

JOHN McCLELLAND.  
Improvement in Fire-Plugs.

No. 115,495.

Patented May 30, 1871.

Fig. 1.

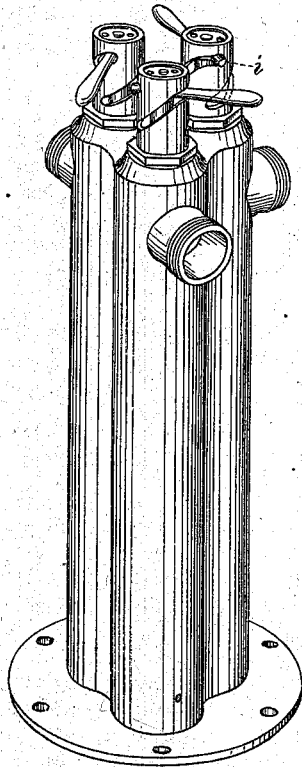


Fig. 2.

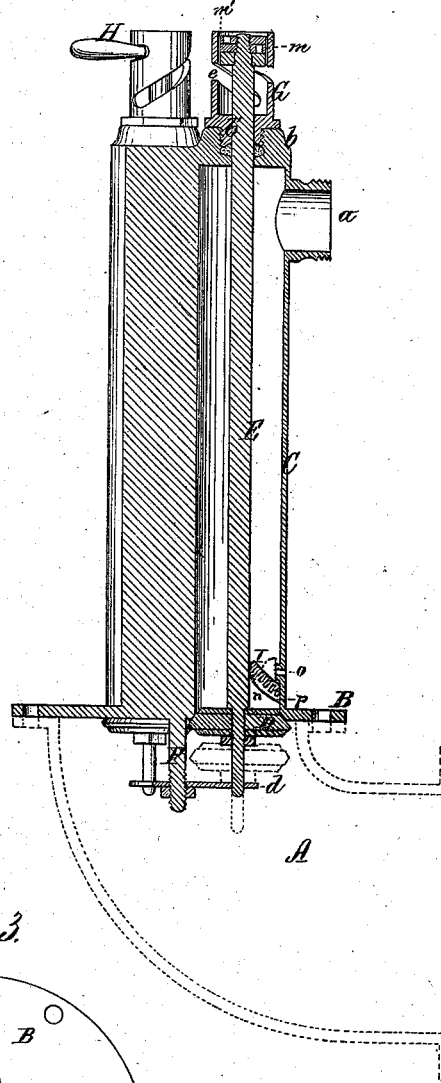


Fig. 4.

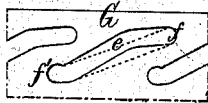
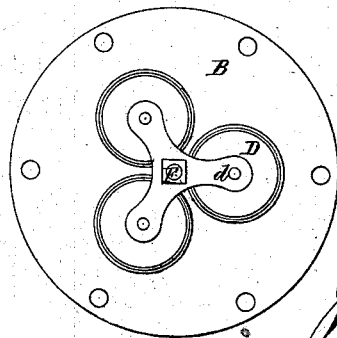


Fig. 3.



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# UNITED STATES PATENT OFFICE.

JOHN McCLELLAND, OF WASHINGTON, DISTRICT OF COLUMBIA.

## IMPROVEMENT IN FIRE-PLUGS.

Specification forming part of Letters Patent No. 115,495, dated May 30, 1871.

*To all whom it may concern:*

Be it known that I, JOHN McCLELLAND, of the city of Washington, District of Columbia, have invented a certain new and useful Fire-Plug.

My invention consists in a novel method of longitudinally operating and holding the feed-rod or valve-stem, a novel arrangement of valve-stem guides, and also in a novel automatic waste-water valve; and I do hereby declare that the following specification, taken in connection with the drawing furnished and forming part of the same, is a true, clear, and exact description thereof.

Referring to the drawing, Figure 1 represents in perspective a stack of my improved fire-plugs. Fig. 2 represents the same in cross-vertical section. Fig. 3 represents the main valves as viewed from below. Fig. 4 represents a plan of the operating-cams.

A is the supply-chamber, connected with the water-main, and may be provided with suitable strainers or not, as may be deemed necessary. B is a common base-plate, forming the cap to the supply-chamber, on which my fire-plug is mounted. C is the barrel of the hydrant, attached to the base-plate, and extending upward to any required height. At its lower end its interior is coincident with an opening in the base-plate of corresponding diameter. Near its upper end is the delivery-port *a*. Its cap *b* may be made in a variety of modes, either solid or separate, and connected by a screw-thread in a well-known manner. D is the main valve. It is circular in form, and is fitted to a seat in the under side of the base-plate. E is the feed-rod or valve-stem. It passes through the valve D, and may either be rigidly fastened thereto, or, while vertically secured, the valve may be free to revolve on the stem. Its lower end is provided with a guide, *d*, projecting from a hanger, F, located in the center of the under side of the base-plate, and projecting downward into the supply-chamber A. The upper end of the feed-rod extends above and through the cap at *b'*, and may be surrounded or not by a stuffing-box. G is the operating-cam cylinder. It is secured to the top of the cap *b*, and rises vertically to the height of the upper end of the valve-rod when the main valve is closed. Cut through the wall of this cylinder is a cam-

