Aug. 5, 1952 J. H. SCHMID ET AL 2,605,781

HYDRANT

Filed Sept. 23, 1946 2 SHEETS—SHEET 1

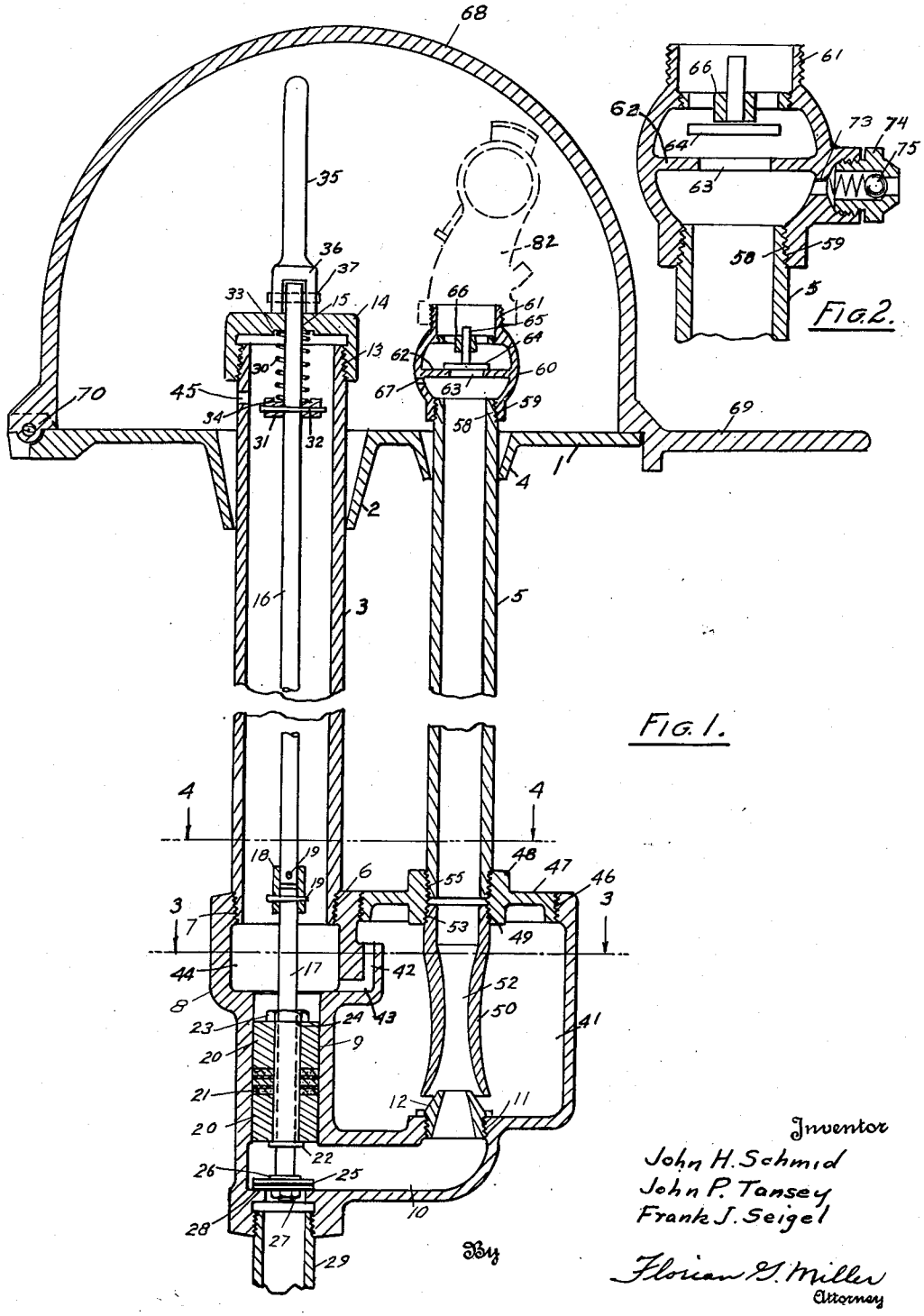


FIG. 1.

