

(No Model.)

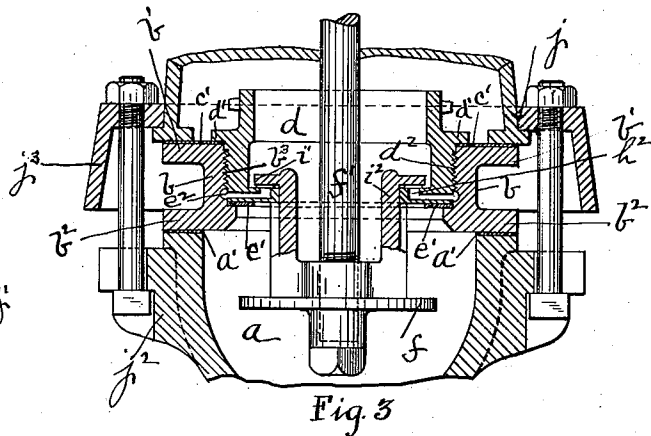
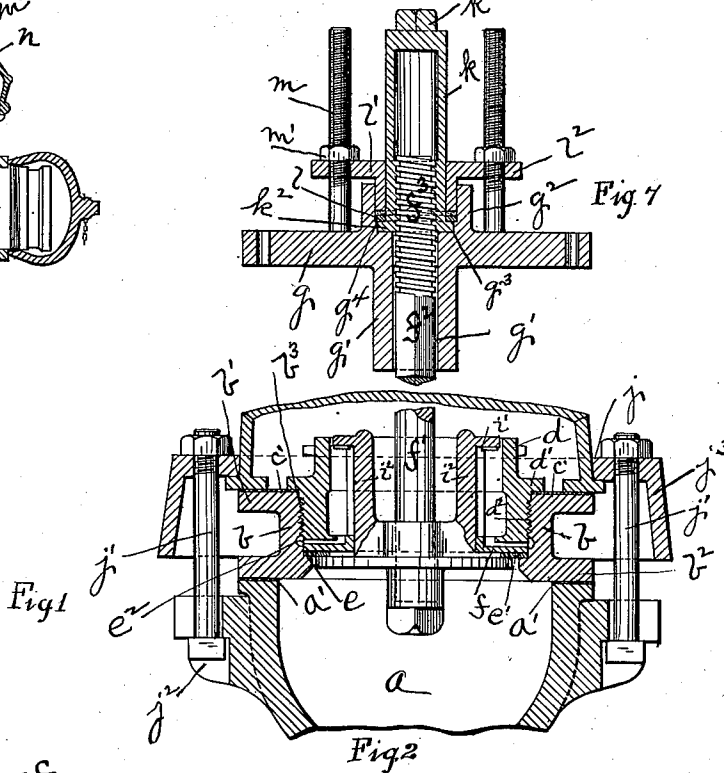
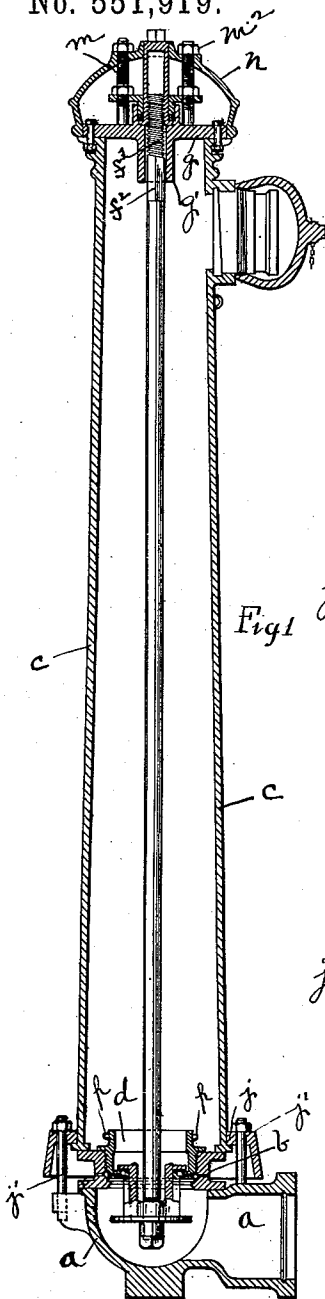
2 Sheets—Sheet 1.

