

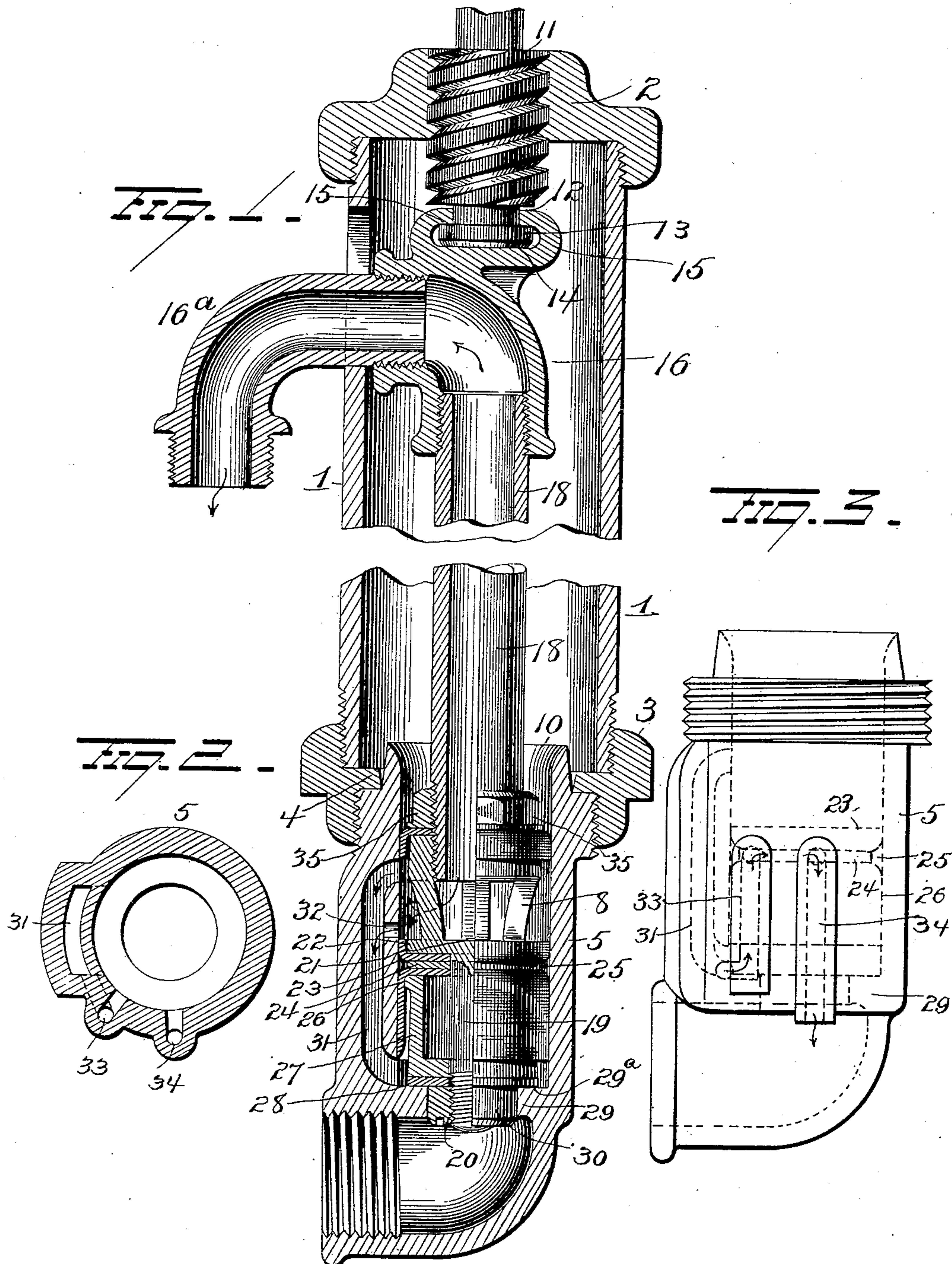
No. 630,985.

Patented Aug. 15, 1899.

J. F. MALLINCKRODT.  
HYDRANT.

(Application filed Nov. 18, 1898.)

(No Model.)



WITNESSES  
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# UNITED STATES PATENT OFFICE.

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## HYDRANT.

SPECIFICATION forming part of Letters Patent No. 630,985, dated August 15, 1899.