FIG. 2.

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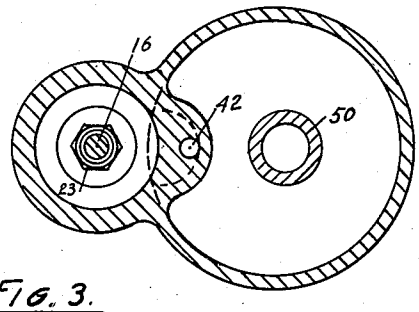


FIG. 3.

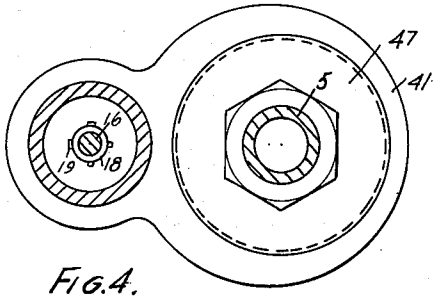


FIG. 4.

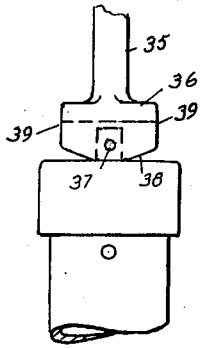


FIG. 5.

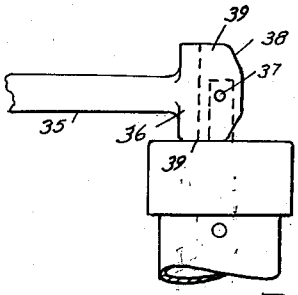


FIG. 6.

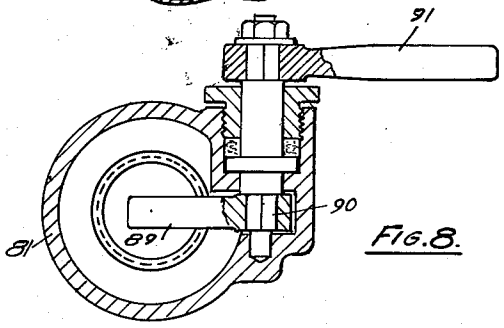


FIG. 8.

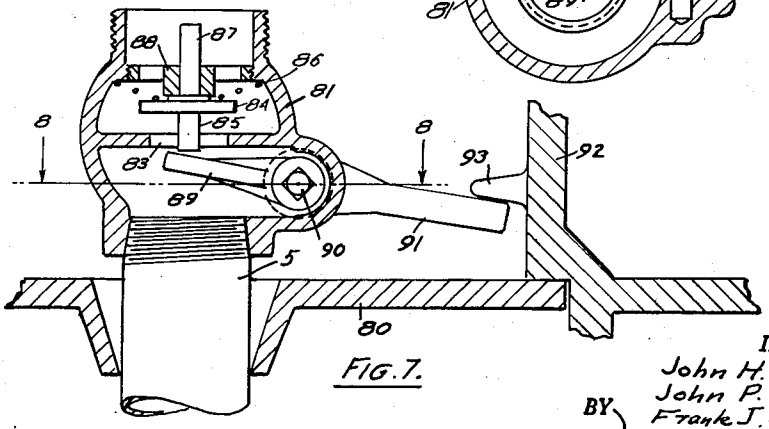


FIG. 7.

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UNITED STATES PATENT OFFICE

2,605,781

HYDRANT

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Application September 23, 1946, Serial No. 698,831

2 Claims. (Cl. 137—282)

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This invention relates generally to hydrants and more particularly to hydrants of the non-freezing type.

Conventional hydrants of the anti-freeze type utilize various means of draining water from the column leading to the spout at or near the base of the column. These hydrants require a porous filling at the base of the hydrant, thereby requiring the valve in the hydrant to be located a greater distance below the surface of the ground. In these prior devices there has been siphonage of waste water into the water column when a reduced pressure or vacuum occurred in the water column or in the hydrant supply line.

It is, accordingly, an object of our invention to overcome the above and other defects in non-freezing hydrants, and it is more particularly an object of our invention to provide a non-freezing hydrant which is simple in construction, easy to install, economical in manufacture, economical in cost, and efficient in operation.

