H. F. NEUMEYER.

SELF CLOSING YARD HYDRANT.

APPLICATION FILED NOV. 20, 1913.

1,177,437. Patented Mar. 28, 1916.

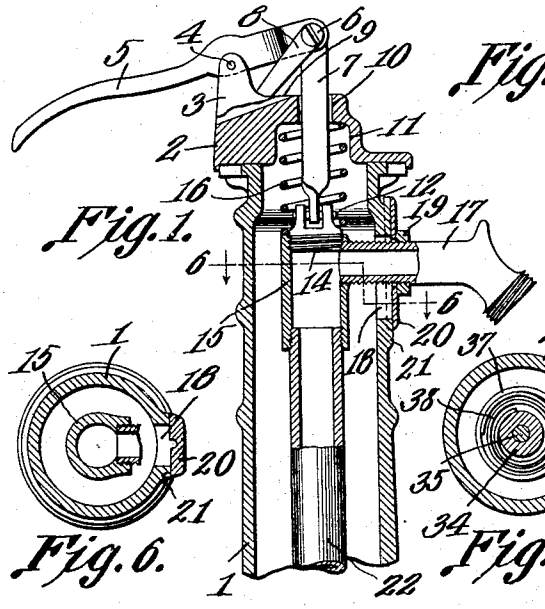


Fig. 1.

Fig. 6.

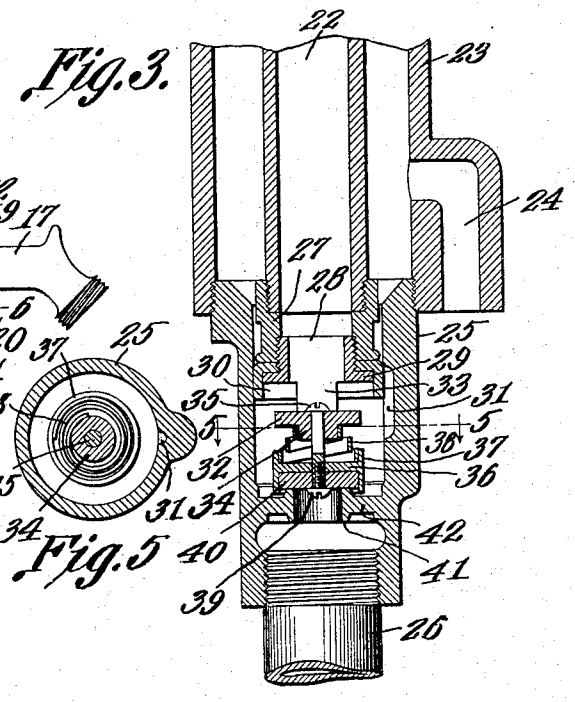


Fig. 3.

Fig. 5

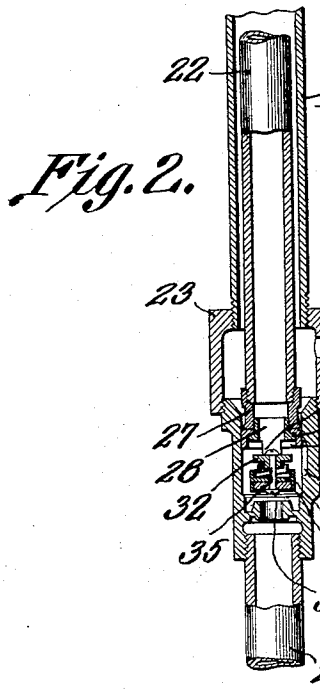


Fig. 2.

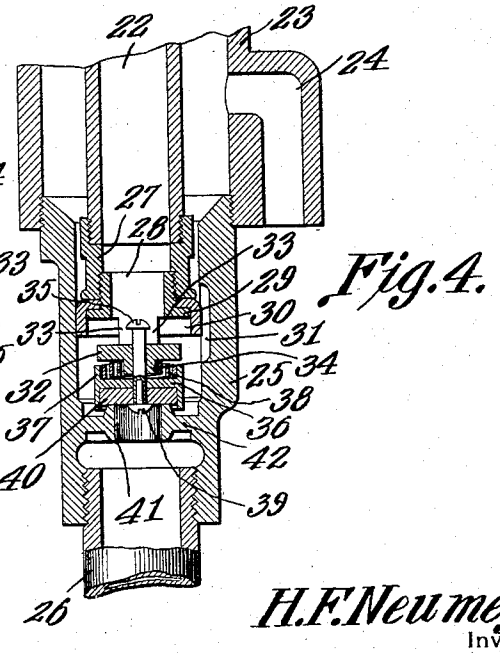


Fig. 4.

