

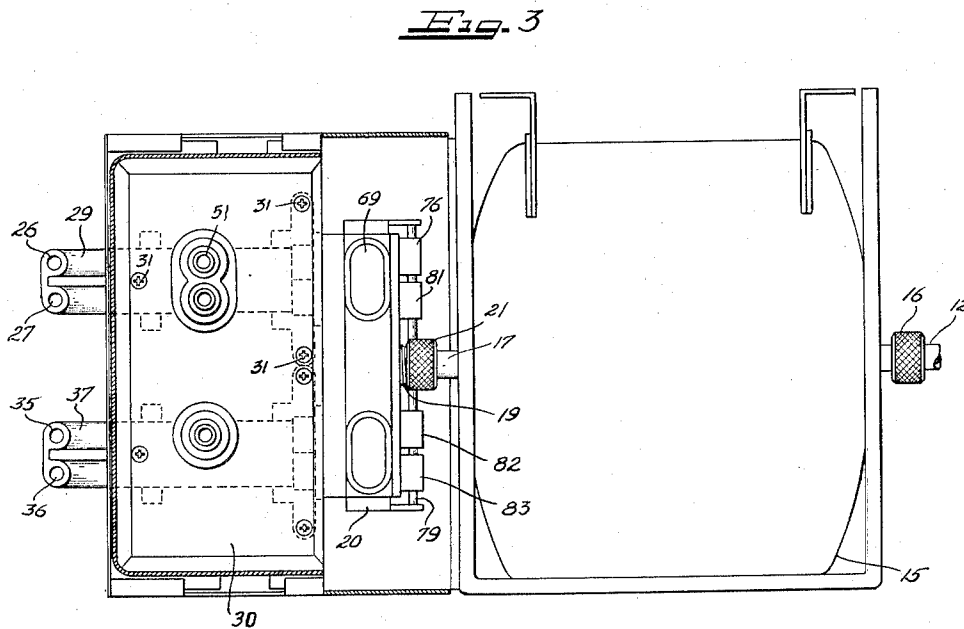
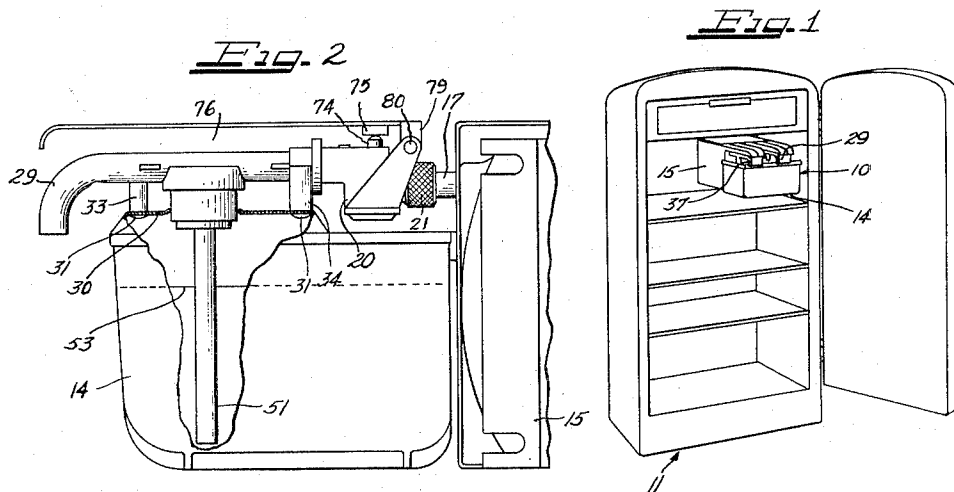
Feb. 18, 1958

