29 slants downwardly and inwardly and is substantially of conical configuration and a flat central part 30 of said closure wall, above and in spaced relation to the lower end of the lifter 20, is disposed in perpendicular relation to the hollow cylindrical member 28.

The valve member 21 includes an upper portion constituted as a hollow cylindrical element 31 slidably fitted to the interior surface of the hollow cylindrical member 28 and a lower portion constituted as an ordinary valve 32. The upper end of the hollow cylindrical element 31 integrally supports an internally extending annular flange 33, and vertical straps 34, extending down-

wardly from the inner margin of said annular flange 33, integrally support the valve 32. Said valve is situated below the lower end of the cylindrical element 31 within a dispensing or measuring chamber 35 provided by the lower part of the hollow cylindrical member 28 and the closure wall 29. The flat central part 30 of said closure wall 29 is provided with a discharge orifice 36 and the valve 32 includes a conical valve element adapted to be engaged with and removed from an annular valve seat provided by the flat central part 30 in surrounding relation to said discharge orifice.

In practical operation of the liquid dispenser, the valve member 21 is manually slid upwardly in the cup shape housing 27 to cause the valve 32 to be removed from the valve seat and slid downwardly by gravity to cause said valve to be engaged against said valve seat. As disclosed, an upper portion of the hollow cylindrical element 31 of said valve member 21 integrally or rigidly supports diametrically opposed, exteriorly extending actuator pieces or lugs 37 which project through and are slidable in vertical slots 38 in the upper portion of the hollow cylindrical member 28 of the cup shape housing 27. Outer end portions of the actuator pieces or lugs 37 are disposed above the annular flange 23 of the lifter 20, and the construction and arrangement are such that the valve 32 will be lifted from its seat, as in Fig. 4 of the drawings, in response to raising of said lifter and permitted to return to its seat, as in Figs. 2, 3 and 5, by gravity with lowering of the lifter.

The exteriorly extending annular flange 26 integral with the cup shape housing 27 carries an upwardly extending annular flange 39 which is integral with the outer margin of said exteriorly extending annular flange, and a supporting member, constituted as a gasket 40, for a vessel or bottle is situated within the upwardly extending annular flange 39 and rested upon the upper surface of the exteriorly extending annular flange 26. As disclosed, the supporting member or gasket 40 is composed of rubber. It could, however, consist of any material suitable to its purpose. An upwardly facing intermediate annular surface 41 of said supporting member or gasket merges at its outer margin into an upwardly and exteriorly extending annular surface provided by an annular flange 42 supported by the internal surface of said upwardly extending annular flange 39 and at its inner margin into an upwardly and interiorly extending annular surface provided by a conical plug 43 situated above and in aligned relation to the cup shape housing 27. An annular projection 44 on the supporting member or gasket 40 extends downwardly from the central portion of said supporting member or gasket, and a central opening 45 extending through the supporting member or gasket 40 is contiguous at its upper end with the upper end of the conical plug 43 and at its lower end with the lower end of the annular projection 44. An annular trough 46 between the conical plug 43 and the annular flange 42 is adapted to receive the open end of a vessel, such as the bottle 16, into the open end of which said conical plug is adapted to project to provide an annular seal precluding the passage of liquid substance from the vessel or bottle into the liquid dispenser other than liquid substance which passes downwardly through the central opening 45. Inasmuch as the plug 43 is conical, it is capable of being sealingly fitted

to the open ends of vessels or bottles which vary in diameter.

A tubular member 47, for conveying liquid substance from position above the supporting member or gasket 40 into the cup shape housing 27, has its upper end portion frictionally and removably supported upon the annular projection 44 of the supporting member or gasket 40, and said tubular member extends downwardly into the valve member 21. The tubular member 47 has diameter considerably less than that of the hollow cylindrical member 28 of said cup shape housing, and as shown said tubular member and hollow cylindrical member are in concentric relation. The upper portion of the valve member 21 is in slightly spaced relation to the lower portion of the tubular member 47, and the lower end of said tubular member terminates in spaced relation to a flat upper surface 48 of the valve 32 when said valve is in closed position, as in Figs. 2, 3 and 5 of the drawings.

