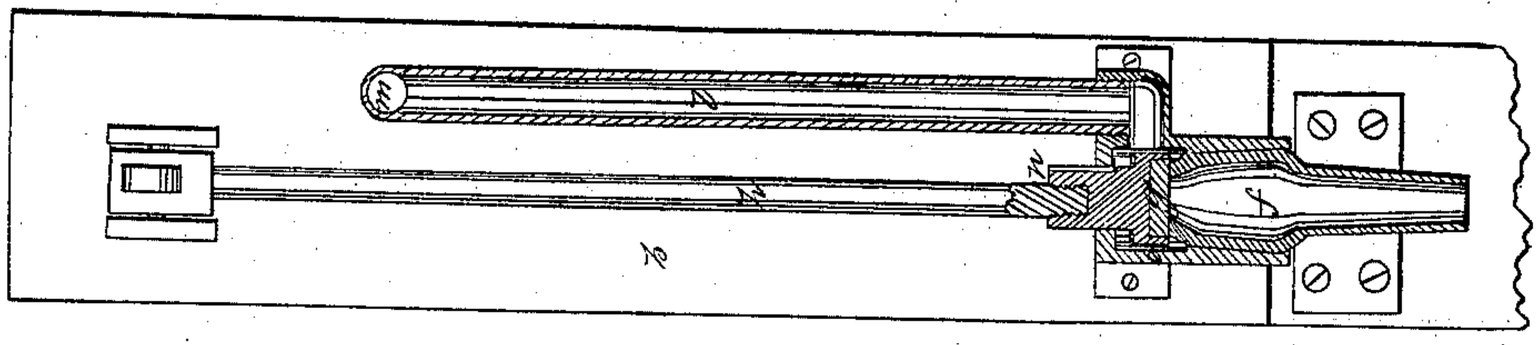
J. Old,

Hydrant,

No. 55893. Patented June 26, 1866.

Fig. 2.



