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DISPENSER FOR CONCENTRATES

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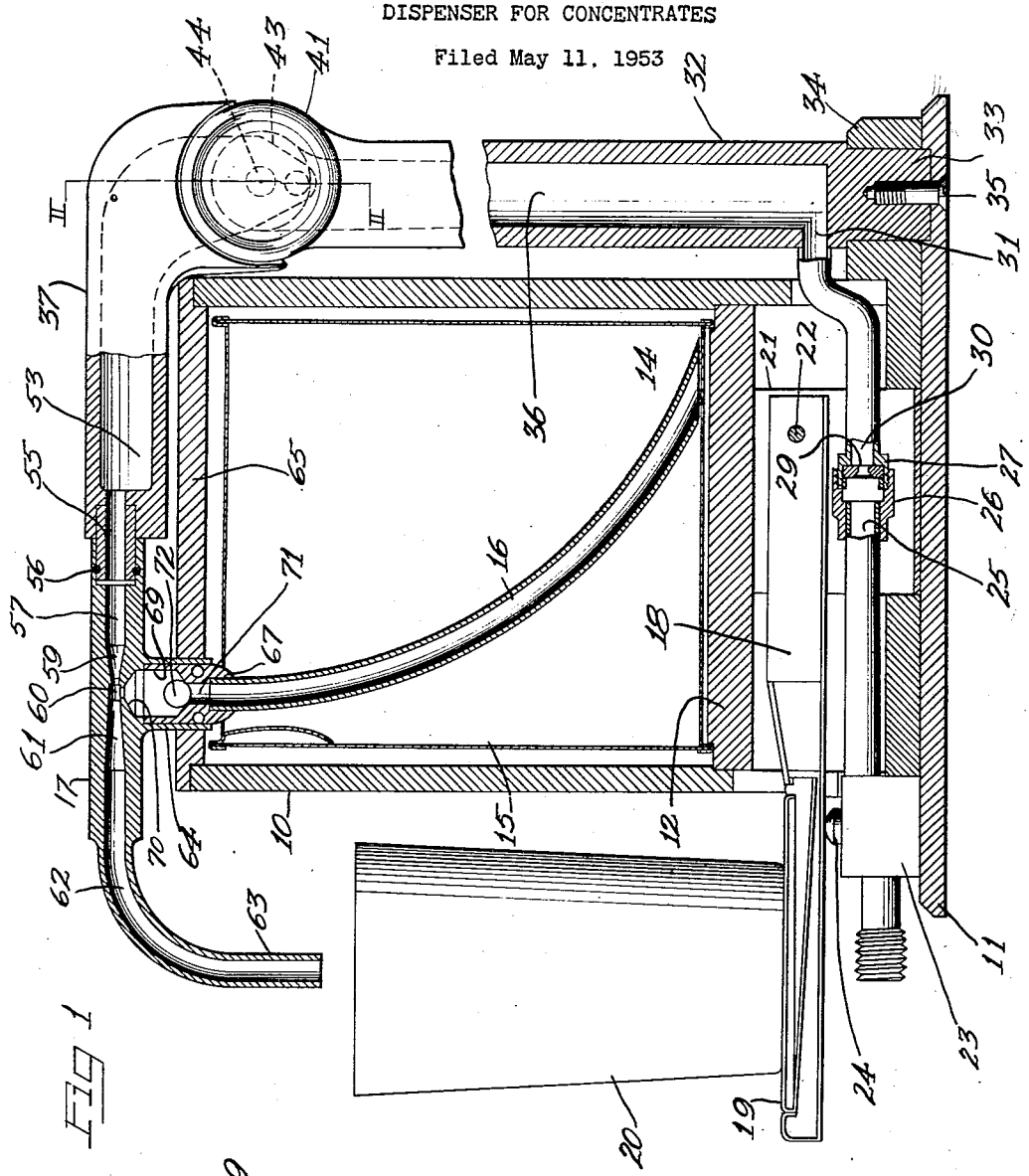


Fig 1

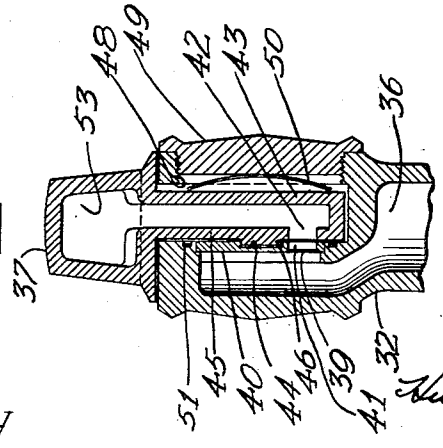


Fig 2

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DISPENSER FOR CONCENTRATES

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This invention relates to improvements in dispensers, for diluting and dispensing fluids or concentrates, such as concentrated juices, malts, liquors, colas, flavors and the like.

