(No Model.) 2 Sheets—Sheet 1.

S. W. LEWIS.

VALVE FOR HYDRANTS.

No. 306,086. Patented Oct. 7, 1884.

FIG. 1.

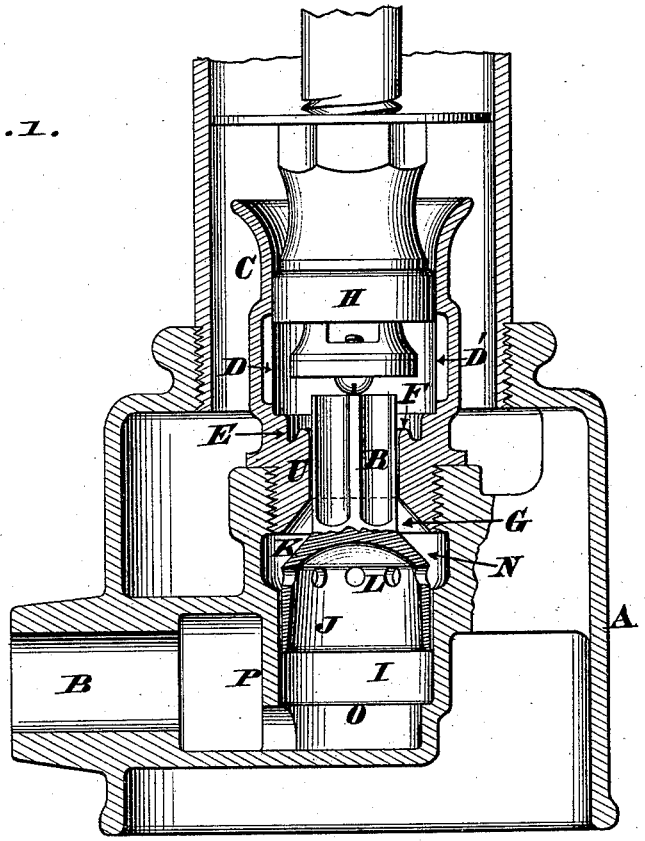


FIG. 3.

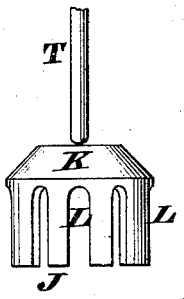


FIG. 2.

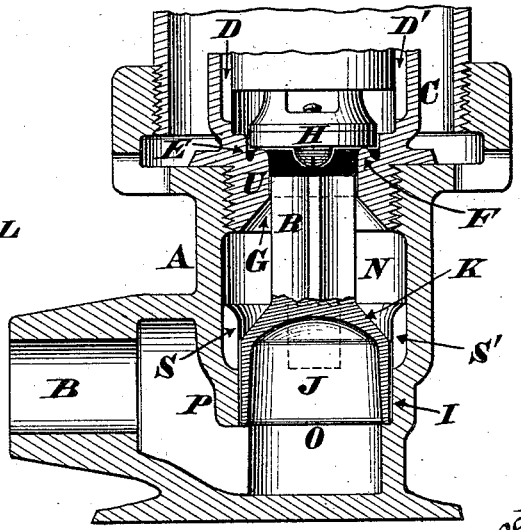
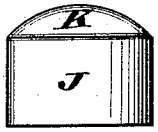


FIG. 4.



Attest:
Sam. E. Barbour,
John R. Brohliger.

Inventor.
Samuel W. Lewis
by Jas. N. Layman. Atty.

(No Model.) 2 Sheets—Sheet 2.

S. W. LEWIS.

VALVE FOR HYDRANTS.

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Fig. 6.

