

*Aqueduct.*

*Patented Sept. 4, 1860.*



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# UNITED STATES PATENT OFFICE.

JOHN OSBORN, OF MOUNT CARMEL, CONNECTICUT.

## AQUEDUCT.

Specification of Letters Patent No. 29,906, dated September 4, 1860.

*To all whom it may concern:*

Be it known that I, JOHN OSBORN, of Mount Carmel, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Aqueducts; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, forming part of this specification, in which drawing is represented a longitudinal vertical section of my invention.

The object of this invention is to arrange an aqueduct in such manner that by a simple and ingenious device the head of the water passing through the aqueduct can be changed and the supply of water increased and it is intended for such localities where the supply water of the aqueduct is taken from two sources which are situated at different levels one higher than the other. The lower source is supposed to furnish the required amount of water under ordinary circumstances and during this time the water of the upper source is allowed to accumulate in a suitable reservoir; but in case of fire or in any other emergency when more water is required than under ordinary circumstances, the water is taken from the upper source and the supply from the lower source is stopped allowing the water from this source to collect in the meantime in a suitable reservoir. To effect this purpose the supply pipes from the upper and lower reservoirs are combined with a valve chest in such a manner that by a simple change in the valves the supply is taken from the upper or from the lower reservoir; and the change of the valves is effected by a balanced swinging box which when closed and filled with water sinks down and allows the valves to close the upper and to open the lower supply but if empty it rises through the action of the counterpoise and the upper supply is opened while the lower supply is closed. The filling and discharging of the swinging box is facilitated by a suitable arrangement of valves and faucets which will be hereinafter more fully explained.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation with reference to the drawing.

A, represents the upper and B, the lower reservoir. A pipe C, leads from the reservoir A, to the valve chest E, and a similar

pipe D, forms the communication between the valve chest and the reservoir B. From the valve chest the pipes *a*, *b*, serve to conduct the water from the upper reservoir to the pipe F, and the pipes *c*, *d*, serve in the same manner to admit the water from the lower reservoir to the same pipe F, which latter represents the main pipe leading the water to a city or to the spot where it is required. The valve chest E, is provided with four balance valves *e*, and *e'*, which are attached to the stem *f*, and which close against seats *g*, *g'*. If the stem *f*, is raised the valves *e'*, close against the seats *g'*, and the communication between the lower reservoir and the discharge pipe F, is interrupted and if the valve stem is allowed to drop down, the valves *e*, close against the seats *g*, and the communication between the upper reservoir and the discharge pipe is closed.

Instead of the valves *e'*, a simple flap valve *e\**, might be employed, which when the upper valves *e*, are closed, will open through the pressure of water flowing from the lower reservoir, but if the upper valves *e*, are open, the excess of the pressure acting on the outside of the flap valve *e\**, will close the same during the time the water is taken from the upper reservoir. Under ordinary circumstances the valves *e*, are closed and the water is taken from the lower reservoir as indicated by red arrows in the drawing, but in case of a fire or whenever an uncommon quantity of water is needed, the valves *e*, are opened and the supply is taken from the upper reservoir. In order to operate the valves in a simple manner, a box G, is arranged on the end of a pipe H, which is secured in a perforated revolving head or joint I. A rod J, which extends from the opposite end of the joint I, bears the counterpoise K, the weight of which is such that the same balances the box G, when the latter is filled with water and that it raises the box up as soon as the water contained in the same is discharged. The joint I, communicates through a pipe L, with a faucet M, which is supposed to be situated in the interior of the city to which the water is conducted or in any other place easy and convenient of access. The pipe L, communicates through the pipe N, with the pipe F, and the communication between the pipes L, and F, can be closed by a faucet O, which is placed in close proximity to the faucet M.

The valve stem *f*, connects by a loop *h*,



with the pipe H, in such a manner that if the box G, sinks down the valves  $e'$ , are opened and the valves  $e$ , are closed and if the box G, rises the valves  $e$ , are opened and the valves  $e'$ , are closed.

5 The box G, is divided by a partition  $i$ , into two chambers  $j, j'$ , and a valve  $k$ , closes or opens an aperture in the bottom of the chamber  $j$ , and the position of this valve is  
10 governed by a float  $l$ , which is attached to a lever  $m$ , that connects with the valve  $k$ . The float  $l$ , is situated in the chamber  $j'$ , and water is introduced into this chamber through an aperture  $n$ , in the under side of  
15 the pipe D. As the water rises in this chamber the float forces the valve  $k$ , down on its seat and at the same time a valve  $o$ , in the bottom of the pipe D, is opened by the  
20 action of the lever  $m$ , which rises together with the float and the water discharged through the valve  $o$ , fills the chamber  $j$ , and the box G, sinks down to a position shown in red outlines. In this position the valves  
25  $e$ , are closed and the water is taken from the lower reservoir B. If it is now desired to change the head and to take the water from the upper reservoir A, the faucet M, is  
30 opened. By this operation the water contained in the box G, is allowed to discharge, the box rises and the valves  $e, e'$ , are changed, assuming a position as shown in black outlines in the drawing, and the water from the upper reservoir passes through the  
35 valve chest to the pipe F, while the communication between the lower reservoir and the pipe F, is closed. This change is made in case of a fire or whenever from any other  
40 cause an uncommon quantity of water is needed. As soon as this cause is removed and whenever it is desired to close the com-

munication to the upper and to open that to the lower reservoir, the faucet M, is closed, and the faucet O, is opened. The water passes now very rapidly through the pipes N, and H, into the box G, the latter is filled  
45 and the valves are changed. The faucet O, is now closed and the whole arrangement is in its normal condition.

By connecting the swinging box G, and the pipes L, N, and F, together with the faucets M, and O, or their equivalents with  
50 a gate or valve forming the communication between a reservoir and the discharging pipe the gate can be opened and closed in a simple and easy manner.

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

1. The arrangement of the valve chest E, with valves  $e, e'$ , in combination with the reservoir A, B, pipes C, D, and pipe F, constructed and operating substantially as and  
60 for the purpose set forth.

2. The arrangement of the swinging box G, in combination with the valve stem  $f$ , valves  $e, e'$ , and reservoirs A, B, constructed and operating substantially as and  
65 for the purpose specified.

3. The arrangement of the float  $l$ , lever  $m$ , valve  $k$ , aperture  $n$ , and valve  $o$ , in combination with the two chambers  $j, j'$ , of the  
70 box G, constructed and operating substantially as and for the purpose described.

4. The combination with the box G, reservoirs A, B, and pipe F, of the faucets M, and O, operating substantially as and for  
75 the purpose set forth.

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Witnesses:

B. GIROUX,  
M. M. LIVINGSTON.