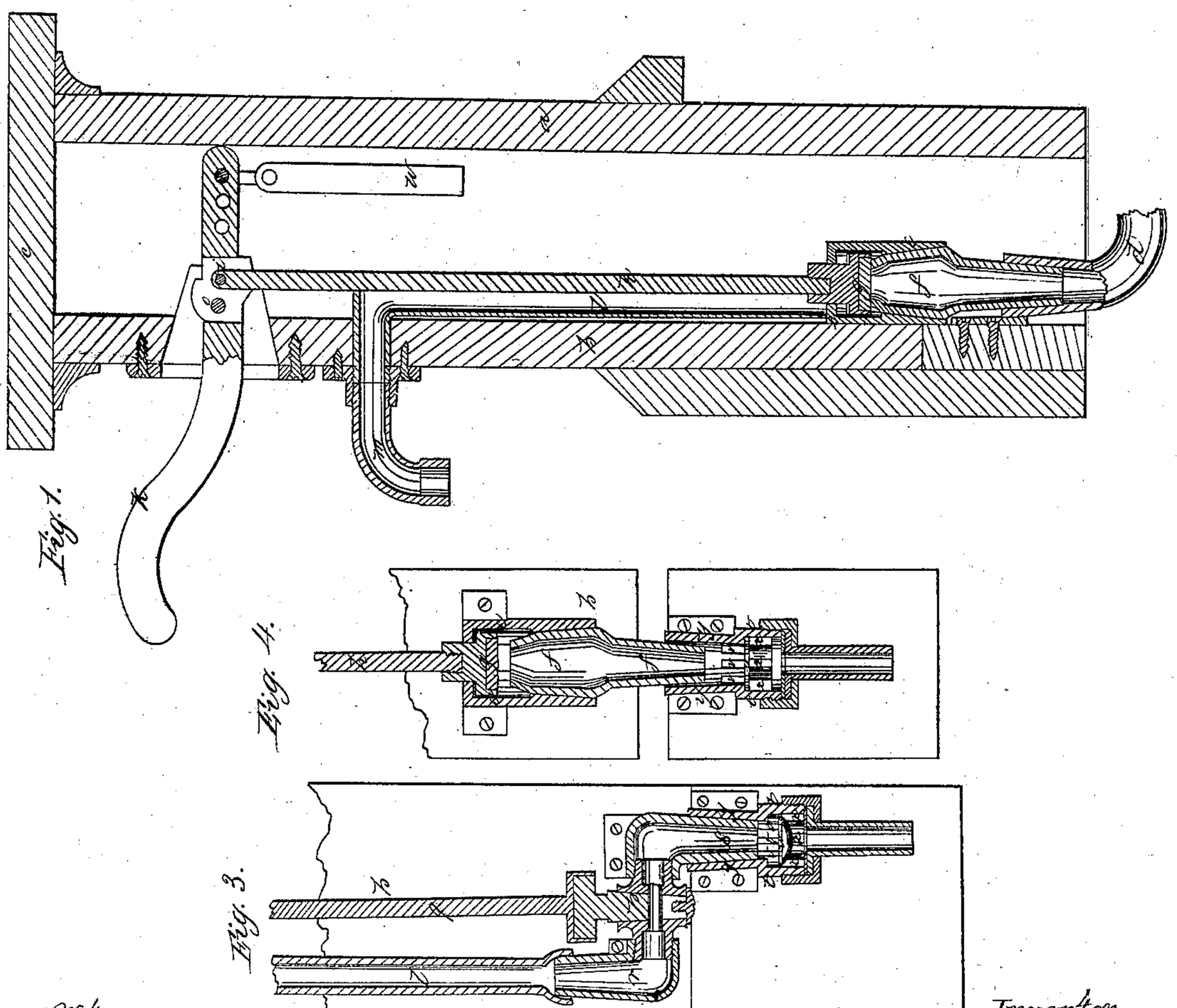


Fig. 1.

Fig. 4.

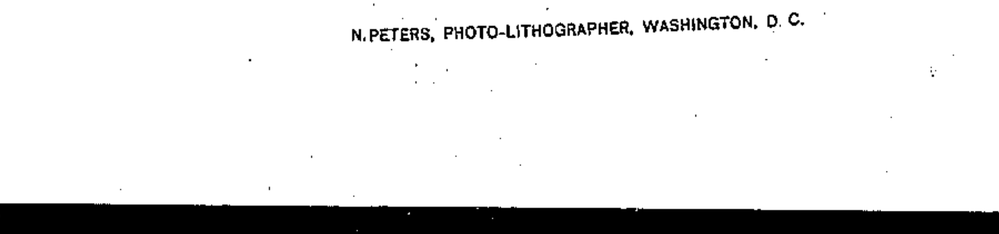


Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES OLD, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN HYDRANTS.

Specification forming part of Letters Patent No. **55,893,** dated June 26, 1866.

To all whom it may concern:

Be it known that I, JAMES OLD, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Hydrants and Fire-Plugs; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a valve-hydrant constructed with my improvements, excepting the lower valve. Fig. 2 is a vertical section of the same hydrant, (at right angles to the plane of section in Fig. 1,) showing the upper parts all attached to a removable slide which forms a part of the hydrant-box. Fig. 3 is a section of the lower part of a stop-cock hydrant constructed with my improvements, including a lower valve. Fig. 4 is a section of the lower part of a hydrant, showing the cone-piece raised from its seat in the base-piece and the lower valve closed.

In the several figures like letters of reference denote similar parts.

My improvements relate to hydrants and fire-plugs used for letting on or shutting off the flow of water from pipes, through which it is supplied from a reservoir or head, so as to escape with more or less force or pressure whenever a valve or cock is opened so as to give it a free passage.

