



# United States Patent Office.

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## IMPROVEMENT IN HYDRANTS.

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

I, ALEXANDER S. FORT, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Hydrant, of which the following is a specification.

### *Nature and Objects of the Invention.*

My invention relates to an arrangement of parts in a hydrant, whereby the contents of the discharge-pipe are, by the act of closing the hydrant, drawn into a vacuum chamber, so as to avoid the danger of freezing the water by exposure to the atmosphere in winter, and also the unpleasant heating of the water at other seasons without wasting the surplusage into the ground as now commonly practiced, whereby great inconvenience often accrues in injury to foundations, dampness to cellars and basements, and much loss of water that in my hydrant is saved for use.

### *General Description with Reference to the Drawings.*

Figures 1 and 2 are axial sections of my hydrant in the opened and closed conditions respectively.

A is a water-reception chamber, which receives water through a service-pipe, B, and in the open condition of the hydrant (see fig. 1) discharges water into a cylinder or barrel, C, whose base D forms the top of the chamber A, and is secured to it by a right-hand screw-thread, *d*.

The cylinder C has at top a brim or flange, E, of much larger diameter than itself, which brim is united by a left-hand thread, *e*, with my vacuum chamber F, which chamber is of sufficient capacity to receive the contents of the discharge-pipe G, or so much of said contents as to bring their upper part below the reach of frost.

The vacuum chamber F is provided at top with a neck, H, through which the discharge-pipe G freely plays, the said pipe so nearly fitting said neck as to constitute the latter a guide for the former, but not so tightly but that air can pass the same with sufficient freedom to afford no opposition to the ascent or descent of the piston I, except to prevent by cushioning any violent slam of the hydrant in shutting, in places where a high pressure of water obtains.

The piston I is made to fit and work snugly within the vacuum chamber F, and may consist of a leather cup, *i*, and a gum gasket or disk, *i'*, as shown.

Projecting inwardly from the top of the cylinder C is an annular rim or ledge, J, whose upper surface, constituting a seat for a valve, R, on the discharge-pipe G, prevents the escape of water into the vacuum chamber in the open condition of the hydrant, (see fig. 1,) and whose under surface, constituting a seat for the rubber piston or plunger K at the bottom of the discharge-pipe, performs the same function in the closed condition the hydrant. (See fig. 1.)

The plunger K is preferably formed of gum-elastic or rubber, in the shape represented, its thick upper part, *k*, constituting both a plunger in the lower posi-

tions and a cushion in the uppermost position of the discharge-pipe. (See figs. 1 and 2 respectively.)

The lower portion or lip *k'* of the plunger forms, with the upper portion, a cap which acts to hug the sides of the cylinder in proportion to the pressure, and thus prevents leakage.

Holes L in the side of the discharge-pipe, just above the plunger K, permit either the egress of water, as in fig. 1, or its ingress, as in fig. 2.

### *Operation.*

The hydrant is opened by simply depressing the discharge-pipe to the position shown in fig. 1, so as to expel the plunger K from the cylinder C and enable the water to flow upward through the lower part of cylinder into the discharge-pipe by way of the orifices L.

The depression of the discharge-pipe also closes the top of the cylinder by the seating of the valve R, so that no water can pass into the vacuum chamber.

The hydrant is closed by simply releasing the discharge-pipe and permitting the pressure of water to force it upward, causing the piston I to travel to the top of the vacuum chamber, and, by creating a vacuum therein, to suck back, through the orifices L, the water contained in the discharge-pipe, or if there be not sufficient pressure of water in the service-pipe, the discharge-pipe may be elevated by the same appliance employed to depress it.

The act of elevating the discharge-pipe also serves to close the top of the cylinder C from below by the impact or seating of the portion *k* of the plunger K, so as effectually to prevent the passage of water from the service-pipe into the vacuum chamber except the few drops that pass through the cylinder at the instant of reversal.

When the hydrant is again opened, the depression of the piston K forces back into the discharge-pipe the water last received therefrom, which water escapes from the hydrant in advance of that which ascends directly from the service-pipe.

The neck H has a hexagonal or other non-circular form, to enable the application of a wrench whereby the whole of the hydrant above the receiving chamber may be unscrewed from said chamber and withdrawn for inspection or repair, if need be.

### *Claim.*

I claim herein as my invention—

The arrangement of water-reception chamber A, cylinder C D *d* E *e*, vacuum chamber F H, perforated discharge-pipe G L, pistons I *i* *i'* and K *k* *k'*, valve R, and annular valve-seat J, the whole being combined and operating substantially as set forth.

In testimony of which invention I hereunto set my hand.

Witnesses: ALEXANDER S. FORT.  
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