C. C. BAUERLEIN
CONCENTRATE DISPENSER

2,823,833

Filed Jan. 7, 1955

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

Fig. 4

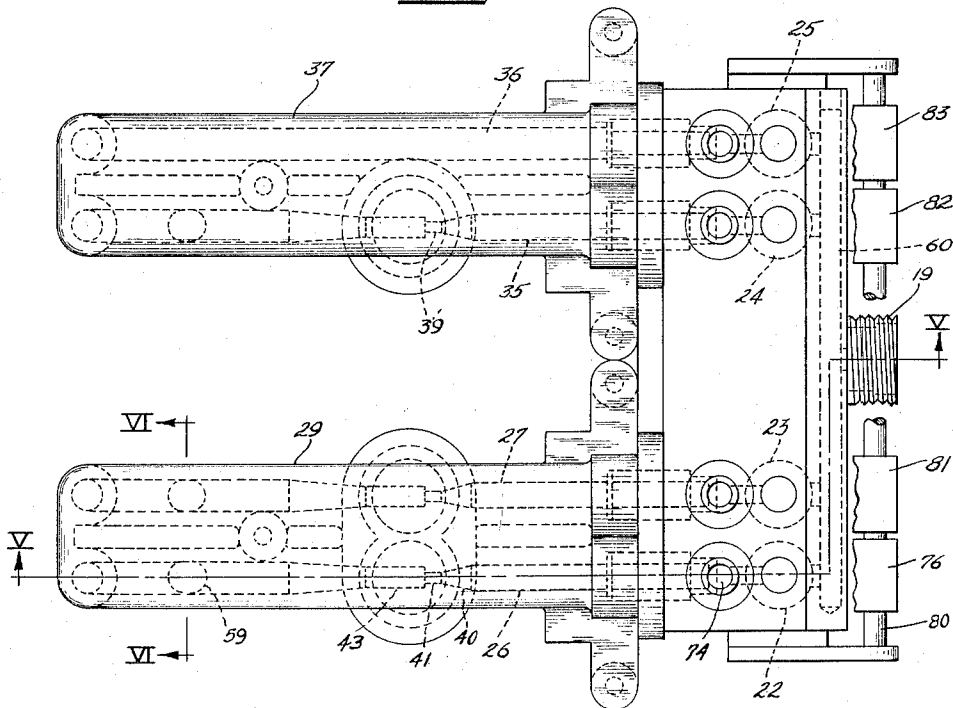


Fig. 5

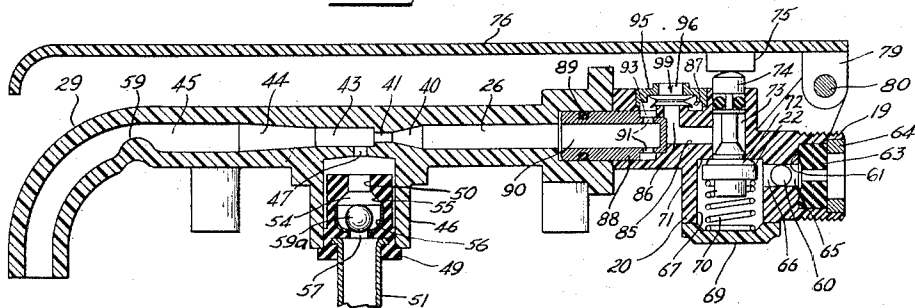
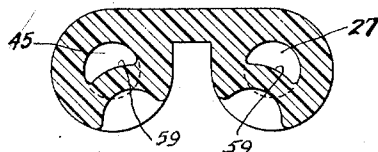


Fig. 6



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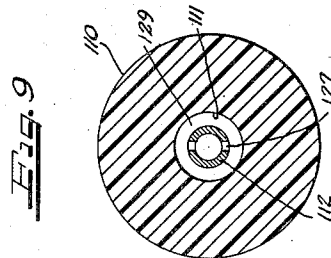
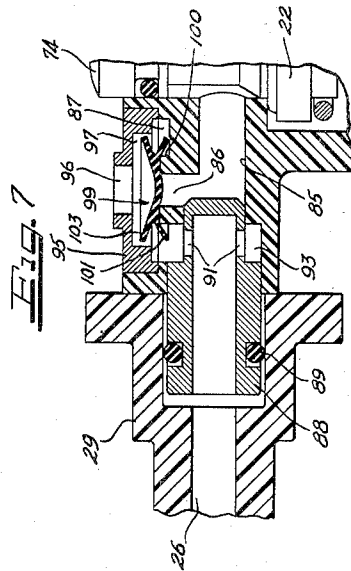
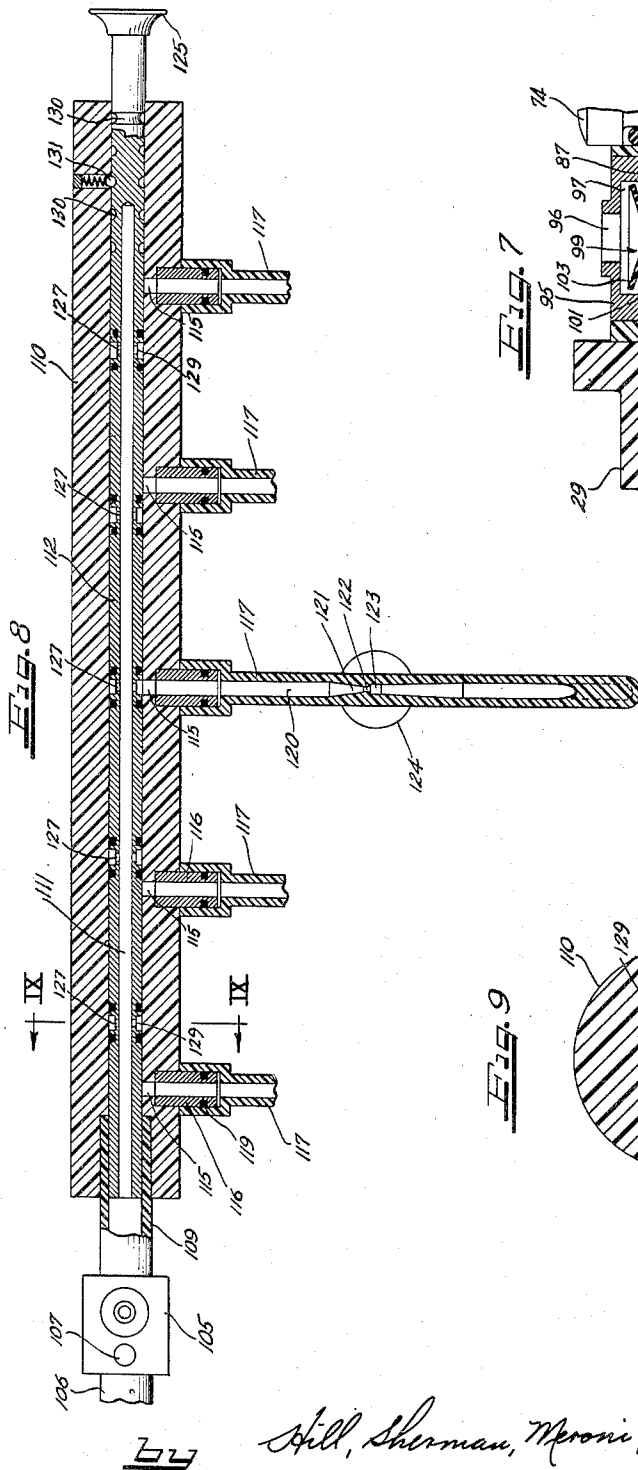
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4 Sheets-Sheet 3