Application filed November 18, 1898. Serial No. 696,806. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. MALLINCKRODT, a resident of Boulder, in the county of Boulder and State of Colorado, have invented certain new and useful Improvements in Hydrants; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in hydrants, the object of the invention being to so construct a hydrant as to prevent leakage while the hydrant is turned on only partially, as is generally the case in lawn sprinkling, where a complete opening of the hydrant would allow the excessive pressure of the waterworks to burst the hose.

A further object is to provide a device of the above character which shall be simple in construction, comparatively cheap to manufacture, and most effectual when in use.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in vertical section through the hydrant; and Figs. 2 and 3 are views in section, illustrating my improved siphon.

1 represents a cylindrical casing externally screw-threaded at its upper and lower ends. A cap 2 is located on the casing and provided with a downwardly-projecting flange internally screw-threaded to mesh with the threads on the upper end of the casing 1. A ring or collar 3 is provided with internal screw-threads to mesh with the threads on the lower end of the casing 1, and said ring or collar is contracted at its lower end, so as to form a shoulder 4, and screw-threaded internally to mesh with external screw-threads on the upper end of a valve-case 5. A cup-leather turning downwardly and held in place by the lock-nut 35 screwing the leather down upon the top of the cage 8 prevents the water from escaping through the top of the casing. All water going upward must pass through the stand-pipe. The mouth of the valve-case 5 is beveled on its inner

edge, as shown at 10, whereby to form a funnel to guide the return of piston when it has been taken out to replace worn-out parts. As will be seen, the piston, with all its cup-leathers, can easily be taken out, and the funnel-shaped mouth of casing allows the replacement of piston without difficulty.

The cap 2 is provided centrally with a screw-threaded opening for the reception of a screw 11, on the upper end of which is secured any approved wheel or crank (not shown) for turning same. The lower end of the screw is provided with a peripheral groove 12 and a head 13. The head 13 is disposed in a socket 14, formed by upwardly and inwardly extending arms 15 on an elbow 16, said arms being disposed in said groove 12 in the screw, and thus the screw is swiveled to the elbow, whereby when said screw is turned it will operate to raise or lower said elbow and parts connected therewith. The hydrant-spout 16<sup>a</sup> is screwed into one end of the elbow 16, and a pipe 18 is screwed into the other end of said elbow. The tube 18 is externally screw-threaded at its lower end to mesh with internal screw-threads in the upper end of the cage or yoke 8 and nut 35. The cage 8 is provided at its lower end with a disk 21, from which a rod 19 depends, and is provided at its lower end with screw-threads 20 for the reception of a nut 30, which constitutes a plug to normally close the opening in the valve-seat 29<sup>a</sup> in the lower end of the casing 5. A leather packing-ring or cup-leather 23 is disposed on the rod 19 below the disk 21 and is made of sufficient diameter to extend outward and upward at its edge around the periphery 22 of said disk and bear against the inner face of the cylinder or valve case 5. A metallic washer 24 is disposed on the rod 19 below the leather cup-washer 23 and is smaller in diameter than the valve-case, whereby to leave an annular space or chamber 25 between the washer 24 and the valve-case for a purpose hereinafter explained. A leather packing-ring or cup-leather 26 is disposed on the rod 19 and is made of sufficient diameter to extend outward to the inner face of the cylinder and downward at its edge. It is held in place by a hollow cup-shaped piston 27, which is preferably open at its upper end, as



shown, and closed at its lower end and is provided on its lower end with a suitable flat leather washer 28. The packing-cups 23 and 26, washers 24 and 28, and piston 27 are held properly in place by means of the nut 30.

The plug 30 is an important feature of my invention, as will be hereinafter more fully explained.

The valve-case 5 is provided with a passage or port 31, which communicates with the valve-casing at its lower end just above the contracted portion 29 and communicates at its upper end with the valve-case above the valve.

A duct 32 connects the chamber above the valve 27 with the passage 31, between the ends of the latter, for a purpose hereinafter explained. A pipe or duct 33 communicates at its lower end with the lower end of the passage 31, and at its upper end said pipe or duct is adapted to normally communicate with the annular space or chamber between the leather packing-rings 23 and 26 of the piston or valve when said piston or valve is in its lowest or closed position. A pipe or duct 34 also communicates at a point between the annular space or chamber 25 and extends downwardly and opens at its lower end into the space outside the valve-case, allowing the water to discharge into the ground.

