May 31, 1955 N. P. ERICKSON 2,709,622

FLUID SERVICE SYSTEM

Filed April 16, 1953

Fig. 1.

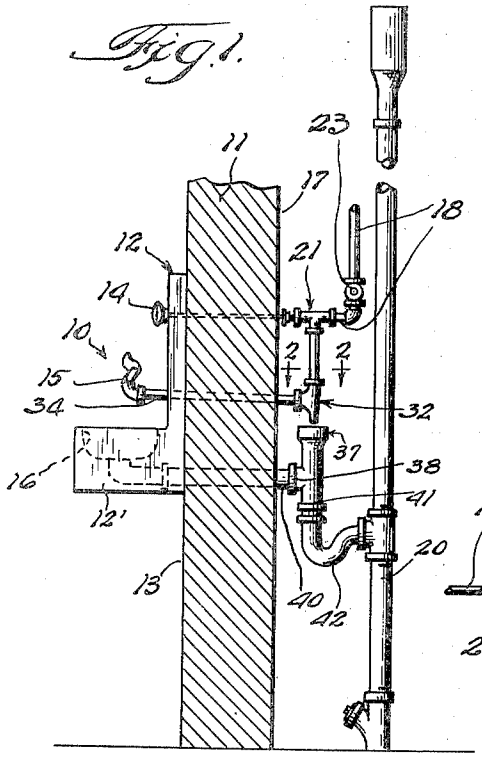
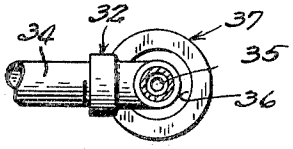


Fig. 2.



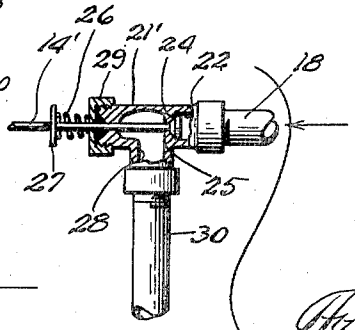
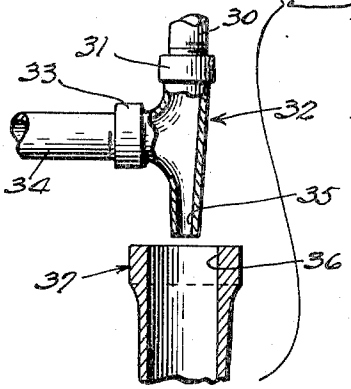


Fig. 3.



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FLUID SERVICE SYSTEM

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3 Claims. (Cl. 299—13)

This invention relates to a fluid service system and more particularly to a non-freeze and pollution-proof hydrant such as a drinking fountain for such a system.

Various hydrants or drinking fountains of this type have heretofore been proposed which are of such design that the essential operating and non-operating parts thereof such as control valves, drain fixtures, and the like are required to be installed in accesses formed in the ground which are of such depth that these parts are disposed beneath the ground frost-line. The difficulties and cost in installing such units plus the awkwardness and inconvenience in servicing these units when disposed in such accesses are believed readily apparent. Furthermore, the problems of contamination and pollution due to the construction of these prior units and their location within such accesses have become more acute. In various prior constructions, the pedestal, upon which the discharge nozzle or bubbler was mounted, allowed portions of the connecting pipes, fittings, and valves to be exposed, thereby presenting attractions to persons, young and old alike, possessed of mischievous desires or impulses for tampering or tinkering with the property of others. Particularly, when such prior constructions were installed in such places as public parks, playgrounds, and the like, the problem of avoiding damage to the units by such persons became one of real concern.

Thus it is one of the objects of this invention to provide a non-freeze and pollution-proof hydrant or drinking fountain which may be readily hung on the outside wall of a heated building such as a fieldhouse, school, garage, and the like, without the installation difficulties heretofore experienced with such units.

It is a further object of this invention to provide a non-freeze and pollution-proof hydrant or drinking fountain wherein the various important working and non-working parts thereof are shielded from changing climatic conditions and yet are readily accessible for servicing.

It is a further object of this invention to provide a non-freeze and pollution-proof hydrant or drinking fountain which incorporates a siphonic action that facilitates drainage of the fluid from the exposed parts of the unit such as the discharge nozzle and supply pipe therefor subsequent to the shutting off of the flow of fluid to the nozzle.

It is a still further object of this invention to provide a non-freeze and pollution-proof hydrant or drinking fountain wherein only a minimum number of the component parts of the unit are exposed, thereby materially reducing the possibility of the units being damaged by roguish or mischievous acts of persons young or old with consequent saving in maintenance cost.