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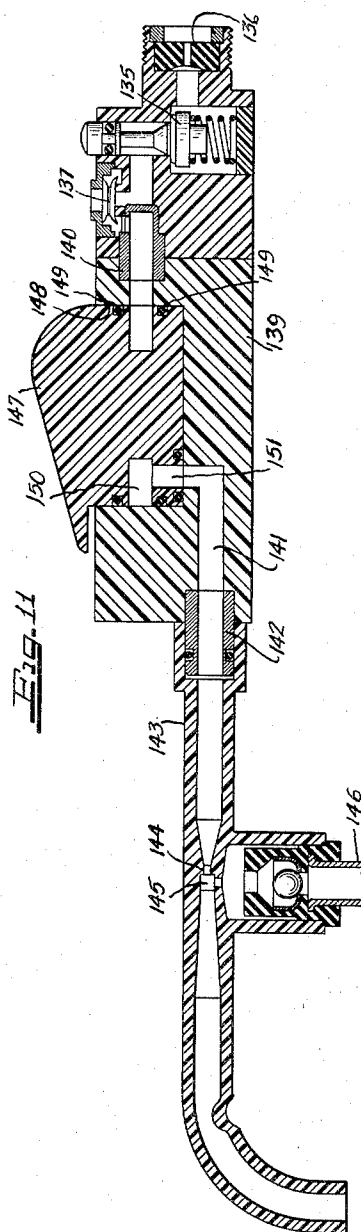
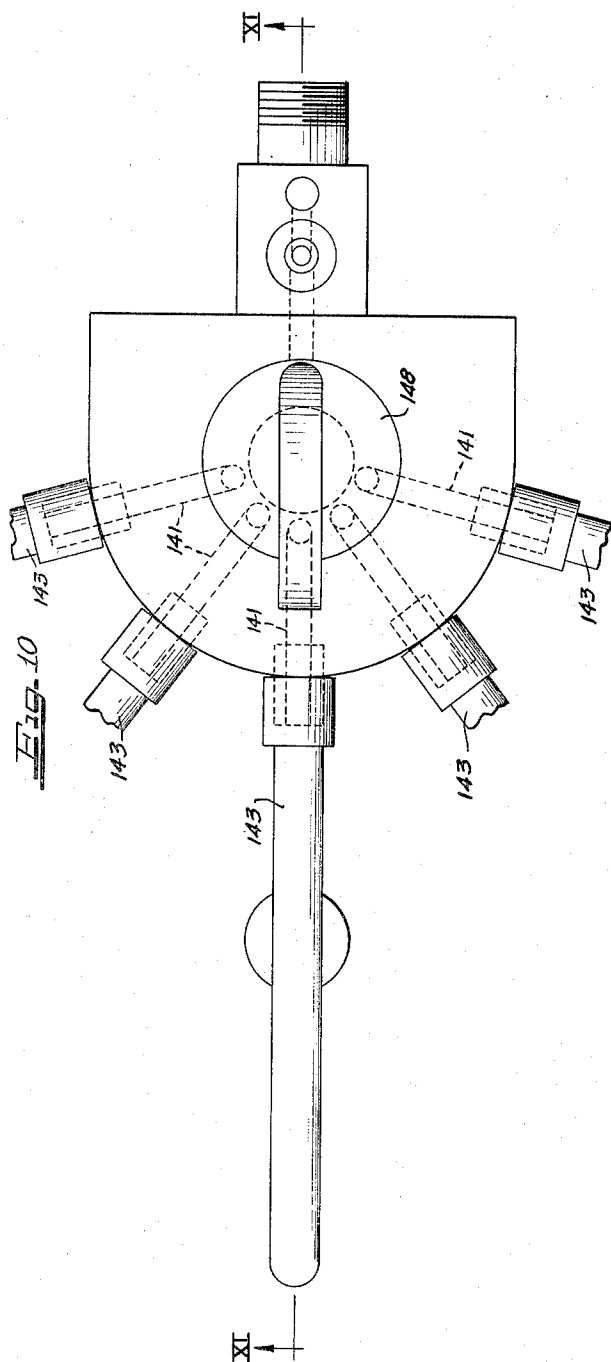
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4 Sheets-Sheet 4



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2,823,833

CONCENTRATE DISPENSER

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Application January 7, 1955, Serial No. 480,332

11 Claims. (Cl. 222—129.2)

This invention relates to improvements in dispensers for proportioning and dispensing fluids or concentrates and the like.

A principal object of my invention is to provide a novel and improved form of proportioning dispenser of a simple construction and particularly adapted for home use as a part of a refrigerator or like cooling device.

A further object of my invention is to provide a dispenser in which a Venturi serves as a proportioning device and in which the Venturi and dispenser are arranged to avoid syphoning of the concentrate back to the source of supply of diluting fluid and with a view toward visibility of the interior of the parts of the dispenser and accessibility and ease of cleaning so as to readily comply with the strictest health standards.

A still further object of my invention is to provide an anti-syphoning proportioning and dispensing device for concentrates and the like constructed from a transparent material in which dirt or contamination in the passageways may readily be seen and cleaned.

