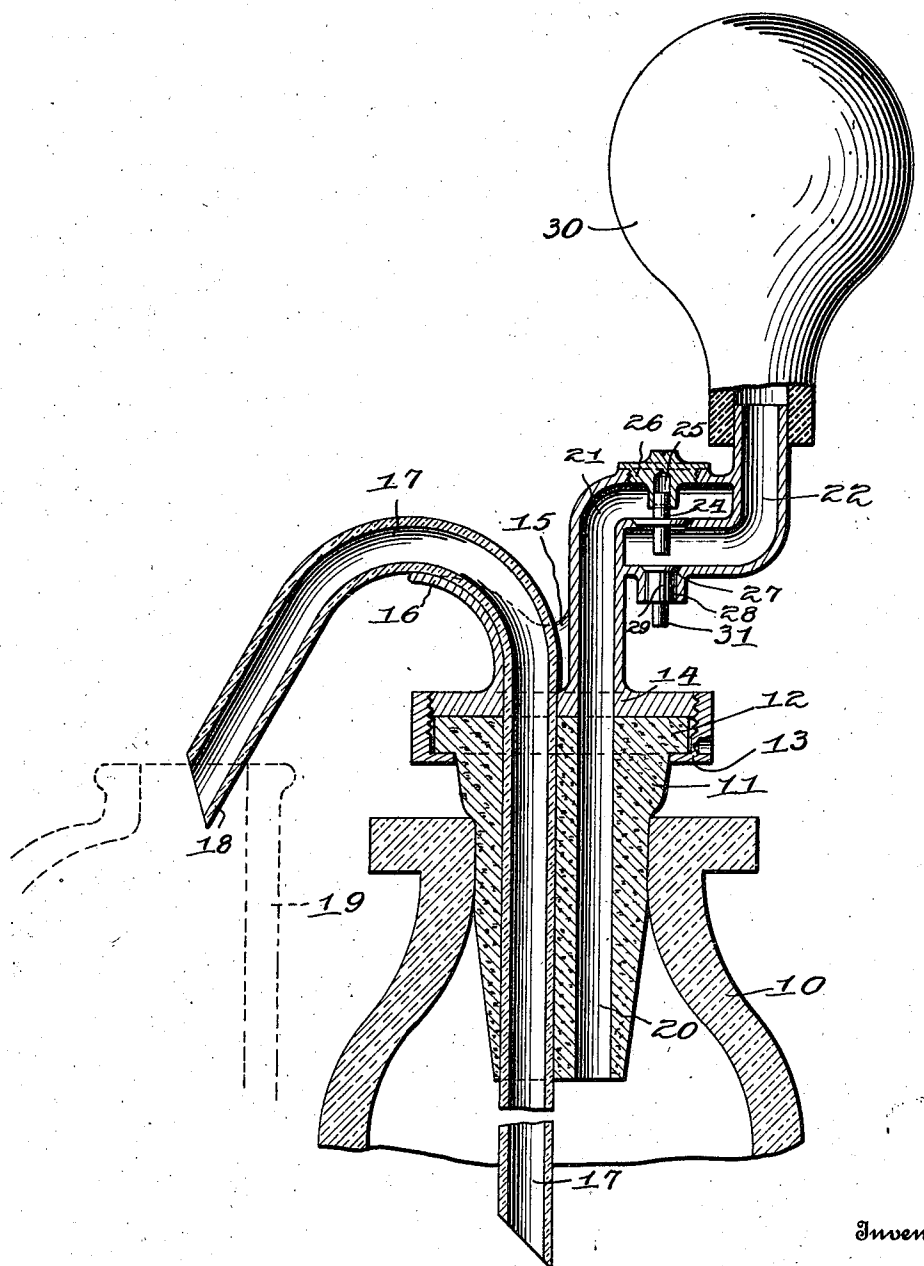
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W. M. THOMPSON

PUMP

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UNITED STATES PATENT OFFICE.

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PUMP.

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To all whom it may concern:

Be it known that I, WILLIAM M. THOMPSON, residing at Meadville, county of Crawford, State of Pennsylvania, a citizen of the United States, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps and particularly to that type of pump where air or gas pressure is applied to the interior of a closed vessel and the liquid therein forced out through a tube.

The principal object of my invention is the provision of an improved pump which produces an air or gas pressure within a vessel thereby forcing the liquid therefrom and having means under control of the operator to immediately, at will, reduce the pressure in the vessel to atmospheric pressure, thereby causing the liquid to stop flowing.

Another object of my invention is the provision of a bulb pump for use in connection with a vessel stopper and outlet tube, there being provided an inlet valve for the bulb and an outlet valve therefrom to the interior of the vessel, the valves being substantially in line and so arranged that they may both be lifted by way of pressing upward upon the stem of one.

Referring particularly to the drawing where an embodiment of my invention is illustrated,

The figure illustrates a cross section of a carboy or other container having my improved pump installed therein.

10 designates a large carboy or other container such as might be used for acid, oil or other liquid. 11 designates a plug which is preferably tapered to fit the container tightly and is made of any suitable material such as rubber. The plug 11 makes a tight fit with the vessel 10 and is preferably provided with a flange 12 which may be held by a screw threaded collar 13, upon the lower face of the screw threaded body member 14. The main body 14 is provided with an opening 15, having a lip 16. A tube 17 is provided and has a portion extending through the plug 11 to a level below the level of the liquid. At the outer end is a spout 18 for discharging the liquid as into another vessel 19.

