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A. P. ARZINO

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FILLING VALVE FOR SIRUPERS

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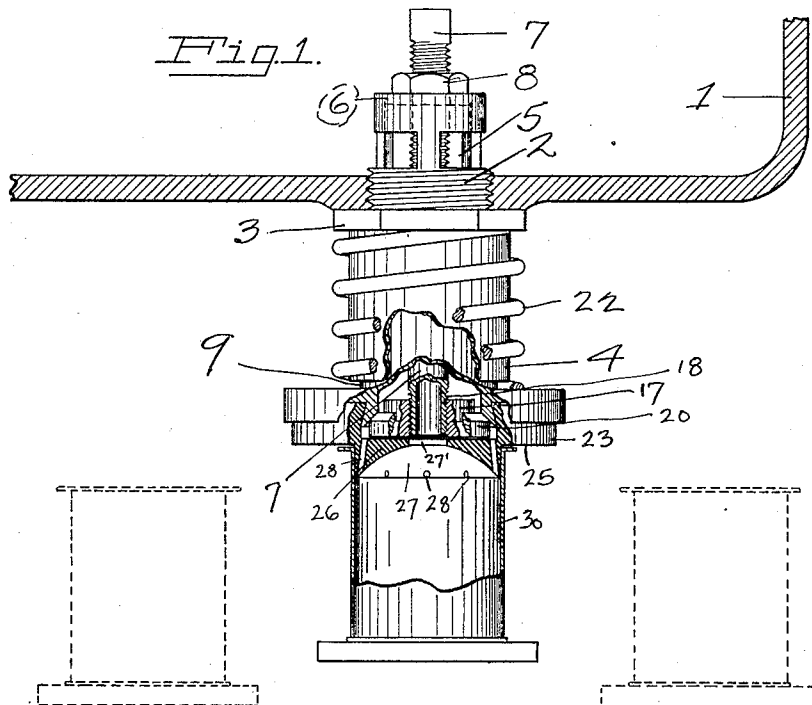


Fig. 3.

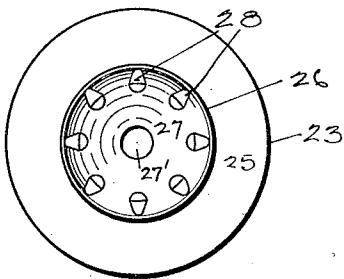


Fig. 4.

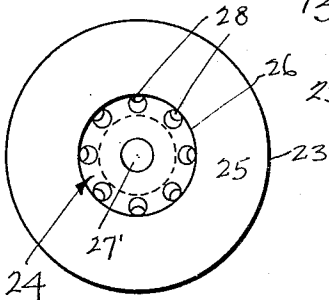
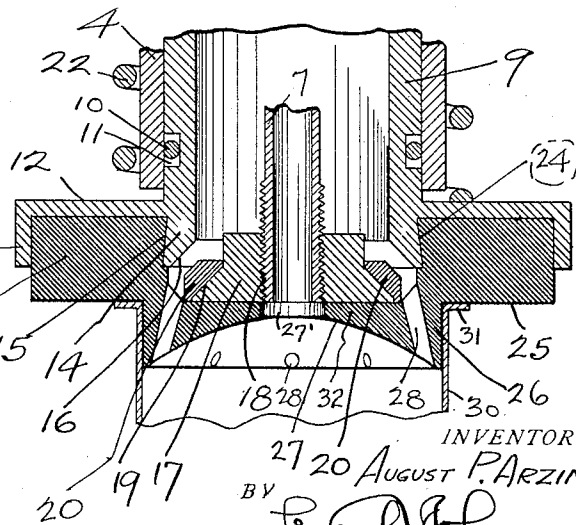


Fig. 2.



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FILLING VALVE FOR SIRUPERS

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This invention relates particularly to filling valves especially adapted to siruping machines used in the canning industry, and particularly to valves for this purpose adapted, the object of which is to enter a displacement body into the can, to automatically provide for the requisite volume of sirup in the can, preparatory to introducing the can or cans into an exhaust box.

10 An object of the invention is to provide a siruping means embodying a valve of simple construction, provided with means thereon to enter the can to be siruped, the said means being adjustable to regulate the amount of sirup to be supplied to the cans according to the size thereof, and a device which is readily and conveniently removable for cleansing or repairs.

20 A further object of the invention is to provide a siruping valve for cans in which the volume of sirup to enter the can may be varied according to circumstances and any excess sirup returned to the source of supply, and also to provide a valve for siruping the cans that will be well ventilated and will avoid undue pressure upon the relatively solid contents of the cans while being filled.

