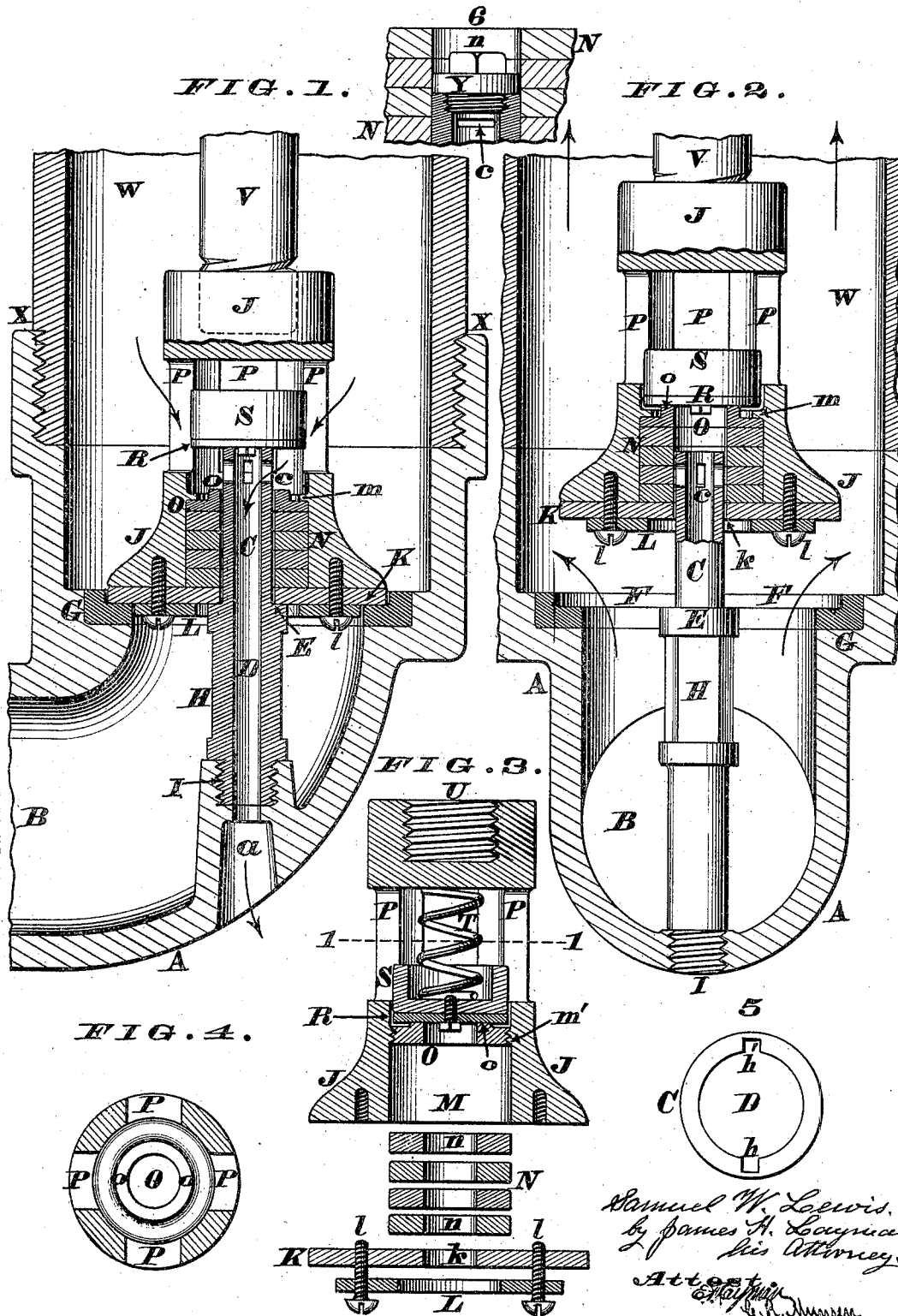


S. W. LEWIS.
HYDRANT, FIRE-PLUG, &c.

No. 172,752.

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UNITED STATES PATENT OFFICE

SAMUEL W. LEWIS, OF CINCINNATI, OHIO.

IMPROVEMENT IN HYDRANTS, FIRE-PLUGS, &c.

Specification forming part of Letters Patent No. **172,752**, dated January 25, 1876; application filed December 29, 1875.

