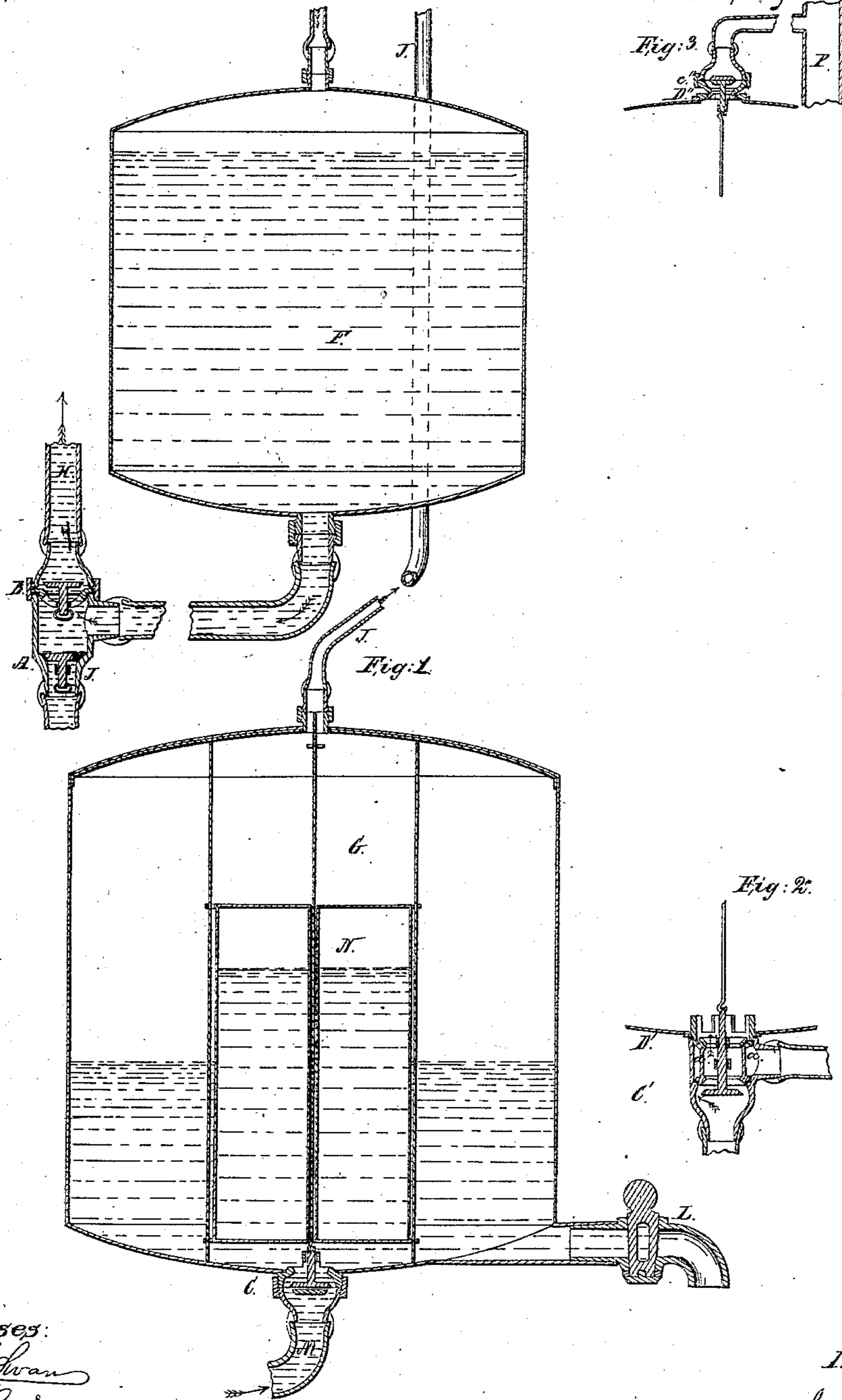


J. Freret, Water Elevator

N^o 58,093.

Patented Sep. 18, 1866.



Witnesses:
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JAMES FRERET, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN WATER-ELEVATORS.

Specification forming part of Letters Patent No. 58,093, dated September 18, 1866.

To all whom it may concern:

Be it known that I, JAMES FRERET, of the city of New Orleans, parish of Orleans, and State of Louisiana, have invented a new and useful Improvement on "Hero's Fountain," and also on a certain contrivance used at Chemnitz, Hungary; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a sectional view of part of my invention; Figs. 2 and 3, similar views of my automatic valves.

My invention has for its object the automatic elevation of water or other liquid above its level without the use of forcing-pumps or other expensive mechanical appliance; and this end is accomplished through the agency of the well-known principle in physics which is familiarly illustrated in Hero's fountain, and also in a certain contrivance used at Chemnitz, Hungary, in combination with certain valves, to be hereinafter more particularly described.

