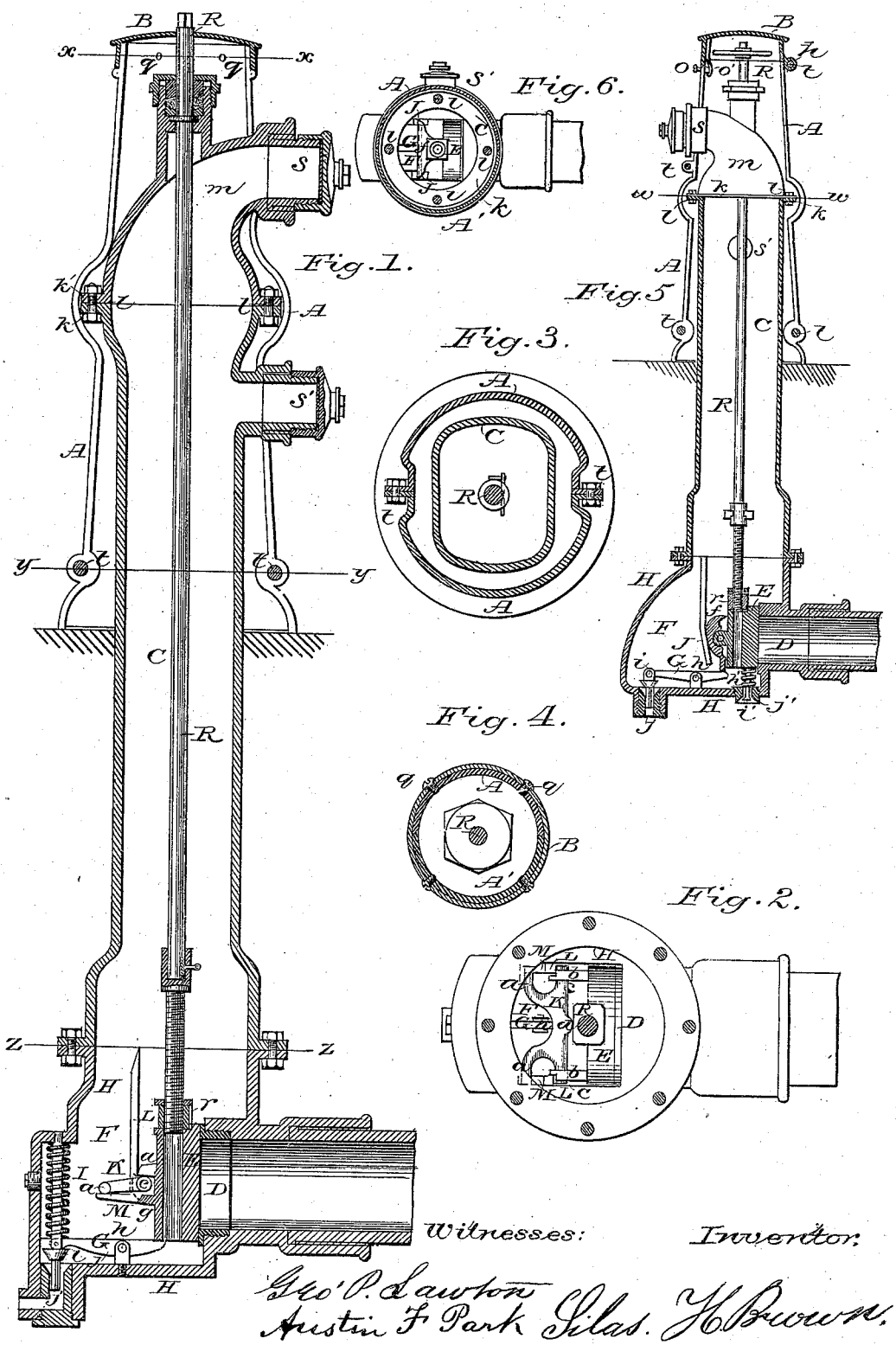
S. H. BROWN.
Hydrant.

No. 214,808. Patented April 29, 1879.