J. L. BROWN & D. CARLIN.

FIRE HYDRANT.

No. 551,919.

Patented Dec. 24, 1895.



Witnesses

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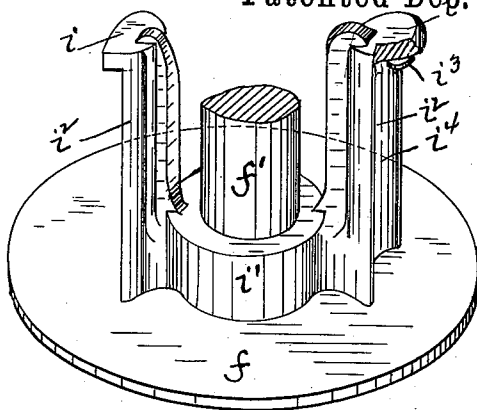
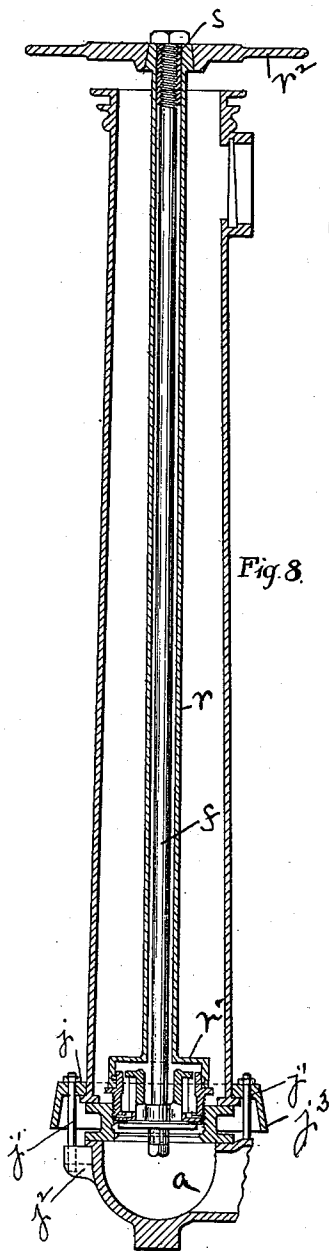


Fig. 6

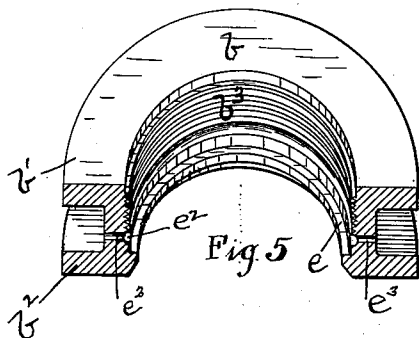


Fig. 5

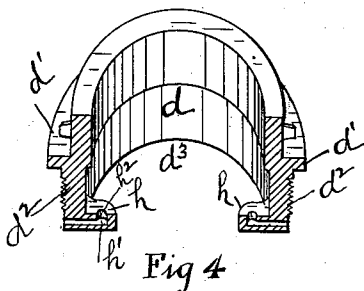


Fig. 4

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UNITED STATES PATENT OFFICE.

JOHN L. BROWN AND DAVID CARLIN, OF ALLEGHENY, PENNSYLVANIA.

FIRE-HYDRANT.

SPECIFICATION forming part of Letters Patent No. 551,919, dated December 24, 1895.

Application filed August 15, 1894. Serial No. 520,341. (No model.)

To all whom it may concern:

Be it known that we, JOHN L. BROWN and DAVID CARLIN, residents of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Fire-Hydrants; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to fire and similar hydrants—that is, more particularly to that class of hydrants employed in streets to supply a large body of water from the water-mains to the engines in case of fire, or for the flooding and cleaning of streets. Its object is to provide a hydrant which overcomes the necessity of the taking away or removal of the stand-pipe when repairing the working parts; which prevents the flooding of cellars of adjacent property in case the stand-pipe should be broken; which prevents the continuous waste of water through the drip-passages when the valve is open and the hydrant in use, and by which the necessity of contracting the water-way through the hydrant so as to reduce the supply through the same, is prevented, as well as to provide working parts, which, though located in the lower part of the apparatus, can be easily removed through the stand-pipe for repair; to provide for the adjustment of the stand-pipe in any desired direction; to insure the closing of the drip-passages when the hydrant is open, and to prevent the washing away of the earth around the hydrant and the undermining of the pavement by the water passing through such drip-passages.