Another object of my invention is to provide a self-priming dispenser of the type in which a Venturi serves as a proportioner for the concentrate with water.

Still another object of my invention is to provide a self-priming dispenser of the Venturi type by so proportioning the discharge passageway from the Venturi as to eliminate air from the Venturi upon the admission of proportioning fluid under pressure thereto.

A further object of my invention is to provide a proportioning dispenser for concentrates in which the dispensing spout has a proportioning Venturi therein and has a restriction on the downstream side of the Venturi creating sufficient initial backflow of fluid to the Venturi to exhaust air therefrom and render the Venturi self-priming.

A still further object of my invention is to provide a new and improved form of proportioning dispenser for concentrates and the like, so arranged as to prevent a vacuum at the source of supply of proportioning fluid from contaminating the source of supply of fluid for the dispenser.

Still another object of my invention is to provide a simple and improved form of vacuum breaker particularly adapted to prevent vacuum in a supply line for fluid from contaminating the supply line.

Another and more detailed object of my invention is to provide a simple and improved form of vacuum breaker in a form of a resilient valve contained within a chamber serving as a check valve to accommodate fluid to pass through the chamber in one direction and venting the chamber to the atmosphere upon the creation of a vacuum.

A still further object of my invention is to provide a dispenser for concentrates and the like adapted to be contained within a refrigerator and receive its diluting fluid from a fluid connection with the refrigerator, and so arranged as to dispense a selected variety of juices,

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flavors and the like through a single source of diluting water under pressure.

These and other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a perspective view of a refrigerator with the door open and showing a concentrate dispenser constructed in accordance with my invention as a part of the refrigerator;

Figure 2 is an enlarged view in side elevation of the dispenser shown in Figure 1 with certain parts thereof broken away and certain other parts shown in vertical section;

Figure 3 is a bottom plan view of the dispenser shown in Figure 2 with certain parts thereof shown in horizontal section, in order to more clearly illustrate certain details of my invention;

Figure 4 is a plan view of the multi-purpose proportioning dispenser shown in Figures 1, 2 and 3 drawn to an enlarged scale with the control levers therefore broken away;

Figure 5 is a sectional view taken substantially along line V—V of Figure 4;

Figure 6 is a transverse sectional view taken substantially along line VI—VI of Figure 4;

Figure 7 is an enlarged fragmentary sectional view taken along the dispenser spout and control valve therefor, and showing the anti-syphoning device in an anti-syphoning position;

Figure 8 is a horizontal sectional view taken through a modified form of dispenser constructed in accordance with my invention illustrating a form of multi-purpose dispenser utilizing a single shut-off and anti-syphoning valve;

Figure 9 is a transverse sectional view taken substantially along line IX—IX of Figure 8;

Figure 10 is a fragmentary plan view showing still another form of multi-purpose dispenser constructed in accordance with my invention; and

Figure 11 is a sectional view taken substantially along line XI—XI of Figure 10.

In the embodiment of my invention illustrated in Figures 1 through 7 of the drawings, I have shown a dispenser or fluid proportioner 10 contained within a refrigerator 11 and connected with a water supply pipe 12 piped within the refrigerator, for proportioning and dispensing a selected concentrate from a plurality of concentrates or fluids in a partitioned container 14 to the normal consistency of the juice of the fresh natural fruit or vegetable or the like, from which the concentrate is made, and to deliver a cool, uniformly mixed natural drink, as selected.

The dispenser 10 is shown as including a cooling tank 15 for the proportioning water, which is connected with the water supply line 12 through a coupling 16. A pipe 17 leads from the tank 15 and is connected with an intake 19 of a valve bank 20 by means of a coupling 21.

The valve bank 20 is shown as having a plurality of independently operable valves 22, 23, 24 and 25 therein. The valves 22 and 23 are each associated with individual passageways 26 and 27 in a spout 29, for dispensing selected concentrates from the partitioned concentrate container 14. The spout 29 is mounted on a top 30 for said container, as by machine screws 31 extending there-through and threaded within depending leg portions 33 and 34 of the spout 29. The container 14 may be slidably carried on the top 30 for ready access thereto.

The valves 24 and 25 are shown as being associated with passageways 35 and 36 in a spout 37 mounted on the top cover 30 in the same manner the spout 29 is

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mounted thereon. As herein shown, the passageway 35 is for the dispensing of a concentrate and has a Venturi 39 therein, connected at the downstream side of its throat with a partitioned portion of the container 14, for proportioning and dispensing a different concentrate from said container than is dispensed from the passageways 26 and 27 in the spout 29. The passageway 36 is shown as being a through passageway, for the dispensing of cold water from the tank 15.

The valves 22, 23, 24 and 25 and the dispensing spouts communicating therewith are each of a similar construction so one of said valves and dispensing passageways only need herein be shown or described in detail. The valve bodies may be made of metal while the spouts 29 and 37 may be made from a transparent thermoplastic material such as an acrylic thermoplastic.

The passageway 26 leading through the spout 29 is shown as terminating into the base of a frusto-conical passageway 40, forming the upstream side of a Venturi. The apex of the passageway 40 leads into a reduced diameter throat 41 terminating into a vacuum chamber 43, which in turn communicates with an inverted cone-like passageway 44, leading into a passageway 45 extending along the downwardly turned discharge end portion of the spout 29.