The manner in which the liquid dispenser is adapted to function will be apparent. Upon manually raising the lifter 20, as by employment of a container for receiving a measured quantity of liquid substance from the dispensing or measuring chamber 35 placed beneath said lifter, the valve member 21 will be slid upwardly to cause the valve 32 to be removed from the annular valve seat surrounding the discharge orifice 36 and the flat upper surface 48 of said valve to become engaged against the lower end of the tubular member 47 in sealing relation thereto. Assuming the dispensing or measuring chamber 35 to be loaded with liquid substance when the valve member 21 is slid upwardly, the contents of said chamber will be removed by gravity from the liquid dispenser by way of the discharge orifice 36. The flow of liquid substance into the dispensing or measuring chamber will be prevented while the valve 32 is open by reason of the fact that the flat upper surface 48 is engaged against the lower end of the tubular member 47. Upon release of the lifter 20 after each manual actuation, gravity will cause the valve member 21 to be slid downwardly to cause the valve 32 to be engaged with the annular valve seat surrounding the discharge orifice 36 and the flat upper surface 48 to become removed from the lower end of the tubular member 47. Upon removal of said flat upper surface from the lower end of said tubular member, liquid substance will, naturally, flow from the tubular member into the dispensing or measuring chamber 35 until this contains liquid substance up to a natural level. The construction and arrangement are such that there will be flow of atmospheric air into an upper portion of the dispensing or measuring chamber 35 with displacement of liquid substance therefrom, the flow being upwardly through an annular space 49 between the lifter 20 and the internally extending annular flange 14 and an annular chamber 50 of the supporting frame or annular member 10 surrounding the hollow cylindrical member 28 of the cup shape housing 27, and thence interiorly through the vertical slots 39 in said hollow cylindrical member. Head pressure on the liquid substance in the tubular member 47 and said dispensing or measuring chamber will be insufficient to cause liquid substance to flow upwardly to the elevation of the vertical slots 39, and tendency toward upward flow of liquid substance into said vertical slots will be resisted by atmospheric pressure communicated to the dispensing chamber by way of said annu-

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lar space 49, said annular chamber 50 and the vertical slots.

The open upper end of the upper hollow cylindrical portion 17 of the vessel or bottle holder is closed by a removable cover 51. As disclosed in Fig. 2 of the drawings, a box 52 for refrigerant, ice as shown, is rested upon the closed end of the bottle 16 and situated within the removable cover 51. Said cover is removable from the box 52, as well as from the holder, and said box is open at its top to receive refrigerant.

Attention is called to the fact that each of the vessel or bottle holder, the lifter 20, the valve member 21, the cup shape housing 27, the supporting member or gasket 40 and the tubular member 47 is a separate and complete entity or instrumentality. The parts of the liquid dispenser are capable of being readily and easily assembled and disassembled. There are no threaded elements or positive connections. The vessel or bottle holder rests upon the supporting frame or annular member 10. The cup shape housing 27 is removably seated within said vessel or bottle holder. The supporting member or gasket 40 is removably seated within said cup shape housing. The tubular member 47 is removably supported by said supporting member or gasket. The valve member 21 is slidably disposed in the cup shape housing 27 and removable therefrom. The lifter 20 is slidably and removably disposed in the reduced portion of the vertical opening through the supporting frame or annular member 10.

When the parts of the liquid dispenser are to be assembled, the lifter 20 will be inserted downwardly into the supporting frame or annular member 10. The valve member 21 will be inserted in the cup shape housing 27. The tubular member 47 will be placed upon the annular projection 44 of the supporting member or gasket 40 until the upper end of said tubular member is up against the body of said supporting member or gasket, and the supporting member or gasket, with the tubular member applied, will be fitted to the upwardly extending annular flange 39 and rested upon the exteriorly extending annular flange 26 of said cup shape housing. The vessel or bottle holder will be slid upwardly over the cup shape housing 27 until the internally extending annular flange 19 of said holder is seated against the lower surface of the exteriorly extending annular flange 26 of said cup shape housing, and, finally, the assembled unit, including all of the parts of the liquid dispenser except the lifter 20, will be associated with the supporting frame or annular member 10 so that said internally extending annular flange 19 of the holder rests upon the upwardly facing annular surface 13 of said supporting frame or annular member. Disassembly of the parts of the liquid dispenser can be accomplished by reversal of the operations as described.

A vessel or bottle containing liquid substance to be dispensed will be assembled with the unit of the liquid dispenser including parts thereof except the lifter before the unit is associated with the supporting frame or annular member 10. The vessel or bottle will be retained upright while assembly with the unit is accomplished, and after assembly, the unit and vessel or bottle will be grasped together and inverted and set upon the supporting frame or annular member 10.

