

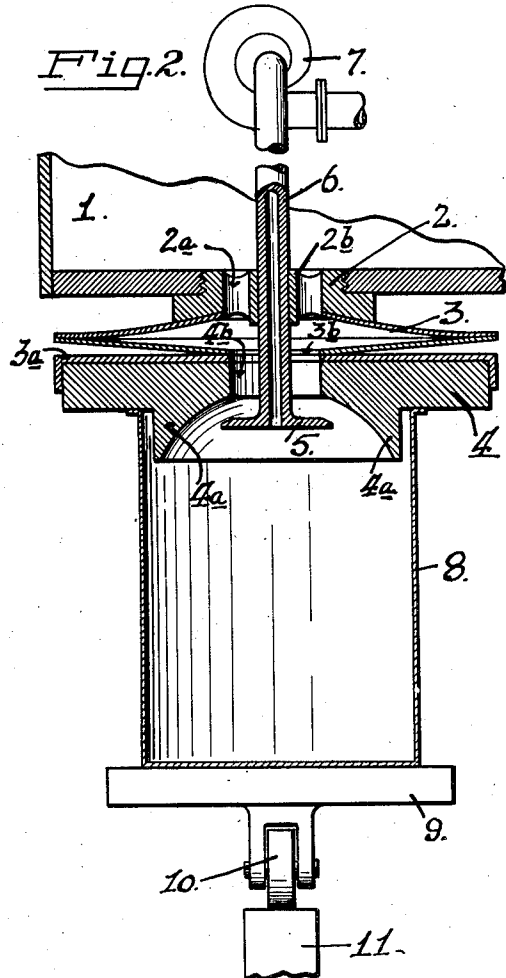
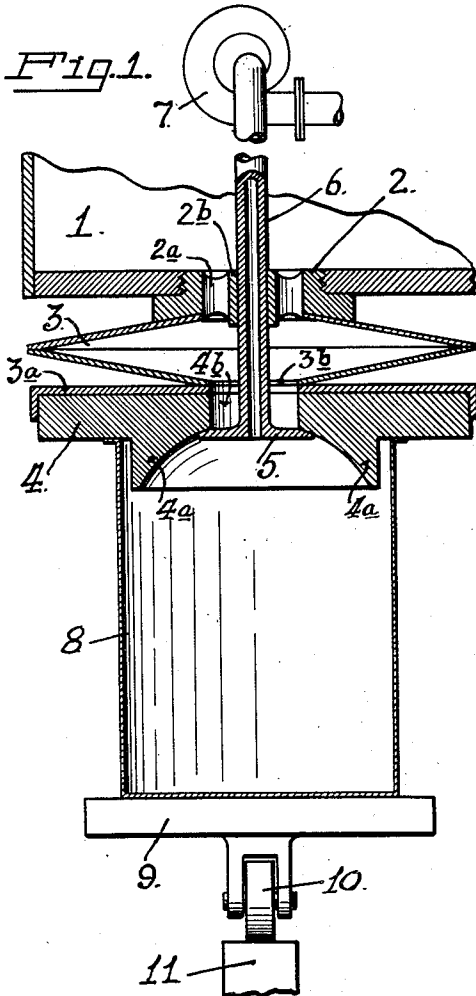
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FILLING VALVE FOR SIRUPERS

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FILLING VALVE FOR SIRUPERS

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My invention relates, in general, to liquid filling-valves especially those adapted for siruping machines used in the canning art, and, in particular, to that type of valve comprising a can-seating member; and an associated inverted dish-shaped member which enters the can as the latter is raised to and lifts the seating member to open the valve to the flow of sirup.

The object of my invention is to simplify the valve in its structure and to render it more efficient, accurate, certain and speedier in operation.

To this end my invention comprises a can-seating member formed with a centrally ported, downwardly extending inverted, dish-shaped can-entering hub; a yieldable body-member carrying said seating member and communicating with its hub port, said body member also communicating with the source of sirup supply; an apertured valve head controlling said hub port, and having an air venting stem leading from the apex of the cavity of the dish-shaped hub to the exterior; and means in association with said stem for producing a vacuum therein.

In the accompanying drawings, my improved valve is illustrated in its preferred form, it being understood that changes may be made without departing from the spirit of the invention as defined by the claims hereunto appended.

Fig. 1 is a vertical section of my valve showing its closed position, with a can just reaching the seating member.

Fig. 2 is a similar section showing the valve opened by the elevation of the can.

1 indicates a tank in which the sirup is contained. 2 is a spider-coupling screwed into the tank bottom, the spaces 2^a between the spider arms forming outlets for the sirup from the tank. 3 is an expansible and contractible body member secured above to the coupling 2 and communicating through the spaces 2^a thereof with the tank interior. The

body member 3 is, in practice, made of discs of springy sheet metal forming a bellows-like diaphragm, and is provided with a base plate 3^a through the axis of which the member opens at 3^b.

4 is the can-seating member, consisting of a rubber disc carried by the base plate 3^a of the body member 3. This disc, which for convenience I call the can-rubber, serves the double purpose of the can-closure and the can-entering member, the hub 4^a being extended downwardly and having an inverted dish shape. The hub 4^a is centrally ported at 4^b registering with the opening 3^b in the base plate 3^a of the body member 3. The port 4^b is controlled from its under side by an apertured valve head 5, carried by a stem 6 which passes up through the body member 3, and through the hub 2^b of the spider coupling 2 which serves as a steadying guide for it. The stem 6 is a hollow one with a through bore opening below through the valve head 5 into the apex of the concavity of the can entering hub 4^a, and said stem extends upwardly through the tank 1 to the exterior. With the upper end of the stem 6 is associated either directly or indirectly a means for producing a vacuum in said stem. One form of such means and association is here shown as a vacuum pump 7. 8 is a can, supported on a table 9 having a foot-roller 10 which travels on a cam-track 11, these parts being herein shown as typical of a means for elevating the can to the valve and removing it therefrom.

