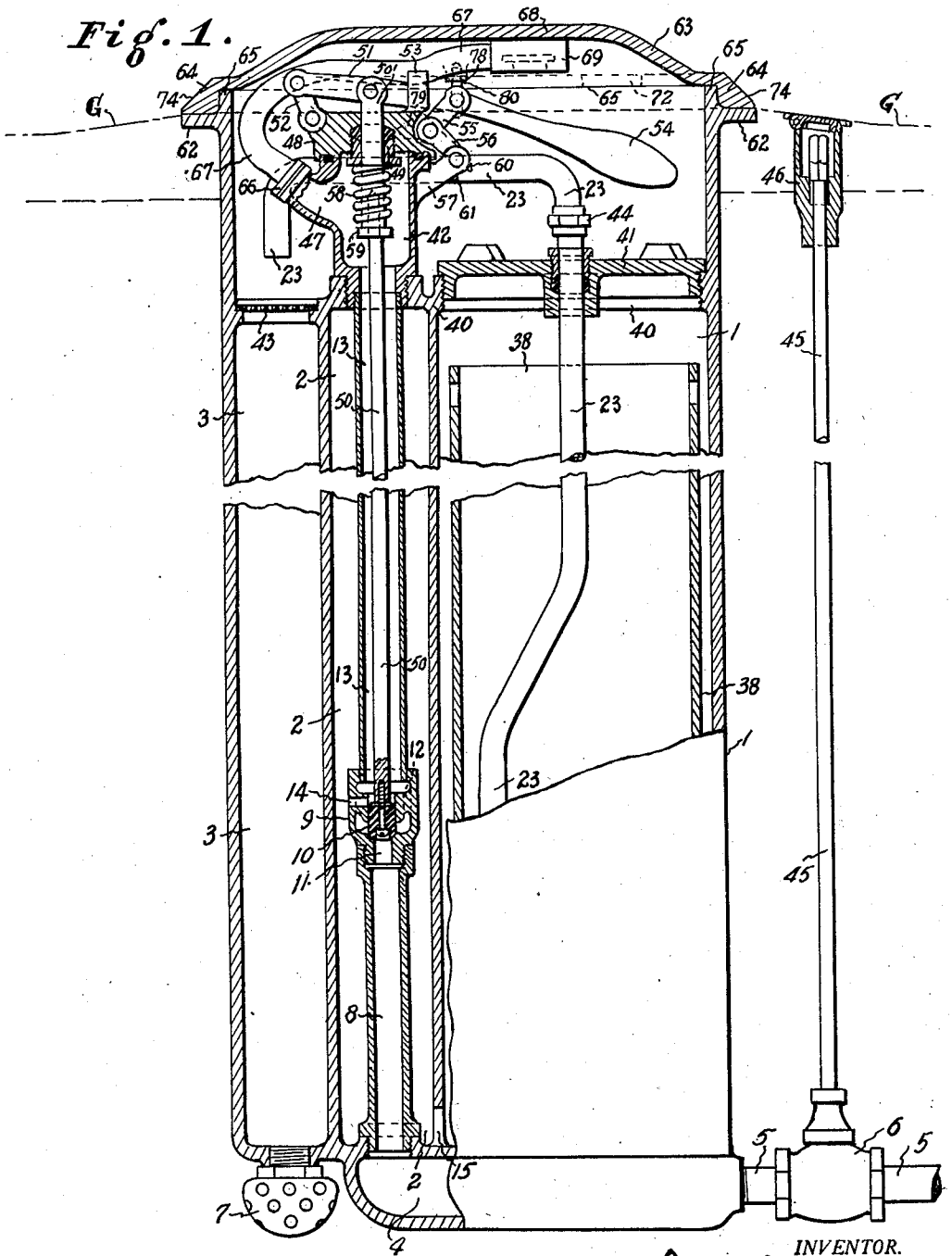
March 30, 1948. J. T. McGARRY 2,438,815

WATER SERVICE APPARATUS

Filed April 4, 1944 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

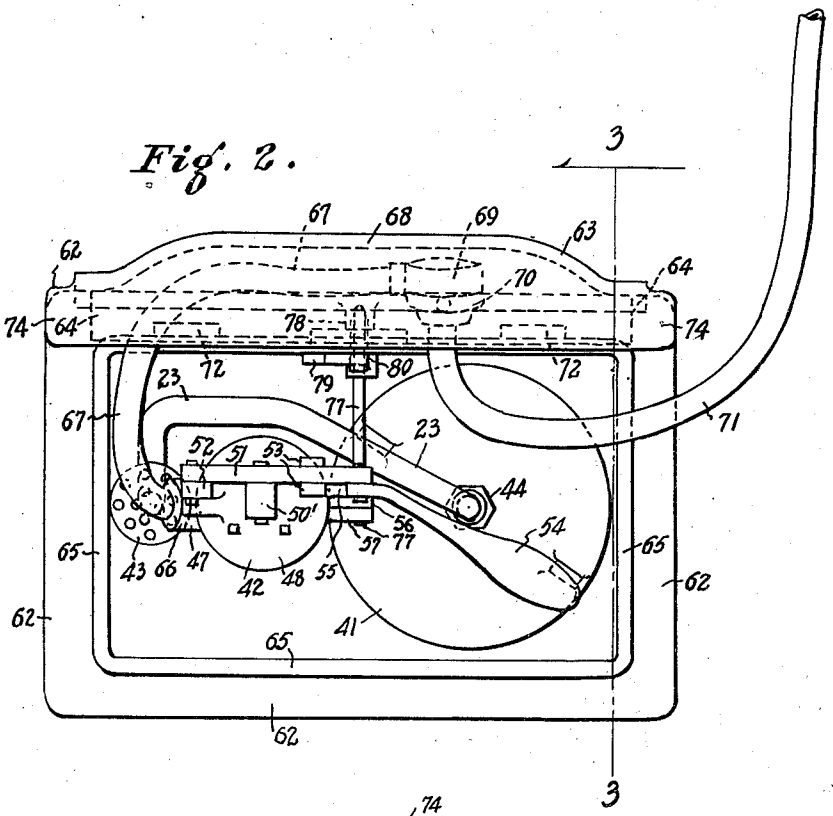
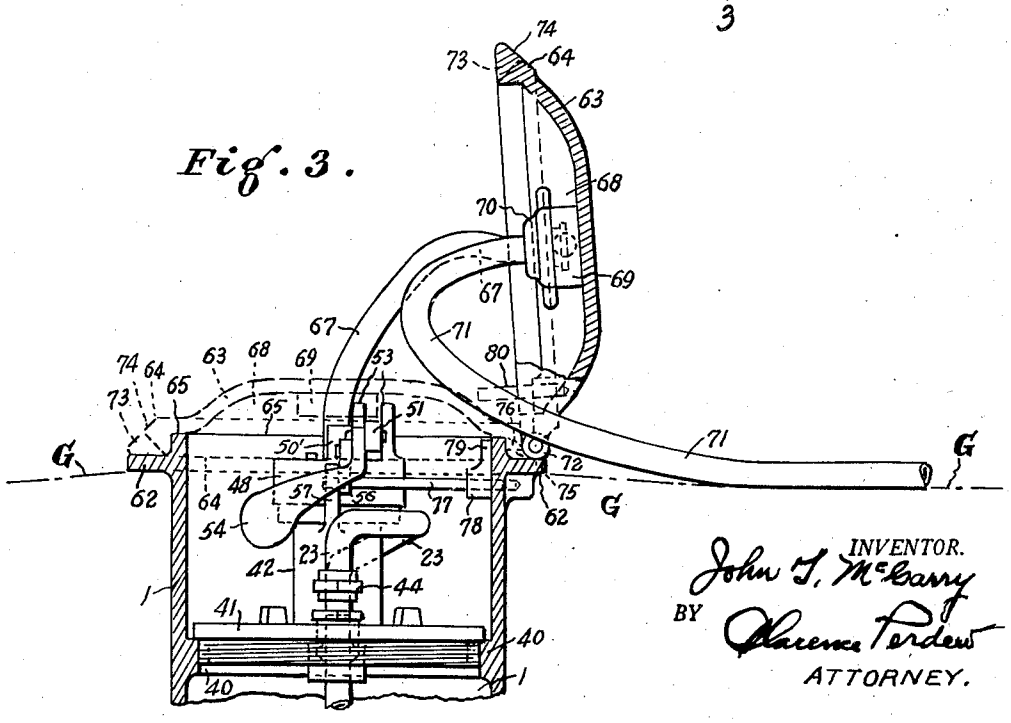


Fig. 3.



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WATER SERVICE APPARATUS

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Application April 4, 1944, Serial No. 529,485

6 Claims. (Cl. 137—13)

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My invention relates to hydrants and the like, and more especially to those of the type in which the outlet, spout, or hose connection is positioned nearly at ground level in a box or the like having a lid which is opened for access to the spout for connection of the hose, and is kept closed normally to exclude foreign substances from the spout or hose connection.