It is a still further object of this invention to provide a drinking fountain which effectively overcomes the problems of contamination or pollution heretofore experienced in prior units of this general type.

It is a still further object of this invention to provide a non-freeze and pollution-proof hydrant or drinking fountain which is attractive in appearance, effective in operation, and inexpensive to install.

Further and additional objects will appear from the description, accompanying drawings, and appended claims.

In accordance with one embodiment of this invention, a non-freeze pollution-proof, wall-hung hydrant is provided comprising a discharge nozzle mounted on the outside surface of a wall, and a receptor mounted on the same outside wall surface and beneath said nozzle. Disposed on the opposite side of the wall and adjacent the inside surface thereof is a hollow connector element provided with a plurality of ports, one of which is in communication with a source of fluid supply, a second of which is in communication with the discharge nozzle, and a third of which is provided with an orifice of lesser size than the orifices of the other ports of the element. Disposed beneath the connector element and on the same side of the wall thereas is a hollow drain unit provided with a plurality of ports, one of which is disposed beneath the restrictive orifice of the element and in spaced relation therewith whereby an air gap is formed therebetween, a second of which is in communication with the receptor, and a third of which is in communication with a sewer. A control means is provided intermediate the connector element and the source of fluid supply for stopping or permitting the flow of fluid to said connector element. A portion of the control means is exposed on the outside surface of the wall to permit manual control of the flow of fluid to the discharge nozzle.

For a more complete understanding of the invention, reference should be made to the drawings wherein:

Figure 1 is a fragmentary vertical sectional view of an outside wall showing the improved drinking fountain mounted thereon:

Fig. 2 is an enlarged fragmentary sectional view taken along line 2—2 of Fig. 1, and

Fig. 3 is an enlarged fragmentary vertical sectional view of a portion of the improved drinking fountain disposed adjacent the inside surface of the wall on which the discharge nozzle is mounted.

Referring now to the drawings and more particularly to Fig. 1, a non-freeze and pollution-proof hydrant or drinking fountain **10** is shown mounted on an outside wall **11** of a building such as a fieldhouse, school, garage, and the like. The fountain, in this instance, includes a suitable supporting member **12** which is mounted directly by any suitable means on the outside surface **13** of the wall **11**. The supporting member **12** is usually formed of a ceramic or metallic material and has mounted thereon a control element **14**, a bubbler or discharge nozzle **15**, and a receptor **16** disposed beneath the bubbler. The receptor **16** is normally formed within the lower protruding portion **12'** of the supporting member **12**. None of the other component parts of the drinking fountain, in this instance, are exposed to the changing outdoor climatic conditions. The various other working and non-working parts for connecting the drinking fountain to the water supply conduit **18** and the sewer conduit **20** of the building, of which the wall **11** forms a part, are all disposed adjacent the inside surface **17** of the wall **11** and thus utilize the heat contained within the building to prevent freezing thereof. The supply conduit **18** is tapped into the cold water supply for the building at one end and at the other end communicates with a valve **21** which, in this instance, is of a conventional self-closing type. As seen more clearly in Fig. 3, the conduit **18** is threaded into the inlet port **22** of the valve housing **21'** of valve **21**. A conventional type volume regulating valve **23**, see Fig. 1, is disposed within the supply conduit **18** ahead of valve **21** for enabling the