The operation of the valve is as follows:—

The normal closed position, shown in Fig. 1, is due to the expansion of the body member 3 holding the can-rubber 4 down upon the valve head 5, thus cutting off the passage of the sirup from the tank.

When lifted into contact with the rubber 4, the can is closed and the hub 4^a is entered into the can a predetermined distance which, as is common in the general type of valve,

defines the volume of sirup to be left in the can, the concavity of the hub also functioning, as usual, as a space within which the more solid contents of the can may rise without injury.

As the can is elevated still more, as in Fig. 2, it raises the can rubber 4, the body member 3 collapsing, and said can rubber lifts away from the valve head 5, thus opening communication for the passage of the sirup through the axis of the device, centrally into the can.

During the continuance of this open position, the sirup fills the can to its top around the hub 4^a; it also fills the hub cavity and rises in the stem 6, seeking its general level. During this filling of the can, the air passes out through the stem 6, and in case the pump 7 be running continuously, the suction will assist the escape of the air.

As soon as the can is filled as described above, it is lowered to its initial position. The first part of this movement, which brings the parts to the positions shown in Fig. 1, results in the closing of the liquid port 4^b by the valve 5, thus cutting off the flow of liquid, this action being caused by the expansion of the body member 3 which causes the can rubber 4 to remain seated upon the rim of the can and follow it downward until arrested by the valve 5.

The can, however, continues to descend until its rim is below the bottom of the hub 4^a, so that it can be removed. When the rim of the can first leaves the surface of the rubber 4, atmospheric air is admitted, and the difference between the atmospheric pressure and the lowered pressure or suction in the hollow valve stem 6 causes the liquid to descend in the can around the outside of the hub 4^a and to rise through said stem. This action continues until the level of the liquid outside said hub reaches the bottom thereof, whereupon the liquid seal is broken and air enters the suction tube 6. A certain quantity of liquid, predetermined by the size of the hub 4^a, is thus drawn out of the can, reducing its level to the desired point.

The action of the suction, which may be either continuous or intermittent in timely relation to the movement of the can, not only reduces the liquid remaining in the can by a predetermined amount, but prevents spilling around the rim of the can as it leaves the rubber 4, and also prevents drip from the vent tube or stem 6 by withdrawing all the liquid therefrom. By the dish shape of the hub 4^a provision is made as usual for the rise of the solid can contents into the hub cavity.

I claim:—

1. A liquid filling valve comprising a hollow compressible and expansible metallic body member fitted to a source of liquid supply; an underlying ported seating member carried by said body member by the compression and expansion thereof; an apertured

valve-head controlling the port of said seating member; and an air vent stem carrying said valve head.

2. A liquid filling valve comprising a hollow resilient body member fitted to a source of liquid supply; an underlying seating member carried by said body member, having a downwardly projecting, ported inverted, dish-shaped hub; an apertured valve head, controlling the port of said hub; and an air vent stem carrying the valve head.

3. A liquid filling valve comprising a hollow resilient body member with openings in its axis above and below; a ported coupling for connecting said body member in communicative relation with a source of liquid supply; an underlying seating member carried by said body member, having an aperture aligned with the bottom opening of said body member; an apertured valve-head controlling said seating member aperture; and an air vent stem carrying said valve head.

4. A liquid filling valve comprising a hollow resilient body member with openings in its axis above and below; a ported coupling for connecting said body member in communicative relation with a source of liquid supply; an underlying seating member carried by said body member, having a downwardly projecting inverted, dish-shaped hub with an aperture aligned with the bottom opening of said body member; an apertured valve-head controlling said apertured hub; and an air vent stem carrying said valve head and leading out through the body member to the exterior.

5. A liquid filling valve comprising a yieldable body member fitted to a source of liquid supply; an underlying seating member carried by said body member having a downwardly projecting, ported, inverted dish-shaped hub; an apertured valve-head controlling the port of said hub to open and close it by the yielding of said body member; an air vent stem carrying said valve head; and means in association with said stem for producing a partial vacuum therein.

6. A liquid filling valve comprising a body member fitted to a source of liquid supply; an underlying seating member carried by said body member, having a downwardly projecting, ported inverted, dish-shaped hub adapted to enter the container to be filled; an apertured valve head, controlling the port of said hub; an air vent stem carrying said valve head; and means in association with said stem for producing a partial vacuum therein.

7. A liquid filling valve comprising a hollow resilient body member with openings in its axis above and below; a ported coupling for connecting said body member in communicative relation with a source of liquid supply; an underlying seating member carried by said body member, having a downwardly projecting inverted, dish-shaped hub with an

aperture aligned with the body opening of said body member; an apertured valve-head controlling said apertured hub; an air vent stem carrying said valve head and leading out through the body member to the exterior; and means associated with said stem for producing a partial vacuum therein.

8. A liquid filling valve comprising a hollow compressible and expansible member fitted to a source of liquid supply, said member comprising peripherally closed opposing metallic disks, a ported seating face carried by said member adapted for contact with the container to be filled; and a valve member adapted to control the port of said seating face by the compression and expansion of said member.

In testimony whereof I have signed my name to this specification.

ALBERT R. THOMPSON.