In those examples of hydrants of this type heretofore in use, so far as I am aware, the spout or part to which the hose is to be connected actually is below ground level and depends especially upon the effectiveness of the box lid when this is closed for exclusion of the substances which would pollute the spout. If its threads or other portions engaging for making the hose connection bear impurities, these are forced inside the hose to mingle with the water. Thus the water delivered by the hose, as for instance a hose delivering water to railroad trains, may be contaminated with matter that may cause widespread disease when used by the many people on the trains. Of course I am not limited to the use of my invention in railway service, though that is where it is especially important, for sanitation in the respects just noted.

An object of my invention is to dispose the hose connection means so that any impurities getting past the box lid will not contact this connection; and will be, if they are accompanied by ground water, washed from the box to a drain of some type, so that the danger of entrance of pollution at the hose connection is substantially eliminated. The operating means for opening and closing the hydrant is located also in the box, as in prior hydrants of this depressed type; and it is another object of my invention better to protect this means from contamination by impurities that may enter the box despite the lid. Such entrance is particularly liable when there is much ground water, as in a heavy rain. Other objects will appear in the course of the following description, illustrated in the accompanying drawings, in which

Figure 1 is a sectional side elevation of an entire hydrant structure selected for illustration of the relation of my invention to the other parts of the hydrant, with the box lid closed;

Fig. 2 is a plan view of the upper part shown in Fig. 1, with the box lid open, but with the main valve operating parts in their positions incident to the main valve being closed as in Fig 1; and

Fig. 3 is a vertical cross section of the same on the plane of the line 3—3 of Fig. 2.

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The lower part of the hydrant structure as illustrated in Fig. 1 is substantially the same as that disclosed and claimed in my copending application, Serial No. 524,392, filed February 29, 1944. It will be understood that I am not limited, however, to this particular lower structure which, though preferred is illustrational only; as my improved hose connecting upper structure is usable along with any one of various lower structures for the general purpose of the one here illustrated. This one is preferred because it provides for disposal of the residue of water left in the riser after closure of the hydrant, so that it will not freeze in the riser; and further, so finally disposing of the residue water that it does not again enter the riser, and that connection to a sewer is unnecessary and the risk of contamination of the riser by contamination back surging from the sewer is eliminated.

For clear understanding, this exemplary lower structure will be described in limited detail, preliminary to description of the example of my present invention associated and coordinated with this lower structure and imposing some of the details thereof as herein shown.

As herein shown, there is a unit comprising three vertically disposed chambers. The widest chamber 1 at the right contains control mechanism for emptying this chamber of water draining into it. The middle chamber 2 surrounds the riser 13. The chamber 3 at the left is to receive and dispose of the water taken from the right hand chamber. There is a fourth chamber 4 below the mechanism chamber 1 and the riser chamber 2, into the right end of which enters the water supply main 5 controlled by a stop valve 6. Leading out of the bottom of the left hand chamber 3 is the perforated bulb 7 to dissipate the water from this chamber 3 into the surrounding ground which may be rocks, not shown, in the familiar manner of drainage.

Leading up from the left end part of bottom chamber 4 is the stand pipe 8 carrying on its top the main valve casing 9 in which is the main valve 10 seating downwardly to close the passage 11 through which water goes up from the standpipe when the valve 10 is lifted from its seat to flow up through passages 12 in casing 9 into riser 13 leading up from the top of casing 9. In the left side of this casing 9 is a drain port 14 which is open when valve 10 is seated but is closed by the valve when the valve is lifted from its seat. That is, when water is stopped from flowing up through riser 13, the water remaining in the riser drains through port 14 into middle casing cham-

ber 2 that surrounds the riser. At the bottom is a communication port 15 through which the drained water may pass into the right hand chamber 1.

The right hand chamber 1 contains any suitable mechanism, not material to the present invention, adapted for operation when the level of drainage water from the riser reaches a predetermined level in chambers 1 and 2, to cause ejection of the drainage water through a discharge pipe 23 to the waste chamber 3, which relieves through the bulb 7.

