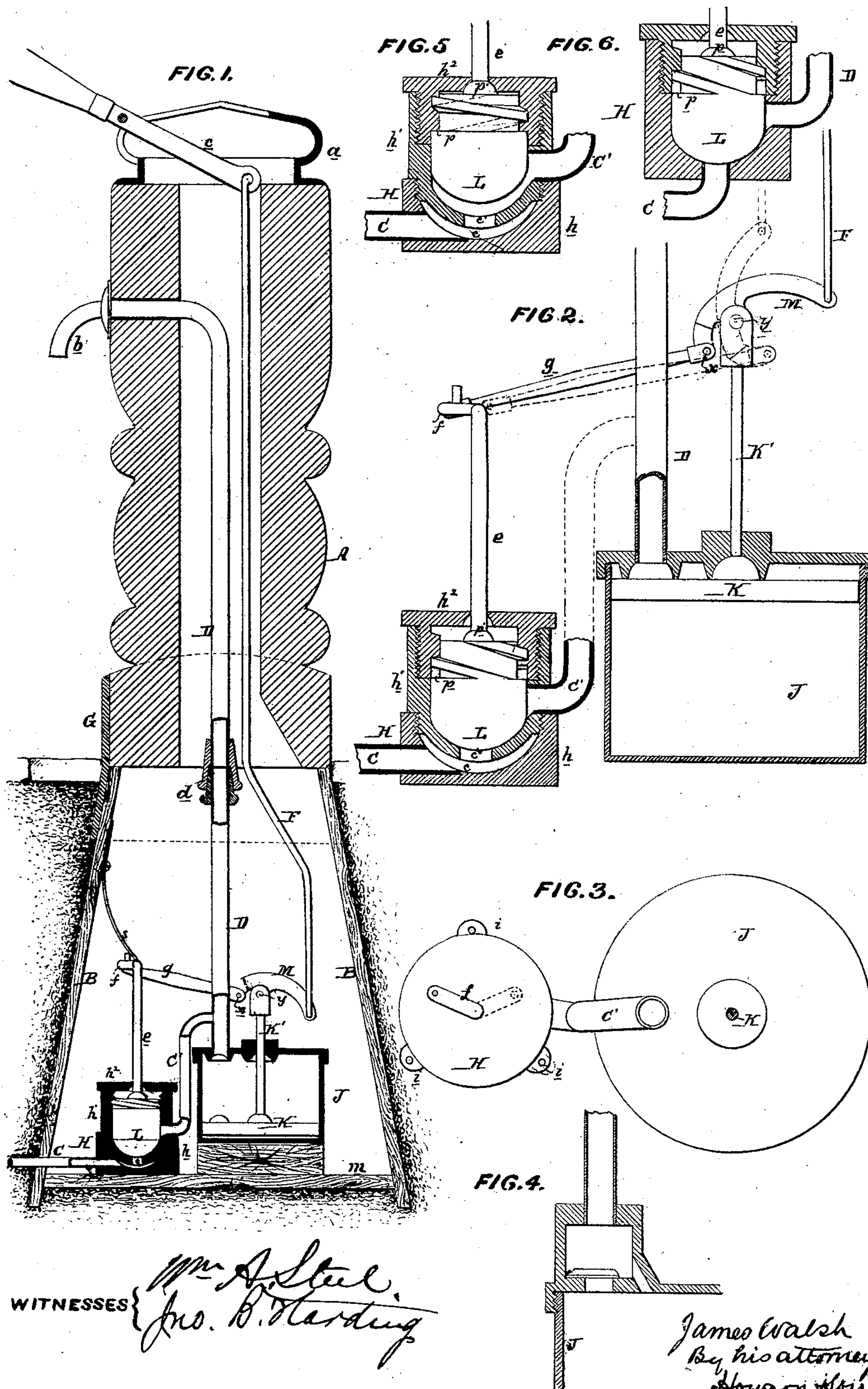


JAMES WALSH.
Improvement in Hydrants.

No. 114,996.

Patented May 16, 1871.



WITNESSES

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JAMES WALSH, OF PHILADELPHIA, PENNSYLVANIA.

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IMPROVEMENT IN HYDRANTS.

The Schedule referred to in these Letters Patent and making part of the same.

