(No Model.)

N. A. CONKLIN.

APPARATUS FOR ELEVATING WATER.

No. 404,030. Patented May 28, 1889.

Fig. 1

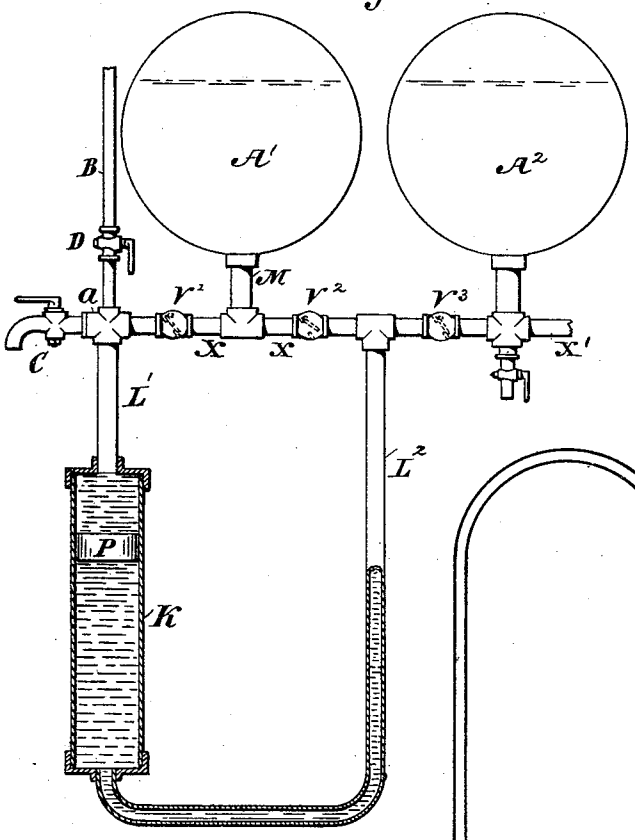


Fig. 3

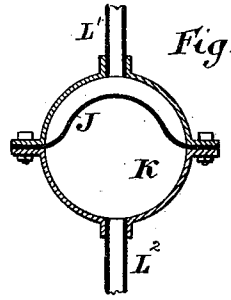


Fig. 4

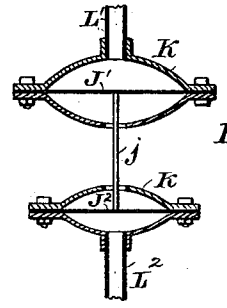


Fig. 2

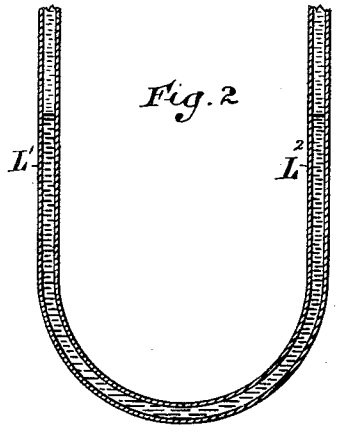
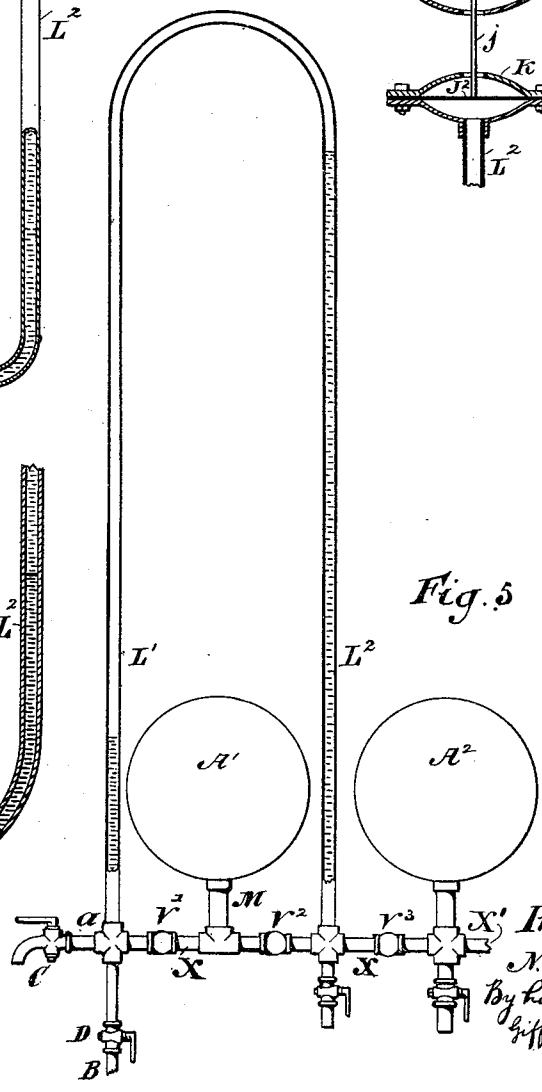


