2 Sheets—Sheet 1.

P. WHITE & J. C. KUPFERLE.

Hydrant.

No. 202,316. Patented April 9, 1878.

FIG. 1.

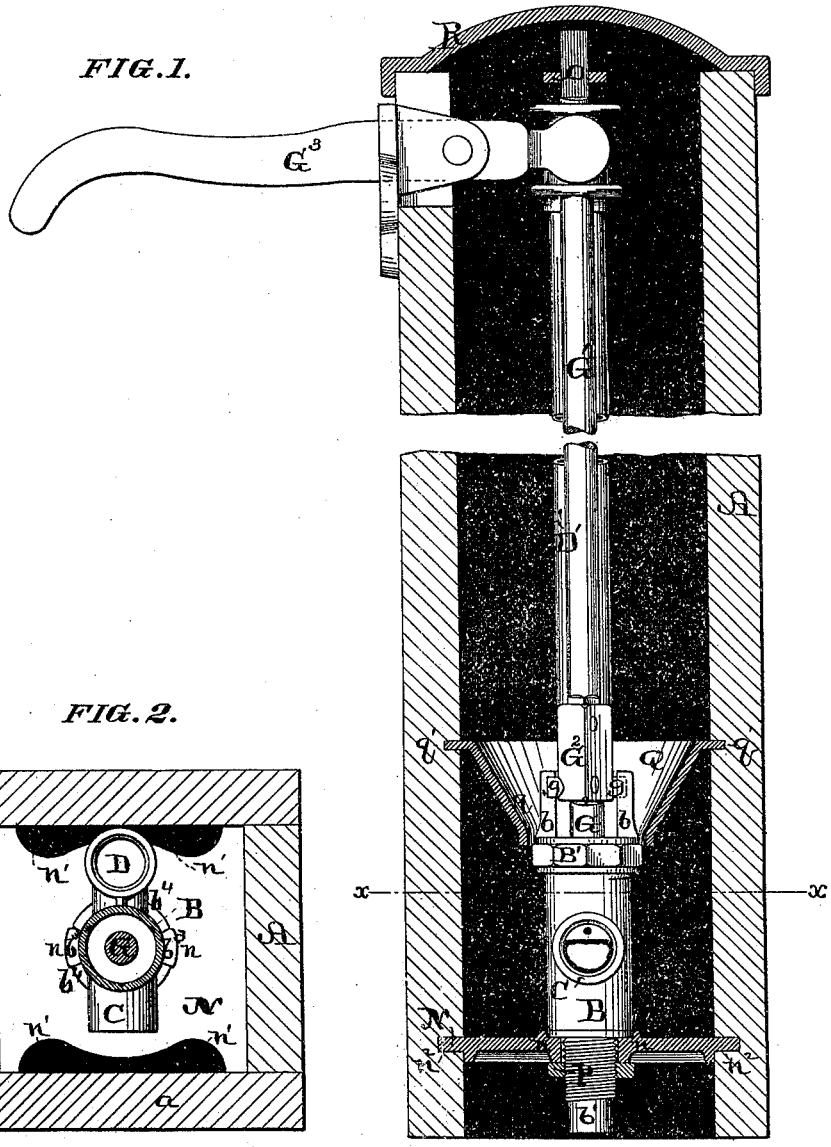
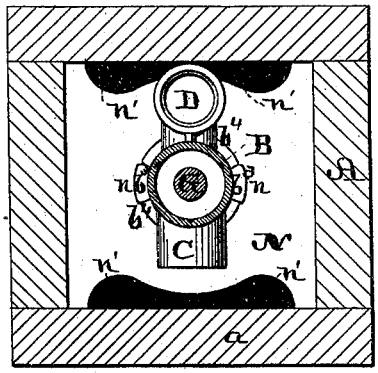


FIG. 2.



ATTEST:

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Paul Bakewell

INVENTORS:

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2 Sheets—Sheet 2.

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Hydrant.

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FIG. 3.

