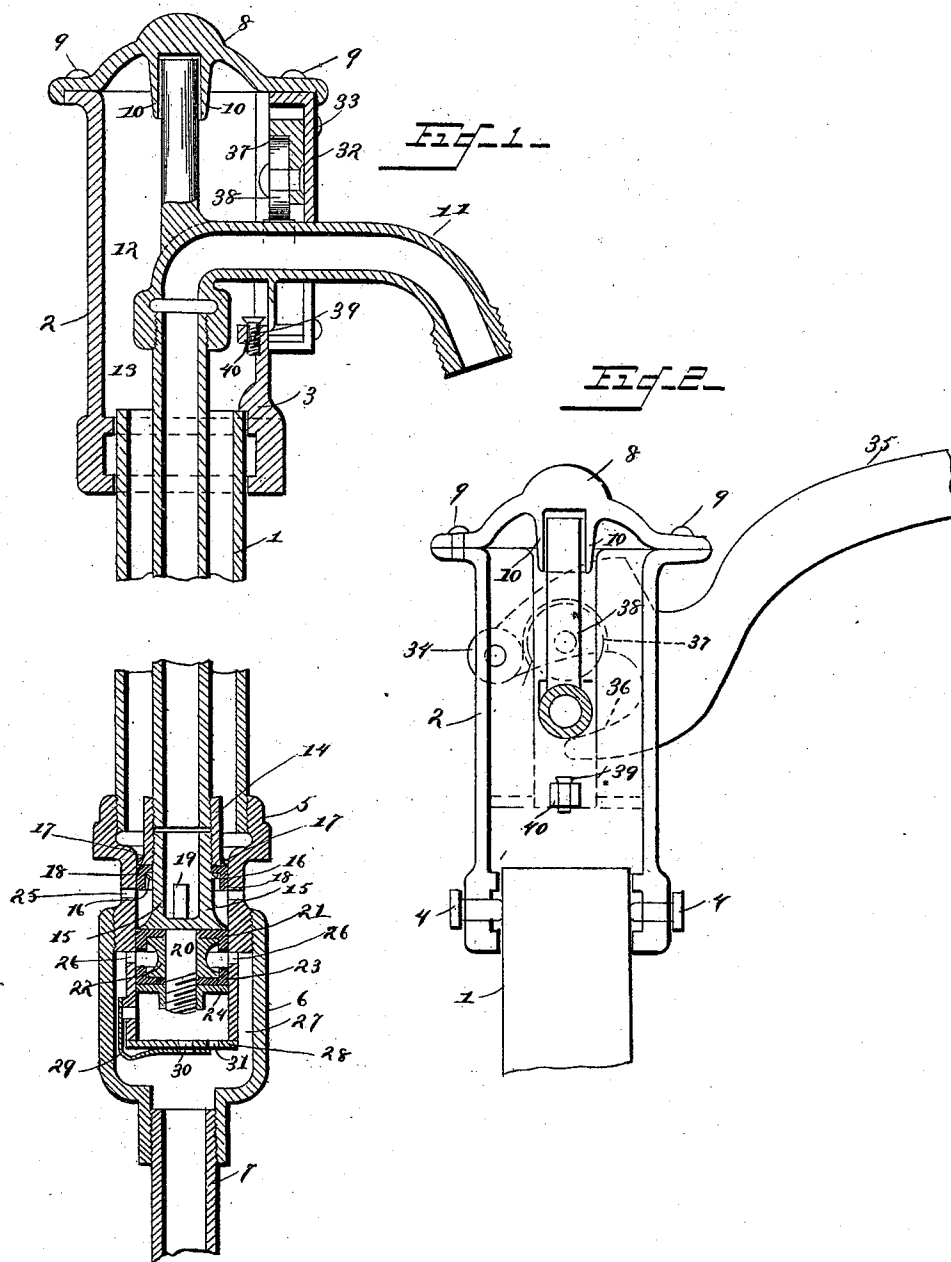


(No Model.)

J. DOWLING.
HYDRANT.

No. 417,633.

Patented Dec. 17, 1889.



Witnesses

Geo. C. French.

Wm. Bagger

Inventor

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By *his* Attorneys,

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UNITED STATES PATENT OFFICE.

JOHN DOWLING, OF WILKES-BARRÉ, PENNSYLVANIA, ASSIGNOR TO THE WILKES-BARRÉ SELF-CLOSING HYDRANT COMPANY, (LIMITED,) OF SAME PLACE.

