

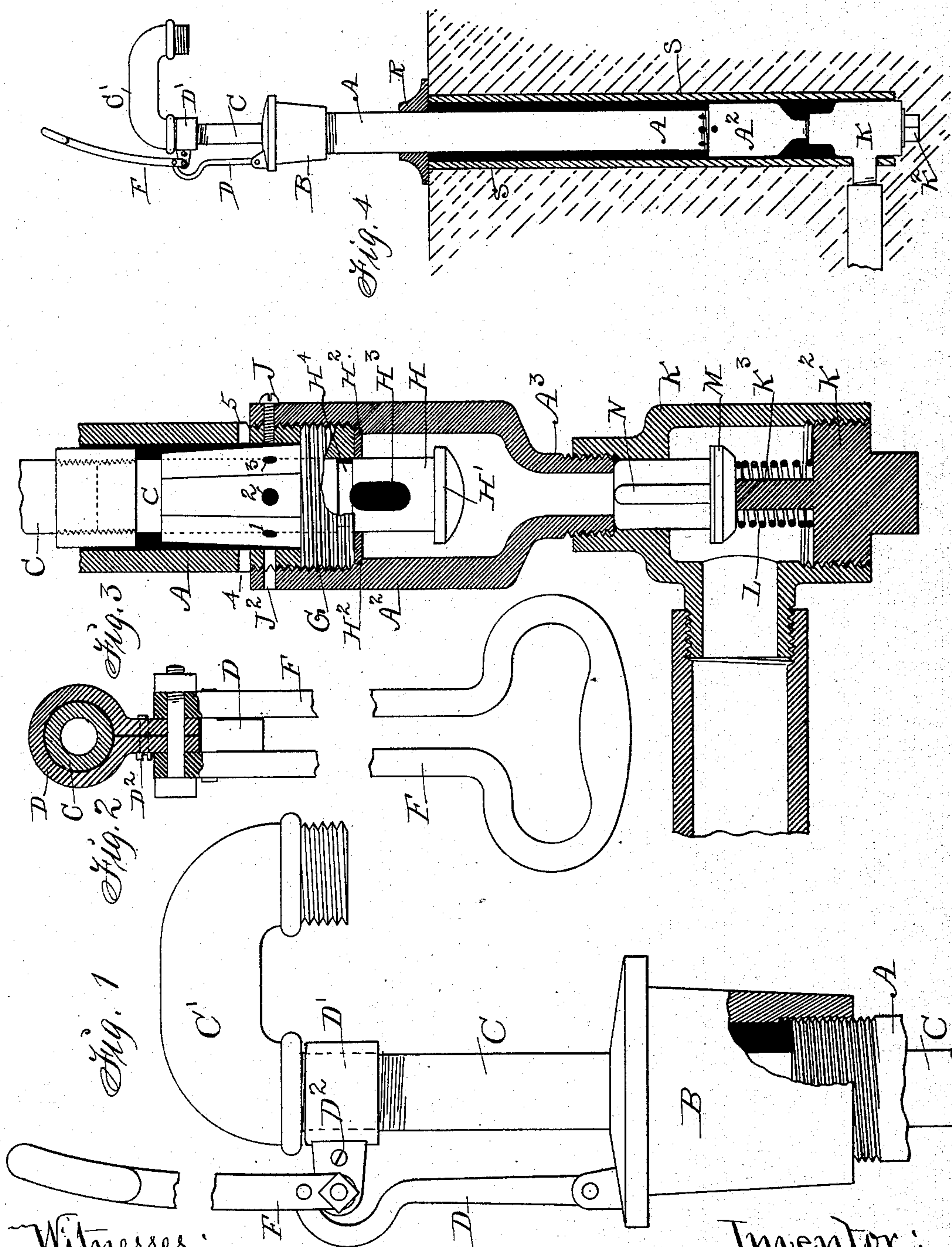
(No Model.)

O. P. PENCE.

HYDRANT.

No. 325,764.

Patented Sept. 8, 1885.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

OLIVER P. PENCE, OF DES MOINES, IOWA.

## HYDRANT.

SPECIFICATION forming part of Letters Patent No. 325,764, dated September 8, 1885.

