A. Richmond, Jr.

Hydrant.

No. 109,547. Patented Nov. 22. 1870.

Fig. 1.

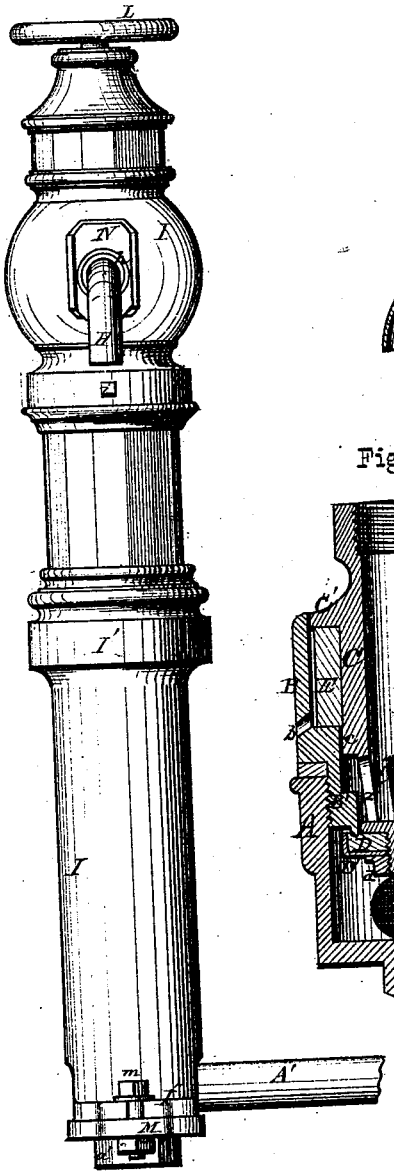


Fig. 2.

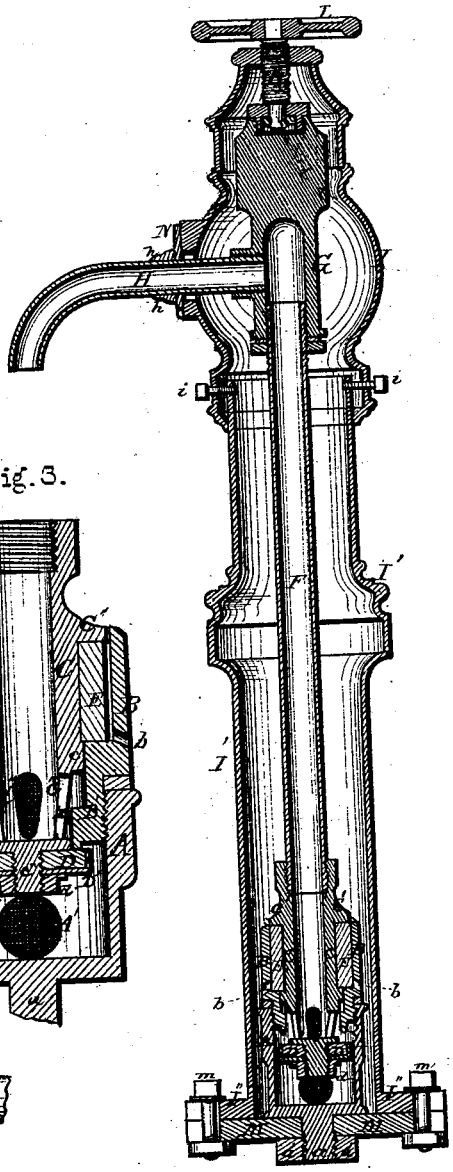
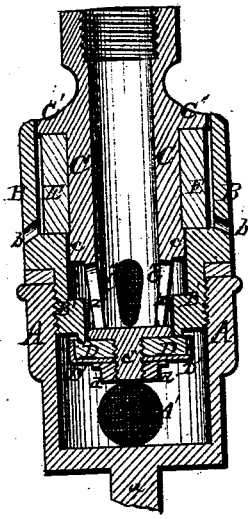


Fig. 3.