Hydrants and fire-plugs, especially when placed out of doors and exposed to rough usage, are very liable to get out of order and need repairing. When this is the case it is necessary oftentimes to take them out of the ground, and as they are usually constructed they have to be dug up and their connection with the underground supply-pipe has to be severed by cutting the pipe or unscrewing a joint. In order to remove a hydrant for repairs it is also requisite to shut off the water from the supply-pipe, which is very frequently connected with other hydrants, which are thereby cut off from the water for a time. Hydrants are also liable to be broken by the violent reaction of the water where the pressure is great, caused by the sudden or simultaneous closing of the flow of water through other hydrants in the neighborhood.

These inconveniences and some others which I shall name hereinafter I propose to remedy by my improvements, which I shall proceed to describe.

In the accompanying drawings, Figs. 1 and 2 represent a valve-hydrant—that is, the flow of the water from the supply-pipe is stopped by the downward pressure of a valve.

In Fig. 1, *a* is the box which contains the hydrant, and which may be made of wood, iron, or other material. In front of the box is a slide or shutter, *b*, forming one side of the box, which, when the top or cap *c* is raised, may be slid upward and removed from the box.

As will be seen by examining Fig. 1, all the operative parts of the hydrant—that is, all above the supply-pipe *d*—are attached to the slide *b*, and are removed from the box when it is taken away. The connection between the valve-box *e* of the hydrant and the supply-pipe *d* is made by the cone-piece *f*, which is a tube tapered at both ends, the joint being conical and ground in, so as to make it water-tight. If there is no valve below the cone-piece *f*, as in Fig. 1, the lower end of the cone-piece may be made fast to the supply-pipe by soldering or otherwise, and be fastened to the base or lower part of the box of the hydrant, so that the upper end of the cone-piece may be held in the proper position to connect with the valve-box *e* when the slide *b* is returned to its place. It is also necessary that the cone-piece should be firmly supported by the base-piece of the hydrant-box, because the valve *g* which shuts off the water presses down upon it. The valve *g* which closes the mouth of the cone-piece *f*, as in Figs. 1 and 2, is inclosed in its box *e*, and is operated by the valve-rod *h*, which is pivoted at *i* to the handle or lever *k*, which has its fulcrum at *o*, outside of the pivot *i*. The effect of this arrangement is that the hydrant is closed by raising the lever *k* and opened by depressing the handle or lever, which is the reverse of the ordinary mode of operating hydrants. The short arm of the lever *k* is extended beyond the pivot *i* of the rod *h*, and a weight, *w*, is hung on it sufficient to keep the valve *g* down and prevent the flow of water at the ordinary pressure to which the hydrant

is subjected. This arrangement has the advantage of making the hydrant self-closing, and also allows the valve *g* to rise whenever any extraordinary or sudden pressure of water occurs in the supply-pipe *d*, which relieves the strain and will frequently prevent the bursting of the pipe or damage to the hydrant.

l is the flow-pipe of the hydrant, through which the water passes whenever the valve *g* is raised.

The valve-box *e* is furnished with the usual aperture *n* above the valve *g*, through which the water, which would otherwise stand in the flow-pipe *l*, escapes when the valve is closed, so that the momentary rising of the valve *g*, caused by the reaction of the water in the supply-pipe, will not necessarily nor usually result in a flow of water out of the spout *m*.

In the hydrant constructed as I have described, and as shown in Fig. 1, it is manifest that if the slide *b* and hydrant attached thereto were removed from the box *a* without first shutting off the water from the supply-pipe *d* the water would flow freely therefrom. In order to prevent the necessity of shutting off the water when the hydrant has to be removed, I place a valve between the cone-piece and the supply-pipe, which shuts automatically as soon as the cone-piece is raised from its seat, and thus closes the orifice of the supply-pipe.

This arrangement is shown in Figs. 3 and 4, Fig. 3 showing the hydrant in place and the valve open, and Fig. 4 showing the hydrant slightly raised from its place and the valve closed. Fig. 4 shows the application of the valve to a valve-hydrant, such as Fig. 1, while Fig. 3 shows the application of my invention (so far as it is applicable) to a stop-cock hydrant.