Witnesses

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SELF-CLOSING YARD-HYDRANT.

1,177,437. Specification of Letters Patent. Patented Mar. 28, 1916.

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To all whom it may concern:

Be it known that I, HORACE F. NEUMEYER, a citizen of the United States, residing at Macungie, in the county of Lehigh and State of Pennsylvania, have invented a new and useful Self-Closing Yard-Hydrant, of which the following is a specification.

One object of the present invention is to provide a hydrant which will not waste water when working under a low pressure.

Another object of the invention is to provide a hydrant of the type hereinafter described having novel means whereby, at no time, a continuous passage exists through the supply pipe, through the bypass and through the drainage opening of the hydrant.

It is within the scope of the invention to improve generally and to enhance the utility of, devices of that type to which the present invention appertains.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawing:—Figure 1 shows in vertical longitudinal section, the upper portion of a hydrant constructed in accordance with the present invention; Fig. 2 shows in vertical longitudinal section, the lower portion of the hydrant herein disclosed, the parts appearing in the positions which they will assume while the water is flowing from the source of supply through the hydrant; Fig. 3 is a vertical longitudinal section of the lower portion of the hydrant, the view depicting the parts as the same will appear at an intermediate stage and when both the bypass and the source of water supply are closed; Fig. 4 is a vertical longitudinal section of the lower portion of the hydrant, showing the parts as they will appear after the source of water supply has been cut off and after the bypass has been opened to permit a drainage of the hydrant; Fig. 5 is a cross section on the line 5—5 of Fig. 3; Fig. 6 is a cross section on the line 6—6 of Fig. 1.

In carrying out the invention there is provided a casing which is a composite structure, the casing comprising a jacket 1 to the upper end of which is secured a cap 2 having ears 3 receiving a pivot element 4 upon which is fulcrumed a lever 5 carrying at its outer end a pivot element 6 supporting a plunger 7 and supporting also a pawl 8 adapted under circumstances to be pointed out hereinafter to engage with the upper face 9 of the cap 2 but, at the will of the operator, adapted to be moved out of engagement therewith.

The plunger 7 works in an opening 10 formed in the cap 2 and below the opening 10 the cap is provided with a recess 11. By means of a pivot element 12, the lower end of the plunger 7 is connected with a plug 14, constituting a part of a conduit, the remaining elements of which will be described hereinafter. The plug 14 is threaded or otherwise secured in a coupling 15. Surrounding the plunger 7 is a compression spring 16, abutting at its lower end against the coupling 15, the upper end of the spring 16 being housed in the recess 11, and having an abutment against the cap 2. Mounted in one side of the coupling 15 is a nozzle 17, extended outwardly through a slot 18 formed in the jacket 1. Secured in place upon the nozzle 17 by means of a nut 19 or otherwise is a closure plate 20 for the slot 18, the closure plate 20 being mounted to reciprocate upon a flat table 21 formed on the outer face of the jacket 1 around the slot 18 therein.

The conduit above mentioned further includes a pipe 22, the upper end of which is threaded into the coupling 15. The lower end of the jacket 1 is threaded into a coupling 23 formed in one side with a lug containing a drainage outlet 24. Threaded into the lower end of the coupling 23 and constituting a part of the casing is a coupling 25 which may be united with a pipe 26 whereby water is delivered into the casing and into the conduit.

A sleeve 27 is threaded onto the lower end of the pipe 22 and into the sleeve 27 is threaded a bushing 28 provided with an outwardly projecting flange 29. A primary valve, preferably taking the form of a cup leather and denoted by the numeral 30 is bound between the flange 29 and the lower end of the sleeve 27. This valve 30 conforms closely to the bore of the coupling 25. In the side wall of the coupling 25 adjacent the valve 30 is formed an upright bypass groove 31. The bushing 28 includes a trans-

verse bridge 32 connected with the body portion of the bushing by upright arms 33. Upon the lower face of the bridge 32 there is a lug 34.

A secondary valve is slidably mounted in the bridge 32, and this secondary valve includes a stem 35 which is immediately received in the bridge. The secondary valve further includes a head 36 located below the bridge, the head being provided with a circumscribing flange 37 which extends above and below the head proper. The upwardly projecting portion of the flange 37 retains a spring 38, the upper end of which surrounds the lug 34 on the bridge 32. This spring 38 preferably is fashioned from a flat strip of metal formed into the shape of a cone, the longer transverse dimension of the strip being vertically disposed. By means of a screw 39 or the like which is threaded into the head 36, a resilient washer 40 is held against the bridge and within the contour of the depending portion of the flange 37. This washer 40 is adapted to coöperate with the seat 41 connected by means of a flange 42 with the coupling 25.