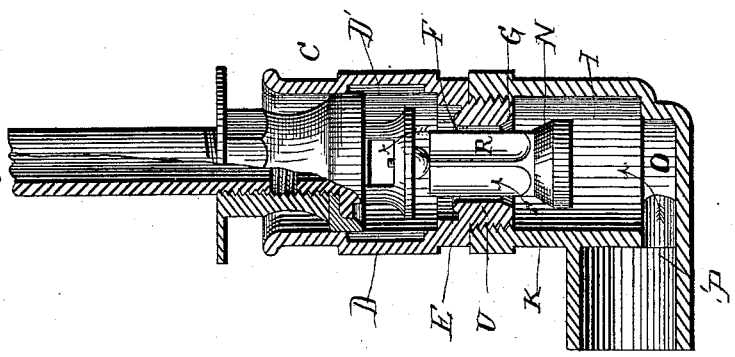
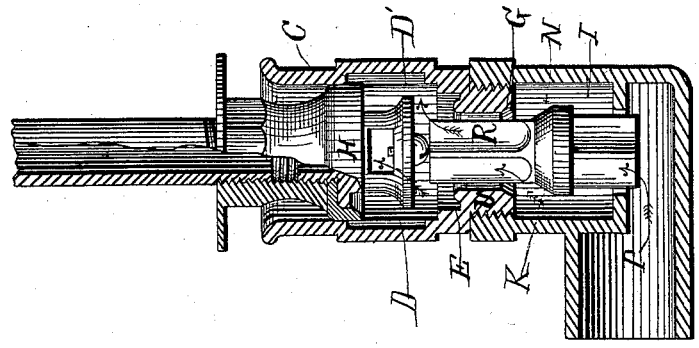


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL W. LEWIS, OF CINCINNATI, OHIO.

VALVE FOR HYDRANTS.

SPECIFICATION forming part of Letters Patent No. 306,086, dated October 7, 1884.

Application filed August 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. LEWIS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Valves for Hydrants, Fire-Plugs, Street-Washers, &c., of which the following is a specification.

The object of this invention is to improve upon the floating or buoyant duplex or auxiliary valve described in Letters Patent No. 192,379, granted to me June 26, 1877, in which patent said valve is shown as consisting, preferably, of some buoyant material or of a closed air-tight cylinder, and provided at its upper end with a ground seat or bearing; but practical experience has demonstrated that in many cases the valve will operate more satisfactory if firmly and securely guided to its seat, and be more cheaply constructed if its lower end is left open or concave underneath, whereby the inflowing current of water may strike the bottom or concave surface, or pass directly into the body or shell, and thus insure the prompt and effective action of the duplex or auxiliary valve without the aid of a spring or any other appliance, and wholly and entirely by the action or force of the inflowing current alone, thus enabling me to make said stop-valve of a greater specific gravity than water, as hereinafter more fully described, and pointed out in the claims.

Heretofore to overcome the natural gravity of auxiliary stop-valves made of metal it has always been found necessary to elevate them to their seats by some special device, which complicates the apparatus, interferes with the flow of water, increases the cost, and makes them more liable to accident, in which case the hydrant has to be dug up for repair; and my object is to provide an auxiliary valve that will automatically close with the current or flow to its seat, where the pressure of water against it will hold it until forced open again by the main or upper valve.

In the annexed drawings, Figure 1 is an axial section of the base of a hydrant provided with one form of my improved auxiliary or duplex valve, the hydrant being shown in the open position. Fig. 2 is a similar section, but showing a modified form of valve applied to a somewhat different construction of hydrant, the latter being shown in the closed position. Figs. 3 and 4 represent other modifications of my improved auxiliary valve. Figs. 5 and 6, Sheet 2, represent further modifications in the details of construction.

The hydrant-base A consists of a casting of any suitable size or shape, and is provided with a customary inlet, B. Screwed or otherwise applied to this base is the valve-chamber C of the upper or main valve, said chamber having at its lower end a suitable seat, G, for the auxiliary valve to close against, as hereinafter more fully described, and also having one or more wasteways, D D'. Adapted to traverse the chamber C is a piston, H, or main controlling-valve of the hydrant, which, for the purpose of illustration, is shown as substantially the same as described in my patent previously alluded to.

Playing vertically within a chamber, I, or in a suitable attachment or non-corrosive bushing of the same, and so arranged as to be properly guided to its seat, is my improved auxiliary valve J, which is shown as open or concave at bottom, but closed at top, its upper end being so ground or shaped at K as to bear or close tightly against the seat G when occasion may require.

In Fig. 1 valve J is shown pierced with a series of ports or slots L.

N is an enlargement at the upper end of chamber I, and O is an annular ledge or shoulder at the lower end of the same, said shoulder serving as a seat or rest for the auxiliary or duplex valve when the latter is in its normal or inactive position.

P is a barrier or curtain that deflects the current of water into the lower end of chamber I, and thence up against the bottom of or into valve J. If desired, the curtain P may be dispensed with, and the inlet located in the bottom of base A immediately beneath valve J.

