Aug. 4, 1931. W. C. BUTTNER 1,817,673

SIRUP PUMP

Filed Oct. 22, 1929

Fig. 1.

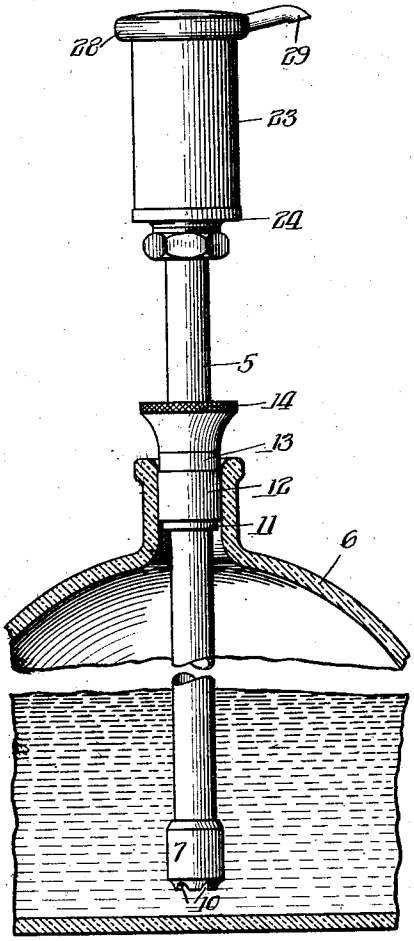


Fig. 2.

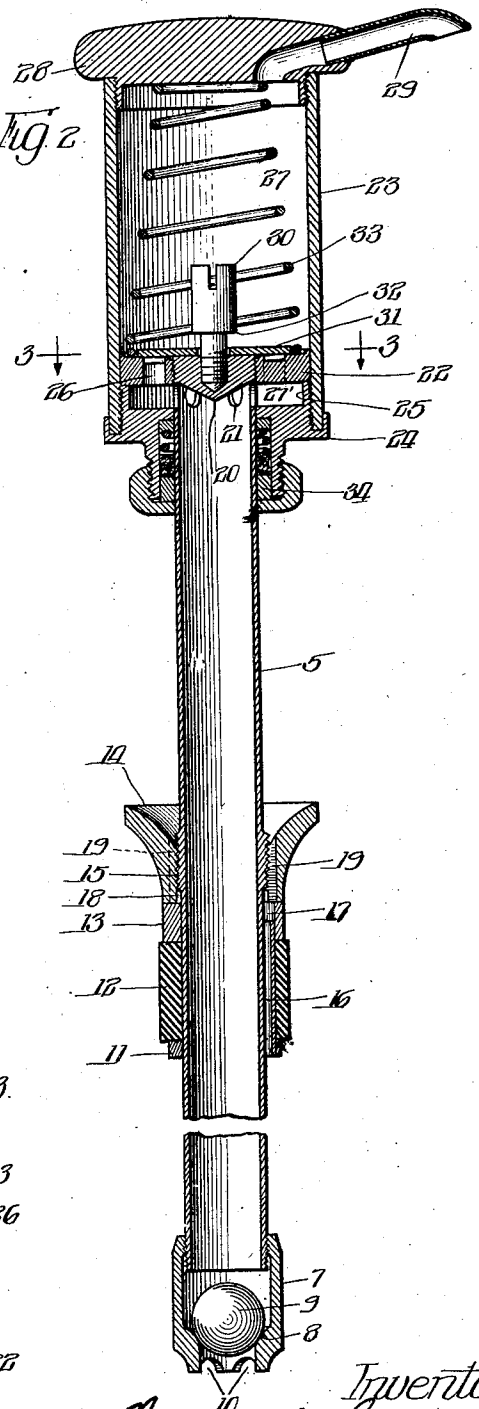
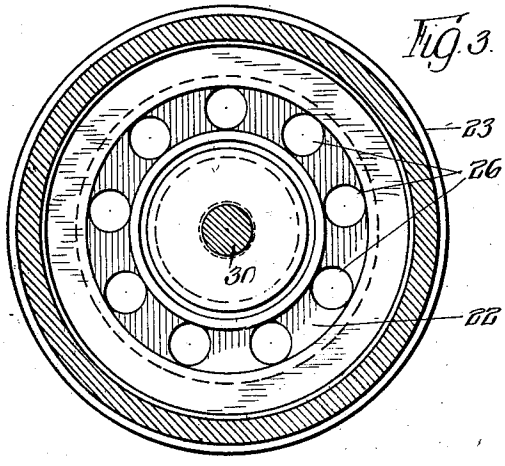


Fig. 3.