30 Other objects of the invention are to provide a siruping valve that will be superior in point of simplicity, inexpensiveness of construction, positiveness of operation, and facility and convenience in use and general efficiency.

35 In this specification and the annexed drawing, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms, and it is also to be understood that in and by the claims following the description, it is desired to cover the invention in whatsoever form it may be embodied.

In the accompanying one sheet of drawing

45 Fig. 1 represents a vertical sectional elevation of a siruping valve constructed in accordance with my invention.

Fig. 2 is an enlarged cross section taken through the siruping valve structure.

50 Fig. 3 is a bottom plan view of the resil-

ient displacement member to enter the can to be filled.

Fig. 4 is a plan view of the top side of the displacement member shown in Fig. 3.

In the drawing accompanying this application, I have deemed it sufficient to only illustrate a single siruping valve in connection with only so much of the conventional assembly of a siruping machine as may be necessary for an understanding of the filling valve structure, it being apparent that the details of the siruping machine per se have no bearing on the present case, and may be of any desirable character. The construction of my siruping valve and the displacement member thereon, through which the sirup is entered into the cans to be filled, is such that the drip from the valve after the requisite volume of sirup has been supplied to the cans is practically eliminated, and in addition any excess amount of sirup delivered into the can is returned to the source of the sirup supply, thereby conserving in the amount of sirup being used, and doing away with the sirup being spilled over the cans. It has also been a practice heretofore to make the siruping valves out of material that has no give or resiliency, and as a result it is not readily possible to get the same close fitting contact between the valve and the cans to be filled as in a case where the filling valve is provided with a resilient displacement member capable of adjusting itself to the contour of the can to be filled. The solid and non-resilient type of siruping valve has a tendency to crush or squeeze the can contents which is disadvantageous in canning such tender fruits as pears, peaches and the like.

In detail, the construction illustrated in the drawing comprises the sirup tank 1 of a siruping machine, into the bottom of which is screwed at 2 the outlet fitting 3, formed with a circular projection 4 thereon. The outlet fitting 3 is a part of the siruping valve to be hereinafter described. The screw end 2 of the fitting 3 has an extension continuing into the siruping tank 1 which is provided with ports 5 therein through which the sirup from the tank 1 may flow into the interior of the

fitting 3. The end of the fitting 3 within the tank 1 is provided with a threaded support 6 thereon in which an air-exit-duct or sirup return pipe 7 is adapted to be adjustably mounted. The duct 7 extends centrally within the fitting 3 so that the axis thereof is concentric with the axis of the circular end 4 of the fitting. A lock nut 8 is placed around the pipe 7 to bear against the support end 6 of the fitting 3 to locate the pipe 7 in any selected position to thereby vary the distance that the concave center of the disc gasket 23 will extend into the can to be filled, when the center of said concave center is deflected by the valve 17.

The base 4 on the fitting 3 is circular in contour and forms a slide bearing for a cylindrical valve sleeve 9. The valve sleeve 9 telescopes within the circular base 4 and is reciprocable therein. The valve sleeve is adapted for vertical movement on the base of the outlet fitting 3, and a tight joint between the valve sleeve and circular base is effected by a rolling gasket 10 interposed in an annular groove 11 cut around the valve sleeve 9. The valve sleeve 9 has a base flange 12 thereon which is provided with a peripheral shoulder 13 on the peripheral edge thereof, said shoulder being parallel to the axis of the sleeve 9. An annular shoulder 14 extends outwardly from the under face of the flange 12 to form a continuation of the valve sleeve 9. The shoulder 14 is tapered exteriorly at 15 toward the face of the flange 12 whereby the diameter of the annular shoulder 14 is greater at its outer edge than at the point where said annular shoulder joins to the flange. The inner edge 16 of the shoulder 14 is beveled to provide a valve seat.

The valve sleeve 9 is adapted to be slidably mounted in the outlet fitting 4 and held in place thereon by a mushroom valve 17 that is screwed into engagement with a threaded end 18 of the pipe 7. The valve has an edge beveled at 19 to seat against the beveled edge 16 of the annular shoulder 14. I have found that a metal to metal contact between the valve and valve seat does not insure the uniform tight seating to prevent sirup leakages that can be effected by arranging a rubber edging 20 around the beveled valve seat 16. The resilient edging 20 is pliant enough to insure a perfect seat between the valve and valve seat, and hence eliminate any leakage or wastage of sirup.