As represented in Figs. 1 and 2, the auxiliary valve J is shown as provided with an upwardly-projecting guide-stem, R, the flutes or grooves of which serve as channels to permit the ascent of water when the hydrant is open. This fluted stem is guided within the neck or passage U of chamber C, for the purpose of more securely and firmly seating the auxiliary valve J when the upper or main valve is

withdrawn; or the valve J may be guided by a similar stem projecting from beneath, or by fluted or winged stems both above and beneath, (as in an ordinary check-valve, as shown in Fig. 5.) When the hydrant is closed, the valve J, relieved from the current or flow of water, gravitates to its normal position and rests on the shoulder O; but the moment the upper or main valve is opened, the current of water, striking the bottom or concave surface of auxiliary valve J, carries it up as high as may be desired. As seen in Fig. 1, the stroke of the upper or main valve is just sufficient to allow a free and uninterrupted flow of water up through or around valve J, and thence up the flutes or other passages of guide-stem R, and finally out through the pipe to which the upper valve is attached.

When the upper or main valve is sufficiently elevated or withdrawn, either for inspection or repair, the valve J is automatically lifted by the inflowing current alone and forced up against the seat G, thereby shutting off the flow of water without using a stop-cock in the branch pipe that communicates with the street-main.

In the modification shown at Fig. 2 the ports L are omitted and the flow of water takes place up channels S S′ in the chamber I as soon as valve J ascends far enough to uncover the lower ends of said channels, or the chamber I may be so enlarged as to afford sufficient area or capacity around valve J for the free flow of water upward, as shown in Figs. 5 and 6.

In Figs. 1 and 2 the valve J is shown as guided by the stem R alone. In Fig. 3 it is slotted instead of perforated, and is shown as depressed or guided by a stem depending from the main or upper valve. Finally, in Fig. 4 the auxiliary valve is shown with a crowning top to enter a concave seat of similar form in the lower end of chamber C.

I do not limit myself to the precise length, form, or shape of valve J, as shown, for from the above description it is evident the advantages of my invention will be obtained by any construction of duplex or auxiliary stop-valve that is properly guided, or that is open or concave at bottom but closed at top, or that can be closed against a seat by the force of the current of water flowing against it. Finally, said valve may be applied to hydrants, street-washers, fire-plugs, or similar devices that close either with or against the pressure, or that have hollow moving water-ways or solid valve rods or stems.

I am aware that hydrants have been proposed having a main valve and the auxiliary valve of greater specific gravity than water, the two valves being united telescopically or by telescopic connections in such manner that when the main valve was raised the auxiliary valve would be raised to its seat by frictional contact of the telescopic parts, but the construction is such that in no other manner could the auxiliary valve be raised or carried up to its seat. This is not my invention, and I do not claim the same.

The distinguishing features between my invention and the construction above referred to are that I do away with any connection between the auxiliary and main valve for the purpose of carrying the former to its seat, and make use solely of the pressure of the inflowing current of water, as fully described.

I claim as my invention—

1. In a hydrant, the combination, with the main controlling-valve, of an auxiliary stop-valve of a greater specific gravity than water, and located between said main valve and source of water-supply in such manner that when said main valve is withdrawn said stop-valve is carried and forced to its seat by the pressure of water alone, and which, when said main valve is restored to working position, is unseated to permit the passage of water.

2. In combination with the upper or main controlling-valve of a hydrant, the auxiliary stop-valve J, open or concave at bottom but closed at top, said auxiliary valve being automatically lifted to its seat or closed wholly and entirely by the force of the inflowing current, for the purpose described.

3. The combination, with a hydrant, of hollow auxiliary valve J, open at bottom but closed at top, provided with ports L, or described equivalent, and having a bearing, K, above said ports or opening, for the purpose specified.

4. The hollow auxiliary valve J K L, in combination with a hydrant provided with chamber I, enlargement N, and seat G, said valve being depressed by the closure of the hydrant and being elevated by a current of water flowing into said hollow valve when the hydrant is opened, substantially as herein described.

5. In a hydrant, the combination, with an auxiliary stop-valve of a greater specific gravity than water, and actuated by the pressure of water alone, of a guide-stem, for the purpose specified.

6. The hollow or concave shaped auxiliary stop-valve J K R, in combination with a hydrant provided with chamber I, seat G, and shoulder O, said valve being depressed by the closure of the hydrant, and being elevated wholly and entirely by the inflowing current of water when the main or upper valve is opened or elevated, substantially as described.

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

SAMUEL W. LEWIS.

Witnesses:
JAMES H. LAYMAN,
SAML. S. CARPENTER.