A hollow boss 46 is shown as extending downwardly from the spout 29, intermediate the ends thereof, and in vertical alignment with the vacuum chamber 43. The hollow boss 46 has communication with the vacuum chamber 43 through a passageway 47.

Within the hollow boss 46 is mounted a fitting and valve seating member 49, having a passageway 50 leading from the top wall thereof in communication with the passageway 47 leading to the vacuum chamber 43. The fitting and valve seating member 46 may be made from rubber, an elastomer or like material and snugly fits within the hollow boss 46 and has gripping engagement with a suction tube 51 at its lower end and seals said suction tube thereto. The suction tube 51 leads from the fitting 49 to a position adjacent the bottom of the container 14 to one side of a partition 53 therein for withdrawing a concentrate from a partitioned portion of said container for mixing with water under pressure passing through the passageway 26 and throat of the Venturi 41.

The fitting and valve seating member 49 has an enlarged diameter chamber 54 formed therein, having a frusto-conical upper wall portion 55 leading to the passageway 50 and having an insert 56 therein forming the inner wall portion of the chamber 54, and apertured in alignment with a passageway 57 leading into the chamber 54 from the bottom thereof, in axial alignment with the suction tube 51. The insert 56 forms a seat for a ball 59a, which serves as a check valve to prevent dilute concentrate from leaking into the concentrate can when the valve 22 is shut off.

Extending within the passageway 45 and spaced from the downstream end of the truncated cone-like passageway 44 is a dimple 59 forming a restriction in the passageway 45 and rendering the Venturi self-priming, as will now be described. It will be noted from Figures 5 and 6 that the cross-sectional area of the throat of the Venturi 41 is less than the cross-sectional area of the passageway 47 leading to the vacuum chamber 43, and that the cross-sectional area at the base of the truncated cone-like passageway 44 is greater than the cross-sectional area of the passageway 45 taken through the restricted portion thereof formed by the dimple 59. The cross-sectional area of the passageway 45 at the dimple 59, however, is greater than the cross-sectional area of the passageway 47 leading to the vacuum chamber 43 and the cross-sectional area of the throat 41 of the Venturi. This is to avoid choking. The dimple 59 thus forms a restriction which creates a back flow of water

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into the vacuum chamber 43 and passageway 47 when the valve 22 is open and water under pressure passes along the dispensing passageway 26. The back flow of water thus expels air from the Venturi and consequently renders the Venturi self-priming and enables a concentrate to be withdrawn from the container 14 as the valve 22 is opened and the proportioning water flows back from the dimple 59.

It should here be understood that while I have shown a dimple indented within a passageway from the Venturi at the discharge end thereof, that any restricting means may be provided in the passageway and that various other means may be provided to expel air from the Venturi which need not be the specific form shown herein.

The valve bank 20 is shown as having a transverse passageway 60 leading thereacross for communication with the valves 22, 23, 24 and 25. The inlet 19 is shown as being threaded to receive the coupling 21 and as having a shoulder 61 formed therein forming a seat for a resilient annular flow control valve 63. A retainer 64 is seated within the inlet 19 to retain the resilient annulus 63 thereto. The resilient annular flow control valve 63 is provided to assure the supply of a uniform volume of water at the delivery rate of either of the valves 22, 23, 24 or 25, regardless of variations in pressure of the water, at the source, and deforms into engagement with the seat 61 into a passageway 65 in axial alignment with the reduced diameter orifice of the flow control valve, to maintain the volume of water flowing through the flow control valve uniform regardless of pressure variations, as in Patent No. 2,389,134, which issued to Clyde A. Brown on November 20, 1945, so not herein shown or described further.

The transverse passageway 60 is shown as having communication with a passageway 66 leading into a chamber 67 for the valve 22. The bottom end of the chamber 67 is closed by a closure plate 69 suitably sealed thereto and forming a seat for a spring 70 biasing a resilient valve disk 72 into engagement with a shouldered port 71, at the upper end of the valve chamber 67, the inner margin of which defines a fluid passageway 73 within which a plunger 74 for the valve 22 is slidably mounted. The plunger 74 is shown as extending upwardly beyond the top of the valve block 20 and as having a rounded upper end portion for engagement with a depending abutment 75 on an operating lever 76, shown as extending along the spout 29 to a position adjacent the forward end thereof. The operating lever 76 is shown as having an ear 79 depending therefrom pivotally mounted on a transverse shaft 80 secured to opposite ends of the valve bank 20 rearwardly of the rear end thereof and extending therealong. Pressure on the end of the hand lever 76 will thus depress the plunger 74 and accommodate the flow of a controlled volume of fluid from the valve chamber 67 into the passageway 73.

Operating levers 81, 82 and 83 are provided for the respective valves 23, 24 and 25 and are pivotally mounted on the transverse shaft 80 for selectively operating said valves as desired.

Referring now in particular to the anti-syphoning device or vacuum breaker of my invention, the passageway 73 communicates with a longitudinally extending passageway 85 extending along the valve body 20 and terminating into a vertically extending passageway 86 extending within a chamber 87. The inner end of the passageway 85 is shown as being formed by the closed end of a connector 88, fitting within the advance end of the valve body 20 and extending therefrom within the spout 29, and sealed thereto as by an O ring 89. The connector 88 has a passageway 90 leading from the closed end thereof and in communication with the passageway 26 and has cross-drilled passageways 91 adjacent the rear end thereof having communication with an annular passageway 93 extending thereabout, and

opening to the outside of the connector and affording fluid communication with the chamber 87.