To all whom it may concern:

Be it known that I, SAMUEL W. LEWIS, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Hydrants, Fire-Plugs, &c., of which the following is a specification:

The principal feature of my improvements consists in a novel arrangement of wasteway for hydrants, fire-plugs, street-washers, and similar devices for controlling the flow of water.

As heretofore constructed, wasteways have usually been formed by making a groove or channel in the base or stock of the hydrant, which channel allows the water to escape through a lateral opening, and thence into the ground. Such wasteways, however, are very objectionable, because of their liability to choke up with sediment, &c., and when thus obstructed, it is an impossibility to gain access to the channel so as to remove the impediments.

I overcome this very serious objection by locating my wasteway in the axis of the hydrant or plug, said wasteway being formed in a tube or pipe whose upper end projects vertically from the base or elbow of the apparatus. This arrangement allows the wasteway to be cleared of any obstructions by simply passing a wire or small rod down through the aforesaid pipe after the plunger has been removed.

Another advantage to this central location of the nozzle of the wasteway is, that said tube or pipe acts as a guide for the plunger, wherewith the flow of water is controlled.

Furthermore, by providing this tube with an annular flange or collar, said collar serves as an auxiliary seat for the inlet-valve, that is secured to the lower end of the moving plunger.

The plunger and its accessories are so arranged with reference to the wasteway as to close the latter when the hydrant is turned on, and to open the waste as soon as the flow of water is shut off.

In the accompanying drawings, Figure 1 is an axial section through the lower portion of a fire-plug or hydrant provided with my im-

provements, the inlet-valve being shown closed and the wasteway open. Fig. 2 is a similar section, but showing the inlet-valve elevated from its seat, and the wasteway shut. Fig. 3 is a vertical section through a modified form of plunger, with some of its accessories detached. Fig. 4 is a horizontal section of the plunger at the line 1 1, the gravitating stop-valve being removed.

A represents the base or elbow of a hydrant or fire-plug, or other apparatus for controlling the flow of water, said base being provided with an inlet, B, that may communicate with the street-main in any suitable manner. Projecting vertically from this base, and occupying an axial or nearly axial position within the hydrant or plug, is a cylindrical tube, pipe, or nozzle, C, whose longitudinal bore D constitutes the wasteway proper. This tube is preferably open at both ends, as shown, and is pierced near its upper extremity with one or more transverse slots or apertures, *c*, of any suitable size and shape.

Cast with or otherwise secured to tube C is an annular flange, ledge, or collar, E, whose upper surface is in the same horizontal plane as the valve-seat F. This seat is counter-bored in an annulus, G, composed of brass or other non-corrosive metal, which annulus may be secured in the base A either with a rust-joint, or by expanding the base with heat and then inserting the ring, or by any other suitable means.

The tube C is furnished with a square, or hexagonal, or other non-circular portion, H, for the reception of a suitable wrench, whenever it is desired to detach the wasteway from the base. The same result, however, may be attained by providing the upper end of nozzle C with two diametrically-opposite grooves or sockets, as shown at *h h'* in diagram 5. These grooves will permit the insertion of a blade of any appropriate implement, so as to rotate the pipe C either to the right or left. The lower end of wasteway C H is screw-threaded at I, to engage with the base A. This junction may be effected by screwing the pipe C directly into the shell of the base, as

seen in Fig. 2; or said pipe may be engaged with a hollow support, *a*, cast with said base, (see Fig. 1;) or the pipe C D and its collar E may be cast in one piece with the base or elbow A.

J represents the plunger, to whose lower end is secured the inlet-valve K, which is composed of leather, or india-rubber, or other suitable material. This valve is pierced with a central circular aperture, *k*, of such size as to fit snugly around the cylindrical nozzle C. The aforesaid valve is clamped to plunger J by screws or bolts *l*, that pass through the annular metallic washer L. The lower portion of the plunger is chambered out at M, to receive a number of packing-rings, N, pierced centrally at *n*, so as to fit closely around the nozzle C. The upper end of this chamber is furnished with an internal flange, *m*, against which abuts a metallic ring, O, having a raised seat, *o*.

This flange may be omitted, if preferred, and the ring O can be screwed into the upper end of the aforesaid chamber, as shown at *m'* in Fig. 3.

The plunger J is provided with a number of vertical slots, P, thereby forming a cage, within which is confined a stop-valve, R, attached to a gravitating disk, S. The weight of this disk causes its attached valve R to rest either upon the upper end of nozzle C, or else upon the raised seat *o*, as will presently appear.