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Patented Aug. 4, 1931 1,817,673

UNITED STATES PATENT OFFICE

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SIRUP PUMP

Application filed October 22, 1929. Serial No. 401,395.

This invention relates to sirup pumps especially designed for use in bottles or jugs at soda fountains and other places to deliver a predetermined charge of sirup at each operation.

The invention also has for its object to provide a device of simple construction which is easy to operate and which will accurately deliver a predetermined charge of sirup at each complete operation.

In the accompanying drawings I have illustrated a selected embodiment of the invention and referring thereto,

Fig. 1 is an elevation of the pump arranged in a bottle which is shown in section.

Fig. 2 is an enlarged vertical sectional view of the pump.

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2.

The invention comprises a tube 5 adapted to be arranged in a bottle 6 and having a check valve at its lower end comprising an open ended casing 7 threaded on the tube and having interiorly a seat 8 to receive the ball valve 9. The lower end of the casing is cut away or scalloped at 10 to permit the sirup to flow from the bottle into the tube. The ball is confined in the casing between its seat 8 and the lower end of the tube and it will normally he held seated by the column of sirup in the tube. A plug is provided on the tube to be tightly fitted in the neck of a bottle or jug and support the pump rigidly therein. This plug comprises a collar 11 soldered or otherwise tightly fitted on the tube, a rubber sleeve 12 above the rigid collar, a loose collar 13 above the rubber sleeve, and an adjusting nut 14 threadedly engaging the tube at 15. When the plug is inserted in the bottle neck the nut is adjusted to compress the rubber sleeve from top to bottom and cause it to swell and tightly fit within the neck of the bottle. There is a continuous air vent through the plug from top to bottom formed in part by the tubular member 16 made fast to the tube 5 and extending through the rigid collar 11 and the sleeve 12 and partly through the loose collar 13 which is provided with a recess 17 to receive said member. The nut 14 has an annular recess 18 at its bottom which communicates with the recess 17 in the movable collar and from which a plurality of slots 19 extend upward through the top of the nut so that air may freely enter the bottle as the sirup is drawn therefrom. The upper end of the tube is provided with a plug 20 and with lateral openings 21 below the plug. A piston 22 is mounted on the upper end of the tube to operate in a cylinder 23 the lower end 24 of which is arranged to slide on the tube 5. The openings 21 are always maintained clear by the provision of an annular flange 25 on the inner face of the lower end of the cylinder which spaces the piston away from the body of said lower end. The piston has one or more openings 26 and communication is constantly maintained between the chamber 27 above the piston in the cylinder and the tube through the openings 26 and 21 and the lower end 27′ of the chamber 27. The upper end of the cylinder is in the form of a cap 28 which is enlarged and rounded to receive pressure from the hand, and this cap is provided with a discharge spout 29. A bolt 30 is screwed into the plug 20 and is arranged within the cylinder to form a stop which is engaged by the cap 28 when the cylinder is forced downward to limit the movement of the cylinder. Stop bolts of different sizes can be provided to determine the movement of the cylinder on the tube and to control the charge of sirup discharged in each operation of the pump. The bolt provides a guide for a valve disk 31 which is loosely mounted on the bolt between the plug 20 and a shoulder 32. This valve disk projects over all of the openings 26 and is positioned within the spring 33 which engages at its lower end the piston outside of the openings 26 and engages at its upper end the cap 28, the function of the spring being to return the cylinder to up position after it has been depressed. A suitable stuffing box 34 is provided on the lower end of the cylinder to prevent leakage of sirup.

In practice the pump is tightly secured in the neck of a bottle, a jar or other receptacle. The check valve at the bottom of the tube may be clear of the bottle, as shown in Fig. 1, or it may rest on the bottom of the bottle. Or-

dinarily the tube and cylinder will be full of sirup, or if they are not, they can be filled by operating the pump quickly or by priming it. Assuming that the pump is filled with sirup, pressure is applied to the cap 28 to force the cylinder down on the piston and tube until the cap engages the stop 30. At the initial downward movement of the cylinder the check valve 9 will be held tightly closed by pressure thereon of the sirup in the tube, a predetermined charge of sirup will be discharged from the cylinder chamber 27 through the spout 29, and the valve disk 31 will remain seated closing the openings 26. When the cylinder is released or pressure is removed therefrom the spring 33 will return the cylinder to up position and the suction caused by this movement of the cylinder will unseat check valve 9 and valve disk 31 and cause sirup to flow into the cylinder chamber to replace that which was discharged.

