(No Model.)

J. C. KUPFERLE.

FIRE HYDRANT.

No. 345,790. Patented July 20, 1886.

Fig. 1.

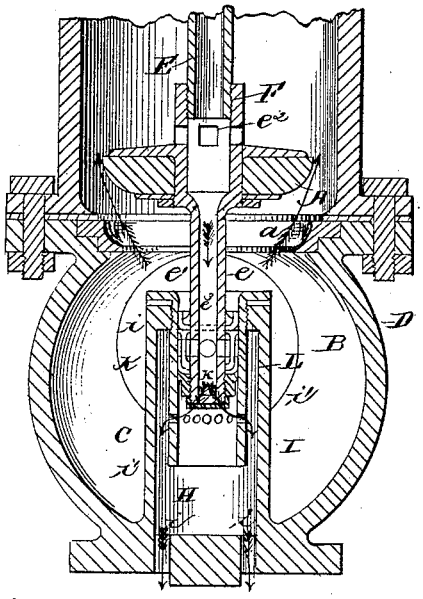


Fig. 3.

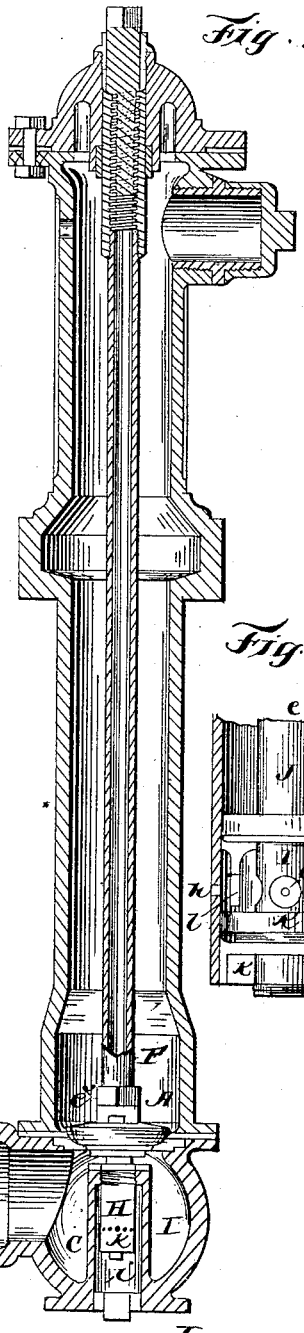


Fig. 2.

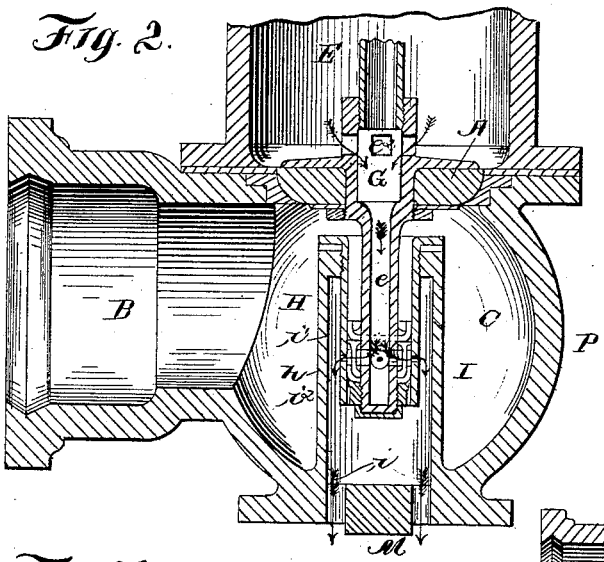


Fig. 4.

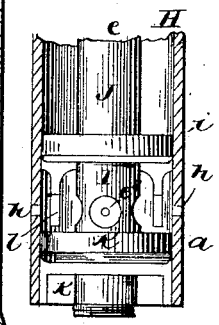
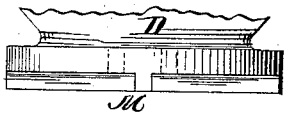


Fig. 5.



Witnesses:
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atto
Attis.

