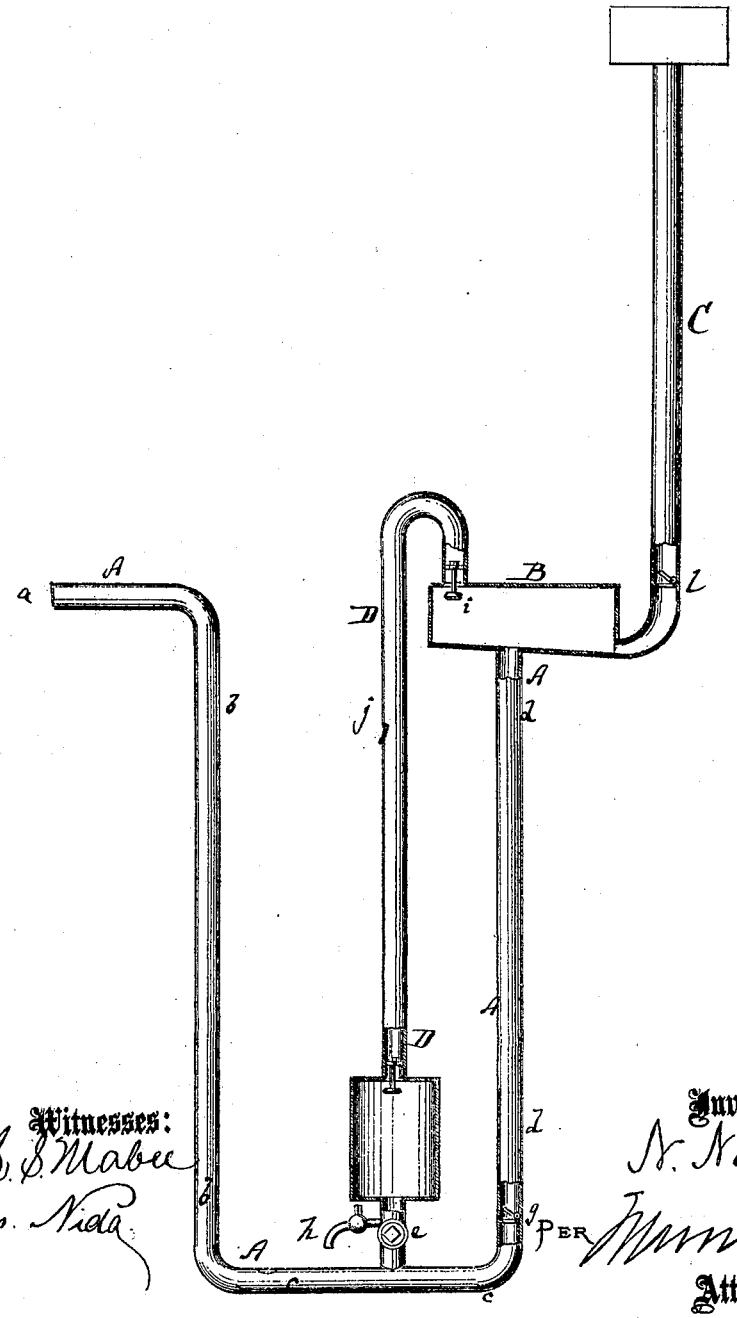
N. Nolan,

Hydraulic Apps.

No. 109,042. Patented Nov. 8. 1870.



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NICHOLAS NOLAN, OF NEW YORK, N. Y.

Letters Patent No. 109,042, dated November 8, 1870; antedated October 29, 1870.

IMPROVEMENT IN HYDRAULIC APPARATUS.

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

To all whom it may concern:

Be it known that I, NICHOLAS NOLAN, of the city of New York, in the county and State of New York, have invented a new and improved Hydraulic Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

The drawing represents a side view, partly in section, of my invention.

The object of this invention is to provide means for elevating, without additional power, water or other liquid to a greater height than at which it has its original level.

The invention consists in the introduction to a vertical water-pipe of a self-acting siphon, whereby the desired result is obtained.

The invention is chiefly applicable to buildings which have some stories higher than the reservoir from which their water supply is taken.

A in the drawing represents the supply-pipe, the end *a* being shown on the level of the reservoir from which the water is taken.

From this level the pipe A extends downward a suitable distance in the arm *b*, and is then carried horizontally at *c*.

From *c* the pipe A extends up again to *d*, until it reaches a vessel, B, which is about on a level with *a*.

From the lower part of the vessel B projects upward a pipe, C, which is almost, but not quite, as long as the arms *b* or *d*.

A siphon-pipe, D, having a stop-cock, *e*, near its lower end, connects the arm *c* with the vessel B, as shown.

The cock *e* being closed, the water will pass from *a* into *b*, *c*, and *d*, finding its level in the vessel B.

The siphon will contain air, which is confined by the cock *e* at one end, and the water in B at the other end.

In this position the water can be drawn from the parts *b*, *c*, or *d*, at will, and will always be replaced.

When, however, water is to be taken from the upper pipe C, the cock *e* must be opened; then the water from the reservoir will rush into the siphon D, and will force the air which was formerly confined therein into the vessel B.

The upward pressure upon the column of water in *d* causes a check-valve, *g*, at the lower part of *d* to be closed.

The air which was confined in the pipe D will force the water that was formerly contained in the vessel B out through the pipe C. Only when the air in B reaches low enough to be in line with the lower end of the pipe C will it escape. Thus a column of water, equal in extent to the column of air confined in the siphon, can be elevated beyond the water line.

In order to increase the elevating capacity, an enlarged chamber, E, is or may be formed on the siphon.

The bottom of the vessel B is inclined, so as to bring the end of the pipe C as low as possible.

When all the air has been driven from the pipe D, the water is withdrawn from the lower end of the same through a faucet *h*.

At the upper end of the pipe D is arranged a valve or float, *i*, which will be closed by water, but not by air. Thus, all the water can be drawn from D, as none can enter the upper end.

Should the air have escaped from the vessel B through C, the vacuum in D will be filled by air drawn in through a self-acting valve, *j*.

As soon as the pipe D is again filled with air, the elevating process can be again carried on.

Within the pipe C is arranged a valve, *l*, which will prevent water once in C from flowing back into B.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The U-shaped supply-pipe A, having valve *g*, and a siphon, D, having faucet-valves and cock, as described, combined with a vessel, B, and valve discharge-pipe C, all relatively arranged as and for the purpose described.

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