When a vessel or bottle, either empty or loaded, is to be removed, the unit with vessel or bottle will be lifted from the supporting frame or an-

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annular member 10 and turned upright so said unit can be lifted from said vessel or bottle. In an instance when a vessel or bottle being removed contains liquid substance, the valve member 21 will be elevated, by pushing the actuator pieces or lugs 37 upwardly, to position causing the flat upper surface 48 of the valve 32 to close off the lower end of the tubular member 47 after the unit is lifted and until the vessel or bottle is made upright. Elevation of said valve member will of course permit the dispensing or measuring chamber 35 to become emptied before the unit is set upright, and sealing the tubular member 47 closed will preclude possibility of spilling of liquid substance from the vessel or bottle. Of course, the externally extending annular flange 26 on the cup shape housing 27 will be held engaged against the internally extending annular flange 19 of the holder while the unit with vessel or bottle is being removed and until said vessel or bottle is made upright.

What is claimed is:

1. A liquid dispenser comprising a supporting frame providing a vertical opening, an interiorly extending element on a lower part of said supporting frame, a valve member, a lifter to be manually elevated to cause said valve member to be elevated constituted as an element movable in a lower portion of said vertical opening and removably assembled with said supporting frame, said lifter including a part adapted normally to rest upon an upwardly facing surface of said interiorly extending element on said supporting frame, a housing removably supported upon and within said supporting frame including a hollow member open at its upper end and a closure wall for a lower end of said hollow member, said closure wall having a discharge orifice at a lower portion thereof and said valve member being removably situated in and including a first portion slidable in the hollow member of said housing and a second portion providing a downwardly facing valve within a dispensing chamber provided by a lower part of said hollow member and said closure wall adapted normally to close said discharge orifice, an actuator piece rigid with said valve member including a part disposed above, aligned with and adapted to be elevated in response to elevation of said lifter to cause the valve member to be elevated thus to cause said downwardly facing valve to uncover said discharge orifice, a removable support for the open end of an inverted vessel upon an upper portion of said housing and having an opening there-through, and a tubular connection extending downwardly from an upper surface of said support and contiguous with said dispensing chamber, said second portion of said valve member including an upwardly facing surface adapted to close said tubular connection in response to elevation of the valve member.

2. A liquid dispenser comprising a supporting frame providing a vertical opening, an interiorly extending flange portion on a lower part of said supporting frame, a holder for a vessel having liquid substance to be dispensed including a lower interiorly extending flange portion removably seated on an upwardly facing surface of said supporting frame, a valve member, a lifter to be manually elevated to cause said valve member to be elevated constituted as an element vertically movable in a lower portion of said vertical opening and removably assembled with said supporting frame, said lifter including a part adapted normally to rest upon an upwardly facing sur-

face of said interiorly extending flange portion of said supporting frame, a housing consisting of an upper exteriorly extending flange removably supported within said holder upon its lower interiorly extending flange portion, an intermediate portion constituted as a hollow member within said supporting frame and open at its upper end and a lower portion constituted as a closure wall for the lower end of said hollow member, said closure wall having a discharge orifice at a lower portion thereof and said valve member being removably situated in and including a first portion slidable in the hollow member of said housing and a second portion providing a downwardly facing valve within a dispensing chamber provided by a lower part of said hollow member and said closure wall adapted normally to close said discharge orifice, an actuator piece rigid with said valve member including a part disposed above, alined with and adapted to be elevated in response to elevation of said lifter to cause the valve member to be elevated thus to cause said downwardly facing valve to uncover said discharge orifice, a gasket for supporting the open end of an inverted vessel removably seated upon an upper surface of said upper exteriorly extending flange of said housing and having an opening therethrough, and a tubular connection contiguous with said opening through said gasket and said dispensing chamber, said second portion of said valve member including an upwardly facing surface adapted to close said tubular connection in response to elevation of the valve member.

3. The combination as specified in claim 2 wherein said gasket consists of a body member and a plug extending upwardly from said body member including an external conical surface adapted to project into the open end of said inverted vessel to provide an annular seal between said open end of said inverted vessel and the external conical surface of said plug, said opening through said gasket being in a part of said plug surrounded by said external conical surface.