UNITED STATES PATENT OFFICE.

JOHN C. KUPFERLE, OF ST. LOUIS, MISSOURI.

FIRE-HYDRANT.

SPECIFICATION forming part of Letters Patent No. 345,790, dated July 20, 1886.

Application filed April 8, 1886. Serial No. 198,242. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. KUPFERLE, of St. Louis, Missouri, have made a new and useful Improvement in Fire-Hydrants, of which the following is a full, clear, and exact description.

The improvement relates to the waste of the hydrant; and it consists in the special means hereinafter set out and claimed, reference being had to the annexed drawings, made part of this specification, and in which—

Figure 1 is a vertical section of the lower end or foot of the hydrant, and being the portion with which the improvement is immediately connected. The main valve is shown opened and the waste closed. Fig. 2 is a similar view, the main valve being seated and the waste being opened. Fig. 3 is a vertical section of the entire hydrant, the view being upon a reduced scale and the valve being shown seated. Fig. 4 is a detail upon a larger scale than that of Figs. 1, 2, showing the interior portion of the construction; and Fig. 5 is a side elevation of the extreme lower end of the hydrant.

The same letters of reference denote the same parts.

The valve A seats at *a* against the pressure, the water entering through the inlet B into the chamber C in the lower end or foot, D, of the hydrant, and thence, when the valve A is unseated, passing upward past the valve into the upper part of the hydrant, whence it is discharged in the ordinary manner, and, as the improvement for its operation does not depend upon any special construction at the upper end of the hydrant, that part need not be specially described.

The main valve-stem E extends downward below the valve, the extension *e* being perforated longitudinally at *e'*, and the perforation extending from above the valve A downward nearly to the lower end of the stem-extension. By means of the perforations e^2 communication is constantly established between the perforation *e'* and the hydrant-chamber F above the main valve A, and by means of the perforations e^3 communication is effected between the perforation *e'* and the space G surrounding the stem-extension *e* and inclosed by the tubular plug H. This last-named part in turn is held within a chamber, I, formed in the chamber C, and, in practice, by casting it in one piece with the foot D. By means of passages *i* water can flow from within the chamber I to without the hydrant-foot. The upper end of the chamber I is closed by the plug H, which is screwed into the upper end of the chamber I, and is from its point of connection with the chamber I extended downward therein, so as to form an annular space, *i'*, between the plug and the shell i^2 of the chamber I.

The shell of the plug H is perforated at *h*, establishing, when the valve A is seated, communication between the space G within the plug and the annular space *i'* without the plug, the operation of the waste mechanism of the hydrant being as follows: When the main valve A is lifted to unseat it, the stem-extension *e* is drawn upward with it. The extension *e* is provided with the two upwardly-turned cup-leather valves J K, which by suitable means—such as the flange *j*, the thimble L, and the nut *k*—are attached to the extension *e*, respectively above and beneath the level of the perforations e^3. The thimble L, whose function is merely to hold the cup-leathers apart, is perforated at *l* to provide for the passage of the water from the perforations *h*. When the main valve is unseated, the stem-extension *e* is lifted sufficiently to bring the lower cup-leather, K, above the perforations *h*, and the flow of water through the perforated extension *e* is arrested; but when the main valve is seated the cup-leather K is beneath and the cup-leather J is above the level of the perforations *h*, and the water now wastes from the chamber F through the perforated stem-extension into the space G, and thence into the annular space *i'*, as indicated in Fig. 2, and from the chamber I the water escapes through the passages *i* to without the hydrant.

An additional feature of the improvement is the projection M upon the bottom of the hydrant. This projection, which is preferably in the form of a cross, serves to raise the hydrant (which in practice is usually rested upon a stone or similar bearing in the ground) from the support beneath, so as to provide openings beneath the shell of the hydrant, and thereby facilitate the discharge therefrom of the waste water. The upper cup-leather, J, prevents the escape of the water from the chamber C through the plug H and perforations *h* into the chamber I.

