

F. J. GILE.
AIR PRESSURE REGULATOR FOR FORCE PUMPS.
APPLICATION FILED DEC. 4, 1911.

1,023,146.

Patented Apr. 16, 1912.

2 SHEETS—SHEET 1.

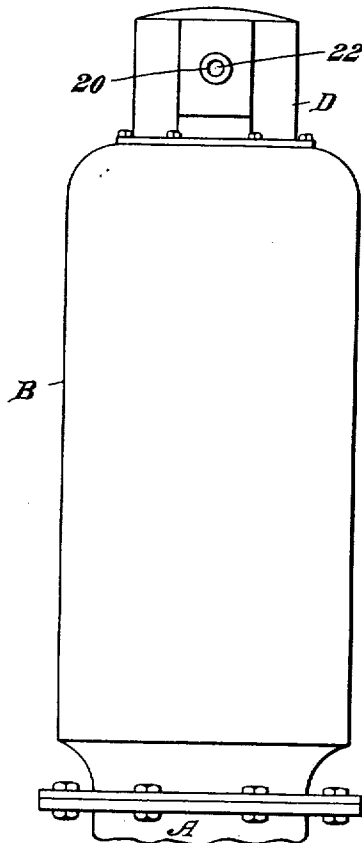


Fig. 1.

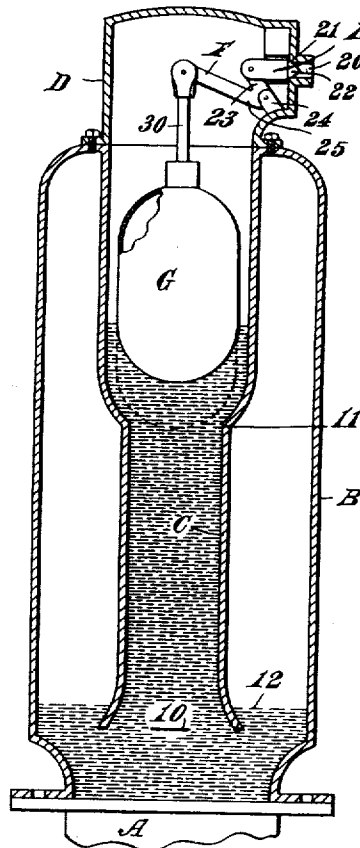


Fig. 3.

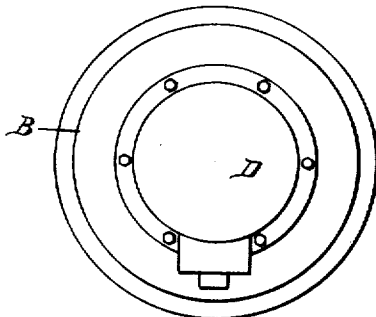


Fig. 2.

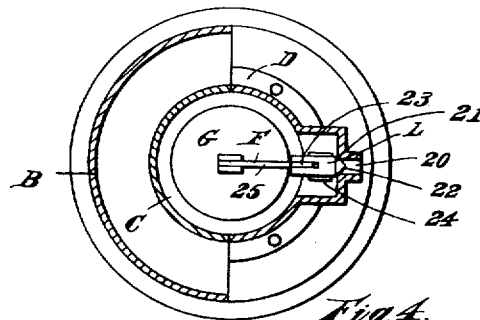


Fig. 4.

WITNESSES: *Fig. 2.*
Ludger A. Nicol.
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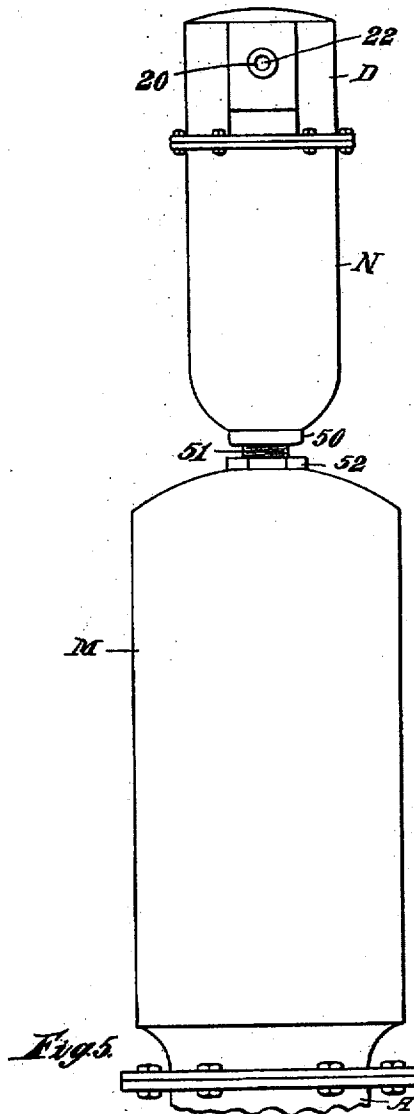


Fig. 5.

WITNESSES:

Sudgen A. Nicol.
Wm. F. Quessow.