An object of my invention is to provide a novel and simplified form of dispenser for dispensing concentrates and particularly concentrated fruit juices directly from the container in which the concentrates are supplied.

A further object of my invention is to provide a dispenser wherein a uniform volume of diluting fluid under pressure aspires the concentrate directly from a container and mixes therewith.

Another object of my invention is to provide an efficient form of dispenser for dispensing concentrates directly from a concentrate container, wherein the concentrate is dispensed and mixed with a diluting fluid by the aspirating action of the fluid under pressure passing through a throat of a venturi, wherein the concentrate is contained in the container at atmospheric pressure and wherein a tube leading from the downstream side of the throat of the venturi is insertable in the container for aspirating a concentrate therefrom.

Still another object of my invention is to provide a novel and simple form of dispenser for concentrates or fluids directly from a container containing the concentrate, wherein the mixing and control of the flow of the concentrate is attained by the flow of the diluting water through a venturi, wherein a tube leads from within a concentrate container, to aspirate the concentrate from the container and has a check valve at its mouth to prevent the diluting water from leaking into the concentrate container at the end of each dispensing operation.

A still further object of my invention is to provide a dispenser for dispensing concentrates directly from a concentrate container at atmospheric pressure, which aspirates the concentrate directly from the concentrate container by the diluting fluid for the concentrate and controls the flow of the diluting fluid to provide a uniform flow of diluting fluid regardless of variations in pressure of the diluting fluid at the source.

A still further object of my invention is to provide a new and improved apparatus to dispense concentrates directly from a concentrate container at atmospheric pressures in which the container is contained in a casing and the cover for the casing has a venturi and a tube leading thereupon and extending into the interior of the concentrate container, and the mixing fluid passageway and venturi form a hinge for the cover for the casing.

Still another object of my invention is to provide a simplified and improved form of dispenser for dispensing concentrates directly from a concentrate can, in which the cover for the casing for the can has a venturi thereon and an aspirating tube leading from the throat of the venturi within the can, and wherein pivotal movement of the cover into a closed position inserts the aspirating tube within the can and withdraws it from the can when the cover is opened.

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 therein:

Figure 1 is a fragmentary sectional view taken through a dispenser constructed in accordance with my invention; and

Figure 2 is a vertical sectional view taken substantially along line II—II of Figure 1.

In the drawings, I have shown a fragmentary section taken through a dispenser constructed in accordance with my invention, for diluting and dispensing various types of concentrates or fluids, such as concentrated fruit juices, vegetable juices, malts, liquors, colas, flavors and the like directly from the concentrate containing can, and particularly adapted to dilute concentrated fruit and vegetable juices to the normal consistency of the juice of the fresh natural fruit or vegetable, and deliver a cool uniformly mixed juice for drinking purposes.

The dispenser may include a casing 10 mounted on a base 11. The casing 10 may be cylindrical in form and may have a bottom spaced above the base 11, recessed to provide an annular shoulder 14 receiving the bead of the bottom of a can 15, which may contain the concentrate to be dispensed, and centering the can with respect to the wall of the casing 10. The can may be pierced by the usual form of piercing opener used for opening cans containing fluids to accommodate an arcuate dispensing tube 16 to be extended therein. It should be understood that in the present instance, while the concentrate contained within the can may be free flowing, it is usually thick and in a slushy state at atmospheric pressure and is taken from the can by suction attained by the diluting fluid flowing through a venturi member 17 with which the tube communicates, as will hereinafter more clearly appear as this specification proceeds.