In order to maintain the reciprocable valve sleeve 9 in contact with the valve 17, I provide an expansion spring 22 around the circular base 4 on the outlet fitting 3. The opposite ends of the expansion spring 22 bear against the outlet fitting 3 and the flange 12 on the valve sleeve to keep the movable valve seat in contact with the stationary valve until such time as the tension of the spring is overcome to unseat the valve and valve seat.

A disc 23 of resilient material is provided to fit within the circumferential shoulder 13 around the base flange and said disc has a recess 24 therein that engages the tapered, annular shoulder 14 projecting centrally from the said base flange 12. The tapered annular shoulder 14 provides sufficient grip when engaged in the recess 24 in the gasket disc 23 to hold said gasket in fixed placement on the under side of the base flange. The bottom face 25 of the disc 23 has an annular projection 26 formed integrally therewith and extending centrally therefrom, the bottom face 27 of the annular projection 26 being dish shaped, concaved or bell shaped. The projection 26 is in contact with the bottom face of the mushroom valve 17. An opening 27' is provided through the center of the projection 26 to register with the opening in the pipe 7. A plurality of openings 28 are arranged adjacent the lower edge of the projection 26 to communicate the interior of the recess 24 in the disc gasket with the outer peripheral edge of the projection 26 formed on the opposite face of the disc gasket.

The diameter of the projection 26 is substantially the same as the inside diameter of the can into which the sirup is to be placed. The can 30 to be filled with sirup is arranged beneath the siruping valve and the can is elevated into contact with the disc gasket 23 whereby the annular projection 26 on the said gasket 23 enters into the can to be filled and the beaded edge 31 of the can rests against the bottom face 25 of the disc gasket 23. The apparatus for moving the cans relatively to the siruping valve and for raising and lowering the can to be siruped into and from engagement with the siruping valve is conventional and I do not claim anything new or novel therein with respect to the present invention. A can 30 to be filled with sirup is registered with the siruping valve and the said open mouth of the can elevated into contact with the valve structure, wherein the dish shaped annular projection 26 on the disc gasket 23 enters into the can and the beaded edge 31 of the can 30 engages the flat surface 25, of the said disc gasket around the annular projection 26. The sirup from the tank 1 enters the outlet fittings 3 and is stopped from discharging by the seating contact between the valve 17 and valve sleeve 9. The can to be filled is elevated in contact with the gasket disc 23, forming a tight joint therewith, and at the same time raises the valve sleeve 9 from the valve 17, the valve sleeve sliding upwardly in its supporting bearing 4 against the tension of the spring 22. At the moment of unseating the sleeve valve 9 from the valve 17, the sirup passes downwardly through the ports 28 in the disc 23 into the can. The sirup will fall into the can 30 and the air in the can is displaced by the sirup to escape upwardly through the duct or pipe 7.

The can is timed to stay under the siruping valve so that only a proper amount of sirup will be discharged. Should an excessive amount of sirup enter the can the same can be returned to the sirup tank through the pipe 7. When the can is being filled with sirup, the bottom 32 of the annular projection 26 on the disc gasket 23 is forced downward into the can a slight distance, as shown in Fig. 2. Fig. 1 shows the projection 26 in the inoperative position before the can is moved toward the mushroom valve 17. The area occupied by the gasket 23 in the can during the filling operation serves to displace from the can a sufficient amount of sirup that will thereafter permit the can to be sealed with the proper volume of contents therein. The position of the displacement space thus determines the volume of sirup supplied, and this volume may be varied by regulating the position of the pipe 7 and the valve 17 for varying the extent of the penetration of the center of the resilient projection 26 into the can. The distance that the annular shoulder 26 with the concave face 27 on the bottom thereof is projected into the can by the valve, thus regulates the amount of sirup which will be filled in the can, and insures that the can will not be filled to overflowing with sirup. The resilient shoulder 26 on the gasket disc meets the outer edges of the can and also the solid contents of the can. The engagement is soft enough not to damage or bruise the contents of the can, and is resilient enough to give way under pressure. When the can is full of sirup it is dropped away from the filling valve, and the valve sleeve 9 automatically engages the stationary valve 17 to prevent the discharge of sirup from the supply tank. After the can is lowered, there is no drip from the filling valve due to the resilient seating between the valve sleeve and valve.

Having thus described this invention, what I claim and desire to secure by Letters Patent is:

1. In a can filling valve structure for sirupers, the combination of an inverted dish shaped resilient member positioned within the can and in close contact with the inner end thereof adapted to provide a displacement body, said member having a central air exit duct; means for supplying sirup to the can; and means for adjusting said member to vary the concavity of the dish-shape thereof.