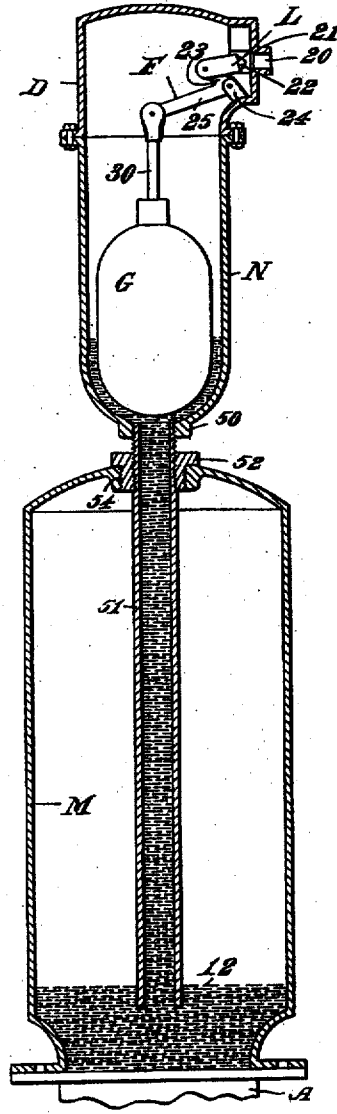


Fig. 6.

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UNITED STATES PATENT OFFICE.

FRANK J. GILE, OF LAWRENCE, MASSACHUSETTS.

AIR-PRESSURE REGULATOR FOR FORCE-PUMPS.

1,023,146.

Specification of Letters Patent.

Patented Apr. 16, 1912.

Application filed December 4, 1911. Serial No. 663,905.

To all whom it may concern:

Be it known that I, FRANK J. GILE, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Air-Pressure Regulators for Force-Pumps, of which the following is a specification.

This device relates to pumps for liquids such as water. It has special reference to the air chambers or pressure chambers used in connection with pressure pumps or force pumps. Such pressure chambers are filled with air and the water or other liquid is forced against the air pressure therein, thereby compressing the air. The result is that the compressed air exerts a steady and powerful pressure in the delivery of the water. Much trouble is experienced in these force pumps by reason of the air, which is carried in with the water, accumulating in the pressure chamber until it is full. After it is filled and overflows, this air frequently works back into the pump plunger and makes the pump air bound. If the supply is for a steam boiler, the air is carried along through the boiler and engine with the steam until it reaches the condenser. It remains in the condenser and keeps the vacuum low.

My device is for the purpose of keeping a uniform quantity of air in the pressure chamber and for releasing or discharging any excess thereof.

In the drawings, Figure 1 is an elevation showing the outside of my pressure chamber. Fig. 2 is a top view. Fig. 3 is a vertical section. Fig. 4 is a partial horizontal section. Fig. 5 is an elevation and Fig. 6 is a sectional elevation of a modification of my device.

A is the body of the pump or the outlet therefrom to the pressure chamber B which is connected therewith by a suitable water tight and air tight connection. Chamber B is preferably of substantially cylindrical form and is provided with an interior cylindrical chamber which I will call a float chamber C. Float chamber C joins the pressure chamber B at the top and is preferably integral therewith. It extends downward nearly to the bottom of chamber B and terminates in an open mouth 10.

Attached by an air tight and water tight joint to the top of chamber B and commu-

nicating with chamber C is an extension thereof forming a vent chamber D having a vent valve L. This vent chamber has an outlet at 20 the inner end of which is a ground valve seat 21 for the stem 22 of vent valve L. This vent valve is preferably a pin valve. Valve stem 22 is pivotally carried by a branch 23 of a rocking member F which is pivoted to a bracket 24. Another branch 25 of rocking member F is pivoted to a rod 30 which connects to a float G which fits loosely inside of float chamber C. Float chamber C may be constricted at 11 as shown if desired.

The operation of the device is as follows: Pressure chamber B surrounding float chamber C is normally filled with air and after this accumulates to a point which brings the water line 12 below the mouth 10 of float chamber C, the air flows inward and upward into float chamber C and to the top thereof. The effect of the air is to force out the water in float chamber C through the mouth 10 and this drops float G to, we will say, the point shown by the dotted line in Fig. 3. This withdraws valve stem 22 thus opening the valve L and permits a part of the air in chamber C to escape. This permits the water again to rise, which lifts float G and again closes valve L. The working pressure is obtained from the air inside chamber B and outside chamber C.

As shown in Figs. 5 and 6, the pressure chamber may be as shown at M and the float chamber N may be above and connected therewith by an outlet in its neck 50. The valve L is of the same construction and float G operates in the same manner. In this construction, the float chamber N above the pressure chamber is connected therewith by a pipe 51 which is screwed into neck 50 and which extends downward to a point near the bottom of the pressure chamber M. Pipe 51 passes through a coupling 52. This coupling 52 is preferably screwed into an opening in the top 54 of pressure chamber M. The operation is the same in each case but the construction shown in Figs. 5 and 6 may be used with an old pressure chamber.

What I claim as my invention and desire to cover by Letters Patent, is:

1. In the combination of a pressure pump, a pressure chamber having an interior float chamber with a mouth which opens near

the bottom of the pressure chamber, with a float in the float chamber, a vent valve for the float chamber, and suitable connections between the vent valve and the float.

- 5 2. In the combination of a pressure pump, a pressure chamber, and a float chamber which has an outlet near the bottom of the pressure chamber, with a float in the float chamber, a vent valve in the float chamber,

and suitable connections between the vent 10 valve and the float.

In testimony whereof I hereto affix my signature in presence of two witnesses.

FRANK J. GILE.

Witnesses:

HELEN F. LOESCHNER,
HARRY R. LAWRENCE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."