slot, *e*, which extends from a point near the top of the cylinder diagonally or spirally to a point near its base. The true vertical distance traversed by this slot is equal to the required vertical movement of the valve and its rod, while its spiral length may be varied to suit requirements. At both top and bottom the inclined groove *e* merges into the holding-cam slots *f* and *f'*, which extend but a short distance in opposite directions, and which may be either horizontal or slightly inclined, the upper slot inclining slightly upward from the upper end of the cam-slot *e*, while the lower inclines slightly downward, and terminates in a slightly upward-curved end. On the opposite side of this cylinder are cam-slots corresponding with those already described. The upper holding-slot *f* can be dispensed with if there is a great pressure of water to hold the valve to its seat when once closed. In such case the cam-slot *e* may be made with straight sides, as indicated by dotted lines in Fig. 4. H is a radial operating-lever, which is attached to the valve-rod at a point near its upper end. The long end of this lever extends from the rod outward, passing through the cam-slot *e*. A stud, *i*, of equal diameter to that part of the handle which is adjacent to the cam-slot *e*, extends from the valve-rod on the opposite side into the corresponding opposite cam-slot already referred to. A pair of circular nuts, *m*, fitted to fill the interior of the cam-cylinder, is screwed upon the upper end of the valve-rod, and serves a double purpose, not only connecting the handle and valve-stem, but, by their peripheral contact with the interior of the cam-cylinder at *m'*, they perform the function of an additional longitudinal guide for the valve-rod.

It will be readily obvious that the main valve will be opened and closed by the movement of the lever H, operating as a cam-stud in the slot *e*; and that the upper slot *f*, from its form, will hold the lever firmly vertically, and thus keep the main valve to its seat; and that the lower slot *f'* will also hold the lever firmly vertically while the main valve is open.

Should it be deemed desirable, a wheel may be keyed to the projecting upper end of the valve-rod. In such case, however, it will be essential to have a stud projecting through the slot from the rod in place of the lever H.

Such a change would amount simply to a transfer of a portion of the lever H from the position it now occupies to the upper end of the valve-rod. The lever is deemed preferable because it is simpler and affords a greater purchase.

From the fact that the valve is opened by a rapid longitudinal movement of the valve-rod, it is very essential that a perfect system of longitudinal guides be provided to steady it during such movement, and also that these guides be so located and arranged that they will obstruct the water-way as little as possible. Therefore I have provided a guide-stand below the base-plate, having a hanger, F, common to the several radial arms or guides *d*.

It will be observed when the valves are open that these guides present little or no obstruction to the water-way. The movement of the operating-lever and valve-rod at the upper end being also rapid and extensive, and the rod being subject to a twisting force, it is desirable that a perfect guide should also be provided at that end. In the opening in the cap of the hydrant at *b'*, and in the contact of the nut at *m'* with the interior of the cam-cylinder, a double-guide is formed, by which the rod is always maintained in a truly vertical position.

When two or more of my hydrants are combined in a single stack, they may be inclosed in a casing of iron, wood, or masonry, as may be desired. In the stacks the several operative levers, when the valves are closed, will not occupy any greater radial space than is occupied by the several hydrants, and may be readily covered by a hinged cap.

I will now describe the means I have devised for freeing the hydrant of waste water after the main valve has been closed. I is my improved automatic waste-water valve. It is a weighted vertical valve, attached by a loose-working hinge-joint to the interior wall of the hydrant, slightly above its base, and adjacent to discharge-aperture *o*, through which the waste water flows. The weighted flap *n* of the valve extends upward from the hinge-joint, and an arm, *p*, extends downward. When no force—as of upward-flowing water—is exercised against the flap, its own weight causes it to fall inward, and leave the column of water free to flow through the opening *o*. As soon as the main valve is opened the force

of the water closes it until the water is cut off. The mere weight of the valve must, of course, be sufficient to overcome the weight of the column of water or the expansive force which the water will exercise against the base of the hydrant. When the weighted flap falls it is prevented from falling too far by the arm *p* coming in contact with the adjacent wall. The relative positions of the valve when open and closed are exhibited in the drawing.

In setting my plugs an open space may be constructed opposite the aperture *o* or not, as may be desired. The small quantity of water discharged through the valve would readily be absorbed in the surrounding earth.

Experience has demonstrated that fire-plugs should be strong and simple in their structure, not liable to get out of order by rough or careless handling, easily and rapidly operated, not liable to freeze up, and should have a free and unobstructed water-way. I have, in my improved fire-plug, combined all of these several desiderata; and it can be made at a low cost compared with other fire-plugs of its class with which I am acquainted.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the cam-cylinder G, provided with the cam-slots *e* and *f'*, the operating-lever H, and the valve-rod E, substantially as shown and described.

2. The guides *d* and *b' m'*, located, respectively, below the main valve and above the delivery-port of the hydrant, in combination with the valve-stem and its operating device, substantially as shown and described.

3. The waste-water valve I, consisting of the weighted flap *n* and arm *p*, hinged to the interior wall of the hydrant near its base and adjacent to a suitable delivery-port, substantially as described.

4. In combination with a stack of hydrants operated by axial valve-rods, and supplied from a common chamber, the hanger F, and the radial guides *d*, substantially as shown and described.

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Witnesses:

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