Another object of our invention is to provide a non-freezing hydrant which requires no drain or other connection to the outside thereof, thereby eliminating any chance for cross connection between a drainage line or water and supply line.

Another object of our invention is to provide a non-freezing hydrant utilizing an ejector.

Another object of our invention is to provide novel means for mounting the water column of a non-freezing hydrant a sufficient distance below the ground to prevent freezing.

Other objects of our invention will become evident from the following detailed description, taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a vertical sectional view illustrating an embodiment of our novel non-freezing hydrant;

Fig. 2 is a fragmentary vertical sectional view showing a check valve in the vent opening in the water column;

Fig. 3 is a view taken on the line 3—3 of Fig. 1;

Fig. 4 is a view taken on the line 4—4 of Fig. 1;

Fig. 5 is a fragmentary side elevational view of the cam lever in a position to close the valve in our novel hydrant;

Fig. 6 is a fragmentary side elevational view of the cam lever in a position to open the valve in our novel non-freezing hydrant;

Fig. 7 is a fragmentary sectional view showing a modified form of our novel non-freezing hydrant; and

Fig. 8 is a view taken on the line 8—8 of Fig. 7.

Referring now to the drawings, Fig. 1 shows a

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base plate 1 having a depending flanged portion 2 for receiving a valve sleeve 3 and a depending flanged portion 4 for receiving a water column 5. The base plate 1 is preferably disposed substantially at the ground surface. The valve sleeve 3 has a threaded portion 6 on the lower end thereof for threadably engaging the internally threaded portion 7 of fitting 8 having a vertically disposed aperture 9 in axial alignment with the sleeve 3, and a second aperture 10 leading to a threaded aperture 11 for threadably engaging a threaded nozzle 12. The upper end of the sleeve 3 is threaded at 13 for threadably engaging an internally threaded flanged cap member 14 having a centrally disposed aperture 15 for receiving a rod 16 which extends along the axis of the sleeve 3 downwardly therethrough. The lower end of the rod 16 is engaged to valve stem 17 by means of sleeve 18 and pins 19. Cylindrically shaped washers 20 having intermediate sealing washers 21 are disposed on the stem 17 between collar 22 and a nut 23 engaging threaded portion 24 of the stem 17. The washers 21 seal the aperture 9 in fitting 8 and prevent passage of water therethrough. The lower end of the stem 17 has a seating member 25 disposed between collar 26 and a nut 27 threadably engaging the lower threaded end of the stem 17. The seating member 25 seats on seating portion 28 of the member 8 and seals the aperture 10 in member 8 to the passage of water from the supply line 29. A spring member 30 surrounding the shaft 16 is disposed on the upper end of the rod 16 between the cap member 14 and a collar 31 attached to the shaft 16 by a pin 32. The flanged member 14 and the collar 31 have recesses 33 and 34, respectively, for nesting the ends of the spring 30. A cam lever 35 shown more particularly in Figs. 5 and 6 has a bifurcated end 36, which is pivotally attached to the upper end of the rod 16 by a pin 37. The bottom surface 38 of the cam lever 35 is a predetermined distance from the horizontally extending pin 37, so that the seating member 25 seats on the seating surface 28 of the member 8 to prevent the flow of supply water when the bottom surface 38 of the cam lever 35 is in engagement with the cap member 14. When the cam lever 35 is moved in either direction a distance of 90 degrees to a position shown in Fig. 6, one side surface 39 of the bifurcated end 36 of the cam lever 35 engages the top of the cap member 14. Inasmuch as the side surface 39 of the bifurcated end 36 of the cam lever 35 is a greater distance from the pin 37 than the bottom surface 38 of the

bifurcated end 36 of the cam lever 35, the seating member 25 moves away from the seating surface 28 of the member 8 and permits the passage of supply water through the aperture 10 of the member 8.