When the water supply to the hydrant is to be cut off, the spring 16 forces the pipe 22 downwardly and the parts appear as shown in Fig. 4. Under such circumstances, the primary valve or cup leather 30 lies between the ends of the bypass 31 and the bypass is opened. The spring 38 is put under compression and the washer 40 is held against the valve seat 41. When the parts are arranged as above described water cannot pass upwardly through the pipe 26 and through the valve seat 41, because the latter is closed by the valve 35—36—40. Any water which may have accumulated in the pipe portion 22 of the conduit, however, will flow downwardly through the bushing 28, around the edge of the cup leather, upwardly through the bypass 31, between the sleeve 27 and the wall of the coupling 25 and thence pass out of the coupling 23 by way of the drainage outlet 24. Now when it is desired to open the supply pipe 26 and to permit the water to flow out through the pipe 22 and the nozzle 17, the free outer end of the lever 5 is depressed, the plunger 7 elevating the pipe 22. Under such circumstances, the parts will first appear as shown in Fig. 3. When the pipe 22 moves upwardly, the primary valve or cup leather 30 will move upwardly, into the position shown in Fig. 3 and will cut off the upper end of the bypass 31. During this limited upward movement of the pipe 22, the spring 38 will maintain the secondary valve 35—36—40 in engagement with the seat 41, as shown in Fig. 3. Therefore, during the opening movement of the hydrant, water cannot flow directly from the pipe 26 through the seat 41, through the bypass 31 and out of the outlet 24, it being observed that the secondary valve remains on the seat 41 until the primary valve 30 has closed the bypass 31. Continued movement of the free end of the lever 5 will cause the parts to be positioned as shown in Fig. 2. As there disclosed, the primary valve 30 still cuts off the bypass 31, but the pipe 22 has been lifted sufficiently so that the washer 40 of the secondary valve no longer rests on the seat 41. Thereupon water is free to flow through the pipe 26 and out of the nozzle 17.

Considering the description of Fig. 3 conversely, from the foregoing description thereof it will be obvious that upon a closing movement, the washer 40 of the secondary valve will engage with the seat 41 before the primary valve 30 moves into an opening position with respect to the bypass 31.

Recalling the function of the spring 16 it will be obvious that water will flow through the pipe 22 and through the nozzle 17 only so long as the free end of the lever 17 is depressed. Should it be desired to secure a continuous flow through the pipe 22 and the nozzle 17, the pawl 8 is swung backwardly into the position shown in Fig. 1, the lower end of the pawl engaging with the upper end face 9 of the cap 2. In this manner, the plunger 7 and the pipe 22 will be held elevated, against the action of the spring 16 and the valves at the lower end of the hydrant will appear as shown in Fig. 2.

Having thus described the invention, what is claimed is:—

1. In a hydrant of the class described, a casing having a drainage outlet, a valve seat and a by-pass located between the outlet and the seat; a conduit mounted to slide in the casing in the direction of its length; a primary valve carried by the conduit and movable therewith to open the by-pass; a secondary valve movably supported on the conduit and coöperating with the seat; an auxiliary spring bearing against the conduit and the secondary valve to maintain the secondary valve engaged with the seat while the primary valve is moving to open the by-pass, and to maintain the secondary valve seated while the primary valve is moving to close the by-pass; and spring means assembled with the conduit and the casing to move the conduit, the said spring means serving to overcome the effort of the auxiliary spring and serving to overcome the friction between the primary valve and the casing.

2. In a hydrant of the class described, a casing provided adjacent its top with a slot and provided adjacent its bottom with a drainage outlet, a valve seat, and a by-pass located between the outlet and the seat; a conduit mounted to slide in the casing in the direction of its length and having a nozzle protrud-

ing through the slot; a slot closure carried by the nozzle and engaging the casing; a primary valve carried by the conduit and movable therewith to open the by-pass; a secondary valve movably supported on the conduit and coöperating with the seat; an auxiliary spring bearing against the conduit and the secondary valve to maintain the secondary valve engaged with the seat while the primary valve is moving to open the by-pass and to maintain the secondary valve seated while the primary valve is moving to close the by-pass; and a spring assembled with the casing and the conduit, the said spring constituting a means for overcoming friction between the slot closure and the casing and the friction between the primary valve and the casing, and the effort of the auxiliary spring.

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

HORACE FALK NEUMEYER.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."