The invention provides a structurally substantial pump of simple construction for discharging predetermined charges of sirup from a bottle or similar receptacle; it may obviously be used with other liquids; and while I have shown it in a form which is desirable for the purpose intended changes may be made in the construction and arrangement of parts without departing from my invention within the scope of the following claims.

I claim:

1. A sirup pump comprising a tube adapted to be mounted in the neck of a receptacle and having a closed upper end and a valved lower end, a pump cylinder slidably mounted on the upper end portion of the tube outside of the receptacle, a piston within the cylinder and mounted on the upper end of the tube, there being an opening in the tube communicating with the chamber in the cylinder and an opening in the piston, a valve within the chamber for the opening in the piston, a cap on the cylinder, a spring between the piston and the cap, said cap adapted to receive pressure for sliding the cylinder on the tube against the tension of the spring and the spring operating to return the cylinder to initial position when the pressure is removed, and a discharge spout for the cylinder.

2. A sirup pump comprising a tube adapted to be mounted in the neck of a receptacle and having a closed upper end and a valved lower end, a pump cylinder slidably mounted on the upper end portion of the tube outside of the receptacle, a piston within the cylinder and mounted on the upper end of the tube, there being an opening in the tube communicating with the chamber in the cylinder and an opening in the piston, a valve within the chamber for the opening in the piston, a cap on the cylinder, a spring between the piston and the cap, said cap adapted to receive pressure for sliding the cylinder on the tube against the tension of the spring and the spring operating to return the cylinder to initial position when the pressure is removed, means within the cylinder for limiting the downward movement thereof, and a discharge spout for the cylinder.

3. A sirup pump comprising a tube adapted to be mounted in the neck of a receptacle and having a closed upper end and a valved lower end, a pump cylinder slidably mounted on the upper end portion of the tube outside of the receptacle, a piston within the cylinder and mounted on the upper end of the tube, there being an opening in the tube communicating with the chamber in the cylinder and an opening in the piston, a valve within the chamber for the opening in the piston, a cap on the cylinder, a spring between the piston and the cap, said cap adapted to receive pressure for sliding the cylinder on the tube against the tension of the spring and the spring operating to return the cylinder to initial position when the pressure is removed, means within the cylinder for limiting the downward movement thereof and for limiting the movement of the piston valve, and a discharge spout for the cylinder.

4. A sirup pump comprising a tube adapted to be mouned in the neck of a receptacle and having a closed upper end and a valved lower end, a pump cylinder slidably mounted on the upper end portion of the tube outside of the receptacle, a piston within the cylinder and mounted on the upper end of the tube, there being an opening in the tube communicating with the chamber in the cylinder and an opening in the piston, a valve within the chamber for the opening in the piston, a cap on the cylinder, a spring between the piston and the cap, said cap adapted to receive pressure for sliding the cylinder on the tube against the tension of the spring and the spring operating to return the cylinder to initial position when the pressure is removed, means within the cylinder at the lower end thereof for limiting the downward movement of the cylinder to provide a clearance between the piston and the lower end of the cylinder for the openings in the upper end of the piston when the pump is at rest, and a discharge spout for the cylinder.

5. A sirup pump comprising a tube adapted to be mounted in the neck of a receptacle and having a closed upper end and a valved lower end, a pump cylinder slidably mounted on the upper end portion of the tube outside of the receptacle, a piston within the cylinder and mounted on the uper end of the tube, there being an opening in the tube communicating with the chamber in the cylinder and an opening in the piston, a valve within the chamber for the opening in the piston, a cap on the cylinder, a spring between the

piston and a cap, said cap adapted to receive pressure for sliding the cylinder on the tube against the tension of the spring and the spring operating to return the cylinder to initial position when the pressure is removed, an upstanding annular flange on the lower end of the cylinder for spacing the piston away from said lower end to clear the opening in the tube when the pump is at rest, and a discharge spout for the cylinder.

6. A sirup pump comprising a tube adapted to be mounted in the neck of a receptacle and having a valved lower end and a pump mechanism at its upper end, a plug on said tube for securing the tube rigidly in the neck of a receptacle, said plug comprising a laterally expansible rubber sleeve on the tube, a fixed collar on the tube at the bottom of said sleeve, a movable collar on the tube at the top of said sleeve, a tubular member on the tube extending through the rigid collar and the sleeve and partly through the movable collar, a nut threadly engaging the tube and bearing upon the movable collar for expanding the sleeve, said movable collar having a recess communicating with said tubular member and said nut having an annular recess communicating with said recess in the movable collar, and slots communicating with said annular recess.

WILLIAM C. BUTTNER.