The plug 11 is provided with an opening 20 in line with the opening 21 in the main body 14. The passage 21 is separated from the passage 22 by the check valve 24. This valve is provided with a valve stem which is guided in the opening 25 in the combined lap and guide 26. When the pressure in the passage 22 is greater than that in the passage 21, the valve 23 will rise letting the pressure equalize. When the pressure in the passage 22 is less than that in the passage 21, the valve 23 will close.

An inlet valve 27 is provided and is preferably placed so that it is in line with the exhaust valve 23. The stem 28 of the inlet valve 27 is provided with ribs 29 which guide the valve 27 properly to its seat and yet permits the air to pass into the passage 22 when the valve is raised. When the pressure in the passage 22 is less than atmosphere the valve 27 will open admitting air to the passage 22. When the pressure in the passage 22 approaches atmospheric pressure, the valve 23 will again be closed. At the end of the passage 22 is a pumping means such as a hand operated rubber bulb 30.

The operation of my invention is as follows:

When the plug 11 is fitted into the carboy or other container and it is desired to force the liquid therefrom, the bulb 30 is squeezed with the hand. The air within the bulb 30 is forced through the passage 22. The pressure, caused thereby, holds the valve 27 closed and forces the valve 23 open. The air under pressure passes into the passage 21 and thence through the passage 20 into the container 10. Upon release of the bulb 30, the valve 23 closes, due to gravity and the decrease in pressure in the passage 22 caused by expansion of the bulb. As the pressure in the passage 22 decreases below atmospheric pressure, the atmospheric pressure from below raises the valve 27 and the passage 22 and bulb 30 are filled with air.

The bulb 30 is repeatedly pressed and released until the pressure within the carboy or container 10 causes the liquid to pass up the tube 17 and out of the spout 18. When enough liquid has been removed, from the carboy or container 10, the lower end 31 of the valve stem is raised as by the finger. This raises both the valve 27 and the valve 23 and reduces the passages 21 and 22 to atmospheric pressure. All of the liquid in the pipe 17 below the joint where it turns downwardly will be returned to the carboy or container 10.

When assembling the valves, the valve cap and guide 26 is not in place. The valve 27 is first inserted, then the valve 23, after which the cap 26 is screwed into place as shown. A screw driver may be used to tighten the cap into its place.

It will thus be seen that I have provided a pump for carboys and other containers which will be positive in operation and easily controlled in its delivery of liquid.

While I have described in detail a preferred embodiment of my invention, I desire to have it understood that I do not limit myself to the exact showing and that modifications and changes may be made without departing from the spirit of my invention and within the scope of the appended claims.

Having described my invention what I claim is:

1. A pump for liquid containers, comprising a plug member for closing the container opening, an outlet duct extending through the plug, an inlet duct for the delivery of gas pressure, above atmospheric pressure, to the container, a means for forcing gas into the inlet duct, a check valve between the gas forcing means and the inlet duct and hand controlled means for releasing the check valve at will.

2. A pump for liquid containers, comprising a plug member for closing the container opening, an outlet duct extending through the plug, an inlet duct for the delivery of gas pressure, above atmospheric pressure, to the container, a means for forcing gas into the inlet duct, a check valve between the gas forcing means and the inlet duct, an inlet check valve for the admission of gas to the gas forcing means and hand controlled means for simultaneously opening both valves.

3. A pump for liquid containers comprising a plug member for closing the container opening, an outlet duct extending through the plug, an inlet duct for the delivery of gas pressure, above atmospheric pressure, to the container, a means for forcing gas into the inlet duct, an exhaust check valve between the gas forcing means and the inlet duct, an inlet check valve for the admission of gas to the gas forcing means, the inlet check valve being adjacent and having its axis in line with the exhaust valve, the inlet valve having a stem, the end of which extends to a position to be manually controlled.

4. A pump for liquid containers comprising a plug member for closing the container opening, an outlet duct extending through the plug, an inlet duct for the delivery of air pressure, above atmospheric pressure, to the container, a rubber hand bulb for forcing air into the inlet duct, an exhaust check valve between the bulb and the inlet valve, an inlet valve having its largest diameter less than the smallest diameter of the valve seat of the exhaust valve, a cap for the exhaust valve and having means for guiding the latter to and from its seat, the inlet valve having a portion extending to a position for manual engagement, the valves being so arranged, relative to each other, that the raising of the inlet valve will also raise the exhaust valve.

5. A pump for liquid containers comprising an inlet duct for the delivery of air pressure, a bulb, inlet and exhaust valves for controlling the passage of air to and from the bulb, means for manually operating one of the valves and means between the two valves to cause the opening of both valves when the manual means is operated to cause a vent for the container.

6. A pump for liquid containers comprising an inlet duct for the delivery of air pressure, a bulb, inlet and exhaust valves for controlling the passage of air to and from the bulb, the inlet valve having an extension for manual control, the valves being so constructed that the valves act as a vent for the container when the inlet valve is manually raised.

In testimony whereof I hereunto affix my signature.

WILLIAM M. THOMPSON.