The principle referred to may be stated briefly to be that the pressure exerted by a column of water in an air-tight cistern, being transmitted by the air it compresses to another air-tight cistern containing water by means of a pipe or other suitable conductor, will cause the water to rise in a pipe communicating with it to a height above its level equal to the height of the first column of water, so that when the second cistern is elevated above the other the water in it will be forced to a point above its level which will be equal, or very nearly equal, to the elevation of the head of water or source of supply above the lower cistern.

The contrivance used at Chemnitz may be described to be substantially the application of valves or other equivalent mechanical contrivances to alternate the filling and emptying of such cisterns, and thereby to elevate the water or other liquid, as the case may be, above the level it would otherwise attain through the action of the above-mentioned law of nature; and it may consist of two air-tight cisterns, G and F, Fig. 1, which receive the water at their bottoms, the cistern G being so placed near the ground or floor, accordingly as the apparatus is without or within doors, as to be conveniently accessible, while F is elevated to the

highest point at which it may be regularly supplied with water from the head or source of supply, whether the same be an ordinary cistern or any other description of reservoir whatsoever, and two simple valves, A and B, of which A allows the water to flow into cistern F, and B provides for its exit from the said cistern into the vertical pipe or tube H. The two cisterns are connected at their respective tops by the air-pipe J, as shown at Fig. 1. In such an arrangement there would be an equivalent of an exhaust pipe or cock, L, and a supply-pipe, M, provided with a stop-cock, the first to discharge the cistern of its water, the last to fill or replenish the same.

The operation of the invention, when its organization is as above described, is as follows, to wit: The cistern F being full of water, and G empty, and the exhaust-cock closed, on opening the supply-pipe M by means of a stop-cock, (not shown on the drawings,) the intruding water will force the air through the connecting-pipe J and transmit the pressure to the upper or superior cistern, close valve A and open valve B, and expel the water into and through the vertical pipe H to a point corresponding in its altitude above cistern F to the height of the head which supplies the water. If the supply-pipe M be now closed and the exhaust-cock L opened, the water in cistern G will be discharged therefrom, and, the pressure being removed from the air in cistern F, it will return through pipe J to cistern G. The expelling pressure being thus removed, the valve B will be closed by the weight of the water in tube H, and valve A be reopened by its release from pressure, thus causing cistern F to be again filled from the reservoir or head. On refilling cistern G the operation may be repeated, and so on indefinitely. This arrangement would be an improvement on the Chemnitz plan; but, like the latter, it requires a constant manipulation to keep it in operation, and my object is to make a self-acting apparatus.

To establish an automatic operation, I substitute, in lieu of the stop-cock in supply-pipe M, a valve, O, (see Fig. 1,) or other equivalent device, which is controlled by a float, N, inside the cistern, so arranged as to open the valve when the cistern is empty and close it when the cistern is full. In this arrangement, as in the first described, the water is drawn

from cistern G by an exhaust-cock; but by the application and use of the double or compound valve C' D', (see Fig. 2,) which is so arranged that one is open while the other is shut, C' filling and D' emptying the cistern, there is established a continuous automatic action without the use of the stop-cock, which may be entirely dispensed with.

The valve C' is of ordinary construction and closes inwardly from the supply-pipe. On the same stem to which C' is attached is secured in a reverse position the annular valve D', the seat of which is perforated for the escape of the water, as seen at *a*, Fig. 2, so that when C' is open D' is closed, and the water passes into the recipient. When C' is closed and D' open, the water escapes through the perforated seat into an outer jacket, and is thence carried off. A modification of valves C' D' is represented at C'' D'', Fig. 3. In both these forms the device alternates the filling and emptying the recipient to which it is attached, and is subjected to little or no friction or resistance, each requiring little play of the float and being kept closed by the very pressure it resists. There being no jacket required in connection with the valves C'' D'', the fluid escapes freely.

It is obvious, upon the slightest consideration and inspection, that my invention is susceptible of a great variety of combinations, and that by the employment of several sets of cisterns water may be raised by a system of relays to almost any reasonable point of elevation, and that the pressure in one inferior cistern may be exerted through the agency of impure water, while in another it is exerted through the medium of pure water, &c.

In the practical use of such combinations or arrangements I render each cistern independent by placing near the top of the lower or inferior system, which may be said to have its representative in G, two valves similar to A B, for the admission of the air into and its transmission from the cistern to which the valves are attached, and at the top of each cistern of the second or superior system, a representative of which is presented in F, a double valve, C'' D'', which, it will be remembered, is operated by a float for the admission of the compressed air into and its escape from the cistern with which it is connected, as is clearly shown at Fig. 3.

There being no necessary connection between the contents of the two cisterns or sets of cisterns, it is plain that any liquid may be acted upon with the same facility as water, and that hence alcohol or hot water may be raised by cold or pure or impure water, the elevations obtained being regulated by or in proportion to the relative density of the fluids employed.

Having thus described my improvement, what I claim, and desire to secure by Letters Patent, is—

The combination of the double or compound valves C' D' and C'' D'' with the cisterns G and F and simple valve C, when these several parts are constructed and conjointly operate substantially as described, for the purpose set forth.

JAS. FRERET.

Witnesses:

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