(No Model.)

2 Sheets—Sheet 1.

C. P. ALLEN.

CUT-OFF.

No. 271,761. Patented Feb. 6, 1883.

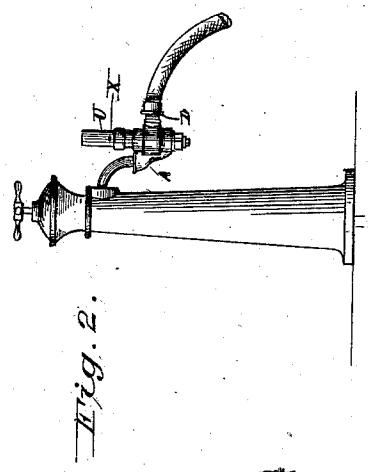


Fig. 2.

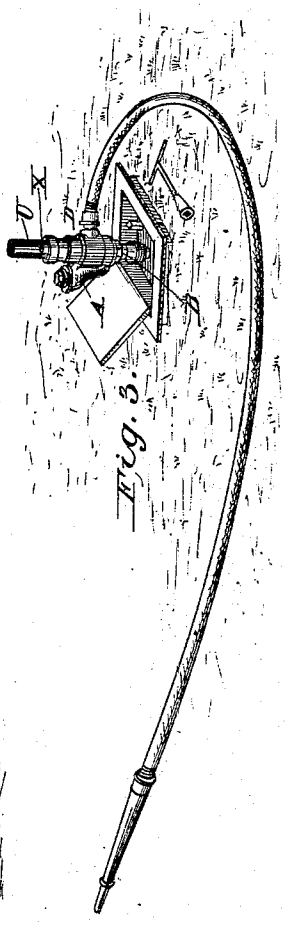


Fig. 3.

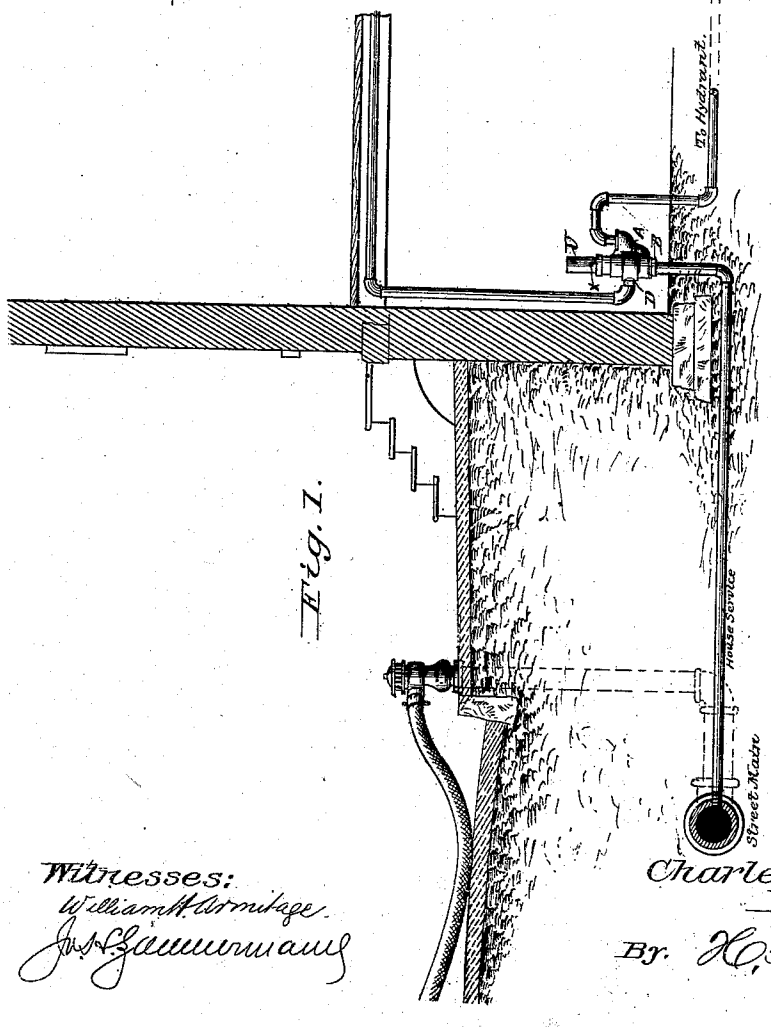


Fig. 1.

Witnesses:
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J. S. Williams

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N. PETERS. Photo-Lithographer, Washington, D. C

(No Model.)

2 Sheets—Sheet 2.

C. P. ALLEN.

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Fig. 5.