The chamber 87 is closed at its top or outer end by a cover 95 fitted within the wall of said chamber and having a passageway 96 leading therethrough and having communication with the atmosphere. The cover 95 is shown as having a stepped inner wall 97 spaced inwardly of the wall of the chamber 87 and having a flexible valve member 99 movably carried therein. The flexible valve member 99 is shown as resting on an annular seat 100 the inner margin of which forms an upward continuation of the passageway 86 into the chamber 87.

The flexible valve 99 may be made from soft rubber, an elastomer or like flexible material and is herein shown as being in the general form of a diablo and has thin flexible walls or valve lips 101 and 103 flaring outwardly and downwardly and upwardly from a reduced diameter central portion thereof. The valve lip 101 seats on the annular seat 100 while the valve lip 103 slidably fits within the wall 97 of the cover 95 and engages the underside of said cover and during normal operation of the valve blocks the passage of air into the chamber 87.

When the valve 22 is open to accommodate the passage of fluid into the passageway 85 the under portion of the valve 99 will be raised off its seat, accommodating the passage of fluid under pressure along the passageway 26 and through the throat 41 of the Venturi to withdraw concentrate through the suction tube 51 and proportion the same within the vacuum chamber 43 for dispensing through the open end of the spout 29.

When however a vacuum occurs in the source of supply of diluting fluid and the valve 22 is open, the suction in the passageway 86 will draw the valve 99 into tight engagement with the annular seat 100 and block the back flow of any concentrate that may be in the spout 29 to the source of supply of proportioning fluid. As the suction increases the valve 99 will be drawn partially within the passageway 86. This will open the passageway 96 to air at atmospheric pressure and completely break any vacuum in the passageway 26, accommodating any concentrate in said passageway to flow downwardly through the mouth of the spout 29.

An anti-syphoning device or vacuum breaker is associated with each passageway 27, 35 and 36 on the downstream side of the associated valve 23, 24 and 25 to prevent the syphoning of fluid back through the respective passageways when the associated valve is open and suction may be created in the inlet 19 leading into the valve block 20.

In Figures 8 and 9 of the drawings I have shown a modified form in which my invention may be embodied in which any one of a number of selected concentrates may be dispensed under the control of a single control valve 105. The control valve 105 is like the valve 22 previously described, and has an inlet 106 for diluting water under pressure leading thereinto which may have a flow control (not shown) therein, for supplying a constant volume of water to the valve, regardless of variations in pressure at the source.

The valve 105 is operated by a plunger 107, like the plunger 74, and has a vacuum breaker or anti-syphoning device on the downstream side of the valve (not shown) to prevent the syphoning of concentrate back into the supply line, so as to avoid contaminating the source of supply of diluting fluid under pressure. The valve 105 is shown as having an outlet 109 leading therefrom and extending within an elongated distributor body or block 110 and suitably sealed thereto.

The distributor body 110 has a passageway 111 extending therealong for the length thereof having a selector valve 112 slidably mounted therein. The distributor body 110 also has a plurality of transverse passageways 115 leading from the passageway or chamber 111 to the outside of the distributor block 110. Each passage-

way 115 has a connector 116 carried therein in axial alignment therewith and extending outwardly from the block 110 and having the inlet end of a dispensing spout 117 mounted thereon and sealed thereto as by an O ring 119.

The dispensing spouts 117 are each of a similar construction having a central passageway 120' extending therealong terminating into a Venturi 121, having a reduced diameter throat 122 and a vacuum chamber 123 on the downstream side thereof. The vacuum chamber 123 has communication with a suction chamber 124, which may have a suction tube (not shown) associated therewith, for withdrawing a concentrate for mixture with the water flowing through the passageway 120, and delivering a proportioned mixed drink of the quality of the juice and the like from which the concentrate is made.

The Venturi 121, spout 117 and suction chamber leading therefrom are exactly like the Venturi and suction chamber in the form of my invention shown in Figure 5 so a detailed description thereof need not herein be repeated. A restriction or dimple (not shown) may likewise be provided on the downstream side of the Venturi to render the Venturi self-priming.

The selector valve 112 is shown as being drilled for a greater portion of the length thereof with the open portion of the drilled portion thereof in registry and slidably extending within the outlet 109 from the valve 105. The opposite end of the selector 112 is shown as being closed and as having a hand knob 125 on the end thereof to enable said selector to be moved longitudinally of the distributor body 110. The selector valve 112 is cross-drilled at spaced intervals therealong as indicated by reference character 127. The cross-drills 127 communicate with outwardly opening annular passages 129 formed in said selector valve to accommodate the passage of fluid under pressure through a selected passageway 115 and aligned Venturi 121, depending upon the position of said selector valve 112.

The selector valve 112 has a plurality of annular detent grooves 130 recessed therein and spaced inwardly of the knob 125 and registrable with a spring pressed detent ball 131, for indexing the selected positions of said selector.

It is obvious from the foregoing that a different concentrate may be dispensed from a selected spout 117 by movement of the selector valve 112 along the distributor body 110 into a selected indexed dispensing position. If desired a dial (not shown) may be associated with the knob 125 to enable the position of the distributor 112 to readily be determined.

