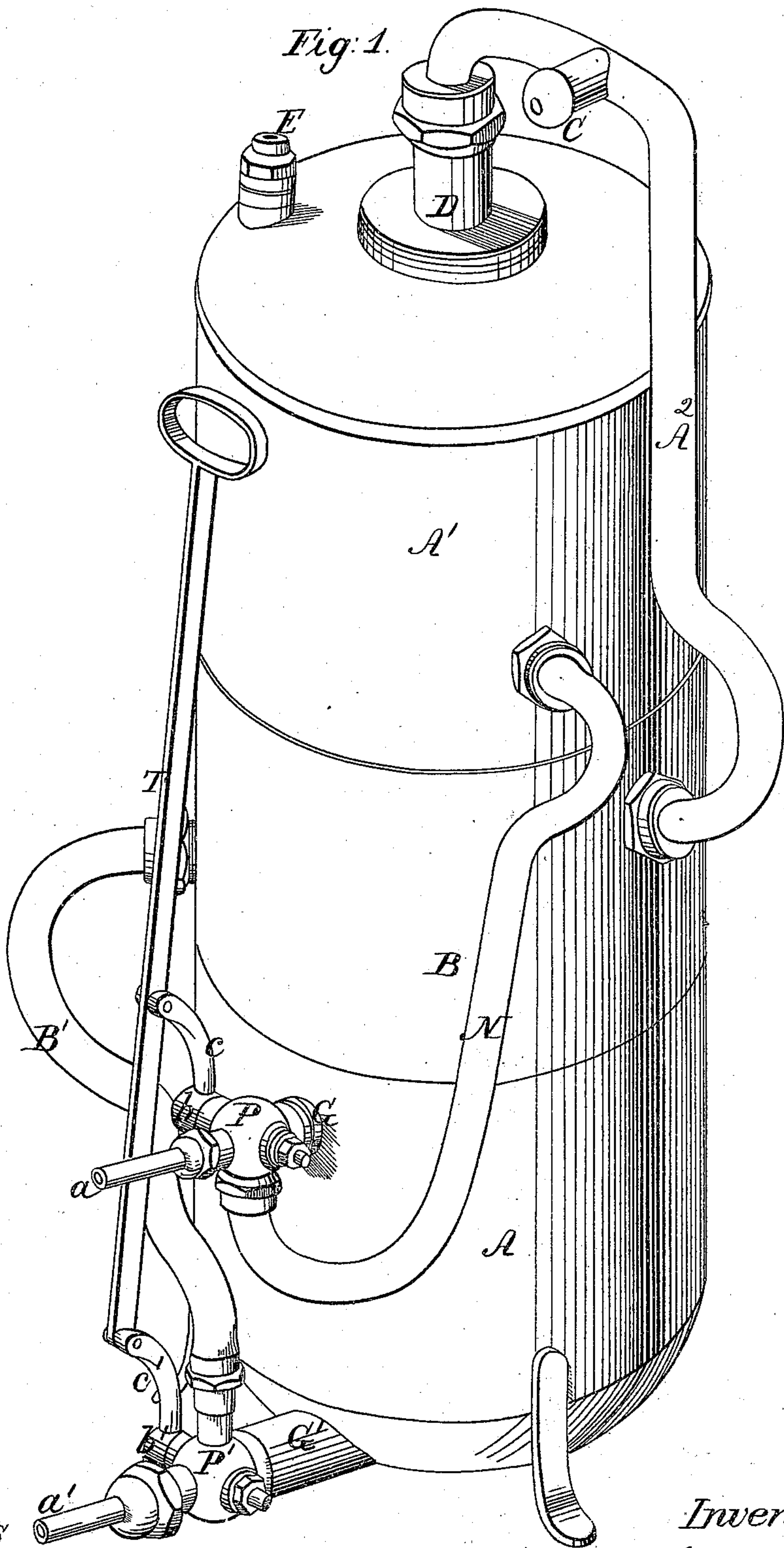


J. P. Gruber Sheet 1. 2 Sheets
Beer Pump.

N^o 104,301.

Patented Jun. 14, 1870.

Fig. 1.