I, JAMES WALSH, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented certain Improvements in Hydrants and in Valve-Cocks for Hydrants, &c., of which the following is a specification.

Nature and Object of the Invention.

My invention consists of certain improvements, too fully described hereafter to need preliminary explanation, in hydrants, and also in valve-cocks to be used in connection with hydrants, and for other purposes.

Description of the Accompanying Drawing.

Figure 1 is a vertical section of my improved hydrant;

Figure 2, an enlarged view of the lower portion of the same, with the working parts in a different position;

Figure 3, a sectional plan view of fig. 2 on the line 1 2;

Figure 4, an enlarged view of a modification;

Figure 5, an enlarged view of the valve-cock as it appears when open; and

Figure 6, a view of the cock slightly modified.

General Description.

A represents the body of the hydrant, of the usual form, and having a cap, *a*;

B, the box or base of the hydrant, sunk below the surface of the ground;

C, the water-supply pipe;

D, the service-pipe, extending upward through the opening in the body of the hydrant, and terminating in a nozzle, *b*; and

F, the operating-rod, secured at its upper end to an arm or lever, *e*, which is pivoted to the cap of the hydrant, and arranged to be operated in such a manner as to raise and lower the rod.

The lower portion of the body of the hydrant, close to the surface of the ground, is protected against dampness and rot by a three-sided metal plate, G, which also serves as a means of securing the hydrant to the box in such a manner that it can be readily detached from the same.

In order to enable the upper portion of the hydrant to be thus detached from the box for the purpose of obtaining access to the parts within the latter without digging it up as usual, the "upright" pipe D is made in two sections, connected together by a ground slip-joint at *d*, which joint is of such construction as to prevent leakage and yet allow the two sections of the pipe to be readily connected and disconnected.

The water-supply pipe C communicates with the bottom of a valve-casing, H, and the latter is connected, by means of a branch, C', with the upright pipe

D, which communicates at its lower end with the interior of a casing or cylinder, J.

The latter has a closely-fitting piston, K, and is intended for the same purpose as the compressible ball or bag described in my patent of January 18, 1870—that is, to receive above its piston the water which would otherwise remain in the upright pipe after the closing of the valve, and which might become frozen in and burst the said pipe.

Both the piston K and valve L within the casing H are operated by the rod F through the medium of a system of levers hereafter described, but in such a manner that the valve shall in every case be lowered into its seat and the water shut off before the piston commences to descend into the cylinder, in order that the latter may receive the water from the pipe D.

The construction of the valve and its casing forms an important feature of my invention, and is as follows:

When arranged for a hydrant the valve-casing consists of three parts, namely, of the base *h*, the casing proper *h*¹, and cap *h*².

The base *h* is furnished with lugs *i*, or is otherwise constructed for ready attachment to the bottom board *m* of the hydrant, and is recessed for the reception of the lower rounded end of the casing *h*¹, which is screwed into it in the manner plainly shown in the drawing, so as to form, between the said casing and base, a chamber, *o*, which communicates with the interior of the valve-casing through an opening, *c*, formed in the latter.

The water-supply pipe C is attached to the base *h* and communicates with the chamber *o*, and the branch *c*' is attached to and communicates with the interior of the casing *h*¹.

The cap *h*² is threaded externally, and is screwed into the top of the casing. It has also internal screw-threads of a steep pitch, *p*, which are adapted to corresponding threads of the valve L.

The latter has a semicircular or rounded face adapted to a corresponding seat at the bottom of the casing, and is also ground to the sides of the latter.

It is operated by a rod, *e*, which passes upward through the cap; and, to avoid the necessity of having a stuffing-box in the latter, leakage is prevented by adapting the upper portion of the valve to ground-seats formed in the cap at both or either of the points *p* and *p*'.

The above valve and casing can, at any time, be removed from the hydrant for the purpose of repairs, &c., without involving the necessity of digging up the latter, as all that is required is to unscrew it from the base *h*, which remains secured to the bottom board. The said valve is of especial utility for hydrants, as it is entirely free from leakage, and no objectionable stuffing-boxes are employed.

The thread upon the valve is of so steep a pitch that one-half or three-quarters of a turn will raise it sufficiently from its seat to permit the water to flow freely beneath the same from the pipe C through the opening *c* into the branch *c'*, and thence to the upright pipe D.