HYDRANT.

SPECIFICATION forming part of Letters Patent No. 417,633, dated December 17, 1889.

Application filed June 14, 1889. Serial No. 314,192. (No model.)

To all whom it may concern:

Be it known that I, JOHN DOWLING, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Hydrant, of which the following is a specification.

This invention relates to certain improvements in that class of hydrants which are employed to furnish water for domestic and other purposes in connection with the ordinary water-supply of cities and other places where the system of water-distribution is under pressure.

A difficulty has heretofore been experienced in the construction of automatic hydrants by the sudden jar or shock, technically termed the "water-hammer," which is caused by the sudden cutting off of the flow of water, which reacts with a destructive force against the interior walls of the service-pipes.

The object of my invention is to obviate these difficulties by constructing the operative parts of the hydrant in such a manner that the automatic closing of the valve is so gradual that the flow of the water is cut off without causing that reactive strain on the service-pipe which has been so destructive to the pipes and injurious to all the parts of the hydrant.

The purposes of my invention are accomplished by the improved construction, arrangement, and combination of parts which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a vertical sectional view of my improved hydrant, the movable parts being shown in raised position and the water cut off. Fig. 2 is a side elevation, the side or covering plate of the head or casing having been removed for the purpose of showing the interior construction.

Similar numerals of reference indicate corresponding parts.

1 designates the stock, which may consist of a metallic pipe of any suitable dimensions. The head or upper casing 2 is constructed of cast metal, and is provided with an interiorly located stop 3, which rests upon the upper end of the stock when the head is placed in

position upon the latter, said head being retained by means of set-screws 4, inserted through opposite sides of the same.

The stock 1 has an external thread on its lower end, which is screwed into the chamber or cylinder 5, the lower end of which is also provided with an external thread, by means of which it is connected with a cup-shaped chamber 6, the lower end of which is in turn connected with the service-pipe 7.

The head 2 is provided with a cap 8, attached by means of bolts 9, and having on its under side an annular flange 10.

11 is the discharge-spout, which is provided at its inner end with an internally-threaded extension 12, with which the upper end of the discharge-pipe 13 is connected. The spout 11 is also provided at its inner end with an upward extension 14, moving vertically in and guided by the annular flange 10 of the cap-piece 8. The outer end of the discharge-spout may be externally threaded, as shown, for the attachment of a hose for sprinkling or other purposes. The front side of the chamber or head 2 is slotted to admit of the vertical movement of the spout and its attachments.

The lower end of the discharge-pipe 13 is attached to the valve by means of an internally-threaded thimble 14. This thimble is screwed over a male threaded chamber 15, having a flange or bead 16 at the lower end of its thread. Between this flange and a corresponding flange 17 on the thimble 14 is placed a cup-shaped leather washer 18. The chamber 15 is provided with a vertical inlet-slot 19, and it has at its closed lower end a stud 20, extending downwardly and threaded on its lower end. Over this stud is placed first a cup-shaped leather washer 21, next a peripherally-grooved sleeve 22, next a cup-shaped leather washer 23, and finally a flanged nut 24, which is screwed tightly onto the stud, thus holding all the parts rigidly in place. The washer 18 serves to open and close the waste-openings 25, formed in the walls of the cylinder 5, the washer 21 serves to open and close the inlet-ports 26, and the washer 23 acts as a balancing-piston. It will be observed that the waste-openings 25 are formed in the walls of the cylinder at a point above its con-

nection with the cup-shaped basin 6, which is connected to the service-pipe. Within said basin the exterior diameter of the cylinder is somewhat reduced, so as to leave a water space or passage 27 between the wall of the said basin and that of the cylinder, and it is at a point within said basin that the inlet-ports 26 are formed in the walls of the cylinder.

The lower end of the cylinder is closed by a metallic plate 28, which is ground so as to fit tightly, and which is held in place against the lower end of the cylinder by the pressure of a light metallic spring 29, which may be bolted to one side of the cylinder or otherwise suitably arranged. A rivet 30 secures the valve-plate 28 to the spring 29, and the said valve-plate is provided with a small vent-opening 31.