Figures 10 and 11 show still another form in which any one of a selected number of concentrates may be dispensed from a single source of fluid under pressure. In this form of my invention, I have shown a valve 135 like the valve 22 and having a resilient annular flow control 136 at the inlet for the valve and a vacuum breaker 137 at the downstream side of the valve. The valve 135 is shown as having fluid connection with a distributor block or manifold 139 through a connector 140. The manifold 139 is shown as having a plurality of radial passageways 141 opening to the periphery thereof and having connectors 142 therein. Each connector 142 is shown as having a spout 143 carried thereon and sealed thereto. The spout 143 has a Venturi 144 therein having a vacuum chamber 145 on the downstream side of the throat of the Venturi having fluid connection with a suction tube 146, as in the form of my invention shown in Figures 1 through 7.

The manifold 139 has a cylindrically recessed central portion 148 having a selector valve 147 rotatably mounted therein and sealed thereto as by O rings 149. The selector valve 147 is shown as having an outwardly opening annular passageway 150 extending thereabout in communication with the valve 135 and connector 140 and

between the O-rings 149. A downwardly opening passageway 151 leads from the annular passageway 150 for registry with any one of a plurality of upwardly opening passageways, leading upwardly from the passageway 141 in the distributor block or manifold 139.

Thus upon turning of the selector valve 147, a selected concentrate may be proportioned and dispensed through the selected proportioning and delivery spout 143, it being understood that the vacuum tube leading from the vacuum chamber on the downstream side of the throat of each Venturi leads to a separate container or a partitioned container containing a selected concentrate syrup flavor or the like.

It may be seen from the foregoing that I have provided a proportioning and dispensing device particularly adapted to be contained within a refrigerator and be a part thereof, which may readily be cleaned and which is so arranged as to be self-priming and anti-syphoning, and that due to the simplicity thereof and transparency of the dispensing spout as well as the anti-syphoning feature thereof, that the dispenser of my invention may safely be used for commercial as well as home use and may comply with the strictest health standards.

It may further be seen that the dispenser of my invention is so arranged as to dispense any one of a number of concentrates as selected and that in the modified forms of my invention a single water supply valve and vacuum breaker on the downstream side of the valve in association with a single selector valve is effective to accommodate the dispensing of the selected concentrate.

It may still further be seen that I have provided a simple form of vacuum breaker venting the spout to atmosphere upon excessive vacuum conditions at the source of supply of proportioning liquid.

It will be understood that modifications and variations of the present invention may be effected without departing from the spirit and scope of the novel concepts thereof.

I claim as my invention:

1. In a concentric dispenser, a spout having a first passageway extending therealong, a Venturi in said passageway having a throat, a vacuum chamber on the downstream side of said throat, a second passageway leading to said vacuum chamber through the bottom thereof, a suction connection from said second passageway to a source of supply of concentrate, the cross-sectional area of said second passageway being greater than the cross-sectional area of said throat, and a restriction in said first passageway extending along said spout and on the downstream side of said Venturi, the cross-sectional area at said restriction being greater than the cross-sectional area of said second passageway and the cross-sectional area of said throat, but being substantially less than the cross-sectional area at the outlet of said Venturi and creating a backpressure to assume the filling of said Venturi with water and the elimination of air therein.

2. In a concentrate dispenser, a spout having a first passageway leading therealong having a Venturi therein, said Venturi having a throat of one cross-sectional area, a vacuum chamber on the downstream side of said throat, a second passageway leading to said vacuum chamber and of a greater cross-sectional area than the area of said throat, said Venturi having a truncated cone-like passageway leading from said vacuum chamber, and an outlet passageway leading from the base of said truncated cone-like passageway and having a restriction therein, the cross-sectional area of said second passageway and said restriction being greater than the cross-sectional area of the throat of said Venturi plus the cross-sectional area of said second passageway but less than the cross-sectional area of said truncated cone-like passageway at its base, and said restriction creating a back pressure of water filling said Venturi with water, thereby eliminating air therein and effecting operation thereof without priming.

3. An anti-syphoning valve particularly adapted to supply fluid under pressure to a spout and the like, a valve

chamber having a first port leading thereinto an outlet passageway leading therefrom and a second port spaced from and in axial alignment with said first port leading from said chamber to the atmosphere, a flexible valve floatingly mounted in said chamber to engage either of said ports and flexing upon the admission of fluid under pressure through said first port to flex out of engagement with said first port and seat on said second port to accommodate the passage of fluid under pressure through said outlet passageway and also flexing within said first port upon the creation of negative pressure conditions to block the passage of fluid back through said first port and to open said second port to vent said chamber to the atmosphere.

4. In an anti-syphoning dispenser for concentrates and the like, a spout having a passageway extending therealong having a Venturi therein having a throat and a vacuum chamber on the downstream side of said throat, a suction tube in communication with said vacuum chamber, a selectively operable shut-off valve on the upstream side of said spout, a uniform volume flow control annulus for delivering a uniform volume of fluid under pressure to said shut-off valve, and an anti-syphoning valve between said shut-off valve and the inlet end of said spout and having fluid communication therewith and comprising a chamber having a first port leading thereinto for fluid under pressure from said shut-off valve, a second port venting said chamber to atmosphere and in axial alignment with said first port and an outlet leading therefrom and having fluid communication with said spout, and a resilient valve within said chamber having flexible valve lips seated on each of said ports and accommodating the flow of fluid under pressure within said chamber and sealing said chamber from the passage of fluid through said second port and flexing within said first port upon negative pressure conditions and opening said second port to vent said chamber to the atmosphere.