To facilitate removal of all of this mechanism upward from chamber 1, for servicing the mechanism, the latter is enclosed in a displaceable tall cup 38 enclosing and supporting the mechanism. The unit has a partition 40 across it, near its upper end, forming the tops of the three chambers 1, 2 and 3 of the unit, each with an opening to the respective chamber. The opening for chamber 1 is large enough to allow passage of cup 38 and contained mechanism upward. This opening is closed by a plug disk 41 which has centrally a packing box for passage of the discharge pipe 23. The opening for the riser chamber 2 receives the spout chamber 42 which has a bottom opening receiving the upper end of riser 13. Across the opening for the left hand or drainage chamber 3 is a perforated disk or strainer 43. The top end part of discharge pipe 23 joins the main lower vertical pipe by a union 44, just above which this part curves to a horiozntal direction and it also curves around spout chamber 42 and then downward, opening over strainer 43 a substantial distance up from it. This top end part of pipe 23 of course is detached when the plug disk 23 is to be removed. The opening in the top of the middle or riser chamber 2 is a large enough to permit passage of main valve casing 9 along with riser 13 and spout chamber 42, which detaches at this opening while main valve 9 preferably detaches from standpipe 8. Before removing these parts and the mechanism in chamber 1, the stop valve 6 is closed, to confine the high pressure water in main 5; this being readily done, and valve 6 being closed after the parts are restored, by means of the elongated stem 45 extending up into a socket member 46 at ground level, in which the square end of the stem may be engaged to turn the stem.

At the left the spout chamber 42 has the upwardly curving spout 47; and the chamber has a detachable top 48 containing a stuffing box 49 through which the main valve operating rod 50 extends down centrally in riser 13 to connect with main valve 10, and up above top 48 to pivotally connect with a lever bar 51 fulcrumed at the left on a link 52 pivoted to the left edge of top 48 and at the right guided between two guides 53, parts of top 48. The handle 54 is pivoted to lever bar 51 at the right of these guides, and has a toggle arm 55 extending down from its pivot-receiving end to pivot to a lower toggle link 56 the bottom end of which pivots to an arm 57 extending from the side of and being part of spout chamber 42. Within this chamber a helical spring 58 surrounds operating rod 50 and is compressed between the gland of stuffing box 49 and a collar 59 on rod 50 which is part of the upper end section 50' of rod 50, into which the main lower section is screwed. This spring holds main valve 10 down to its seat against the high pressure water unless overcome by action of the operator by means of handle 54 and associated parts just described. The lever or handle 54 and the toggle link 56 are so proportioned and disposed that raising handle 54 straightens the toggle with powerful action on the main valve against the seating spring 58 just above described. Stop lugs 60 and 61 on the link 56 and arm 57 permit the toggle to pass slightly to left of straight vertical position, holding main valve 10 open until handle 54 is forcibly depressed, releasing spring 58.

The top part of the unit, above the partition 40, constitutes the equivalent of the usual box, so called, of prior apparatus of this general type. It extends appreciably above the ground line G which may be the top surface of a concrete railroad station platform, for instance; and it preferably has embedded in the surface material the outward flange 62 with its top surface exposed. The lid 63 is of inverted trough shape, or of dome shape, with a rim 64 that fits all around the part or rim 65 of the unit above flange 62 and down on this flange, affording a fair exclusion of matter from the box. But the fit of lid 63 is not relied upon for protecting the portions of hose connection from pollution.

Were it spout 47 that received the hose detachably, when the hose is removed and the box closed by the lid, such matter, especially liquid, getting from the ground past the lid, easily could be in part deposited on the surfaces of the spout on which the hose connection surfaces will bear upon connection. Such pollution by this would be forced into the hose interior to be taken up by the water being delivered for potable use. This liability is because spout 47 is below the upper edge of rim 65. To elevate this spout would involve increase of the height of lid 63; though it is desirable to minimize the height of the lid to avoid undue obstruction at ground line G. My invention comprises, therefore, a permanent connection 66 of an intermediate hose 67 which leads up into the dome part 68 of lid 63 to be permanently connected to one mating part 69 of a hose connector attached to the underside of the lid. As here shown, the connector, of which the other mating part 70 is seen in Figs. 2 and 3, is of a quickly operating kind, similar to couplings for air and other hose on trains. It will be understood that a screw coupling or any other suitable coupling may be used; it being the nature of my invention that one mating part is mounted up in lid 63, above the box rim 65 or place of entrance of pollution. The detachable usual hose 71 is seen connected to part 69 by its part 70, and to be of any length to reach the place of delivery of the potable water, in the usual manner.

The lid 63 has hinges 72 holding it to the box at the rear, and has a finger notch 73 on its front edge for engaging it to open it. Preferably the lid rim 64 is slanted at 74 all around its four edges, to minimize stumbling on the lid; and the sides and ends of dome part 68 also are slanted for easy passage thereover. Though not so shown it will be understood that the lid top surface may be roughened in familiar manner, to minimize slipping of persons thereon.