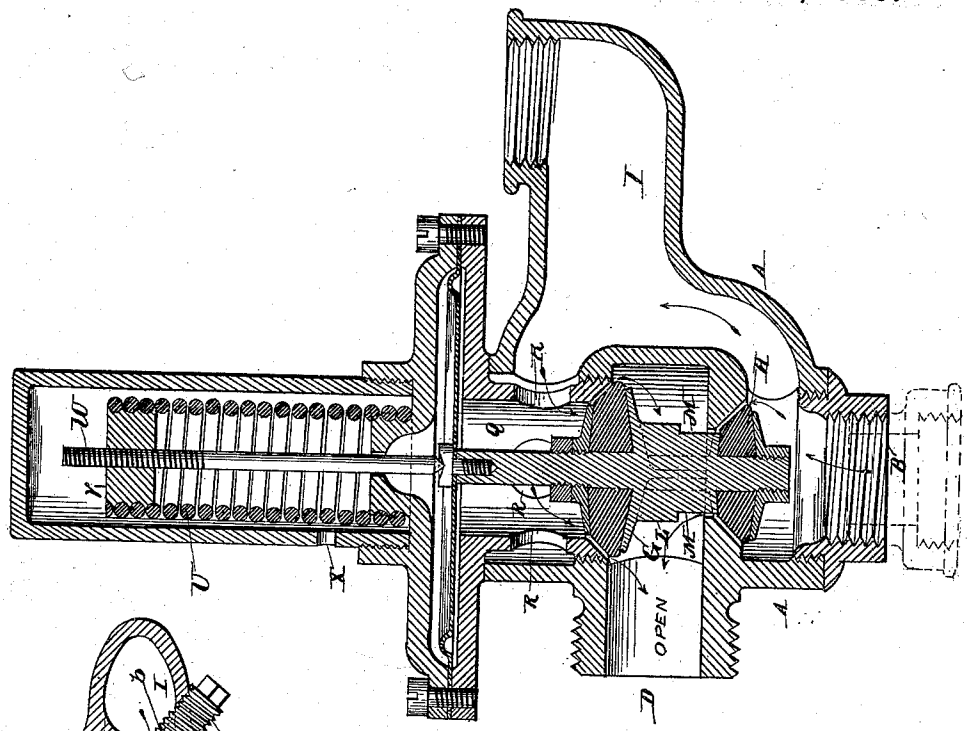


Fig. 6.

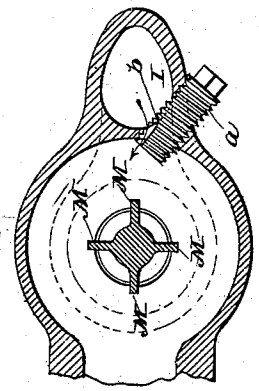


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES P. ALLEN, OF DENVER, COLORADO.

CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 271,761, dated February 6, 1883.

Application filed August 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. ALLEN, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Cut-Offs for City Water-Service; 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, and to letters or figures of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a vertical section of part of a house and the roadway in front of it, showing the street-main, fire-plug, house service-pipes, and my cut-off in their relative positions to each other. Fig. 2 is a side elevation of a hydrant with the cut-off attached to the spout. This figure also shows, by means of dotted lines, the manner in which the hydrant may be connected with the cut-off when located in the position shown in Fig. 1. Fig. 3 is an isometrical projection, showing the use of the cut-off with a street-hose. Fig. 4 is a vertical section through the cut-off. Fig. 5 shows a modification in which a diaphragm is used instead of a piston. Fig. 6 is a cross-section taken on the line *x x* of Fig. 4.

My device relates to a cut-off especially designed for use with a system of water-supply in which the water is pumped directly into the mains or into a stand-pipe, and has for its object the automatic cutting off or closing, entirely or partially, of the supply of water to buildings, fountains, &c., so that the supply can be concentrated upon the fire-plugs in case of a fire, and all the water the system permits of be discharged at the required point, and when this service is completed opening the service to the buildings, fountains, &c.; and it consists in cutting off the whole or part of the ordinary service by increasing the pressure, and in the construction, arrangement, and operation of parts, as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which it appertains to make and use my invention, I will proceed to describe its construction and operation.

A is the outer shell, having inlets B and C and outlet D. If desired, the inlet C may be used as an outlet when the cut-off is closed, or it may be plugged and not used at all.

An inner shell or body, E, incloses a chamber, F, which communicates directly with the outlet D, and by means of valves G and H with the inlet-chamber I. The valve H is located beneath and seated in the wall of the shell E, opening downward.