Witnesses
H. Campbell
J. C. Campbell

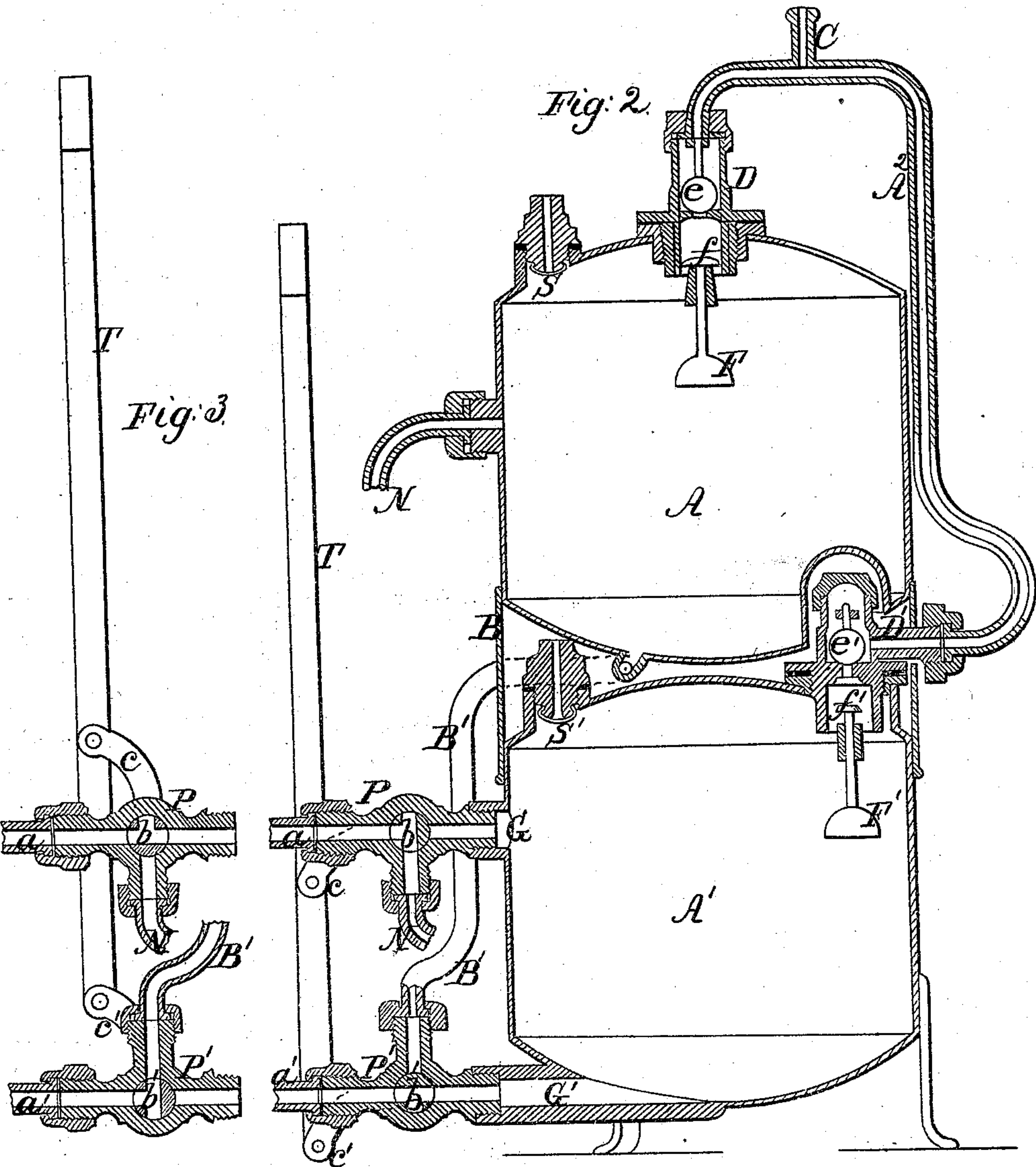
Inventor;
John P. Gruber
By Mason, Smith & Lawrence

J. P. Gruber Sheet 2, 2 Sheets.

Beer Pump.

N^o 104,301.

Patented Jun. 14, 1870.



Witnesses
R. Campbell
J. N. Campbell

Inventor;
John P. Grier
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UNITED STATES PATENT OFFICE.

JOHN P. GRUBER, OF NEW YORK, N. Y.

IMPROVEMENT IN PNEUMATIC LIQUID-ELEVATORS.

Specification forming part of Letters Patent No. 104,301, dated June 14, 1870.

To all whom it may concern:

Re it known that I, JOHN P. GRUBER, of New York city, in the county and State of New York, have invented a new and Improved Hydro-Pneumatic Elevator for Raising Wine and other Liquors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1, Plate 1, is a perspective view of the improved apparatus. Fig. 2, Plate 2, is a vertical section through the apparatus, with several of the communicating pipes arranged so as to show them in this section. Fig. 3, Plate 2, is a sectional view of the switch-cocks detached from the body of the apparatus.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to utilize the force or pressure of a head of water—such, for instance, as may be desired from reservoirs used to supply cities and towns with water—for the purpose of elevating wine and other liquors from cellars or vaults to upper stories of buildings.

The nature of my invention consists in an apparatus, hereinafter described, whereby air is forcibly expelled from two chambers through a single pipe by alternately allowing water to enter and escape from the chambers, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawing, A A¹ represent two vessels, which are made of suitable strength to sustain the degree of pressure to which they are subjected. For convenience these vessels are connected together, one above the other, by means of an intermediate cylindrical case, B, the interior of which should be in free communication with the external air.

a represents an induction water-pipe, which should be connected to a pipe communicating with a head or reservoir of water. This pipe a is applied to a valve-box, P, which communicates with the interior of vessel A¹ by means of a connection, G, and also with the vessel A¹ by means of a pipe, N. The valve-box P is provided with an oscillating two-way cock, b, having an arm, c, applied to its stem.