A support arm 18 of a support 19 for a cup or glass 20 extends beneath the bottom 12 and is pivotally mounted on spaced spacer plates 21, 21 on a transverse pivot pin 22. A water valve 23 for the diluting water is shown as being mounted in the base 11, adjacent the forward end of the casing and as having a push button 24 slidably mounted therein and extending upwardly therefrom. The push button 24 forms on its upper end, a support for the arm 18 and opens the valve 23, for the flow of water through a pipe 25 to the venturi member 17. The pipe is shown as being connected with a fitting 26 having a male fitting 27 threaded therein. The male fitting 27 is shown as being shouldered at its interior and as having a flexible flow control annulus 29 abutting the shouldered portion thereof to flex inwardly of the shoulder of the fitting 27 as the pressure of water against said annulus increases. This will reduce the flow area of the orifice through said annulus, and maintain the volume of water flowing therethrough uniform as the pressure increases, as in the flow control of Patent No. 2,389,134, which issued to Clyde A. Brown on November 20, 1945, and no part of my present invention, so not herein shown or described further.

The fitting 27 is shown as having a pipe 30 forming a continuation thereof and communicating with a passageway 31 in a post 32, extending upwardly along the rear end portion of the casing 10. The post 32 is shown as having a depending boss extending downwardly within a boss portion 34 of the casing 10 and secured to said boss portion and to the base 11 as by a machine screw 35, threaded therein from the bottom of said base. The post 32 likewise has a passageway 36 for diluting water leading upwardly therealong, and forms a pivotal support at its upper end for a dispensing arm 37.

As shown in Figure 2, the passageway **36** in the post **32**, extends upwardly along the post **32** to a position adjacent the upper end thereof and then is restricted and closed at its upper end portion, and has an opening **39** opening to one side thereof. The opening **39** has a bearing member **40** mounted therein having a passageway **41** leading therethrough into a passageway **42** leading into a hollow depending portion **43** of the dispensing arm **37**.

As herein shown the closed upper end portion of the post **32** is of an arcuate form, the center of the arc of which is struck about the center of a recess **44** in the bearing member **40** about which the dispensing arm **37** pivots. The hollow depending portion **43** of the dispensing arm **37** is shown as being flattened on opposite sides thereof, one side of which extends along the bearing member **40** and has a boss **46** extending inwardly therefrom. The boss **46** has pivotal engagement with the recessed portion **44** of the bearing member **40**, to pivot thereabout. The upper end portion of the post **32** has an annular threaded portion **48** extending along the opposite side of the depending portion **43** from the boss **46** and threaded to receive a retaining nut **49**, threaded therein and biasing a leaf spring **50** into engagement with the wall of the depending portion **43**. An annular seal **51** encircles the opening **39**, coaxial with the center of the boss **46** and abuts the depending portion **43** of dispensing arm **37**, to seal water from leaking at the pivotal joint between said post and dispensing arm.

When the dispensing arm **37** is in the position shown in Figures 1 and 2, fluid will freely flow through the passageway **36** out the passageway **41** and into the passageway **42** and along a passageway **53** extending along the dispensing arm **37** to the forward end thereof. When, however, the dispensing arm **37** is pivoted upward about the axis of the boss **46**, the passageway **42** will come into engagement with the outer face of the sealing member **40** and out of registry of the passageway **41**, to shut off the flow of water through the dispensing arm **37**.

The dispensing arm **37** is shown as having a fitting **55** mounted in and projecting from its forward end and in communication with the passageway **53**. The fitting **55** is shown as forming a support for the venturi member **17**, and as being sealed thereto as by an O ring **56**. The interior of the fitting **55** is shown as communicating with a fluid passageway **57** extending along the venturi member **17** and terminating into the base of a frustoconical passageway **59**, forming the upstream side of the venturi. The apex of the passageway **59** leads into a reduced diameter neck terminating into vacuum chamber **60**, which in turn communicates with an inverted truncated cone-like passageway **61**, leading into a passageway **62** of a downwardly turned spout **63**, directed to direct the mixed concentrate into the glass or cup **20**.

The venturi member **17** likewise has a downwardly extending hollow boss **64** extending through a cover **65** of the container **10** and secured thereto, to open and close said cover upon pivotal movement of the dispensing arm **37** about the axis of the boss **46**. The cover **65** may be of any well known form, and is provided to prevent foreign matter from getting into the concentrate can during the dispensing of concentrate therefrom, and may be a relatively loosely fitting cover to retain the pressures within the casing **10** at substantially atmospheric pressure.