2. In a can filling valve structure for sirupers, the combination of an inverted dish shaped resilient member spaced within the can and in close contact with the inner end thereof to form a displacement body, said resilient member having a central air exit duct and openings at its base periphery; means for supplying the sirup to the can through the openings within the periphery

of said member, and means for adjusting said member to vary the concavity of the dish shape thereof.

3. In a can filling valve structure for sirupers, the combination of an inverted dish shaped resilient member spaced within the can to form a displacement body, said resilient member having a central air exit duct and openings at its base periphery means for supplying the sirup to the can through the openings within the periphery of said member; and means for adjusting said member to vary the extent of displacement by the dished center of the said member in the can.

4. In a can filling valve structure for sirupers, the combination of a valve for controlling the communication between the sirup supply tank and the can, and adapted to be opened under the pressure of the can; and an inverted dish shaped resilient member positioned within the open top of the can and in close contact with the inner wall thereof, adapted to form a displacement body, said member having a central air exit duct, and adjusting means to vary the concavity of the dish shaped member adjacent the air duct.

5. In a can filling valve structure for sirupers, the combination of a valve for controlling the communication between the sirup supply tank and the can, and adapted to be opened under the pressure of the can; an inverted dish shaped resilient member positioned within the open top of the can and in close contact with the inner wall thereof adapted to form a displacement body, said member having a central air exit duct; and means for adjusting said member to vary the extent of displacement by the dished center of the said member in the can.

6. A filling valve structure for sirupers comprising an outlet fitting depending from a sirup supply tank adapted to communicate with an associated can to be filled; a valve depending from said outlet fitting and lying freely in the open top of the can; a spring controlled valve seat slidably mounted upon said outlet fitting, the face of said valve seat contacting with said valve and the top edge of the can, whereby the communication of the tank and the can is normally closed, and is opened by the upward pressure of the can; and an inverted concave resilient member associated with the valve seat and underlying the valve and in close contact with the inner wall thereof, adapted to form a displacement body within the can, said resilient member having a central air exit duct.

7. A filling valve structure for sirupers comprising an outlet fitting depending from a sirup supply tank adapted to communicate with an associated can to be filled; a valve depending from said outlet fitting and lying freely in the open top of the can; a spring controlled valve seat slidably mounted upon said outlet fitting, the face of said valve seat

contacting with said valve and the top edge of the can, whereby the communication of the tank and the can is normally closed, and is opened by the upward pressure of the can; 5 and an inverted concave resilient member associated with the valve seat and underlying the valve, adapted to form a displacement body within the can, said resilient member having a central air exit duct; and means for 10 vertically adjusting the concavity of said resilient member to vary the volume of the displacement in the can.

8. In a can filling valve structure for sirupers, the combination of a valve for controlling the communication between the sirup supply tank and the can, and adapted to be opened under pressure of the can; a resilient cushion member associated with the valve to engage the open end of a can having a resilient displacement member thereon adapted 20 to enter a can to be filled to determine the sirup volume to be supplied, such displacement member having ports therein through which sirup is supplied to the can, and an air exit duct through which air displaced 25 from the can can be discharged.

9. In a filling valve structure for sirupers, the combination of an inverted concave resilient member adapted to contact a can internally and adapted to form a displacement 30 body, said member having a central air exit duct, there being ports within the periphery of said resilient member through which sirup is supplied to the can; and means for opening 35 and closing the passage of sirup through the ports to the can to be filled, independently of the air exit duct.

10. A filling valve structure for sirupers comprising an outlet fitting from a sirup supply tank adapted to communicate with an associated can to be filled, said fitting having an inverted concave resilient base adapted to contact the can internally and adapted to form a displacement body, said resilient base 45 having an air exit duct leading from the center thereof; an air exit pipe fitted in said outlet fitting and communicating with the air exit duct, said pipe leading up through the fitting and into the sirup supply tank above 50 the level of the sirup therein, a valve on the air exit pipe having a valve seat at its outer portion, there being a plurality of ports arranged around the periphery of the resilient base; and a slidably mounted valve sleeve 55 carried by the said outlet fitting and having a valve member coacting with the valve seat on the air exit pipe, to normally close the communication between the said fitting and the can interior under the contact pressure of 60 the can top.

In testimony whereof, I have hereunto set my hand at San Jose, California, this 4th day of April, 1927.