The fitting 8 has a surge chamber 41 formed therein with aperture 11 and nozzle 12 disposed axially thereof. The surge chamber 41 has a vertically extending apertured portion 42 internally on one side and near the top side thereof for bleeding air to or from the surge chamber 41. The lower end of the apertured portion 42 has an aperture 43 leading into chamber 44 in the fitting 8. It will thus be evident that air passing from the surge tank 41 will pass through the apertured portion 42 thereof, through aperture 43 and chamber 44 to the interior of the valve sleeve 3. Valve sleeve 3 has a small air vent 45 near the top thereof. The surge chamber 41 has the upper internal portion thereof threaded at 46 for threadably engaging flanged externally threaded cap member 47. The cap member 47 has a flanged portion 48 disposed centrally thereof with internal threads 49 for threadably engaging an arcuate shaped member 50 having an arcuate shaped centrally disposed aperture 52 axially aligned with the nozzle member 12. The lower end of the member 50 extends a sufficient distance below the upper end of the nozzle member 12 to provide changes of pressure (Venturi effect) as water passes through the nozzle member 12 to the arcuate shaped member 50. The upper end of the arcuate shaped member 50 has a threaded portion 53 for threadably engaging the threads 49 in the cap member 47. The lower end of the water column 5 has threads 55 for threadably engaging the threads 49 in the cap member 47. The upper end of the sleeve 5 has threads 58 for threadably engaging the threaded flanged portion 59 of globular member 60. The upper end of the member 60 has external threads 61 for connection to any conventional hose coupling member such as coupling member 82 shown in dotted lines. The member 60 has a dividing wall 62 with a centrally disposed aperture 63 adapted to be closed by a check valve 64 when there is no flow of water to the hose coupling 82. The check valve 64 has a stem 65 journalled in apertured web 66 disposed in the upper part of the member 60. An air vent 67 is provided in the member 60 to permit air to be bled from the member 60 and column 5. In Fig. 2, I have shown the globular member 60 with an air vent 73, and a check valve member 74 with a spring-urged ball member 75 therein.

In operation, when my novel non-freezing hydrant is in a position as shown in Fig. 1, water is disposed in the surge tank 41 up to the top, or substantially the top of the vent member 42. When the cam lever 35 is rotated 90 degrees, valve seat 25 is lifted from the seat 28 of the fitting 8 wherein water passes through branch 10 of the fitting 8, through nozzle 12, member 50 and water column 5 and out through hose connection 82. When water passes through the nozzle 12 and arcuate shaped member 50 a Venturi effect results whereby water is drawn from the surge chamber 41 up through the water column 5 to the hose connection 82, thereby leaving the surge chamber 41 in a substantially evacuated condition. When it is desired to shut off the supply of water, the cam lever 35 is raised to an upright position as shown in Fig. 1 whereby the seating member 25 seats on the seat 28 of the fitting 8 to shut off the supply of water from the supply line 29. The check valve 64 then seats on the wall member 62 to stop the back flow of water from the hose connection 82 whereby water in the water column 5 passes downwardly and disposes in the surge chamber 41 which is below the frost line. Air is vented from the surge chamber 41 to the vent 42 and a vent 43 to the valve sleeve 3 which also has a vent 45. It will be evident that no vent is absolutely required in the surge chamber 41 in order for our novel invention to function efficiently in that when water is withdrawn by the nozzle 12 and arcuate shaped member 50 from the surge chamber 41, vacuum would be produced in the surge chamber 41 if there were no air vent thereby assisting to return water to the surge chamber 41 when water ceases to pass through the nozzle 12.

It will be evident that the nozzle 12, and arcuate shaped member 50 may take many different forms and the surge chamber 41 need not necessarily be a part of the fitting 8. The surge chamber 41 is preferably disposed below the frost line and is large enough to contain all water in water column 5.

In Figs. 7 and 8, we show a modified form of globular valve on the upper end of the fluid supply line 5. The globular member 81 has an apertured central wall portion 83 for seating a check valve 84 with a downwardly extending stem 85 and an upwardly extending stem 87 journalled in web 88. A spring member 86 urges the check valve 84 in sealing relationship with the apertured wall portion 83 of the globular member 81. A lever 89 pivoted at 90 has an outwardly extending lever arm 91 for engagement with an outwardly extending lug 93 on the cover member 92 disposed on the base member 80. It will thus be evident that when the cover 92 is closed, the check valve 84 will be forced upwardly by the lever 89 through the engaging lug 93 causing the fluid in fluid line 5 to be forced below the frost line and into the surge chamber 41.