Witnesses.

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United States Patent Office.

ALEXANDER RICHMOND, JR., OF DAYTON, OHIO.

Letters Patent No. 109,547, dated November 22, 1870.

IMPROVEMENT IN HYDRANTS.

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

To all whom it may concern:

Be it known that I, ALEXANDER RICHMOND, Jr., of Dayton, in the county of Montgomery and in the State of Ohio, have invented certain new and useful Improvements in Hydrants; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a front elevation of my improved device;

Figure 2 is a central longitudinal section of the same, on the line *x x* of fig. 1; and

Figure 3 is an enlarged vertical central section of the plunger, valve, valve-box, and water-chamber.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to produce a hydrant that shall be certain in its operation, durable, and not liable to derangement and injury from the action of the frost; and to this end,

It consists, principally, in closing the waste-openings by means of a rubber ring or valve while water is passing from the discharge-pipe, substantially as hereinafter set forth.

It also consists in causing the valve to close, when released, by means of the pressure of the water and the spring of a rubber ring, substantially as hereinafter shown and described.

It also consists in the peculiar construction of the valve and plunger, substantially as is hereinafter specified.

It also consists in the relative arrangement of the plunger, valve, valve-box, and discharge-pipe, substantially as is hereinafter set forth.

It finally consists in the general construction of the casing, and in the means employed to make a tight sliding opening for the passage through said casing of the discharge-pipe.

In the annexed drawing—

A represents a cylindrical water-chamber, open at its upper end, and having upon its inner side, near the top, a suitable female-screw thread, which receives a corresponding male-screw thread, provided upon the lower end of the valve-box B.

The valve-box B, like the water-chamber, is cylindrical, and corresponds in size therewith externally from its upper end downward about two-thirds of its length, from which point to its lower end the size is reduced to correspond with the interior of said chamber.

Internally the valve-box is provided with an opening which has a straight cylindrical form from its upper end downward to a point near the contracted portion B′, where its size is reduced and its shape changed to that of a four or other-sided square until near the lower end of said valve-box, where a further reduction in the size is made, and the opening again assumes a circular form.

Fitting into the valve-box is a plunger, consisting of a hollow cylindrical part, C, provided upon its lower end with a squared part, *c*, corresponding in shape with and fitting loosely into the squared opening within said box.

Upon the upper end of the plunger C is a flange, C′, which, projecting horizontally outward, nearly fills the upper end of the valve-box, while upon the lower end of said plunger is a downward-tapering plug, C″, and below the same a short screw, *c″*, for the reception of the valve, consisting of a circular rubber disk, D, contained within a corresponding metal cup, D′, the latter of which is fitted upon said screw *c″* and held in place by means of a jam-nut, *d*.

A rubber ring, E, having a diameter somewhat less than the interior of the valve-box, and a length equal to the distance between the flange C′ and the squared part *c*, being fitted upon said plunger, two or more channels, *z*, cut through the walls of the plug C″, and a number of openings, *b*, provided in and through the walls of the valve-box, at the lower end of the largest portion of its interior, this portion of the device is complete.

The valve D being adjusted with reference to the rubber ring E, so that, when the former is pressed upward by the water until a firm bearing is secured upon the lower end of the valve-box, said rubber shall be sufficiently loose to permit such water as shall pass upward around the plunger to escape into the openings *z*, the device is operated as follows:

In order to permit water to flow outward through the hydrant the plunger is depressed until an opening is formed between the valve and its seat, through which the water passes upward into the space around the plug C″, from whence, being unable to pass outward around said plunger by reason of the closing of the opening between the same and the valve-box by the downward compression of the rubber ring E, said water is forced to pass into the plug through the openings *z*, and from thence through the plunger and a suitable pipe into the open air.