Preferably lid 63 does not pass the vertical in opening but leans slightly toward closing position. This better insures that the operators will close the lid than were it to reach a more rearward and lower open position; since the lid will fall closed with its heavy rim 64 forward of vertical. Each hinge 72 has a stop lug 75 to engage the top of a recess 76 in the box rim 65 as indicated in Fig. 3; so that lid 63 cannot go farther backward. In Fig. 3, the open lid is represented

by solid lines, and the closed lid is represented by broken lines.

Provision is shown for putting the closure of lid 63 under control of the operating handle or lever 54, according to the valve opening or valve closing position of the latter. The pivot pin 77 fixed in the lower toggle link 56 and turning in arm 55 is extended backward to turn in a bearing 78 in the back wall of the box, adjacent to which it has fixed on it the segment 79. Fixed in lid 63 and projecting forward in such position as to engage the segment 79 when it is raised incident to raising handle 54 to open the main valve 10, is a pin 80, for holding the lid 63 in its raised forwardly inclined open position in which it is shown. Depressing the handle 54 swings segment 79 down away from lid pin 80 so that the lid is free to close. The mode of operation is to raise the lid, holding it raised with one hand while connecting hose 71 and then raising handle 54 with the other, to open valve 10, upon which the segment and pin engagement is attained, to hold the lid open without the operator's attention. He must close main valve 10 before disconnecting hose 71; and to do so must depress handle 54, releasing the lid to fall closed if he forgets to control it by hand.

The lid is not so heavy that the operator could not get control of it if he forgets as just supposed; so that there is no serious element of danger involved. However, such slight element as is present, as liability to strike a hand not on the lid is an aid toward insuring that the operator will keep a hand on the lid while detaching hose 71 and operating the handle 54 to close main valve 10. If his hand is on the lid when it is freed to close by these acts, it is unlikely that he will forget to close the lid in the usual and proper way. This precaution against neglect to close the lid is important in connection with my provision for protecting the hose connection by the lid; since if the lid were left open, that precaution would be nullified.

By having the riser 13 protected by the management of the residue drainage water as herein first described, and having the detachable hose connection protected as just described, I have provided a hydrant of the depressed type which is sanitary in its entirety; as is logical, since any neglected precaution is substantially certain to nullify the benefits of all other precautions.

Though my invention is herein rather precisely disclosed, it will be understood that modifications in construction and operation may occur in practice, and that I am limited only within the scope of the following claims.

I claim:

1. In water service apparatus of the character described, underground water-supply means, a riser communicating with said means, a valve controlling flow up through said riser, an embedded box into which said riser enters, a lid to close said box by engaging the upper rim of the box, a detachable flexible hose connection, said lid having a raised enclosing space above the level of the box rim when the lid is closed, said hose connection being mounted on said lid within said space above the box rim, and said connection communicating with said riser.

2. A depressed water service box, a water supply means within said box, a lid to close said box at its upper rim and having a raised interior enclosing space above the level of the box rim, and hose connecting means mounted on the lid within the lid space, a flexible water conducting connection between the water supply means and the hose connecting means by which the connecting means communicates with the water supply means.

3. In water service apparatus, a box, a lid for said box, opening upwardly but limited to swing only to an upright position in which it tends to fall closed, water supply means, a valve for said supply means, mechanism to open and close said valve, and means moving respectively with said mechanism and said lid, so mutually engageable and disengageable that when the mechanism is operated to open the valve the lid is sustained in open position, and when the mechanism is operated to close the valve the lid is free to close, for the purposes set forth.

4. In a service apparatus of the character described, underground liquid-supply means, a riser communicating with said means, a valve controlling flow up through said riser, an embedded open-top box into which said riser enters, a lid to close the open top of said box, said lid having a hinge and a raised enclosing space above the level of the box top when the lid is closed, a hose coupler fixed to the lid within said space in position to be always at an elevation above the box top to avoid contamination by liquid-borne impurities within the box, and a flexible liquid-conducting connection leading from the riser to the hose coupler on the lid to accommodate opening and closing movements of the lid.

5. An embedded water service box including an upper rim, water supply means within said box, a lid to close said box at its upper rim and having an interior surface overlying the water supply means when the lid is closed, a hose connecting means mounted upon the interior surface of the lid, and a flexible water conducting connection between the water supply means and the hose connecting means, by which the hose connecting means communicates with the water supply means in the open and closed positions of the lid.

6. An embedded water service box including an upper rim, water supply means within said box, a lid hinged to the box for closing the box at its upper rim, and including means to limit swinging movement of the lid to an upright position in which it tends to fall closed, a hose connecting means fixedly mounted upon the lid interiorly thereof, and a flexible water conducting connection between the water supply means and the hose connecting means, by which the hose connecting means communicates with the water supply means in the open and closed positions of the lid.

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