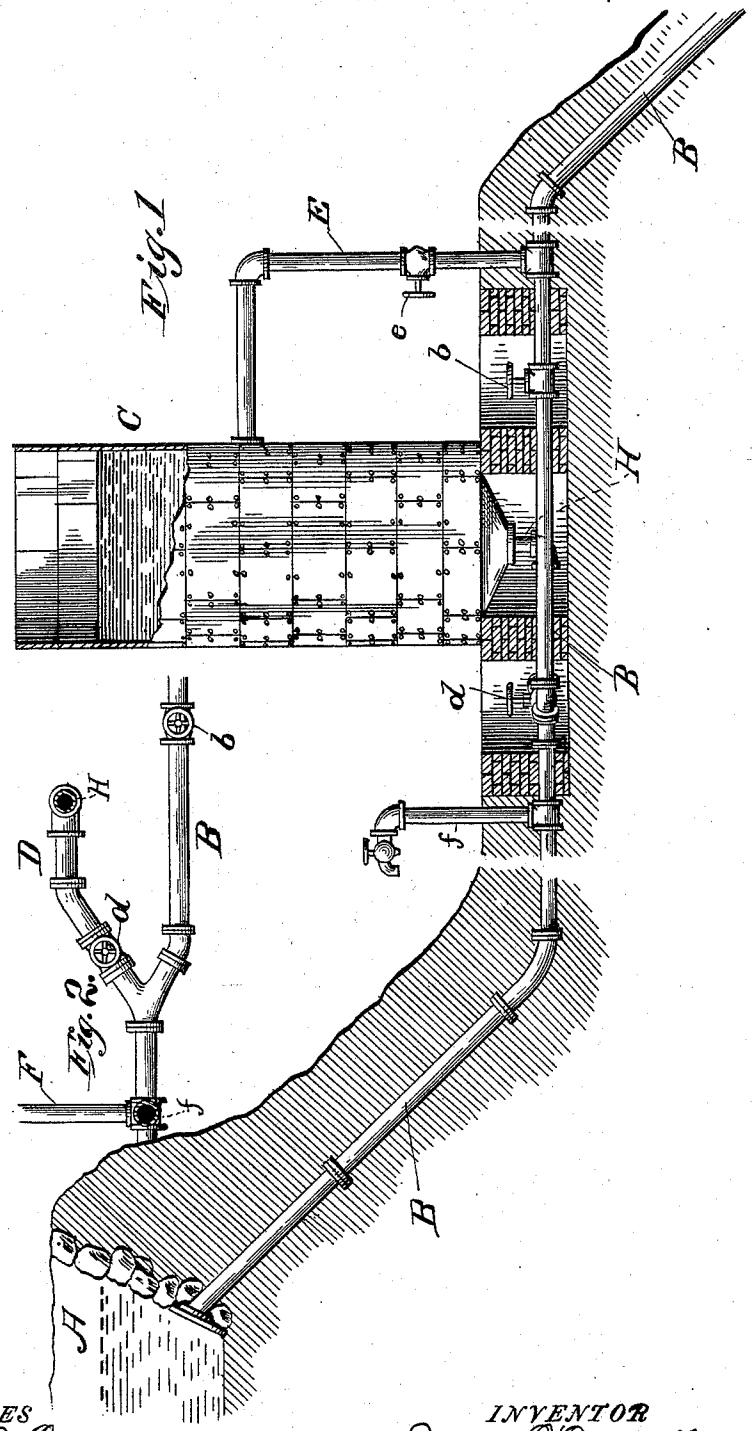
(No Model.)

D. O'DONNELL.

EQUALIZER FOR WATER MAINS.

No. 541,816. Patented June 25, 1895.



WITNESSES
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UNITED STATES PATENT OFFICE.

DANIEL O'DONNELL, OF RICHMOND, VIRGINIA.

EQUALIZER FOR WATER-MAINS.

SPECIFICATION forming part of Letters Patent No. 541,816, dated June 25, 1895.

Application filed December 20, 1894. Serial No. 532,498. (No model.)

To all whom it may concern:

Be it known that I, DANIEL O'DONNELL, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Equalizers for Water-Mains; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to equalizers for water mains and has for its object to so regulate the pressure in a system of water distribution that the supply will be as great at the highest point as at the lowest, through which the water is distributed, and my invention consists in accomplishing this object in the manner and by the means hereinafter described and more particularly pointed out in the claims.

It is well known that in very rolling or hilly cities the supply of water is not as plentiful in buildings on the elevated portions as it is in those on the lower sections, and that this is a source of great inconvenience to the occupants of the elevated portions of the city. By the use of my invention however, the pressure can be so equalized as to insure an even distribution of water to all parts of the city at the same time.