Upon releasing the plunger the upward pressure of the rubber ring E upon the flange C′, and of the water upon the valve, force both plunger and valve upward until the latter has a firm bearing upon the seat and prevents the outward flow of water from the chamber A, while at the same time said rubber ring being released from compression uncovers the opening between the squared portion of said plunger and the valve-box and permits all water contained in the hydrant above that point to escape beneath said rubber ring and through the openings *b*.

Secured to and extending upward from the upper

end of the plunger C is a pipe, F, having an internal diameter corresponding to that of the opening through the former, the upper end of which fits into a right-angled branch-pipe, G, from whence extends horizontally outward a suitable discharge-pipe, H.

The branch-pipe G is extended upward above the discharge-pipe, and its sides squared vertically, so as to enable it to be retained in radial position by being fitted into a corresponding opening within the casing I without interfering with its free vertical movement.

A screw, K, is swiveled at its lower end, within the upper end of the branch-pipe, and, passing upward through a corresponding threaded opening in the casing, is provided at its upper end with a hand-wheel, L, by means of which said screw may be rotated and the branch-pipe G, pipe F, plunger C, and the valve D, adjusted vertically, so as to permit or arrest the flow of water.

As seen in fig. 2, the casing is formed of two parts, the upper of which contains the branch and discharge-pipes, and the adjusting-screw, and fitting over the upper end of the lower part, is secured thereto by means of two screws, *i*, passing radially through their walls.

The lower end of the casing I′ is provided with two openings for the passage of the supply-pipe A′, and has projecting horizontally from opposite sides two lugs, I″, by means of which a cover or plate, M, is secured to or upon the lower end of the casing, a bolt, *m*, passing through each of said lugs and through each end of said cover.

A bolt, *a*, secured to and projecting downward from the lower end of the chamber A, through an opening in the cover M, and provided at its lower end with a nut, *a′*, enables said chamber and the valve-box to be firmly secured in position.

The discharge-pipe H, being rigidly attached to the branch-pipe G, has a corresponding vertical movement, and requires a vertically-elongated opening for its passage through the casing.

In order to cover said opening and give a good finish to the casing, a slide, N, is fitted upon the discharge-pipe, and held in position within a corresponding groove provided upon the face of said casing by means of a collar, *h*, secured to said pipe immediately outside of said slide, by which means, as said slide has a greater length than the opening that it covers, it will be seen that the latter will remain closed at all times, regardless of the position of the discharge-pipe.

The especial advantages possessed by this device are—

First, as no water can remain in the pipes above the valve, all danger of injury from frost is avoided.

Second, the operating portions of the device are simple in construction, exceedingly durable, and not liable to get out of order, and, while possessing these merits, are not more expensive than those of ordinary construction.

Having thus fully set forth the nature and merits of my invention,

What I claim as new is—

1. The means employed for closing the waste-opening of the hydrant, consisting of the rubber ring E, fitted upon and working with the plunger C, and within the box B provided with the opening *b*, substantially as shown and described.

2. The means employed for closing the valve when released, consisting of the rubber ring E, working between the valve-box B and plunger C, in addition to and in combination with the outward pressure of the water, substantially as specified.

3. The hollow plunger C, provided with the squared part *c*, the flange C′, the tapering plug C″, the openings *x*, and the screw *c″*, substantially as and for the purpose shown.

4. The combination of the valve-box B, the plunger C, the valve D, the rubber ring E, and the discharge-pipe F, substantially as shown and for the purpose described.

5. The combination of the water-chamber A, the valve-box B, the plunger C, and the valve D, substantially as shown and for the purpose specified.

6. In combination with the plunger C and the valve D, the pipes F and G, and the screw K, substantially as shown and for the purpose described.

In testimony that I claim the foregoing, I have hereunto set my hand this 3d day of September, 1870.

ALEXANDER RICHMOND, JR.

Witnesses:

MORRIS LEEN,

THS. D. MITCHELL.