5. In a dispenser particularly adapted to dispense a selected concentrate from a plurality of concentrates contained within a refrigerator, a plurality of Venturis, each having a vacuum chamber on the downstream side thereof and a suction line for association with a concentrate, valve means on the upstream side of said Venturis for supplying proportioning fluid under pressure to a selected Venturi, a uniform delivery volume flow control valve upstream of said valve means for supplying fluid under pressure to said valve means, and anti-syphoning valve means between said first mentioned valve means and said Venturis.

6. In a dispenser for dispensing a selected concentrate from any one of a plurality of concentrates directly from a refrigerator, a spout having a plurality of proportioning passageways leading therealong, each passageway having a Venturi therein, a vacuum chamber on the downstream side of the throat of each Venturi and a suction tube leading from said vacuum chamber for association with a source of supply of concentrate, an individual valve having fluid connection with each proportioning passageway, a uniform delivery flow control valve for supplying proportioning fluid to said valves, and a separate anti-syphoning valve on the downstream side of each of said first mentioned valves and on the upstream side of each of said Venturis.

7. In a dispenser particularly adapted to dispense a selected concentrate from any one of a plurality of concentrates, a fluid distributor block, a plurality of spaced spouts leading therefrom in fluid communication therewith and each having a Venturi therein having a throat and a suction connection from the downstream side of said throat to an individual source of supply of concentrate, uniform rate of flow control means for supplying fluid under pressure to said distributor block at a uniform delivery volume regardless of variations in fluid pressure at the source, a selector valve movably mounted in said distributor block downstream of said

uniform rate of flow control means and positionable to afford a fluid passage through said distributor block to a selected spout, for proportioning and dispensing a concentrate therefrom.

8. In a dispenser particularly adapted to dispense a selected concentrate from any one of a plurality of concentrates directly from a refrigerator, a fluid distributor block, a plurality of spaced dispensing spouts leading therefrom and having fluid communication with said distributor block, each of said spouts having a Venturi therein having a throat and a suction connection from the downstream side of said throat to a source of supply of concentrate, a shut-off valve upstream of said Venturis and selectively operable to supply proportioning fluid to said distributor block and having an anti-syphoning valve on the downstream side thereof, and a selector valve downstream of said anti-syphoning valve and movably carried in said distributor block for selecting a desired concentrate and positionable to afford fluid passage through said distributor block to a selected spout for proportioning and dispensing a concentrate therefrom.

9. An anti-syphoning valve particularly adapted to supply fluid under pressure to a spout and the like comprising a chamber, a first port leading into said chamber, an outlet passageway leading from said chamber, a second port in axial alignment with said first port and leading from said chamber to atmosphere, a flexible valve floatingly mounted within said chamber and having a disc like central portion and flexible valve lips diverging outwardly from opposite sides thereof, one of said valve lips seating on said first port and the other of said valve lips seating on said second port upon the admission of fluid through said first port, moving said valve out of engagement with said first port in sealing engagement with said second port, and said valve flexing within said first port upon negative pressure conditions in said first port and moving out of engagement with said second port to vent said chamber to atmosphere.

10. In an anti-syphoning valve, a chamber, a first port leading into said chamber, an annular valve seat extending about said port within said chamber, an outlet from said chamber, a second port in axial alignment with said first port and leading from said chamber to atmosphere, an anti-syphoning valve within said chamber, said valve being in the general form of a diablo and having a disc like central portion and flexible angularly extending valve lips extending angularly outwardly therefrom in opposite directions, one of said valve lips extending about said annular seat encircling said first port, the other of said valve lips engaging said second port and blocking the passage of fluid therethrough upon the admission of fluid under pressure through said first port, moving said valve

out of engagement with said first port, and said valve flexing within said first port upon negative pressure conditions therein and moving out of engagement with said second port and venting said chamber to atmosphere through second port.

11. In an anti-syphoning dispenser for concentrates and the like, a spout having a passageway extending therealong and opening to opposite ends thereof and having a Venturi therein having a throat and a vacuum chamber on the downstream thereof, with a suction tube for concentrates in communication with said vacuum chamber, a valve on the upstream side of said passageway and having fluid communication therewith for supplying fluid under pressure thereto, an anti-syphoning chamber between first mentioned valve and said passageway, an outlet passageway leading from said chamber and having fluid communication with said passageway leading through said spout, a second port in axial alignment with said first port and leading from said chamber to the atmosphere, and an anti-syphoning valve within said chamber seated on said first port and having a disc like central portion with outwardly flared valve lips extending therefrom in opposite directions, the pressure of fluid flowing through said first port moving said valve out of engagement with said first port and into sealing engagement with said second port, to block the passage of fluid through said second port and accommodate the passage of fluid through said outlet, and said valve flexing within said first port upon negative pressure conditions, and moving out of sealing engagement with said second port, to vent said chamber and spout to atmosphere.

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1,553,994	Estes	Sept. 15, 1925
1,933,165	Curtis	Oct. 31, 1933
2,125,251	Thompson	July 26, 1938
2,128,170	Stull	Aug. 23, 1938
2,148,047	Epstein	Feb. 21, 1939
2,215,132	Parker	Sept. 17, 1940
2,294,092	Moody	Aug. 25, 1942
2,381,589	Hayes	Aug. 7, 1945
2,404,549	Thomas	July 23, 1946
2,487,366	Penno	Nov. 8, 1949
2,547,423	Wegman et al.	Apr. 3, 1951
2,580,199	Schmid	Dec. 25, 1951
2,587,960	Bletcher et al.	Mar. 4, 1952
2,600,731	Carlton et al.	June 17, 1952
2,653,802	Bauerlein	Sept. 29, 1953