4. A liquid dispenser comprising a supporting frame providing a vertical opening, an interiorly extending flange portion on a lower part of said supporting frame, a holder for a vessel having liquid substance to be dispensed including a lower interiorly extending flange portion removably seated on an upwardly facing surface of said supporting frame, a valve member, a lifter to be manually elevated to cause said valve member to be elevated constituted as an element vertically movable in a lower portion of said vertical opening and removably assembled with said supporting frame, said lifter including a part adapted normally to rest upon an upwardly facing surface of said interiorly extending flange portion of said supporting frame, a housing consisting of an upper exteriorly extending flange removably supported within said holder upon its lower interiorly extending flange portion, an intermediate portion constituted as a hollow member within said supporting frame and open at its upper end and a lower portion constituted as a closure wall for the lower end of said hollow member, said closure wall having a discharge orifice at a lower portion thereof and said valve member being removably situated in and including a first portion slidable in the hollow member of said housing and a second portion providing a downwardly facing valve within a dispensing chamber provided by a lower part of said hollow member and said closure wall adapted normally to close said discharge orifice,

an actuator piece rigid with said valve member including a part disposed above, alined with and adapted to be elevated in response to elevation of said lifter to cause the valve member to be elevated thus to cause said downwardly facing valve to uncover said discharge orifice, a gasket for supporting the open end of an inverted vessel removably seated upon an upper surface of said upper exteriorly extending flange of said housing and having a downwardly extending annular projection, there being an opening through said gasket contiguous at its upper end with said open end of said inverted vessel and at its lower end with the lower end of said annular projection, and a tubular member frictionally, removably retained upon said annular projection and extending into an upper portion of said valve member, said second portion of the valve member including an upwardly facing surface adapted to close the lower end of said tubular member in response to elevation of said valve member.

5. The combination as specified in claim 4 wherein said gasket consists of a body member and a plug extending upwardly from said body member adapted to project into the open end of said inverted vessel in supporting relation thereto to provide a seal between said open end of the inverted vessel and said plug.

6. A liquid dispenser comprising a supporting frame providing a vertical opening and a first horizontal upwardly facing surface in surrounding relation to an upper portion of said vertical opening, an interiorly extending flange portion on a lower part of said supporting frame providing a second horizontal upwardly facing surface below and in spaced relation to said first horizontal surface, a holder for a vessel having liquid substance to be dispensed including a lower interiorly extending flange portion removably seated on said first horizontal surface, a valve member, a lifter to be manually elevated to cause said valve member to be elevated constituted as an element vertically movable in a lower portion of said vertical opening and removably assembled with said supporting frame, said lifter including an externally extending flange adapted normally to rest upon said second surface, a housing consisting of an upper exteriorly extending flange removably supported within said holder upon its lower interiorly extending flange portion, an intermediate portion constituted as a hollow member within said supporting frame and open at its upper end and a lower portion constituted as a closure wall for the lower end of said hollow member, said closure wall having a discharge orifice at a lower portion thereof and said valve member being removably situated in and including a first portion slidably fitted to an interior surface of the hollow member of said housing and a second portion providing a downwardly facing valve within a dispensing chamber provided by a lower part of said hollow member and said closure wall adapted normally to close said discharge orifice, an actuator piece rigid with said valve member projecting through and slidable in a vertical slot in an upper portion of said hollow member of the housing and including a part disposed above, alined with and adapted to be elevated in response to elevation of said lifter to cause the valve member to be elevated thus to cause said downwardly facing valve to uncover said discharge orifice, a gasket for supporting the open end of an inverted vessel removably seated upon an upper surface of said upper exteriorly extending flange of said housing and having a down-

wardly extending annular projection, there being an opening through said gasket contiguous at its upper end with said open end of said inverted vessel and at its lower end with the lower end of said annular projection, and a tubular member 5 frictionally, removably retained upon said annular projection and extending into an upper portion of said valve member, said second portion of the valve member including an upwardly facing surface adapted to close the lower end of said 10 tubular member in response to elevation of said valve member.

7. The combination as specified in claim 6 wherein said gasket consists of a body member and a plug extending upwardly from said body 15 member including an external conical surface adapted to project into the open end of said inverted vessel to provide an annular seal between said open end of said inverted vessel and the external conical surface of said plug, said opening 20

through said gasket being in a part of said plug surrounded by said external conical surface.

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