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IMPROVEMENT IN HYDRANTS.

Specification forming part of Letters Patent No. **214,808**, dated April 29, 1879; application filed May 20, 1871.

To all whom it may concern:

Be it known that I, SILAS H. BROWN, of Lansingburg, in the county of Rensselaer and State of New York, have invented certain Improvements in Hydrants or Fire-Plugs, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of a central section of a hydrant or fire-plug which embodies the distinguishing features of this invention. Fig. 2 is a plan of that portion of the same which is below the line *z z* in Fig. 1. Fig. 3 is a section at the line *y y*, and Fig. 4 a section at the line *x x*, of the same hydrant. Fig. 5 is an elevation of a central vertical section of another hydrant which also embodies the distinguishing features of this invention, and Fig. 6 is a plan of that portion of the same hydrant which is below the line *w w* in Fig. 5.

Like parts are marked by like letters in the different figures.

One part of this invention consists of a hydrant stand-pipe having an adjustable cap-piece with a lateral discharge nozzle or nozzles therein, in combination with a lateral discharge nozzle or nozzles in the stand-pipe below the said adjustable cap-piece, all constructed and secured together substantially as hereinafter set forth, so that the said cap-piece can be set with its nozzle or nozzles in various directions in respect to the nozzle or nozzles in the stand-pipe below the cap-piece, as may be desirable, according to the location of the hydrant at one side or at the corner or crossing of streets where two or more streams are required to be discharged from the stand-pipe in the same or opposite or different directions.

Another part of this invention consists of a hydrant having an upright valve-seat surrounding a horizontal inlet-passage and a vertically-sliding valve which is arranged in the discharge-passage and is moved downward to close the said inlet-passage and upward to open the latter, and which, when closing the inlet-passage, is pressed horizontally against the said valve-seat in opposition to the pressure of the water in the inlet-passage by means of a mechanical device, substantially such as hereinafter specified, operated by means of the rod which moves the valve, and which extends upward through the standing discharge-pipe, which has a removable cap-piece, and is so large internally from its cap-piece to the said inlet-valve that when the cap-piece is removed the inlet-valve can then be drawn out of the hydrant and replaced therein edgewise through the standing discharge-pipe by means of the said valve-operating rod, substantially as hereinafter set forth.

Another part of this invention consists in the combination of the vertical inlet-valve seat and vertically-sliding inlet-valve arranged in the discharge-passage, and a self-closing waste-valve arranged over a waste-aperture in the bottom of a laterally-extended part of the discharge-passage back of the inlet-valve, and mounted on a lever which is operated by the said inlet valve as the latter descends, and which is released by the said inlet-valve as the latter begins its upward movement, as hereinafter described.

In the aforesaid drawings, A A′ are the two parts of a longitudinally-divided casing, which laterally surrounds and protects the upper portion of the stand-pipe C, and has side openings, through which the nozzles *s s′* project laterally. B is a removable cover on the top of the bisected casing.

In Fig. 1 the cover B is secured to the casing A A′ by removable screws *q*, Fig. 4, and has a hole through which the valve-rod R projects, and may be turned from the outside, so as to raise and lower the sliding inlet-valve E, and thereby let the water into and shut it off from the stand-pipe.

In Fig. 5 the top of the valve-rod R has a hand-wheel, which is covered by the cap B, which is secured to the casing A A′ by a hinge at *p* and a movable catch, *o o′*, so that the cap can be readily released from the catch and turned upon the hinge to allow the hand-wheel to be turned to let on and shut off the water. The two parts A A′ of the casing are held together by screw-bolts *t*, and when wholly above ground can be freely removed from the stand-pipe upon removing the bolts *t* and cap B.

In Figs. 1 and 5 the removable nozzle-bearing cap-piece *m* is secured to the main portion

C of the stand-pipe by means of removable screw-bolts *l*, extending through holes in flanges *k k'* on the stand-pipe and cap-piece in such manner that the said cap-piece can be changed in its position on the stand-pipe, so that the nozzle *s* of the cap-piece shall be either in the same vertical plane as the nozzle *s'* in the main body of the stand-pipe, as shown in Fig. 1, or in a different vertical plane, as shown by Figs. 5 and 6.