In Fig. 3, *p* is the stop-cock, which is operated in the usual way by a key, *q*. Two cone-pieces, *r* and *s*, are used, one, *r*, connecting the flow-pipe *l* with the cock *p*, and the other, *s*, being seated with a ground-in joint in the valve-box *t* of the lower or check valve, *u*. The cone-piece *s* and all other parts of the hydrant excepting the check-valve *u* and its valve-box *t* are attached to the slide or shutter *b*, so that when the slide *b* is removed it carries with it the hydrant, the cone-piece *s* rising out of its seat on top of the check-valve box *t*.

The valve *u* and valve-box *t* are alike in construction and operation, whether applied to a stop-cock hydrant, as in Fig. 3, or to a valve-hydrant, as in Fig. 4. The valve *u* consists of a circular metallic disk, which is forced up by the upward pressure of the water through the supply-pipe against its seat, and thus prevents the upward passage of water beyond that point. This disk has three or four pins, *v*, on its upper side, which enter the conical tube *w*, in which the cone-piece *s*, Fig. 3, or *f*, Fig. 4, is seated. It has also three or four pins, *x*, projecting downward from its lower surface, which also extend beyond the periphery of the valve-disk, so as to touch the sides of the valve-box *t*. These pins *v* and *x* serve to keep the disk *u* from tilting or getting out of place, and the lower pins, *x*, prevent the valve *u* from falling so low in the valve-box as to close the orifice of the supply-pipe. The upper pins, *v*, extend up into the conical seat of the cone-piece *s* or *f*, as before stated, the object of which is, that when the cone-piece is pressed down into its seat *y* (as it always is when the hydrant is in place) the lower extremity of the cone-piece *f* or *s* will come in contact with the tops of the pins *v v*, and, pushing them down, depress the valve *u*, leaving a free passage for the water from the supply-pipe up through the cone-piece.

The diameter of the valve-disk *u* being less than that of the valve-box *t*, the water finds its way all around it; but as soon as the cone-piece is raised, as in Fig. 4, the valve *u* is free to rise, which it is forced to do by the upward pressure of the water, and at once closes the passage and prevents any escape of water from the supply or service pipe.

In applying my improvement to fire-plugs which are operated to let on the water by screwing downward a conical plug which is seated in a tapering aperture having its smaller diameter uppermost, it may be found desirable to have the check-valve always closed, excepting when water is to be drawn from the plug. In this case, instead of making the cone-piece which connects the fire-plug with the water-supply pipe to force and keep open the check-valve in the manner shown in Fig. 3, I extend from the under side of the working-valve a rod downward toward the check-valve, so as nearly to touch it when the working-valve is closed, which rod, as soon as the working-valve is opened, will depress the check-valve and allow the water to pass up from the supply-pipe into and through the fire-plug.

Having thus described my improvement in hydrants and fire-plugs, what I claim as my invention, and desire to secure by Letters Patent, is—

1. Connecting the operative parts of the hydrant to the supply or service pipe at a point below the working valve or cock, by means of a joint, in such manner that the hydrant may be removed and separated from the supply or service pipe without cutting any pipe or unscrewing any joint, substantially as hereinbefore described.

2. So constructing the hydrant, substantially as hereinbefore described, as that all the operative parts above and including the working cock or valve are connected together as one piece, and may be attached to a removable slide either placed in or forming part of the hydrant-box, substantially as and for the purposes hereinbefore set forth.

3. The check-valve, placed below the working-valve of a fire-plug or hydrant, so constructed and arranged as that the valve will shut whenever the hydrant or fire-plug is re-

moved from the supply or service pipe, and that it shall be opened to allow of the passage of water from the supply-pipe, either by the opening of the working-valve whenever the fire-plug is used, or be kept open by the plug or hydrant when it is placed in connection with the supply or service pipe, substantially as hereinbefore described.

In testimony whereof I, the said JAMES OLD, have hereunto set my hand.

JAMES OLD.

Witnesses:
W. BAKEWELL,
A. S. NICHOLSON.