April 19, 1932. J. B. TEESDALE ET AL 1,854,317

PUMP

Filed May 29, 1930

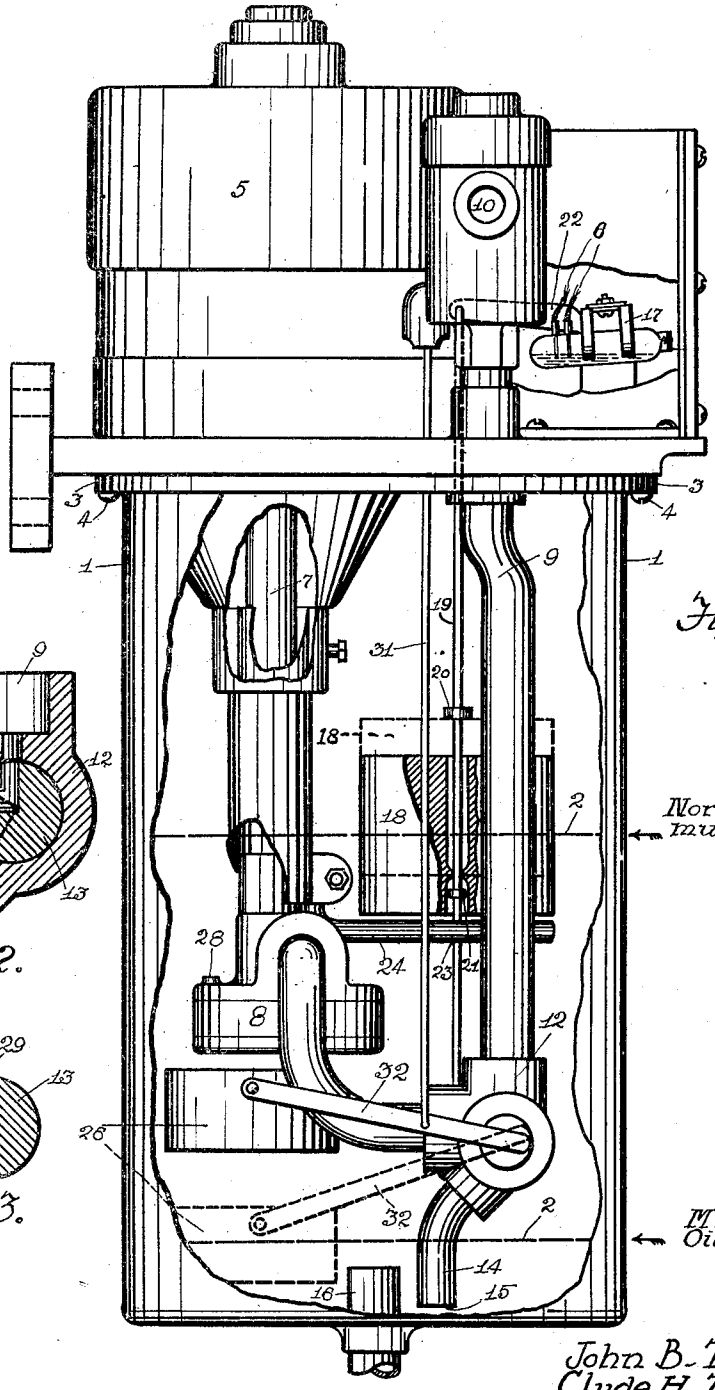

Fig. 1

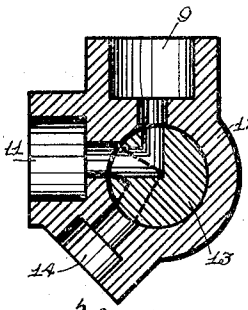

Fig. 2.

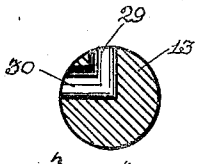

Fig. 3.

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UNITED STATES PATENT OFFICE

JOHN B. TEESDALE AND CLYDE H. TEESDALE, OF GRAND RAPIDS, MICHIGAN, ASSIGNORS TO TEESDALE MANUFACTURING COMPANY, OF GRAND RAPIDS, MICHIGAN, A CORPORATION OF MICHIGAN

PUMP

Application filed May 29, 1930. Serial No. 457,229.

The present invention relates to pumps, and more particularly to booster pumps.

The main objects of the invention are to provide a pump of the character above indicated having a float-operated valve for closing the intake conduit and opening a second conduit when the liquid within the container falls below the normal minimum level, to provide such a valve for closing the intake conduit and opening a minimum liquid level conduit when the liquid within the container falls below the normal minimum level; and, generally, to provide improved means of that character such as hereinafter appear.