In small hydrants the cap-piece *m* may be fastened to the body C of the stand-pipe by male and female coupling-screws on those parts. The cap *m* may be entirely removed, and another secured in its place with a nozzle or nozzles of different size, or in any desired different direction in respect to the nozzle *s'* in the body of the stand-pipe.

The stand-pipe C surrounds and protects the rod R, by which the flat-faced inlet-valve E is slid up and down across the horizontal inlet-passage in the flat upright face of the valve-seat D, to let the water into and shut it off from the stand-pipe.

In Figs. 1 and 5 the valve-rod R is fitted to be turned, without moving endwise, in a stuffing-box on the top or cap *m* of the stand-pipe C, and has on its lower end a screw which works in a nut, *r*, that is held loosely but securely in or on the valve E, so that by turning the rod R in opposite directions the valve E will be slid or moved up and down edgewise across the inlet-opening in the flat valve-seat D.

The stand-pipe C is so large internally, from the valve-seat D to its removable cap *m*, that when that cap is removed from the stand-pipe the sliding valve E, with the devices attached thereto for tightening it against the seat D, can then be drawn up edgewise by the rod R from the seat D through and out of the stand-pipe, as may be required for examination or repairs, and can then be returned to the seat D through the stand-pipe.

As regards this invention, the inlet-valve E, when closed over its seat, may be wedged, braced, or pressed against that seat by means of any suitable known device or devices actuated by the valve-rod—as, for instance, by devices such as are shown in my United States Letters Patent No. 77,448, or in the aforesaid drawing.

In Figs. 5 and 6 the valve E, when forced down by the rod R, is pressed against the seat D by a wedge, *f*, hinged at its middle to the back of the valve, and bearing at its ends against stationary inclines J on the casing H.

In Figs. 1 and 2 the valve E carries a lever, K, which has a short arm, *d*, to bear against the back of that valve, and has fulcrum-journals *c c*, in open sockets *b b* on the valve so that the rear sides of the parts *c c* may be against the front sides of the fixed upright bearings L L in the casing. The part K also has lever-arms *a a*, arranged to bear on the fixed stops M in the casing when the valve E is closed, as in Fig. 1. When the valve E is open the lever K hangs loosely in the bearings *b b* on the valve; but when the valve is nearly closed the arms *a a* are first arrested by the stops M, and as the valve E continues to move downward the arms *a* slide backward on the stops M, and thereby turn the lever K, so as to press the arm *d* against the back of the valve E, and thereby press the latter firmly against its seat D. In beginning to raise the valve E by the rod R the lever K is thereby released, so as to loosen that valve on its seat. The bearings L L extend upward parallel, or nearly so, to the valve-seat D, to serve as guides for the back of the valve, and to keep the lever K in place on the valve E when the latter is open and the water rushes past.

In Fig 1, *g'* is a stop on the valve E to hold out the lever K when that valve is drawn above the guides L L in removing it from the hydrant, and to direct the arms *a a* of the lever down in rear of those guides in returning the valve to its seat.

In Figs. 1 and 5, *j* is the waste-aperture in the bottom of the laterally-extended lower part of the discharge-passage, and away from the course of the main current of water; and *i* is the waste-valve over the waste-aperture.

In Figs. 1 and 5 the valve *i* is jointed to a lever, G, which is pivoted at *h* to a stud on the bottom of the chamber F.

In Fig. 1 the valve E is shown closed, and with its lower edge pressing down the lever G, so as to thereby positively hold the waste-valve *i* open in opposition to the pressure of a spring, I, which closes the valve *i* on the opening *j* whenever the valve E is raised away from the lever G; but the spring I is not generally required, and may commonly be dispensed with, as in Fig. 5, where the valve *i* is positively opened by the downward pressure on the lever G of the part *f* on the valve E, which part *f* leaves and releases the lever G as the valve E is opened, and thereby allows the valve *i* to be closed by its own weight or by the pressure of the water in the chamber F.