Application filed June 16, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, OLIVER P. PENCE, a citizen of the United States, and a resident of Des Moines, in the county of Polk and State of Iowa, have invented an Improved Hydrant, of which the following is a specification.

My object is to simplify the construction, reduce the cost, and improve the operation of that class of hydrants that have a vertical sliding valve.

My invention consists in the construction and combination of a bent and hinged fulcrum, a lever-handle, a stand-pipe and delivery-spout, a case, a detachable case-section and valve-chamber, a detachable valve-seat, a detachable sliding valve, and an automatic check-valve, as hereinafter fully set forth, in such a manner that the complete hydrant, when attached to a service-pipe, can be readily operated by means of the handle and bent fulcrum, so that the sliding valve will remain stationary in an open or closed position, as desired, and lifted with the case and stand-pipe for repairs, whenever necessary without removing any ground or shutting off the supply and pressure in the service-pipe.

Figure 1 of the accompanying drawings is a side view, and Fig. 2 a transverse section, of the top portion of my hydrant, showing the construction of the handle and hinged fulcrum. Fig. 3 is a vertical section of the lower portion, showing the sliding-valve chamber, valve-seats, and sliding valves, combined with the case, stand-pipe and service-pipe. Fig. 4 shows the complete hydrant in position for use. Jointly considered, these figures clearly illustrate the construction, application, and operation of my complete invention.

A represents a tubular metal case, that may vary in length and diameter, as desired.

B is a detachable top and perforated cover, through which the stand-pipe extends and operates.

C is a metal tube and stand-pipe, and C' a spout attached to its top.

D is a fulcrum hinged to the top B, and bent into a semicircle at its top end.

D' is a collar or clip, clamped to the stand-pipe C by means of a screw, D<sup>2</sup>. By relaxing the pressure of the screw D<sup>2</sup> the clip D' can be readily raised or lowered on the tube C, and

detached when the spout C' is removed from the top of the tube.

F is a lever of the first order, pivoted to the free end of the semicircular top of the hinged fulcrum D.

A<sup>2</sup> is a valve-chamber and detachable section of the case A, but larger in diameter at its top end and contracted at its lower end. It is screw-threaded on the inside of its top end to receive a valve-seat and also the screw-threaded lower end of a case, A.

G is a valve seat, preferably made of brass. Its lower end is a right-hand screw that fits into the screw-threaded valve-chamber A<sup>2</sup>. Its top portion is of smaller diameter and angular, and adapted to be engaged by a wrench, so that it can be readily screwed in and out of the valve-chamber. A shoulder at the end of the female screw in the valve-chamber, and adapted to receive a gasket, will restrict the downward movement of the valve-seat G and facilitate its removal.

H is a tubular sliding valve, preferably made of brass, and adapted to move up and down through a longitudinal bore in the valve-seat G. It is open at the top, and has a screw-thread on its outside, adapting it to be connected with the pipe C by means of a coupling, as shown in Fig. 3. It is closed water-tight at its bottom end, and has a flange, H', that will close tight upon the gasket H<sup>2</sup>.

H<sup>3</sup> are slots about half an inch above the flange H'. H<sup>4</sup> is an annular groove in the outside surface and at the top of the slots H<sup>3</sup>. 1 2 3 are perforations in the angular portion of the valve-seat G, which coincide with the groove H<sup>4</sup> in the sliding valve when its flange H' is drawn up tight against the bottom of the valve-seat.

4 5 6 are perforations in the case A.

J is a screw that extends through the top of the valve-chamber A<sup>2</sup> into the lower end of the case A, to lock them together. J<sup>2</sup> is a vent on the opposite side.

K is a valve-chamber that has a lateral branch adapting it to be fixed to a service-pipe, and a vertical extension adapted to admit the lower contracted end, A<sup>3</sup>, of the valve-chamber and case section A<sup>2</sup>, as clearly shown in Fig. 3.

K<sup>2</sup> is a plug fitted in the lower end of the



chamber K. K<sup>3</sup> is a pin formed integral with the plug.

L is a coiled spring placed over the pin K<sup>3</sup>. M is a check-valve adapted to fit against the valve-seat in the chamber K. It has a stem of cruciform shape in its cross-section that projects up against the contracted lower end, A<sup>3</sup>, of the detachable valve-chamber and case-section A<sup>2</sup>.