In the upper part of the shell E a cylinder, K, is set, the lower end of which is chamfered to make a seat for the valve G, which opens downward, and is connected to the valve H by a stem, L, which is provided with centering-guides M, that bear upon the sides of the lower valve-seat. The stem L extends a suitable distance upward into the cylinder K, and at or near its upper end sustains a piston, N, that fits the cylinder K, and is secured to the stem by means of a cap, O, and sleeve P. The space between the piston and the valve G forms a chamber, Q, which has a free communication with the chamber I by means of any desired number of openings R through the side of the cylinder K.

The top of the cylinder K is provided with a cap, S, held down upon its seat by a cylinder, T, screwed into the top of the cylinder K. A coiled spring, U, is secured in any suitable manner to the cap S, and extends upward any required distance, having a nut, V, secured to its upper end. A threaded rod, W, passes through this nut, the center of the coiled spring, and the center of the cap S, and rests upon the center of the end of the valve-stem which extends up through the top of the piston. By adjusting the rod in the nut the spring can be made to exercise more or less pressure upon the end of the valve-stem, so as to counteract any given degree of upward pressure upon the top of the valve G, owing to their excess of area.

An opening, X, admits air into the cylinder T, and from there it may pass into the chamber, between the cap S and piston N, through the open center of the cap S.

Where there is objection to shutting off the entire supply of water, as is the case in buildings where there is a boiler to be fed, a screw-threaded opening is made from the outside to

the chamber F, tapping in its course the chamber I, making a small opening. A screw-threaded plug, *a*, provided with a groove, *b*, extending a suitable distance from the inner end, is inserted and so adjusted that the groove *b* will form an open channel between the two chambers, as shown in Fig. 6 of the accompanying drawings. A half-turn of the screw will close this channel when desired. The spring U being set to resist a pressure in the water-main of, say, thirty-five pounds to the inch, and an alarm of fire conveyed to the pumping-station, the pressure is at once increased to, say, seventy-five pounds to the inch. This overcomes the power of the spring and at once closes the valves G and H in every cut-off throughout the water system, and reserves the water for the use of the fire-plugs. The occasion having passed, the pressure is reduced at the pumping-station to thirty-five pounds, when the power of the springs asserts itself and all cut-offs are opened at once.

It will be observed that this device is not a fluid-pressure regulator, but that it is distinctively a cut-off, the only purpose being to cut off and stop the flow of water.

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

1. In a system of water-supply, a cut-off located between the main and service pipes, and provided with means for keeping said cut-off open under a normal pressure in the mains, and for automatically closing it by an increased pressure in the same, and keeping said valve closed until the pressure is reduced to its normal condition, whereby the supply of water can be concentrated at any desired point, substantially as shown and described.

2. A cut-off for a water-service in which the pressure can be increased or diminished, consisting of chambers and valves, in combination with an adjustable rod and spring, whereby the degree of pressure at which the stoppage shall take place and be continued can be regulated, substantially as and for the purpose shown and described.

3. A cut-off for a water-service in which the pressure can be increased or diminished, consisting of chambers and valves, in combination with an adjustable rod and spring, whereby the degree of pressure at which the stoppage shall take place and be continued can be regulated, and a connection between said chambers, whereby a limited supply of water can be continued after the greater portion has been cut off, substantially as shown and described.

4. A cut-off for a water-service in which the pressure of the water can be increased or diminished, consisting of the shells A E, forming the chambers I and F, valves H and G, stem L, and piston P, in combination with the cylinders T and K, the latter having openings R, adjustable rod W, and spring U, substantially as shown and described, whereby the degree of pressure at which the stoppage shall take place and be continued can be regulated.

5. A cut-off for a water-service, consisting of the shells A E, forming the chambers I and F, valves H and G, stem L, piston P, cylinders T and K, the latter having openings R, adjustable rod W, and spring U, in combination with the slotted plug *a*, forming a channel between the chambers I and F, substantially as shown and described, whereby a limited supply of water can be continued after the greater portion of the supply has been cut off.

6. The combination of the slotted plug *a* with the shells A and E, substantially as shown and described, whereby a channel connecting the chambers I and F is established.

7. The combination of the shell E, valves H G, stem L, piston N, cylinder K, provided with openings R, and the shell A and inlet B, substantially as shown and described.

8. The combination of the cylinders T and K, cap S, nut V, spring U, and rod W with the valve-stem, valves, and shells, as shown and described.

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

CHARLES P. ALLEN.

Witnesses:

RICHARD HOLME,

RICHARD HOLME, Jr.