A valve, *i'*, in Fig. 5 is shown forced open by the valve E bearing down on the stem of that waste-valve, which valve *i'* is closed by a spring, *n*, whenever the valve E is open.

It is very important that the inlet-passage should be closed by the downward movement of the edgewise-sliding valve E in the discharge-passage, and opened by the upward movement of that valve, in order to avoid the extra expense of having a reception-chamber for that valve below the inlet-passage, and in order that the valve may be drawn up through and out of the standing discharge-passage edgewise.

The device shown by Figs. 1 and 2 for pressing the valve E against its seat D is the subject of a separate application for a patent, and is not claimed herein.

I am well aware that prior to this invention hydrants had been constructed so that, after removing a cap, the inlet-valve could be withdrawn by its stem through the standing dis-

charge-pipe; but in all such hydrants of which I have any knowledge the inlet-valve seat was horizontal, or nearly so, and the valve was moved flatwise directly toward and from the seat, and thereby closed and opened an annular passage for the water all around and between the faces of the valve and seat, so that such faces were subject to much wear by the rapidly-passing water and were liable to be clogged and injured by small obstructions; and in such hydrants the stand-pipe had to be so large internally as to permit the valve to be drawn up through it when the largest circumference of the valve was in a horizontal position.

I avoid all those defects by my present invention, wherein the face of the inlet-valve seat is in a vertical plane, and projects into the discharge-passage, and the disk-valve is arranged within the discharge-passage, and so as to be slid edgewise up and down across the valve-seat and drawn up edgewise through the stand-pipe.

I am also aware that a hydrant has been heretofore devised with a vertical valve-seat surrounding a lateral inlet-passage in the side of a standing discharge-pipe, and across which seat a valve was slid up and down to close and open the inlet-passage by means of a rod extending from the valve upward within and through the standing discharge-passage; but in that case the valve was to be slid downward in opening the inlet-passage, so that an otherwise useless chamber was required to extend downward below the valve-seat to contain the valve whenever the inlet-passage was open, and in that case the valve could not be drawn out through the discharge-pipe.

Those defects are all obviated by my improved construction, wherein the valve is slid downward across the inwardly-projecting vertical valve-seat in closing the inlet-passage, there being a lateral chamber, F, in the lower part of the discharge-passage for the free upward exit of the water back of the valve E.

I also know that hydrants are commonly made with a waste-valve separate from a main inlet-valve, but connected therewith so that the closing of the inlet-valve opens the waste-valve, and the opening of the inlet-valve permits or causes the closing of the waste-valve; but I am not aware that a hydrant has been heretofore made with a vertical inlet-valve seat, sliding inlet-valve, lateral chamber in the lower part of the discharge-passage, pivoted lever G, and waste-valve and aperture *i j*, all constructed and arranged together as hereinbefore set forth.

What I claim as my invention is—

1. In a fire-plug or hydrant, the stand-pipe C, having a lateral nozzle, *s'*, and a removable cap-piece, *m*, which has a lateral nozzle, *s*, and is secured to the body of the stand-pipe, substantially as herein described, so that the cap-piece can be set with its nozzle in various directions in respect to the nozzle on the stand-pipe below the cap-piece.

2. A hydrant having a standing discharge-passage, C, with a lateral chamber, F, in the lower part thereof, an upright inwardly-projecting valve-seat, D, surrounding an inlet-passage opposite to the lateral chamber, and a disk-valve, E, arranged in the discharge-passage, with a device for pressing the valve against the seat, and movable edgewise upward across the valve-seat to open the inlet-passage and downward to close the same by means of a rod, R, extending through the standing discharge-passage, as described.

3. In a hydrant, a standing discharge-passage having the lateral chamber F in its lower part, a vertical valve-seat, D, surrounding the inlet-passage opposite to the lateral chamber, the vertically-sliding inlet-valve E, the waste-aperture *j* in the bottom of the lateral chamber, and the detached pivoted lever G, with the self-closing valve *i* thereon, all constructed and arranged together as described.

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