W. ADAIR.

PUMPS.

No. 185,619. Patented Dec. 26, 1876.

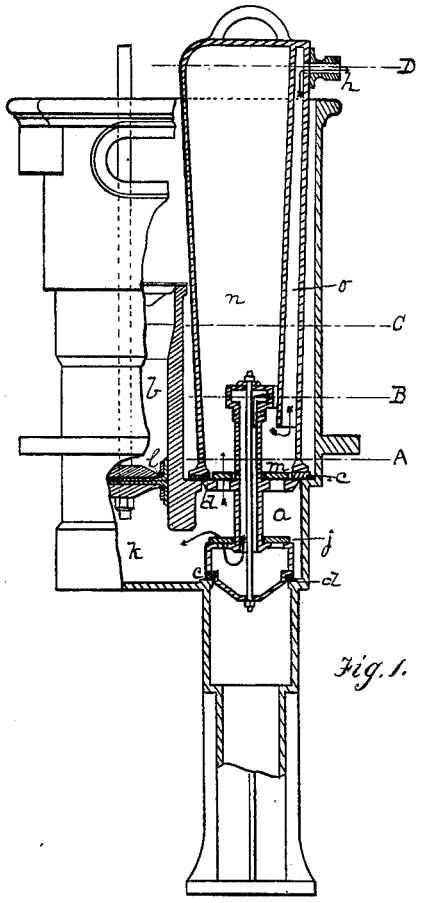

Fig. 1.

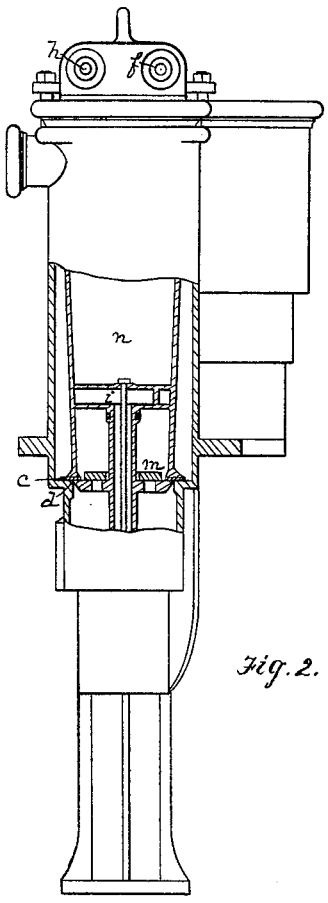

Fig. 2.

Fig. 3.

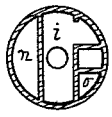

Fig. 4.

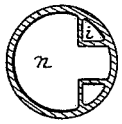

Fig. 5.

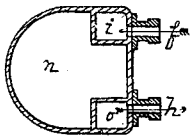

Fig. 6.

Witnesses.

R. C. Wrenshall

C. L. Parker.

Inventor.

William Adair,

by George A. Christy

his Atty.

UNITED STATES PATENT OFFICE.

WILLIAM ADAIR, OF LIVERPOOL, ENGLAND.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **185,619**, dated December 26, 1876; application filed October 31, 1876.

To all whom it may concern:

Be it known that I, WILLIAM ADAIR, of Liverpool in the county of Lancaster, England, engineer, have invented a new and useful Improvement in Pumps, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

This invention relates more especially to pumps for use on board ship; and consists in means for utilizing as force-pumps ships' pumps in which a solid piston or plunger is used, and in which a pair of valves are directly over each other in a chamber open at top, and in providing an air-vessel filled with suction and delivery valves and with hose-connections.

When it is desired to use a lift-pump as a fire-engine, or for forcing water, a pair of suction and delivery valves are removed, and the said air-vessel and connections attached, preferably by a bayonet-joint, so as to close the ordinary suction-pipe. The water is drawn from over the ship's side through the air-vessel.

Figures 1, 2, 3, 4, 5, and 6 illustrate my invention. Fig. 1 is a view of a pump, showing the valve-chamber *a*, part of the piston-barrel *b*, and my air-vessel and connections in section. Fig. 2 is a view at right angles to Fig. 1, also partly in section. Figs. 3, 4, 5, and 6 are sections at the line A B C D.

When a pair of valves has been removed from one of the valve-chambers, I insert in their place the air-vessel and connections, as shown, so that the packing-pieces *c* rest on the upper and lower valve-seatings *d*, and make the joints tight. The said air-vessel and connections are secured in position by a clamp. If the pump is double-acting, as is the one shown, the valves in the other chamber may be removed. A suction-hose, to be passed overboard or into any water-containing receptacle, is attached to the nozzle *f*, and a delivery-hose to the nozzle *h*.

When the pump is operated, water is drawn through the nozzle *f*, down the passage or way *i*, through the valve *j*, into the chamber *k*, on the upstroke of the piston *l*, and is expelled on the down-stroke thereof, through the valve *m*, into the chamber *n*, which acts as an air-vessel, and thence, through the way or passage *o*, to the delivery-nozzle *h*. The arrows show the direction of motion of the fluid.

It will be obvious that various modifications and arrangements of the above-described apparatus may be made without departing from my invention.

Having now particularly described the nature of my said invention, so that others will be enabled to carry my improvements into effect, I claim—

The combination of piston-barrel *b*, piston *l*, chambers *a k n*, valves *j m*, passages *i o* and hose-nozzles *f h*, substantially as set forth.

WM. ADAIR.

Witnesses:
EDWIN C. GORMLY,
J. JOHNSON.