Fig. 5



Witnesses
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UNITED STATES PATENT OFFICE.

NATHANIEL A. CONKLIN, OF BROOKLYN, NEW YORK.

APPARATUS FOR ELEVATING WATER.

SPECIFICATION forming part of Letters Patent No. 404,030, dated May 28, 1889.

Application filed August 23, 1888. Serial No. 283,559. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL A. CONKLIN, of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Apparatus for Elevating Water, of which the following is a specification.

I will describe in detail apparatus for elevating water embodying my improvement, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of apparatus embodying my improvement. Fig. 2 is a view, partly in section, showing a modification of certain parts. Figs. 3 and 4 are detail views in section, showing other modifications. Fig. 5 is an elevation, partly in section, showing still another modification.

Similar letters of reference designate corresponding parts in all the figures.

In another application, Serial No. 294,450, I show an apparatus similar in its construction to the one described herein, but in which a three-way cock is arranged in the receiver and a less number of valves and chambers are employed.

In supplying water to buildings from the main service-pipe in the street the flow is approximately under a uniform pressure, and the house service-pipe is usually of a more restricted internal area than the principal cock for drawing off the water in the lower part of the premises. Either this is true or a cock is arranged in the house supply-pipe, by which the flow of water through said supply-pipe is controlled, and which cock has a discharge-area which is less than the discharge area of the principal cock in the kitchen or lower part of the premises. If neither of these conditions should exist in premises wherein it was proposed to apply my system, I should place a restriction in the house supply-pipe, such restriction being essential to the perfect operation of my system.

The essential feature of my improvement consists in storing up the excess of pressure on the water used in the lower part of the premises, and subsequently adding to it the initial or street pressure for the purpose of causing the water to be elevated in the building higher than it would be under normal street-pressure.

In Fig. 1 I have shown convenient means for accomplishing the above result, in which B designates the house supply-pipe extending from a street-main. D designates a cock in the pipe B, which constitutes a restriction in said pipe, to which I have referred. C designates a cock located in the kitchen or lower part of the premises, from which water is to be drawn. The cock C is located upon a pipe, X, which pipe forms part of the distributing system for the building. In the pipe X are located, as here shown, three reflow check-valves, V' V^2 V^3. Between the valves V' and V^2, and communicating by means of a pipe, M, with the pipe X, is a reservoir, A′, which reservoir constitutes a compressed-air chamber.

In the pipe X is a coupling-piece, *a*. To this coupling-piece are attached the pipes B and X, the cock C, and a pipe, L′. The pipe L′ communicates with one end of a cylinder, K, constituting a receiver for water. Communicating with the other end of said receiver is a pipe, L^2, which pipe is also in communication with the pipe X. The point of connection with the latter is, as shown, between the valves V^2 V^3. I have also shown in communication with the pipe X, beyond the valve V^3, a reservoir for water, A^2, constituting a compressed-air chamber. A pipe, X′, extends from the pipe X.