To these ends our invention comprises, generally stated, a fire-hydrant having a base, an intermediate valve-case resting on the base, and a stand-pipe resting on and supported by the valve-case, a valve ring or seat insertible from above into the intermediate valve-case and a valve closing from below against the valve-seat, as well as certain other improvements, such as in the method of packing both the valve-ring and the stand-pipe, and other improvements which will be hereinafter referred to.

To enable others skilled in the art to make and use our invention, we will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of the fire-hydrant. Fig. 2 is an enlarged detailed vertical section showing valve closed. Fig. 3 is a like view showing valve open and the drainage-ports closed. Fig. 4 is a perspective section showing the valve-ring. Fig. 5 is a perspective section showing the valve case or body. Fig. 6 is a perspective view of the main valve and drip-valves. Fig. 7 is a sectional view of the top plate and the devices for operating the valve; and Fig. 8 is a view illustrating the manner of removing and inserting the valve-ring in the valve-body.

Like letters of reference indicate like parts in each of the views.

The fire-hydrant is supported on any suitable base *a*, which is connected to the water-main, above which base and resting thereon is what we term the "intermediate" valve-case *b*, on which rests the stand-pipe *c*, which supports at the upper end the mechanism for operating the valve, and has at one side a nozzle to which the hose is connected. The base *a* has its upper face turned, and the valve-case *b* rests upon it, with suitable packing *a'* inserted between them, while the packing *c'* is employed between the stand-pipe and valve-case. The valve-case *b* is formed of a large ring having top and bottom flanges *b'* *b''* for forming joints with the base and stand-pipe, and having the inner surface threaded, as at *b'''*, to receive the valve-ring *d*, which screws into the threaded seat. Below the threaded inner face is the inwardly-extending annular flange *e*, onto which the valve ring or seat *d* is seated, or when a metallic valve is used, upon which rests the gasket *e'*, said gasket being compressed upon the seat *e* by the valve-ring *d*, so forming a tight joint between the valve-case and seat at the base thereof.

To form a tight joint between the upper parts of the valve-case and valve-ring, we form on the valve-ring *d* the annular flange *d'*, which extends over the top face of the valve-case and under which we prefer to carry the packing *c'* or another separate ring which is compressed between the top face of the valve-case and said flange *d'*.

It will be noticed that on the inner face of the valve-case there is also formed the annu-

lar drainage-recess e^2 , which opens at intervals through the valve-case to form the drainage-passages e^3 , the annular recess e^2 being employed so as to provide for the escape of the dripping, no matter what position the valve-ring d may occupy in the valve-case b .

The valve-ring d has a threaded outer face d^2 below the flange d' and its lower face d^3 , which is plain, either acts to compress the gasket d' above referred to, which forms the seat of the valve, or itself forms the seat of the valve, as may be desired. It will thus be seen that the valve-ring is insertible from above into the valve body or case b , and, as will be seen from the drawings, the valve f closes from below against the valve-seat, closing with the pressure or flow of the water, the hydrostatic pressure in the main assisting in holding the valve closed, the force being generally sufficient to hold the valve closed even where by accident the mechanism at the top of the stand-pipe becomes inoperative, or the stand-pipe itself is broken so that it will not support such mechanism. The valve f has a valve-stem f' , which extends up through the stand-pipe and enters into the depending socket g' of the top plate g secured to the top of the stand-pipe and carrying the operative mechanism hereinafter described.

It will be noticed that extending inwardly from the valve-ring are the lugs h , in each of which is formed the drip-passage h' , the valve-port h^2 of which opens upwardly through the lug, while the passage itself runs horizontally to the outer case of the ring and communicates with the annular drip-recess e^2 in the inner face of the valve-case b . The valve-stem f' carries just above the valve f the drip-valves i , which are connected to the ring i' , and have two standards i^2 extending up above the lugs h , the valves proper i extending thus outwardly over the lugs and carrying any suitable elastic plug i^3 , which forms the valve-face; and when the main valve is lowered the drip-valves are lowered with it and bear upon the drip-valve ports h^2 of the lugs h and close the same, such valve-ports being closed not only by the weight of the main valve and its stem, but the drip-valves being forced down into the same by the operative mechanism hereinafter described.