Referring to the drawings in describing my invention, Figure 1 is an elevation, partly in section, of my improved apparatus in position for operation; and Fig. 2 is a detailed view of a detached part of the same.

Similar letters of reference refer to corresponding parts in each figure of the drawings.

A represents the supply reservoir located at some elevated point within or near the city, and B a water main distributing pipe leading down into the city from the reservoir.

C indicates a stand pipe or supplementary reservoir, situated on a plane below that of the reservoir, into the bottom of which, through a vertical pipe H, a branch pipe D leads from the water main B, for the purpose of filling the stand pipe with water.

From the stand pipe C, and preferably at a point substantially on the same horizontal plane as that of the mouth of the water main at the supply reservoir A, although it may be lower if desired, a pipe E leads to the main distributing pipe B for the purpose of carrying the raised water in the stand pipe back into the water main, thereby forming a connection through the stand pipe between the supply reservoir and the water main leading down into the city.

The water main pipe B is provided with a cut off valve *b*, at a point between the connections of the branch pipe D and the pipe E with the main pipe, for the purpose of forcing the flow through the pipe D into the stand pipe, and the branch pipes D and E are provided with cut off valves *d* and *e*, in order to prevent the water from entering or leaving the stand pipe in case the whole force is needed in the city below to extinguish fire in a great conflagration.

F represents a branch distributing pipe which may lead from the water main pipe B at any point between the reservoir and the stand pipe for supplying water to the upper part of the city, and this pipe is provided with private supply pipes *f*, at any desired points.

In carrying my equalizing water supply system into operation, I erect a stand pipe C in an elevated part of the city below the plane of the reservoir where a supply of water is desired and connect it with the main distributing pipe. The valve *b* is closed and the water will naturally rise in the stand pipe until it reaches the level of that in the supply reservoir. If the branch distributing pipes F lead from the water main at a point between the reservoir and the stand pipe, it is evident that the full normal pressure from the reservoir will be maintained in these distributing pipes as there will be an equal pressure on both sides of the connection between the main and the distributing pipes.

The water for the lower sections of the city will pass through the stand pipe C, the exit therefrom being on substantially the same plane as the connection of the water main pipe with the reservoir though the exit may be lower down on the stand pipe if desired. By this arrangement the pressure in the lower sections of the city will be substantially the

same as the full normal pressure of the reservoir and be equal to that in the distributing pipes in the upper section of the city.

In the event that the elevations vary considerably, other stand pipes may be erected on intermediate levels between the first stand pipe and the lowest section of the city. Such stand pipes however, should preferably be of sufficient height to permit the water to rise therein to the level of that in the supply reservoir, and the exit point from such stand pipe for the supply of the next lower section should be on substantially the same level as the connection of the water main distributing pipe with the supply reservoir although it may be lower down if desired. By the use of such a series of stand pipes arranged on different elevations, the water supply will be uniform in all sections of the city.

By using my system in equalizing the pressure of water, in case a fire should occur in the elevated section of the city, the full pressure of the supply reservoir can be temporarily concentrated in that section by closing the valve *e*, of the exit pipe E, and thereby shutting off the water supply to the lower section; or in case the fire should occur in the lower section, the same result may be practically obtained by closing the valve *d*, and opening the valve *b* thereby partially shutting off the pressure in the upper section of the city.

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

1. The combination with a supply reservoir and water main, of a stand pipe or supplementary reservoir located on a plane below that of the supply reservoir, a branch pipe leading from the water main to the stand pipe, a branch distributing pipe leading from the water main at a point between the supply reservoir and stand pipe, an exit pipe leading from an elevated point on the stand pipe to the water main and a cut off in the water main between the two connections from said water main to the stand pipe, as and for the purpose set forth.

2. The combination with a supply reservoir and water main, of a stand pipe located on a plane below that of the reservoir, a branch pipe leading from the water main to the stand pipe, a branch distributing pipe leading from the water main at a point between the reservoir and stand pipe, an exit pipe leading from an elevated point of the stand pipe to the water main, a cut off in the water main between the two connections from said water main to the stand pipe, and cut offs in the inlet and outlet pipes connecting the water main and the stand pipe, as and for the purpose set forth.

3. The combination with a supply reservoir and a water main leading therefrom, of a conduit having inlet and outlet connections with the water main on a plane below that of the reservoir, said conduit extending vertically to a plane substantially the same as that of the exit from the reservoir to the water main, a cut off in the water main between the inlet and outlet connections of the conduit, and a branch distributing pipe leading from the water main between the reservoir and the conduit, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL O'DONNELL.

Witnesses:

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A. S. CRAWFORD.