Within the boss **64** is mounted a fitting member **67** having a vacuum chamber **69** at its upper end portion, communicating with a truncated cone-like passageway **70**, the apex of which opens into the vacuum chamber **60**. The bottom of the vacuum chamber **69** is being shown as of an inverted truncated cone-like form and as having a passageway **71** leading therefrom, from which extends the arcuate tube **16**. A ball **72** is shown as being provided in the chamber **69** and engaging the mouth of

the passageway **71**, and serving as a check valve, to prevent the dispensing and diluting fluid from leaking into the concentrate can, when the water valve **23** is shut off.

The tube **16** is shown as being curved about an arc struck from substantially the center of the boss **46**. The tube **16** thus passes through the pierced opening of the can **15**, when the dispensing arm is pivoted downwardly. The lower end of said tube is shown as being positioned at substantially the bottom of the can, when the cover **65** is closed.

It may be seen from the foregoing that a novel and simplified form of dispenser for dispensing concentrates directly from the concentrate containing can has been provided, in which the concentrate is aspirated from the can, by the mixing fluid supplied in a uniform volume through the flow control annulus **29**, to mix with and dilute the concentrate.

It may further be seen that when the dispensing arm **37** is in an uppermost position and the cover **65** is completely opened, that the aspirating tube **16** is removed from the inside of the concentrate can and accommodates the ready removal of empty cans and insertion of full cans within the container **10**.

It may also be seen that when the arm **37** is up that the supply of water through the venturi is shut off, thus avoiding the discharge of water through the venturi in case the valve **23** should accidentally be turned on, and that when inserting a new pierced can within the container it is simply necessary to position the pierced opening of the can so the leading end of the tube **16** will pass therethrough, and then pivot the arm **37** and cover **65** dowwnardly to close the top of the container, at which time the dispenser is ready to dispense the concentrate merely by pressing down on the glass **20** or the arm **18**.

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

I claim as my invention:

1. In an apparatus for dispensing concentrates from a concentrate container in a region of atmospheric pressure, a casing adapted to contain a concentrate container having a pierced top, a pivoted venturi movable from a position out of registry with said casing into a position to extend along said casing, said venturi having a throat and a vacuum chamber communicating therewith, an aspirating tube leading from said vacuum chamber and formed to conform to the path of movement of said venturi to move into the opening formed by the pierced top of the concentrate container within said casing as said venturi is moved to extend along said casing, a water valve and a fluid conduit connecting said water valve with said venturi, and a check valve in said vacuum chamber, blocking the seeping of water through said aspirating tube when said water valve is turned off and opening upon the creation of a vacuum within said vacuum chamber upon the turning on of said water valve.

2. In an apparatus for dispensing concentrates directly from a concentrate container, a casing adapted to receive and encase a concentrate container, a pivoted venturi member movable from a position out of registry with said casing into a position to extend along said casing, said venturi member having a venturi therein having a restricted throat and a vacuum chamber communicating therewith and depending therefrom, an arcuate aspirating tube leading from said vacuum chamber and formed on an arc struck from the axis of pivotal movement of said venturi member to move within the concentrate container upon downward movement of said venturi member, a valve controlling the passage of aspirating and diluting water into said venturi, a pressure line leading from said water valve to said venturi, and a check valve in said vacuum chamber, blocking diluting water from seeping into the concentrate container when said water valve is turned off.

3. In an apparatus for dispensing concentrates directly from a can containing the concentrates, a casing adapted to receive a can of concentrates, a pivoted venturi member movable from a position free from the open portion of said casing to extend along said casing across the open portion thereof, said venturi member having a venturi extending therealong having a restricted throat and a vacuum chamber communicating therewith and depending therefrom, an arcuate aspirating tube leading from said vacuum chamber, the arc of said tube being struck about the axis of pivotal movement of said venturi, to position the lower end of said tube adjacent the bottom and one end of the can when said venturi is in position over the top of said container, a water valve, fluid passageway means connecting said water valve with said venturi and having a uniform volume control valve therein, providing a uniform volume of mixing fluid regardless of pressure variations in the water at the source, and a check valve in said vacuum chamber preventing the seepage of water into said concentrate tube when said water valve is turned off.