It will be evident from the foregoing that we have provided a novel non-freezing hydrant which requires no outside drainage connections thereby requiring no loose fill around the base of the hydrant, which is efficient in operation, and which prevents any cross connection between a sewer line or sub-surface seepage water and a supply water line.

Various changes may be made in the present embodiment of our invention without departing from the spirit thereof, or from the scope of the appended claims.

What we claim is:

1. A non-freezing hydrant comprising a unitary fitting adapted to be disposed below the frost line of the earth having an inlet aperture in the bottom portion thereof and a laterally offset outlet aperture in an upper portion thereof, an open surge chamber concentrically disposed above said outlet aperture and having the upper portion thereof internally threaded, a valve chamber concentrically aligned with said inlet aperture, a passageway between said surge chamber and said valve chamber a predetermined distance above the bottom of said surge chamber for venting said surge chamber to said valve chamber, a disc type valve movable in said valve chamber for opening and closing the inlet aperture in said fitting to control the flow of fluid between said inlet and outlet apertures therein, a cylindrical valve casing concentric with said

valve chamber and extending upwardly therefrom to the surface of the earth, a valve rod extending through said valve casing and attached to said disc type valve, means for reciprocating said valve and valve rod, a quickly detachable jet member disposed in the outlet aperture of said fitting and the bottom of said surge chamber, a skirt member spaced from and concentrically aligned with said jet member in said surge tank, an externally threaded cover to which said skirt member is connected threadably engaged with the internally threaded portion of said surge chamber of said fitting, means for adjusting said skirt member vertically with reference to said jet member, and a conduit connected to said cover concentrically aligned with said ejector member and said skirted member for the flow of fluid to a point extending above the surface of the earth.

2. A non-freezing hydrant comprising a unitary fitting adapted to be disposed below the frost line of the earth having an inlet aperture in the bottom portion thereof and a laterally offset outlet aperture in the upper portion thereof and a passageway therebetween for fluid, an open surge chamber concentrically disposed above said outlet aperture and having the upper portion thereof internally threaded, a valve chamber concentrically aligned with said inlet aperture, a common wall between said surge chamber and said valve chamber having an offset aperture in the upper portion thereof for venting said surge chamber to said valve chamber, said offset aperture being spaced a predetermined distance above the bottom of said surge chamber, a disk type valve movable in said valve chamber for opening and closing the inlet aperture in said fitting to control the flow of fluid between said inlet and said outlet apertures therein, a valve stem on said valve extending through said valve chamber, a guiding member surrounding said valve stem and movable in said valve chamber and in sealed relationship with the inner side

thereof, a handle for reciprocating said valve and valve stem, a quickly detachable jet member disposed in the outlet aperture of said fitting in the bottom of said surge chamber, a skirt member spaced from and concentrically aligned with said jet member in said surge chamber, an eccentrically threaded cover to which said skirt member is connected threadably engaged with the internally threaded portion of said surge chamber of said fitting, means for adjusting said skirt member vertically relative to said jet member, and a conduit connected to said cover concentrically aligned with said jet member and said skirt member for the flow of fluid to a point extending above the surface of the earth.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
109,553	Schriber	Nov. 22, 1870
113,216	Smith	Mar. 28, 1871
174,181	Bailey	Feb. 29, 1876
436,932	Best	Sept. 23, 1890
1,154,582	Hollowell	Sept. 21, 1915
1,648,238	Modra	Nov. 8, 1927
2,097,733	Miller	Nov. 2, 1937

FOREIGN PATENTS

Number	Country	Date
3,643	Sweden	of 1892
5,393	Austria	of 1901
5,396	Great Britain	of 1896
7,520	Germany	of 1879
10,134	Denmark	of 1907
25,156	Germany	of 1882
236,645	Germany	of 1911
379,282	France	of 1907