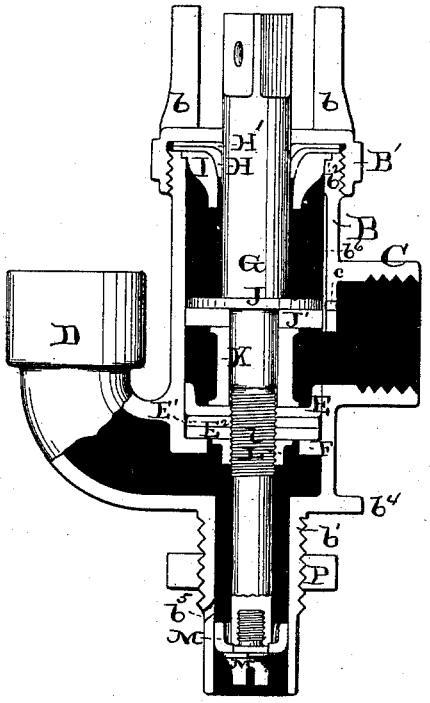
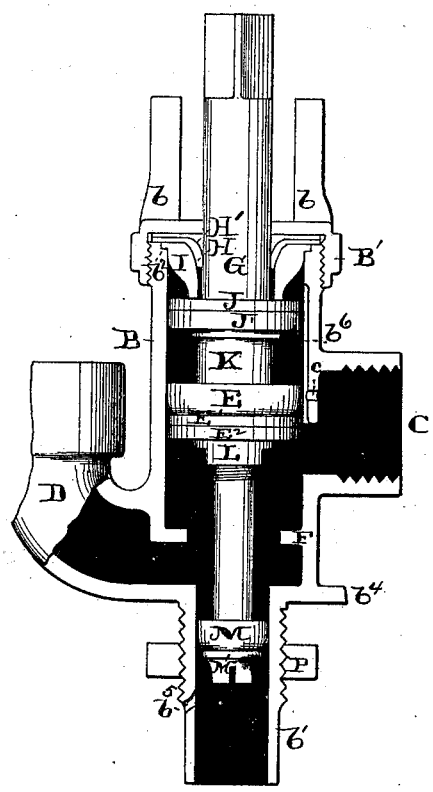


FIG. 4.



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UNITED STATES PATENT OFFICE.

PETER WHITE AND JOHN C. KUPFERLE, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN HYDRANTS.

Specification forming part of Letters Patent No. **202,316**, dated April 9, 1878; application filed March 21, 1878.

To all whom it may concern:

Be it known that we, PETER WHITE and JOHN C. KUPFERLE, residents of St. Louis, Missouri, have made a new and useful Improvement in Hydrants, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is an elevation of the hydrant, showing the hydrant-box and the plates for holding the hydrant in the box in section; Fig. 2, a horizontal section taken on the line *x x* of Fig. 1; Fig. 3, a vertical section taken through the valve-chamber, showing the valve mechanism partly in section, and the various parts being as when the valve is closed; and Fig. 4, a view similar to that of Fig. 3, the valve mechanism being in elevation and the valve being opened.

The same letters of reference denote the same parts.

The present construction has several advantages. It is readily made, operated, and repaired. There is no leakage, neither when the hydrant is running nor when the valve is closed. The water does not remain in the discharge-pipe when the valve is closed, preventing trouble from frost. The valve mechanism can be removed from the valve-chamber and replaced therein without having to remove the latter from its position. But an especial advantage is that the concussion in the supply-pipe incident to the sudden closing of the valve of the ordinary hydrant is entirely obviated.

Referring to the drawing, A represents the hydrant-box; B, the valve-chamber; C, the inlet thereto; D, the outlet; E, the main valve; F, the valve-seat; G, the valve-stem; G^1, the valve-rod; G^2, a thimble that connects the stem and rod; and G^3, the handle or lever for lifting the rod.

B′ represents the cap of the chamber B. It is made to screw onto the chamber, and it is furnished with two lugs, *b b*, that project upward from the cap, and so as to engage, as hereinafter described, with the lugs *g g*, that project laterally from the thimble G^2.

H H′ represent two cup-shaped leathern washers, interposed between the cap B′ and the top of the chamber B.

I represents a cup-shaped metallic washer, arranged between the washer H and a shoulder, b^2, in the chamber B.

J represents a disk, that is fastened to the valve-stem in the position shown. Its diameter is equal to that of the valve-chamber. Directly beneath it is arranged a leathern washer, J′. A thimble, K, comes next on the valve-stem, pressing at its upper end against the washer J′, and at its lower end against the main valve E. Thus made, the valve-chamber above the main valve is, by means of the disk J and washer J′, subdivided into two spaces. The valve E is cup-shaped, as shown, and beneath it, on the stem, is arranged a metallic disk, E^1, and beneath the latter is a leathern washer, E^2.

All the above-named parts, from the disk J downward, are upheld in place, and ultimately against the disk J as a bearing, by means of a nut, L, that is screwed onto the stem at *l* and against the washer E^2. The valve-stem is extended below the nut L sufficiently to pass down and work in an extension, b^1, of the valve-chamber, and at its lower end the stem is provided with a cup-shaped valve, M, that is held in place on the stem by means of a nut, M′. There is a waste-hole, b^5, in the extension b^1, just above the position of the valve M when the valve-stem is down and the valve E is closed.