The stem *e* of the valve terminates at its upper end in a horizontal arm, *f*, acted upon by a spring, S, and to the outer end of this arm is connected one end of a rod, *g*, which is also attached to a curved lever, M, the latter being hung at the point *y* to the upper end of the piston-rod *x'*, and being also attached to the lower end of the operating-rod F.

The operation of the above is as follows:

When the rod F is raised in order to turn on the water to the hydrant, the lever M will be raised, turning upon the point *x* as a fulcrum until the piston K reaches the top, or nearly to the top of the cylinder J, the water being, consequently, forced out of the latter into the upright pipe D.

During this movement the action of the spring *s* on the arm *f* will prevent any movement of the same, and the valve will consequently remain undisturbed in its seat.

As the piston approaches the limit of its upward movement, however, the fulcrum of the lever *m* will be changed from the point *x* to the point *y*, and as the rod F still continues to be raised after this change of fulcrum, the arm *f* of the valve-stem will be turned, and the valve, owing to its steep screw-thread, be raised sufficiently from its seat to permit the water to flow freely beneath the same through the branch *c'* into the upright pipe, and thence to the discharge-nozzle *b*.

All this occurs, it should be remembered, when the piston K is raised, so that when the lever *c* is operated in a contrary direction, and the operating-rod F, lever *m*, and rod *h* are lowered, the valve, owing to the action of the spring *s*, will first be closed, so as to shut off the supply of water, and on continuing the downward movement of the rod F the piston K will be caused to descend to the bottom of the cylinder, so that the column of water in the pipe D will be permitted to flow into and fill the latter.

In the modification of my invention, represented in fig. 4, the cylinder J has two openings leading to the upright pipe D, one of which is provided with a valve opening upward, so that the water, on leaving the cylinder, has egress from the same through two openings, but on entering the cylinder can pass through but one opening only. The object of this arrangement is to prevent too sudden a passage of water into the cylinder.

The valve-cock also may be modified, as shown in fig. 6, where it will be seen that the base *h* and its chamber *c* are dispensed with, the casing *h'* forming the base of the valve, and being secured directly to the bottom board of the hydrant.

It should be understood that the valve-cock can be

used for ordinary hydrants which are not provided with my improved wash-receiver. In such case the cock should be so arranged as to permit the waste water from the upright pipe to pass off into the ground.

The valve-cock, although especially adapted for hydrants, can, it will be evident, be used for a variety of purposes in place of ordinary valve-cocks.

The application of the slip-joint to the vertical delivery-pipe of a hydrant permits the removal of the upper part of the hydrant without the necessity of digging away the earth to gain access to the connections, or of cutting the pipes, as is necessary when no such device is used.

I do not claim, broadly, a receptacle arranged below the vertical delivery-pipe to receive the water remaining in the latter after the supply-pipe is closed, as an elastic receptacle for this purpose is shown in the Letters Patent granted to me January 18, 1870.

Practical tests have shown that the said elastic receptacle, although efficient in some instances, is liable to wear away rapidly and become ruptured. By substituting a cylinder and piston as above described these objections are obviated.

It will be seen that the cylinder *c* is so situated that any particles of matter, sediment, &c., which may enter the valve-chamber will descend into the chamber, so that the valve can always be brought closely against its seat.

Claims.

1. The combination, with the vertical delivery-pipe D, of an inflexible cylinder, J, arranged below and communicating with said pipe and a piston sliding in said cylinder, and operating so as to raise the water into or draw it from the said pipe, as specified.
2. The combination and arrangement, substantially as herein described, of the operating-rod F, cylinder J, and piston K, valve-case H, and the intervening devices, consisting of the lever M, rod *g*, and arm *f*, with its spring *s*.
3. The combination, in a hydrant, of the stationary box B, detachable body A, and a delivery-pipe, D, divided near the point where the body and box are joined, and provided at said point with a slip-joint, as specified.
4. The combination, with the casing *h'*, screw-cap *h''*, and pipes *c c'*, of a valve, L, having internal threads adapted to threads in the cap, and operating as described.
5. The combination of the base H, detachable casing *h'*, and intervening chamber *c*, for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES WALSH.

Witnesses:

WM. A. STEEL,
F. B. RICHARDS.