R represents a flanged collar slipped over the case A to form a base for that portion of the hydrant that is visible when in use.

S represents an auxiliary case that prevents the ground from coming in contact with the case A. It may be made of wood or metal. By forming a slot in its lower end it will engage the service-pipe or the lateral branch of the lower valve chamber, as shown in Fig. 4. Its top end will be covered by the sliding collar or base R.

In the practical operation of my hydrant, thus constructed and applied, the spring L will be depressed by the lower end of the detachable case, and the check-valve retained open, as required, to allow water to flow upward from the service-pipe. When the hydrant is detached from the lower valve-chamber and service-pipe, the pressure of the water will lift and close the check-valve, and the spring will resume its normal position and aid in elevating and closing the valve. By turning the handle upward, as shown in Figs. 1 and 2, the short arm of that lever will depress the stand-pipe and the valve H attached to its end, as required, to allow the water to enter the stand-pipe through the water-way openings H<sup>3</sup>, and to ascend therein to be discharged at its top. A reverse motion of the handle lifts the stand-pipe and valve and shuts off the water, as required, to confine it below the sliding valve. The water remaining in the stand-pipe, after the valve is closed at its lower end, will escape through the annular groove H<sup>4</sup> of the sliding valve H and coinciding perforations or vents 1 2 3 in the valve-seat G, and from thence through the perforations in the case into the ground.

By forming the slots H<sup>3</sup> at some elevation above the flange H<sup>1</sup> of the valve H, and making the space between the flange H<sup>1</sup> and the groove H<sup>4</sup> of the sliding valve and the space between the bottom of the valve-seat and the vents 1 2 3 in the same equal in length with the stroke of the short arm of the lever-handle, the waste is closed by the downward motion of the valve before the supply opens, and the supply is shut off by the upward motion of the valve before the waste-vents are opened, so that the hydrant can never be running and wasting at the same time.

I am aware that a valve case or cylinder has been formed integral with a supply-pipe and ports made in the walls of the case or cylinder in such a manner that it has a sliding valve or water-way having two pistons and lateral

openings between the pistons, so that the pistons would close the waste-ports in advance of the opening of the supply-ports and the supply-ports be closed in advance of the opening of the waste; but my manner of forming an open-ended screw-threaded valve-chamber and screwing a valve-seat and a casing in the open top and combining a sliding water-way with the fixed valve-seat, and then detachably connecting the lower end of the valve-chamber and complete hydrant with a service-pipe, is novel and greatly advantageous.

I claim as my invention—

1. In a hydrant, the combination of a vertically-reciprocating stand-pipe, a detachable and adjustable clip having a bearing to support a pivoted lever, a lever of the first order pivoted to the adjustable clip, and a hinged fulcrum having a semicircular bend at its top, to operate in the manner set forth, for the purposes stated.

2. The stationary hydrant-case and top A B, the moving stand-pipe C C', the hinged fulcrum D, having a semicircular bend at its top end, the clip D', and a lever-handle, F, arranged and combined as and for the purposes shown and described.

3. A metal tubular casing having waste-openings at its lower end, a detachable valve-chamber having open screw-threaded ends, a detachable valve-seat having an angular top and waste-vents, a sliding valve having slots or water-way openings, and an annular groove and wasteway intersecting the water-way openings, and a reciprocating stand-pipe and delivery-spout, arranged and combined to operate in the manner set forth, for the purposes specified.

4. In a hydrant, the combination of a valve-chamber having an open screw-threaded top, a detachable valve-seat having an angular and perforated top of diminished diameter, and a sliding tubular valve having one or more water-ways near its lower closed end, and an annular groove in its outside surface intersecting the top ends of the water-ways, to operate in the manner set forth, for the purposes stated.

5. The combination of a valve-chamber having an open screw-threaded top end, a contracted open and screw-threaded bottom end, a detachable valve-seat having a perforated top of smaller diameter, a tubular sliding valve having water-ways near its lower closed end and an annular groove intersecting the water-ways, a reciprocating stand-pipe and tubular case extending into the valve-chamber and provided with vents at its lower end, to operate in the manner set forth, for the purposes specified.

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