It will be observed that the water from the service-pipe enters the basin or chamber 6, thus allowing the water from the main to circulate freely both inside and around the cylinder from the washer 21 and downwardly. When the discharge-pipe, with its attachments, is in a raised position, as shown in Fig. 1 of the drawings, the washer 21 cuts off communication between the main or service-pipe and the inlet-slot 19 of the discharge-pipe. When the discharge-pipe, with its attachments, is forced in a downward direction, the bottom plate or valve 28 is thrown open against the tension of the spring 29 and the water contained in the cylinder below the washer 23 is displaced. At the same time the washer 21 is carried below the inlet-ports 26, thus establishing communication below the latter and the inlet-slots 19 of the discharge-pipe, while the washer 18 is carried below the waste-openings 25, thus cutting off communication between the latter and the said inlet-port 19. The water, it will be observed, is thus permitted to flow from the service-pipe 7 through the passage 27 and inlet-ports 26 and to circulate around the chamber 15, from whence it enters the discharge-pipe through the slot 19 and is permitted to escape through the spout. When downward pressure upon the discharge-pipe is removed, or when the latter is raised, it will be seen that the tendency of the piston formed by the washer 23 is to create a vacuum in the lower end of the cylinder. The lower end of said cylinder being closed by the plate 28 and spring 29, it is only through the vent-opening 31 that said vacuum may be filled by the inflowing water from the service-pipe, and it is evident that by regulating the size of said vent-opening the speed with which the discharge-pipe and its piston attachment are raised may be governed. The cutting off of the water being thus regulated, the force of the water-hammer is broken, and injury to the service-pipes, as well as to the component parts of the hydrant, is avoided.

The front or covering plate 32 of the head or casing 2 is secured in position detachably by means of bolts 33, and it is provided on

its inner side with a pin 34, upon which is pivotally mounted an operating-lever 35, having a hook 36, which embraces the spout 11, which latter, with the discharge-pipe to which it is attached, may be raised or lowered by the operation of said lever. The latter is provided on its inner side with a recess 37, in which is mounted a friction-roller 38, bearing against the upper side of the spout 11, so as to avoid friction in the operation of the latter with its attachments. The upward extension 14 of the spout, which is guided within the flange 10, serves to maintain the spout and the discharge-pipe in true position when in operation.

39 designates a set-screw, which is vertically adjustable in a lug 40, formed in the head or casing 2, and access to which may be had by removing either the front or top plate of the latter. Said set-screw is arranged directly below and in the path of the spout 11, and is adapted to regulate the stroke of the piston attached to the lower end of the discharge-pipe in such a manner as to receive a greater pressure of water below the washer 21 than above said washer, thus causing the piston to be automatically raised and the water supply to be cut off when downward pressure is removed from the said discharge-pipe and its attachments.

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

1. In a hydrant, the combination of the stock, the cylinder at the lower end of the same, the vertically-movable discharge-pipe having a piston at its lower end and provided with suitable inlet-openings, and the loose downwardly-opening spring-pressed plate covering the lower end of the cylinder and having a vent-opening, substantially as set forth.

2. In a hydrant, the combination of the stock, the cylinder at the lower end of the same, having reduced lower end and provided with inlet-ports, the loose downwardly-opening spring-supported plate closing the lower end of the cylinder and having a vent-opening, the cup or basin connected to the cylinder above its reduced portion, and the service-pipe connected to the lower end of said cup or basin, substantially as set forth.

3. In a hydrant, the combination of the stock, the cylinder at the lower end of the same, having reduced lower end and provided with inlet-ports in the said reduced portion and waste-openings above the same, the cup or basin connected to said cylinder above its reduced portion and below the waste-openings, the service-pipe connected to the lower end of said cup or basin, the spring-pressed plate having a vent-opening at the lower end of the cylinder, and the vertically-movable discharge-pipe having a piston and suitable inlet-openings at its lower end, substantially as set forth.

4. In a hydrant, the combination of the stock, the cylinder at the lower end of the

same, having reduced lower end, and provided with inlet-ports in the said reduced portion and waste-openings above the same, the cup or basin connected to said cylinder
5 above its reduced portion and below the waste-openings, the service-pipe connected to the said cup or basin, the spring-pressed plate having a vent-opening at the lower end of the cylinder, and the vertically-movable discharge-pipe having a spout at its upper end
10 and provided at its lower end with a thimble, a chamber connected to said thimble and having vertical inlet-slots, a washer interposed between said thimble and chamber, a

stud extending downwardly from the closed 15 bottom of said chamber, and washers mounted upon the said stud, spaced by an annularly-grooved disk, and secured by means of a flanged clamping-nut, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses. 20

JOHN DOWLING.

Witnesses:

JOHN G. WOOD,
CAL P. KIDDER.