It will also be noticed that the standards i^2 have their outer faces formed on a concave or depressed, as at i^4 , to fit around the lugs h , which lugs in the valve-ring d in this way act as guides, in connection with the drip-valve, to prevent the turning of the main valves. The base, valve-case and stand-pipe are connected together by the bolts j , which pass through the ring j' fitting over the base-flange of the stand-pipe and engaging with the seats in the base a , as at j^2 . By such construction the stand-pipe can be adjusted to any desired position, so that its nozzle extends out toward the street, no matter what the position of the base a may be.

It is also to be noticed that the ring j' has

the annular depending shield j^3 , which extends down over the valve-case b . This forms an annular chamber between the valve-case and shield j^3 , which prevents access of dirt to the drip passages e^3 of the valve-case, and the drip-passages e^3 open into such space, so that any drainage or dripping will strike it directly against said shield, which will deflect it in a downwardly direction and prevent the washing out or undermining of the earth around the hydrant.

The depending socket g' of the top plate is square or angular in the lower portion thereof, and the upper end of the rod f is correspondingly squared, as at f^2 , to fit into such angular socket, so holding the upper end of the valve-rod from turning, while above said squared portion is the threaded upper end f^3 , which engages with the sleeve-nut k , having at its upper end the angular wrench-seat k' by which the nut is turned. The sleeve-nut k is mounted in the annular upwardly-extending ring g^2 on the top plate g and has the flange k^2 at the base thereof, which fits neatly into the seat g^3 formed therefor, the interior of the ring g^2 above said seat g^3 being of greater diameter than the seat, so as to form a flat shoulder or offset g^4 to receive the metallic washer l , which rests on such shoulder, while above such washer is a suitable compressible packing-ring, and above such packing-ring the male portion l' of the stuffing-box l^2 enters within the ring g^2 , properly packing the sleeve-nut within the ring g^2 . This permits the free and easy turning of the same, as the base-flange k^3 of the sleeve-nut is not tightly confined by the socket l . The male portion l' of the stuffing-box is held in place by the nuts m' on the bolts m , which also extend up above the stuffing-box and over which the cap n fits, said cap surrounding the top plate g and being held in place by the nuts m^2 on the bolts m , and angular wrench-seat k' of the sleeve-nut extending out through such cap.

In Fig. 3 we have illustrated the method of inserting and withdrawing the valve-ring, and we will now describe the same: It will be noticed that on the outer face of the upper part of the valve-ring, above the flange d' are the lugs p . These lugs are engaged by the sleeve-wrench r , the body of which is formed of a long tube slipping around the valve-stem f and carrying at the lower end the enlarged socket r' , which has recesses in its inner face passing around the lugs p of the valve-ring, the socket r' resting on the flange d' of the valve-ring. The wrench has at its upper end the handles r^2 and passing within the tubular portion of the wrench is the sleeve-nut s , which screws upon the threaded end f^3 of the stem, and so, by drawing up the valve, clamps the valve-ring between the base of the socket r' of the wrench and of the valve f , the sleeve-nut s bearing, of course, on the upper surface of the wrench. When these parts are so clamped together, by

turning the wrench the valve-ring *d* can be either screwed into the valve-case *b* or screwed out of the same, it being thus made possible to insert the valve-ring into the valve-case without removing or interfering in any way with the stand-pipe. In inserting the valve and its ring in place, the parts are clamped together, the valve-ring being slipped over the valve, the washer being interposed between the valve-ring and the valve and the wrench *r* then being slipped over the valve-stem and engaging with the valve-ring, and the parts being clamped together in the proper position, so that when the whole is lowered through the stand-pipe and screwed to place, the gasket or washer *e'* is lowered upon the seat formed therefor in the valve-case and is clamped upon said seat by the valve-ring as it is screwed to place. The sleeve-nut *s* can then be loosened and the wrench withdrawn, leaving the parts in operative position. The top plate can then be secured in place and the cap *n* placed over the same, and the hydrant is ready for use.