In Fig. 2 cock b is turned so as to cut off communication from the vessel A¹ and allow water to enter vessel A through the pipe N. Below the pipe a is a water-eduction pipe, a', which is applied to a valve-box, P', which communicates with the vessel A¹ at its bottom by means of a pipe, G'. Valve-box P' is provided with an oscillating two-way valve, b', having an arm, c', applied fast to its stem. The arms c and c' are pivoted to a rod, T, which is used for operating both valves b b' at the same time for changing the direction of the currents, as will be hereinafter explained.

In Fig. 2 valve b' is represented in position for cutting off the escape of water from the vessel A by way of pipe B', and allowing water to escape through pipe a' from vessel A¹ by way of pipe G'. The upper vessel, A, is provided at its top with an air-inlet valve, s, which valve will prevent the escape of air through it. Vessel A is also provided at its top with a valve-box, D, containing an air-valve, e, which closes downwardly upon its seat; also, with a valve, f, which closes upwardly against its seat, and which is applied to a vertically-movable stem having a float, F, on its lower end. When water rises above a given height in vessel A the valve f will be buoyed up by float F, and by closing the outlet-passage into pipe A² prevent farther entrance of water into the vessel A.

The pipe B' is intended for conducting off the water from vessel A, through valve b' and pipe a', during the introduction of water into vessel A¹. The pipe A², which leads out of valve-box D of vessel A, and also out of the valve-box D' of vessel A¹, communicates with a common air-pipe by means of the branch pipe C.

The vessel A¹ is provided at its top with an air-inlet valve, s', which, like valve s, will prevent the escape of air through it. A valve-box, D', is also applied to vessel A¹, and provided with two valves, e' f', and a float, F', which operate precisely like corresponding parts applied to valve-box D, and above described. G' is the water-outlet pipe for vessel A¹, and is in direct communication with outlet-pipe a' when valve b' is adjusted as shown in Fig. 2. Air will enter the case B through a space left around the air branch of the valve-box D'.

Operation.

By depressing the rod T valves *b b'* will be adjusted as shown in Fig. 2. Valve *b* will cut off communication between vessel *A*¹ and inlet-pipe *a* and open a communication between pipe *a* and vessel *A* through pipe *N*. Water will then flow into vessel *A* and out through the valve-box *D* into pipe *A*² and close valve *e'* in valve-box *D'*. From pipe *A*² the air will escape through pipe *C*. While this is taking place water will be allowed to escape from vessel *A*¹ through pipes *G'* and *a'*, and this vessel will fill with air, entering it through valve *s'*. The rod T being raised valves *b b'* will be adjusted as shown in Fig. 3, when the inflow of water will be cut off from vessel *A* and the inflow established into vessel *A*¹. At the same time valve *b'* will prevent the escape of water from vessel *A*¹, but allow its escape from vessel *A* through pipes *B'* and *a'*. While the vessel *A*¹ is being filled with water and its air forced out through pipe *A*², (valve *e* being shut,) the vessel *A* will be filling with air and its water escaping through pipes *B'* and *a'*.

The float-valves *f f'* are safety-valves to prevent water from rising so high in either one of the vessels *A A*¹ as to enter the air-outlet pipe *A*².

In practice I shall arrange the apparatus in a cellar or vault containing the liquor to be raised.

The rod T will have a weight or spring applied to it for drawing it down to the position

indicated in Fig. 2, and by means of a wire or rope carried up to the apartment into which it is desired to elevate the liquor. The rod T can be raised, as indicated in Fig. 3.

A flexible pipe is applied to the air-branch *C*, and made to communicate, in a suitable manner, with a barrel from which it is desired to force liquor to an upper story. From such barrel a pipe is carried up, and through this pipe the liquor is forced by the introduction of air into the barrel from the apparatus.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the vessels *A A*¹, two-way cocks *b b'*, passages *G G' N B'*, inlet air-passages *s s'*, and valved outlet air chambers or passages *D D'*, substantially as and for the purpose herein described.

2. The combination of the floats and valves *F F' f f'* with the vessels *A A*¹, cocks *b b'*, passages *s s'*, valved outlet air-passages *D D'*, and pipe *A*² *C*, substantially as described.

3. The arrangement of the two-way cocks *b b'*, links *c c'*, rod T, pipes *B' N*, and inlet-valves *s s'*, applied to chambers *A A*¹, which are provided with air-outlet passages, substantially as and for the purpose described.

JOHN P. GRUBER.

Witnesses:

CHAUNCEY SHAFFER,
WILLIAM HAENSEL.