The disk S may take the shape of a shell, as shown in Fig. 3, and be provided with a spring, T, so as to insure a perfect closure of the valve.

The upper end of the plunger is tapped at U to receive the operating stem V, which latter may be either solid or tubular. This stem or plunger-rod may be elevated and depressed either with a screw, or eccentric, or lever, or any other suitable device.

W represents the stock or case of the plug or hydrant. In the drawings this stock is represented as being attached to the base by a screw-thread, X; but it is evident these two members may be furnished with flanges and bolted together in the usual manner.

To illustrate the operation of my hydrant or plug, I will suppose the plunger J is depressed so as to shut off the flow of water, as shown in Fig. 1. In this closed condition of the hydrant, the margin of inlet-valve K is seated in the counterbore F, while the central portion of said valve seats upon the collar E. The valve thus has a double support, and the close fit of its orifice *k* around the nozzle C prevents the accidental leakage of water up through the center of the plunger.

It will be observed that the end of nozzle C projects some distance above the raised seat *o*, and, consequently, any water in the stock W escapes through slots P and apertures *c* into the wasteway D, thereby prevent-

ing the hydrant freezing up during the winter season. This escape of water through the waste-channels of the hydrant is indicated by arrows in Fig. 1.

The previously-described depressed condition of the plunger causes the stop-valve R S to seat itself upon the upper end of nozzle C, thereby preventing dust, rust, &c., entering the wasteway D.

To open the hydrant or plug the operating device attached to the upper end of stem V is manipulated in such a manner as to elevate the plunger J a suitable distance, say from one-half of an inch to two or more inches, according to the capacity of the plug. The moment this elevation is effected water rushes up through the base A B and stock W, as indicated by arrows in Fig. 2, the stop-valve R S being forced down tightly upon seat *o* by the pressure of water, which pressure may be assisted by the stress of spring T, if desired. The pipe C being thus automatically and securely closed by the gravitating stop-valve R S, it is evident no water can now escape through the wasteway *c* D.

As soon, however, as the hydrant is shut off, the previously-described discharge of water from the stock W is automatically effected.

If at any time the wasteway D should become obstructed, and fail to act properly, the plunger J V and its attachments can be withdrawn from the stock, and a wire or small rod may then be inserted in said channel D, so as to clear it from all impediments.

It will be noticed that when the hydrant is closed the packing-rings N coact with the inlet-valve K, to prevent any ascent of water around the exterior of nozzle C, and, if preferred, said valve may be "cupped," so as to hug the waste-pipe more securely.

In this specification, wherever the phrase "vertically-projecting waste-pipe" is employed, it is to be construed as referring solely to that portion of the pipe or tube which projects above the collar E, or, in other words, to the nozzle C, which guides the plunger J. Below this collar E the waste-pipe may incline or curve either to the right or left, provided such deviation is not so angular or abrupt as to prevent the insertion of a rod for clearing the channel D.

The invention may be further modified by causing the nozzle C to occupy an eccentric position with reference to the plunger J or the inclosing-stock W.

Another change may be made without affecting the leading feature of the invention, by closing the upper end of nozzle C D, and omitting the gravitating stop-valve R S. Such a modification is shown in diagram 6, which represents the plunger as elevated, and the nozzle closed with a plug, Y, or otherwise.

In this simple form of the hydrant it will be necessary to unscrew the nozzle for the pur-

pose of cleaning out the wasteway, as the closed upper end of tube C prevents the insertion of a wire.

In case the nozzle C should be cast in one piece with base A, the plug Y can be made detachable by means of a screw-thread, or otherwise.

I claim as my invention—

1. The vertical wasteway C D, either open or closed at top, and occupying an axial, or nearly axial, position within the hydrant or plug, said nozzle C D serving as a guide to the plunger, substantially as described.

2. In combination with the vertically-projecting nozzle C c D and moving plunger J, I claim the collar E and seat F for the double

support of inlet-valve K when the latter is closed, as herein explained.

3. I claim the combination of vertical nozzle C c D, slotted moving plunger J P, seat o, and gravitating stop-valve R S, as and for the purpose stated.

4. In combination with the vertical nozzle C c D and moving plunger J, I claim the chamber M, seated ring O o, and elastic packings N n, for the object stated.

In testimony of which invention I hereunto set my hand.

SAMUEL W. LEWIS.

Attest:

JAMES H. LAYMAN,
S. B. SPEAR.