In the use of the hydrant, by turning the sleeve-nut *k* the valve-stem is raised and draws the valve *f* against the valve-seat or gasket, so closing the hydrant and closing the same in the direction of the flow of the water through the main, so that the pressure of the water assists in the closing of the hydrant. The hydrant is opened by turning the sleeve-nut *k* in the opposite direction, so forcing the valve from its seat; and the valve is screwed down until the drip-valves *i* are lowered into and forced against the drip-ports *h*² in the lugs *h*, so closing the drip-passages not only by the weight of the valve but the operating mechanism forcing down the valves through the valve-stem. It has been found that this drip-valve mechanism is sure in its operation, holding against very heavy pressure and preventing leakage when the hydrant is open. As the hydrant is closed by the raising of the main-valve *f*, the drip-valves *i* are raised from the ports of the drip-passages, and so give a free exit for all the water contained within the stand-pipe; and the water flows through such drip-passages and strikes against the depending shield *j*³, which breaks the force of the same and prevents the washing of the dirt around the hydrant, as above described.

The operative mechanism is thus capable of being inserted and withdrawn without interfering in any way with the main parts of the hydrant, and without the necessity of the removal of the stand-pipe. In case of accidents to the fire-hydrants, such as the breaking of the body of the stand-pipe or of the head thereof, as the valve closes with the pressure of the water it is naturally held to its place, and flooding from such accident to the hydrant is prevented.

The valve-case *b* may be made interchangeable and may be employed with any construction of base and stand-pipe being made to fit the same.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a base, an intermediate valve case resting on the case, a stand-pipe resting on and supported by the valve case, a valve ring or seat insertible from above into the intermediate valve case, and a valve closing from below against the valve seat, substantially as set forth.

2. The combination of a base, stand pipe, an intermediate valve case between the base and stand pipe, and a clamping ring engaging with the stand pipe and connected to the base and clamping the valve case between them, substantially as and for the purposes set forth.

3. The combination of a base, a stand pipe, an intermediate valve case between them, having drip passages therein, and a clamping ring engaging with the stand pipe and connected to the base and clamping the valve case between them, such clamping ring having an annular depending shield, substantially as and for the purposes set forth.

4. The combination of a base, an intermediate valve case resting on the base, a stand-pipe resting on and supported by the valve case, a washer fitting over the top of the valve case and clamped between it and the stand-pipe, and a ring inserted in the valve case and having a flange extending over said washer, substantially as set forth.

5. The combination of an annular valve ring having inwardly projecting lugs and drip passages formed therein and having said passages opening upwardly through said lugs, a main valve seating itself upwardly against the valve ring, standards rigid with the main valve having concave outer faces fitting around said lugs and carrying drip valves closing downwardly upon the drip ports, substantially as set forth.

6. The combination of a valve case having an annular drip recess in its inner face and drip passages leading therefrom through the case, and an annular valve ring insertible into the valve case and having drip passages leading through the same and communicating with the annular drip recess, substantially as and for the purposes set forth.

7. The combination of a valve case having the seat *e* at the base thereof, a gasket resting on said seat and a valve ring screwing into the valve seat and upon said gasket, said valve case having an annular drip recess in its inner face and passages leading therefrom through the case, and said valve ring having drip passages communicating with said annular drip recess, substantially as and for the purposes set forth.

8. The combination of a valve body, a valve ring screwing into said body from above, a valve seating itself upwardly against the valve ring and having a stem extending upwardly through the valve body, and a sleeve wrench fitting over said valve stem and engaging with the valve ring to turn the same,

and a nut engaging with the valve stem to clamp the wrench to the valve ring, substantially as and for the purposes set forth.

9. The combination of a valve body, a valve
5 ring screwing into said body from above, a
valve seating itself upwardly against the
valve ring and having a stem extending upwardly through the valve body, and a sleeve
10 wrench fitting over said valve stem and engaging with the valve ring to turn the same, and a sleeve nut passing within the sleeve

wrench and engaging with the valve stem to clamp the wrench upon the valve ring, substantially as and for the purposes set forth.

In testimony whereof we, the said JOHN L. BROWN and DAVID CARLIN, have hereunto
15 set our hands.

JOHN L. BROWN.
DAVID CARLIN.

Witnesses:

ROBT. D. TOTTEN,
ROBERT C. TOTTEN.