The valve-chamber is held in place in the hydrant-box by means of a foot-plate, N, that receives the extension b^1, and a top plate, O, that is held in the top of the hydrant-box, serves to guide the valve-rod in its movement. A nut, P, that is screwed onto the extension b^1, serves to fasten the valve-chamber to the plate N. The latter is provided with lugs *n n*, that interlock in recesses b^3 b^3, that are in a flange, b^4, that the valve-chamber is furnished with, and against which the plate N comes. This prevents the chamber from being turned around. The plate N is cut away at n^1 n^1, to allow such sediment as collects above the plate to pass beneath it.

Q represents a guide-plate that serves to direct the valve mechanism into the valve-chamber whenever the former is being replaced in the latter. The lower end of the depression *q* of the plate passes below the lugs *b b*. The

valve-chamber, having the plates N and Q attached, is readily connected with the hydrant-box by slipping the plates respectively into grooves n^2 and q' that are in the walls of the hydrant-box, and afterward attaching the side *a* of the box. The hydrant-valve can thus, and without any other fastening, be secured in position. A cap, R, is used to cover the box in the usual manner.

D represents the discharge-pipe, which is preferably attached to the valve-chamber before the latter is attached to the hydrant-box. The valve-stem and disk J can be cast in one piece, and all the other parts immediately connected with the stem can be slipped thereon in the order named, and at once fastened in place.

It will be noticed that the inlet to the valve-chamber is above the main valve-seat. The pressure of the water in the supply-pipe is therefore upon the upper side of the valve E when the latter is closed. This operates to spread the valve and tighten it. The washer E^2 co-operates with the valve E in preventing the leakage of water from the supply-pipe. When the valve E is closed the valve M is below the waste-opening b^5, allowing the water to drain from the discharge-pipe. As soon as the valve-stem is lifted to open the main valve the valve M is raised sufficiently to close the waste-opening b^5, and thus prevent any wastage of water from the supply-pipe. As soon as the required amount of water has been drawn, and the lever G^3 is released, the pressure of the water operates to close the valve E.

Instead, however, of closing sharply down, a gradual closing of the valve is effected. This is accomplished as follows: In the inner side of the wall of the valve-chamber, and extending from a point opposite the valve E (when the latter is opened) upward to the top of the chamber, is a small groove, b^6. As the valve has opened the space between the valve and the washer J′ has continued filled with water, and there is as much pressure upward against the washer J′ as there is downward against the valve E. Hence, when the lever G^3 is released, there would be no downward movement of the valve but for the groove b^6. This groove provides a channel, through which the water can slowly pass from beneath the washer J′ to above the disk J, and thus enable the valve to gradually close, and this gradual closing of the valve serves to prevent any sudden reaction or concussion in the water in the supply-pipe, which, in the ordinary hydrant, by the sudden closing of the valve, is the frequent cause of breakage in the supply-pipe. As the valve E is lifted the water that is above the disk J is forced through the groove b^6 to beneath the washer J′, and thence through an opening, *c*, into the supply-pipe.

The valve mechanism is readily removed from the valve-chamber by rotating the valve-rod backward and bringing the lugs *g g* of the thimble G^2 against the lugs *b b* on the cap B′, causing the latter to be unscrewed, and leaving the valve-stem and the parts thereto attached free to be lifted out of the valve-chamber.

We claim—

1. The chamber B, having the groove b^6, in combination with the stem G, valve E, and disk J, substantially as described.

2. The chamber B, having the groove b^6, opening *c*, and inlet C, in combination with the stem G, valve E, and disk J, substantially as described.

3. The combination of the chamber B, cap B′, stem G, washers H H′, and washer I, substantially as described.

4. The combination of the chamber B, inlet C, seat F, stem G, valve E, disk E^1, and washer E^2, substantially as described.

5. The combination of the stem G, disk J, washer J′, thimble K, valve E, disk E^1, washer E^2, and nut L, substantially as described.

6. The chamber B, having the inlet C and outlet D, arranged as shown, the extension b^1, waste-opening b^5, stem G, valve E, seat F, and valve M, combined and operating substantially as described.

7. The combination of the hydrant-box A, valve-chamber B, and the foot-plate N, having the openings n^1 n^1, as and for the purpose described.

8. The hydrant-box A, having the grooves n^2 and q', in combination with the plates N and Q and the valve-chamber B, substantially as described.

9. The valve-chamber B, having the extension b^1, provided with the waste-opening b^5, in combination with the stem G and valve M, substantially as described.

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Witnesses:
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PAUL BAKEWELL.