4. A dispenser of a type adapted to dilute and dispense concentrates directly from a can, a casing adapted to contain a concentrate can, a cover for said casing, a venturi member mounted on said cover, and having a venturi extending therealong having a restricted throat, an aspirating tube leading from said venturi on the downstream side of said throat, means mounting said venturi member for pivotal movement about a transverse axis, to open said cover for the insertion and removal of concentrate cans within said container, and a conduit for mixing and aspirating fluid having connection with said venturi member through said pivotal mounting means therefor.

5. A dispenser of a type adapted to dilute and dispense concentrates directly from a concentrate container comprising a casing having a cover, a venturi member extending along said cover having a venturi extending therealong having a restricted throat and a vacuum chamber communicating with said throat, a hollow upright post having a water passageway leading therethrough, a pivotal mounting for said venturi member on the upper end of said post, mounting said venturi member and cover for upward swinging movement out of registry with said casing for the replacement of concentrate containers therein, a fluid passageway through said pivotal mounting from the hollow interior of said post to said venturi member, an aspirating tube leading from said vacuum chamber and movable within an opening into a concentrate container in said casing, upon downward pivotal movement of said venturi member to close said cover, a check valve in said vacuum chamber opening upon the creation of a vacuum therein by the passage of diluting water through said venturi, said check valve closing the upper end of said tube when the flow of water through said venturi stops, to block water from seeping into the concentrate container upon the completion of a mixing and dispensing operation.

6. A dispenser of a type adapted to dilute and dispense concentrates directly from a can, comprising a casing having a cover, a Venturi member extending along the top of said cover and mounted thereon, said Venturi member having a Venturi extending therealong with a restricted throat and a vacuum chamber communicating with said throat and leading to the interior of said cover and also having a discharge spout forming a continuation of said Venturi, a hollow upright post having a water passageway leading therethrough, a hollow dispensing arm transversely pivoted to said post and having communication with said water passageway through said pivotal mounting, said dispensing arm having said Venturi member and cover mounted thereon, a fluid passageway leading from said flow control member to the interior of said post for supplying fluid under pressure thereto, an aspirating tube leading from said vacuum chamber and formed on an arc struck from the center of pivotal movement of said dispensing arm, to enter a pierced top of a can in said casing and move therein to a position adjacent the bottom of the can upon downward pivotal movement of said Venturi member and the closing of said cover.

7. A dispenser of a type adapted to dilute and dispense concentrates directly from a can, comprising a casing having a cover, a Venturi member extending along the top of said cover and mounted thereon, said Venturi member having a venturi extending therealong with a restricted throat and a vacuum chamber communicating with said throat and leading to the interior of said cover and also having a discharge spout forming a continuation of said venturi, a hollow upright post having a water passageway leading therethrough, a hollow dispensing arm transversely pivoted to said post and having communication with said water passageway through said pivotal mounting, said dispensing arm having said Venturi member and cover mounted thereon, a fluid passageway leading from said flow control member to the interior of said post for supplying fluid under pressure thereto, an aspirating tube leading from said vacuum chamber and formed on an arc struck from the center of pivotal movement of said dispensing arm, to enter a pierced top of a can in said casing and move therein to a position adjacent the bottom of the can upon downward pivotal movement of said Venturi member and the closing of said cover, and the fluid connection through said pivotal mounting including means shutting off the supply of fluid to said venturi by upward movement of said venturi and arm.

8. In a dispenser for dispensing concentrates from a concentrate container, a casing for receiving a concentrate container, a venturi extending along the top of said casing in vertically spaced relation with respect thereto and pivotally mounted for movement toward and from said casing and having a throat and a discharge spout forming a continuation of said venturi on the downstream side of said throat, an aspirating tube leading from the downstream side of said throat and formed on an arc to pass within a noutlet opening in the container upon downward pivotal movement of said venturi, a passageway for diluting fluid leading to said venturi and having flow control means therein, maintaining a uniform flow rate of diluting fluid to said venturi, for creating a reduction in pressure at said throat and for aspirating concentrate from said container and diluting the concentrate, and valve means closing said aspirating tube and blocking the diluting fluid from entering the concentrate chamber when the flow of diluting fluid is turned off.

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