The operation is as follows: The cock C being closed and the cock D open, water under normal pressure from the street-main passes through the pipe B and the pipe X, charging the compressed-air reservoirs A′ and A^2. For convenience of illustration I will assume that they are charged under a sixty-foot pressure. Water also passes into the receiver K and the pressure upon all parts of the system is uniform. We will now assume that the cock C is open to its full extent, the area of its discharge being much greater than that of the supply through the pipe B, (say, for instance, double.) The pressure upon the water of the receiver K will be reduced from the fact that the water from the reservoir K

also finds an outlet through the enlarged cock. The valves V′ V³ will then be closed, owing to the full normal pressure from the compressed-air reservoirs A′A² being exerted upon said valves. The excess of pressure from the compressed-air reservoir A′ will then cause the valve V² to open and pressure to be exerted upon the contents of the receiver K through the pipe L² in proportion to the decrease of pressure at the cock C. Within the receiver K, I have arranged a plunger, P. The excess of pressure from the reservoir A′ will cause the elevation of the plunger P. If now the cock C be closed, normal pressure will be restored upon the water within the pipes X and L′ and the reservoir A′. To the normal pressure exerted through the pipe L′ above the plunger P will be added the pressure exerted by the weight of the plunger, which combined pressure will operate to close the valve V² and cause the excess of pressure exerted by the weight of the plunger to be exerted upon the contained air and water within the reservoir A². It is therefore apparent that there is theoretically a normal pressure and a half stored within the reservoir A², which pressure will be sufficient to cause a flow of water through the upper part of high buildings. Indeed, by increasing the number of reservoirs and receivers—such as K—together with the plungers P, pressure may be increased in the reservoir successively considerably beyond normal pressure.

In Fig. 2 I have shown that a column of mercury contained within a bent tube, L′ L², may be used, which mercury will constitute, in effect, a plunger, P.

In Fig. 3 I have shown that an elastic diaphragm, J, may be used in lieu of a plunger, the diaphragm being arranged in a suitable receiver, K, located in the pipes L′ L².

In Fig. 4 I have shown that two diaphragms, J′ J², of differential areas, may be used. These diaphragms are rigidly connected together at about their centers by a rod, *j*, and are arranged in two receivers, K, in the pipes L′ L².

In Fig. 5 I have shown that a column of water may be used. In this case the pipes L′ L² ascend from the pipe X to a height equal to the additional head required, and are to be full of air when the operation is commenced. The draft of water at the cock C will induce a flow up the pipe L², leaving therein a column of water to be added to the initial pressure upon the closing of the cock C.

It will be observed that in all the examples of my improvement a pressure-exerting device is employed, which pressure-exerting device operates to add to the pressure normally exerted from the street-main.

A three-way cock may be substituted for the cocks C D.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a supply-pipe, B, of a pipe, X, in communication with the pipe B and comprised in a distributing system for buildings, two reflow check-valves in the pipe X, a compressed-air chamber in communication with the pipe X between said reflow check-valves, a receiver for water connected with the pipe X at two points, said valves being located between such connections, a third check-valve beyond said connections, and a pressure-exerting device in said receiver, substantially as and for the purpose specified.

2. The combination, with a supply-pipe, B, of a pipe, X, in communication with the pipe B and comprised in a distributing system for buildings, two reflow check-valves in the pipe X, a compressed-air chamber in communication with the pipe X between said reflow check-valves, a receiver for water connected with the pipe X at two points, said valves being located between such connections, a third reflow check-valve in the pipe X beyond the two valves first named, a second compressed-air chamber beyond the third reflow check-valve, and a pressure-exerting device in said receiver, substantially as and for the purpose specified.

NATHANIEL A. CONKLIN.

Witnesses:
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