By reference to Fig. 1 of the drawings it

will be observed that the valve is unseated and that the cup-leathers on the lower end of the hollow valve-stem are above the perforations in the shell i^2, and that all communication between the chamber F and the perforations or passages i is cut off by the cup-leathers, thus leaving the water free to flow from the main supply spout or inlet B up through the chambers C and F; and by reference to Fig. 2 it will be observed that the valve A is seated and that communication is established between the chamber F and the perforations i, and that the water can flow freely through the perforations e^2 down through the hollow valve-stem and out through the perforations in the hollow valve-stem, which register with corresponding perforations in the shell i^2, and thence down through the annular space below and around the hollow valve-stem, through the perforations i, out of the hydrant. Thus the waste water is carried away from the chamber F down through the passages i as soon as the valve A is seated and the supply of water from the main cut off.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A hydrant provided with a chamber at its bottom in front of the entrance to the main, and having within this chamber an upwardly-projecting shell provided with a secondary perforated shell, which receives the hollow stem, in combination with a hollow stem imperforate at its bottom and carrying a valve, and having a cup-leather which cuts off communication between the chamber in the top of the hydrant and the waste-openings in the bottom of the hydrant, substantially as described, whereby when the valve is unseated and the water allowed to flow freely through the hydrant out of the main when the waste is cut off, and whereby communication is established between the upper chamber of the hydrant and the lower waste-perforations as soon as the valve is seated or closed, substantially as and for the purposes specified.

2. The combination of a hydrant provided with a chamber at its bottom in front of the entrance of the main, and provided with a shell which has a secondary perforated shell secured within it, in combination with a hollow valve-stem carrying a main valve and provided with perforations above and below the valve, and also provided with cup-leathers above and below the lower perforations in the hollow stem, all constructed and combined to operate substantially as described, whereby communication between the upper chamber of the hydrant and the lower waste-perforations of the same is established when the valve is closed, and whereby communication between the upper chamber of the hydrant and the lower waste-perforations is closed as soon as the valve is open, substantially as and for the purposes specified.

3. A hydrant provided with a chamber at its bottom and in front of the entrance of the main, said chamber having a projecting shell, which is provided with a secondary perforated shell within it, said secondary shell being of less diameter than the first shell, thus providing an annular space within the first shell and around the second shell, in combination with a hollow valve-stem provided with perforations both above and below the valve, and also provided with cup-leathers to establish and cut off, respectively, communication between the upper chamber of the hydrant and the lower chamber of the same as the valve is closed and opened, all constructed and combined to operate substantially as described, whereby the waste is automatically operated as the main valve is opened and closed, as specified.

4. The hydrant provided with a chamber in its bottom or lower portion, the said chamber having a shell which is provided with a secondary perforated shell within it, in combination with a hollow valve-stem provided with perforations above and below the valve, and also having two cup-leathers secured above and below the lower perforations in the hollow valve-stem, respectively, and held in position with relation to each other and the lower perforations in the hollow valve-stem by a perforated thimble, all constructed and combined to operate substantially as described.

5. A hydrant provided with a chamber in its lower portion in front of the main, said chamber having an upwardly-projecting shell which is provided with a secondary perforated shell, in combination with a hollow valve-stem provided with perforations above and below the valve, and also having two cup-leathers which are separated by a thimble, and having a nut which secures the cup-leathers and the thimble in place and holds them in their relative positions, substantially as described.

6. The combination of the hydrant provided with a chamber at its bottom in front of the entrance to the main, and provided with a shell which is perforated at its bottom, and which is also provided with a T-shaped projection, M, below the perforations in the bottom of the shell, and having a secondary perforated shell secured within the first shell, in combination with the hollow valve-stem carrying a main valve and provided with perforations above and below this valve, and also provided with cup-leathers above and below the lower perforations in the hollow valve-stem, all constructed and combined to operate substantially as described, whereby the waste water is allowed to escape from the hydrant and the hydrant is elevated from its support by the said projection M, to facilitate the outward flow of the waste water, as and for the purposes specified.

Witness my hand.

JOHN C. KUPFERLE.

Witnesses:
C. D. MOODY,
B. F. REX.