An illustrative embodiment of the invention is shown in the accompanying drawings, wherein:

Figure 1 is a front elevational view of the entire pump unit, certain portions being broken away to better illustrate the inside operating parts;

Figure 2 is a vertical sectional view of the float-operated valve housing with the valve being indicated in its two operative positions; and

Figure 3 is a sectional view of the valve per se.

Referring to the drawings, the booster pump comprises a container 1 adapted to hold a liquid 2 such as fuel oil. The container has a cover plate 3 secured to its upper end by suitable means such as screws 4.

Mounted on the upper side of this cover plate is an electric motor 5 within an electric circuit 6 whose shaft is connected to the shaft 7 of a rotary pump 8 which supplies liquid to the container through an intake conduit 9 which has an intake port 10 connected to a suitable source of liquid supply not shown. This conduit is connected to the pump 8 by means of the short curved pipe 11 and the T-union 12 which houses a float-operated and controlled rotatable valve 13 whose function and purpose will hereinafter appear.

A minimum liquid level conduit 14 is likewise connected to the T-union 12 and its intake port 15 extends below the vertically projecting outlet port 16 of the container to insure the obvious maintenance of a minimum level 77 therein.

A switch 17 of the mercury type and within the motor circuit 6 is operated by the float 18 which is limitedly slidably carried on the vertically disposed stem 19 between the stops 20, 21 thereon. The stem 19 is pivotally secured at its upper end to the arm 22 connected to the switch 17 and the stem slidably passes through an aperture 23 of the laterally projecting rod 24 intermediate its ends for maintaining the stem in a substantially vertical position. When the normal minimum level 25 (which is normally maintained by the float-operated switch 17) falls below such level, a minimum level 77 is maintained within the container by the upwardly extending outlet port 16. As the liquid within the container thus falls below the normal minimum level 25 to the minimum level 77, the float 26 falls to the position shown in dotted lines. During this movement, the valve 13 which is originally in the position shown in Figure 2, rotates to the position shown in dotted lines and the pump thus continues to pump liquid through the minimum level conduit 14 and exhaust it through the outlet port 28 of the pump instead of pumping it through the intake conduit 9 and exhausting it through the pump's outlet port 28.

In operation, the motor driven pump 8 draws the liquid into the container 1 through the intake port 10 faster than it flows therefrom through the outlet port 16. As the liquid level rises within the container, the float 18 continues to rise until it reaches the position shown in dotted lines where it abuts the stop 20 which tilts the switch 17 to shut

off the motor 5 and its driven pump 8. As the liquid is withdrawn from the container 1, the float 18 falls and abuts the stop 21 which closes the tiltable mercury switch 17 to turn on the motor 5 to drive the pump 8.

In the event, however, that the source of liquid supply to the container fails or is exhausted, the liquid within the container will fall from the normal minimum level 25 to the minimum level 77.

The float operated and controlled valve 13, within the T-union housing 12 is provided with two angular bores 29, 30 connected at right angles with each other. When this valve is in the position shown in full lines in Figure 2, the pump draws the liquid from the intake conduit 9 and when in the position shown in dotted lines, it draws the liquid through the minimum level conduit 14.

When therefore the source of liquid supply thus becomes exhausted, and the liquid falls to the minimum level 77, the pump will nevertheless continue to pump oil through the minimum level conduit 14 rather than air. The manually operable lever 31 secured to the arm 32 intermediate the float 26 and the valve 13 is provided to lift the float when the source of liquid supply is replenished, thus permitting the unit to again renew its normal operation when the normal minimum level 25 is regained within the container.

It will be understood of course that the upwardly extending outlet port 16 may be dispensed with in which event however, the pump will draw air through the conduit 14 instead of oil when the oil has become exhausted in the container.

It will thus be seen that a novel device is herein shown and described which provides alternate means for accomplishing the objects generally attained in the Teesdale patent hereinabove mentioned.

While but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claim.

I claim:

In an organization of the class described, a container adapted to hold a liquid, a liquid intake conduit, an electrically operated pump within an electric circuit for drawing liquid into said container through said conduit, an electric switch within said circuit, a float within said container operatively associated with said switch for opening said switch by the movement of the float in one direction and for closing the switch by the movement of the float in the opposite direction for maintaining the liquid therein between normal maximum and normal minimum levels, a second conduit connected to said pump for supplying liquid within the container to said pump, and a float-operated valve for closing said intake conduit and opening said second conduit when the liquid level within the container falls below the normal minimum level.

In testimony whereof we, JOHN B. TEESDALE and CLYDE H. TEESDALE, have hereunto set our hands at Grand Rapids, Michigan, this 24th day of May, 1930, and at Chicago, Illinois, this 26th day of May, 1930, respectively.

CLYDE H. TEESDALE.
JOHN B. TEESDALE.