The operation of my improved hydrant is as follows: When it is desired to turn on the supply of water, the screw 11 is turned, which will raise the piston or valve 27 and permit the water to pass up through the passage 31, through the cage or yoke 8, and thence out through the spout 17.

The great difficulty with hydrants now on the market is that they leak through the waste-water escape unless the hydrant-valve is wide open. In cities where the pressure ranges from seventy-five to one hundred and twenty-five pounds per square inch the hose used for sprinkling lawns would burst if they were subjected to the full pressure of the water, and hence the hydrant is only partially turned on. This partial opening of the valve allows a constant leak under pressure, so that in a few days the ground will become saturated. This saturation leads to unsanitary conditions in summer and frozen hydrants in winter. To obviate these difficulties is one object of my invention, and I accomplish it by completely closing the waste-water outlet before the valve which controls the main water-supply through the hydrant is entirely opened. This result is attained by the plug 30, which will move about one-fourth of an inch (more or less) before the water will flow past the valve, and during this movement of the plug and the valve to which it is secured the waste-water outlet will be completely closed. Thus it will be seen that the valve can be opened to any desired extent after the waste-water outlet has been closed and all leakage will be obviated. When the water is turned off, it will be seen that a quantity of water will remain in the tube 18, cage or yoke 8, passage

31, and the valve-case, and the same will flow down through the passages 31 and 32 and up the passage 33 to the annular space or chamber 25, between the leather packing-rings 23 and 26 of the piston or valve 27, and thence through the passage 34 into the ground surrounding the valve-case 5. It will be seen that when the hydrant is first turned off there will remain a sufficient amount of water in the stand-pipe above the valve to start the siphon above described, and it will be understood that after the siphon is once started it will drain all the water from the hydrant.

Various slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a hydrant, the combination with a valve-casing having a valve-seat therein, of a valve having an annular peripheral chamber, two ducts adapted to communicate with said peripheral chamber, said chamber and ducts constituting a siphon to drain the hydrant when the valve is closed.

2. In a hydrant, the combination with a valve-casing having a seat therein, of a valve having a peripheral chamber, a siphon cooperating with said peripheral chamber to drain the hydrant when the valve is on its seat and means for preventing the opening of the valve before the siphon is closed.

3. In a hydrant, the combination with a valve-casing having a valve-seat therein, of a valve having a peripheral chamber, a siphon cooperating with said peripheral chamber to drain the hydrant and adapted to be closed by the valve after it leaves its seat and a plug on the valve adapted to enter the throat in the valve-seat whereby to permit the valve to close the siphon before permitting the passage of water past the valve-seat.

4. The combination in a hydrant of a valve therefor, means for operating said valve and a siphon adapted to drain the water from the stand-pipe and valve to the outside of valve after closing same.

5. The combination in a hydrant, of a valve-casing having a passage for water, a valve in said casing so constructed as to provide an annular chamber around same, two ducts adapted to communicate with said annular chamber, one of said ducts communicating at its lower end with the lower end of said water-passage and the lower end of the other duct being open.

6. In a hydrant, the combination with a casing, of a spout in said casing and protruding therefrom, a tube or stand-pipe connected to



said spout and disposed in said casing, a valve-case secured to the lower end of said casing and communicating therewith and having a passage in one side thereof, a valve in said  
5 valve-case and having packing rings or cups constantly above and below respectively, the upper end of said passage, a seat for said valve below the lower end of said passage and an extension on said valve to enter the opening  
10 in said valve-seat.

7. The combination in a hydrant, of a casing, a valve-case secured to said casing, a valve in said valve-case, a spout in said casing, a tube or stand-pipe connected to said  
15 spout, a yoke or cage secured to said tube or stand-pipe, a rod connecting said yoke and

valve, a leather washer on the upper end of said valve having its edge bent downward, a metallic washer on said leather washer, a leather washer on said metallic washer having  
20 its edge bent upward, a metallic disk above said last-mentioned leather washer, and a nut or plug on said rod adapted to secure said valve and washers together and to enter the  
25 valve-seat.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN F. MALLINCKRODT.

Witnesses:

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J. M. EUBANKS.