United States Patent Office.

JOHN D. AVERELL AND GEORGE A. HIGGINS, OF NEW YORK, N. Y., AND THOMAS GORDON, OF SHREWSBURY, NEW JERSEY, ASSIGNORS TO GEORGE A. HIGGINS.

Letters Patent No. 108,087, dated October 11, 1870; antedated September 20, 1870.

IMPROVEMENT IN COMBINED PUMPS AND SIPHONS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JOHN D. AVERELL and GEORGE A. HIGGINS, of the city and State of New York, and THOMAS GORDON, of Shrewsbury, in the county of Monmouth and State of New Jersey, have invented and made a new and useful Improvement in Siphons; and the following is hereby declared to be a correct description of the same.

In the construction of siphons it has been usual heretofore to make use of a mouth-tube running up from the longest leg of the siphon, so that the air can be exhausted to cause the liquid to flow.

In siphoning many liquids, such as oils, acids, &c., it is very disagreeable, and sometimes dangerous to health to exhaust the siphon by the mouth, and when the vessel is filled from the siphon, that has to be lifted to cause air to pass in and stop the flow, or else a cock has to be employed to shut off the flow.

Frequently a siphon can be used for most of the contents, but sometimes the difference of level in the container and the receiver is not sufficient to make the liquid flow, and a pump has to be resorted to in finishing up the emptying of the retainer.

Our invention is a combined siphon, pump, and stop-valve, whereby the siphon can be exhausted and made to flow by the action of the pump, or the piston of the said pump can be used as a stop to arrest the flow of liquid in place of a cock, or the siphon can be used as a pump in cases where the differences in the level of the liquids in the receiver and container are such that the siphon will not act.

In the drawing we have shown a sectional view of our combined siphon, pump, and stop-valve, in which—

a b are the legs of the siphon of any usual character.

c is a cylinder, connected with the leg *b* of the siphon, and in this is a piston, *d*, actuated by a rod, *e*.

The valve *i*, between the leg *b* and cylinder *c*, opens inwardly to said cylinder, and

o is another valve, opening outwardly toward the delivery nozzle or tube *h*.

These valves *i* and *o* are to be of any desired construction, and, when opening downward, as shown, are to be balanced by a light spring.

These valves might be placed at the bottom of the cylinder *c*, so as to be made of pliable leather, that will not interfere with the flow of liquid through the seats when the apparatus is acting as a siphon.

It is now to be understood that the pump, formed of the rod *e*, piston *d*, and cylinder *c*, is to be used to exhaust the siphon, and that the liquid will flow through said siphon and be delivered at the nozzle *h*, and, when the piston *d* is forced down, it will act as a stop-valve by cutting off the passage between the leg *b* and exit-tube *h*.

If the siphon will not act, the pump can be used to draw and eject the liquid regardless of the relative levels of the liquid in the container and receiver.

We claim as our invention—

The pump *c d e* and valves *i* and *o*, combined with the siphon *a b*, and arranged substantially as specified, so that the piston *d* will act as a stop to the siphon, and the siphon can also be used as a pump, substantially as set forth.

Signed by us this 3d day of January 1870.

JOHN D. AVERELL.
GEORGE A. HIGGINS.
THOS. GORDON.

Witnesses:
CHAS. H. SMITH,
GEO. T. PINCKNEY.