maximum pressure of water being supplied to the fountain to be readily controlled. A valve head 24 is disposed within the housing 21' adjacent the inlet port 22 and is affixed to the end of an elongated connecting rod 14' which forms a part of control element 14. The valve head 24 is urged into seating relation with respect to a valve seat 25 formed within the housing 21' by a coil spring 26 which embraces a portion of the rod 14' which extends outwardly from housing 21'. The coil spring 26 engages at one end a suitable washer 27 formed on the rod 14', and at the other end a packing nut 29 which is threaded onto the valve housing 21'. The rod 14' extends through a suitable passageway formed in the wall 11 and support member 12. The outlet port 28 of the valve 21, in this instance, is angularly disposed with respect to inlet port 22 and has a pipe section 30 threaded therein which leads to a port 31 formed in hollow connecting element 32. The connecting element 32, in this instance, is in the form of a reducing T fixture which is disposed beneath valve 21 adjacent the inside surface 17 of the wall 11. The second port 33 is disposed at substantially a right angle to inlet port 31 of element 32 and is connected by means of a suitable pipe section 34, extending through wall 11, to the bubbler 15. To facilitate the drainage through connecting element 32 of any water trapped within pipe section 34, when the flow of water through valve 21 is shut off, the pipe section 34 is mounted at a slight inclination downwardly from the bubbler, as seen in Fig. 1. The third port 35 of element 32 extends downwardly and is provided with an orifice of lesser size than the orifices of ports 31 and 33. By reason of the restrictive orifice of port 35, a slight back pressure is developed within element 32, when the fluid flows through valve 21, thus causing a substantial portion of the water or fluid being supplied to the element from valve 21 to be diverted through pipe section 34 to the bubbler 15. While the bulk of the fluid is flowing through pipe section 34 from element 32, a portion of the fluid is simultaneously flowing through the restrictive orifice of port 35 into the port 36 formed in a hollow drain unit 37 disposed therebeneath. The drain unit, in this instance, is in the form of a hub T. As shown in Fig. 3, an air gap is formed between the end of port 35 of element 32 and the port 36 of the drain unit 37. The purpose of this air gap is to prevent contamination or pollution of the supply system if a backup from the sewer 20 through unit 37 should occur. The air gap, formed between port 35 of element 32 and port 36 of drain unit 37, in most installations should be disposed at a greater height than the rim of the receptor 16 so that if there is sewage backup it will flow over the rim of the receptor 16 onto the ground beneath the support member 12 rather than out through the air gap and into the space between the inside and outside walls, where possible damage to the walls and flooring might occur before the backup is discovered. By reason of this effective way of overcoming the problem of contamination or pollution, due to sewage backup, the public health ordinances or laws of the community are amply complied with in the proposed system. A second port 38 of the drain unit 37 is connected directly by a pipe section 40, extending through wall 11, to the bottom of receptor 16 formed in the support member 12. Connected to the lower port 41 of unit 37 is a gooseneck or trap pipe section 42 which, in turn, communicates with the main sewer conduit 20 of the building. The various operating and non-operating parts, namely, valve 21, regulator valve 23, connector element 32, drain unit 37, and trap pipe section 42 are all disposed on the heated side of the wall 11 and may be concealed between the outside wall 11 and a finished interior wall of the building, not shown. A door or access may be formed in the interior wall to enable these various parts to be readily accessible for servicing or repair.

By reason of the relative disposition of element 32 and unit 38 with respect to valve 21, gravitational force is utilized to effect drainage of the fluid from pipe sections 34 and 40. As heretofore mentioned, the fact that there is a continuous flow of fluid or water through the restrictive orifice of port 35 of element 32, a siphonic effect is created within the system subsequent to the valve 21 being shut off, which facilitates and expedites drainage of any fluid which might be disposed within pipe sections 30 or 34 at the time.

Thus it is believed that a non-freeze, pollution-proof drinking fountain or hydrant has been provided which may be readily mounted on an outside wall with the same ease as is required for indoor installation and which has but a minimum of working parts exposed to the climatic conditions of the outdoors, thereby reducing the possibility of damage caused by freezing and also minimizes the temptation that such a fixture possesses for persons young or old having roguish and mischievous tendencies.

While the drawings disclose a drinking fountain construction, it is to be understood, of course, that a similar arrangement might be utilized for another type of hydrant wherein no receptor is utilized.

While a particular embodiment of this invention is shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. In a non-freeze and pollution-proof wall-hung hydrant, the combination of a discharge nozzle mounted on the outside surface of a wall at a predetermined height above a given substantially horizontal base plane, a hollow connector element provided with a plurality of ports disposed adjacent the inside surface of the wall on which said nozzle is mounted, one of the ports of said element being in communication with a source of fluid supply wherein the flow of fluid from such source is from above said hollow connector element and said discharge nozzle and is controlled from the outside wall surface, a second of the ports of said element being in communication with and disposed at a height less than the predetermined height of said discharge nozzle, and a third port of said element being provided with an orifice of lesser size than the orifices of said other ports and disposed therebeneath, and a hollow drain unit disposed in spaced relation beneath said connector element and on the same side of the wall thereas, said unit being provided with a plurality of ports, one of which is disposed beneath and in spaced registered relation with respect to the third port of said element whereby an air gap is formed therebetween, and a second of which is in communication with a sewer.

2. In a non-freeze and pollution-proof wall-hung hydrant, the combination of a discharge nozzle mounted on the outside surface of a wall at a predetermined height above a given substantially horizontal base plane, a receptor basin for said nozzle mounted on the outside surface of such a wall and having the whole thereof disposed at a height less than the predetermined height of said discharge nozzle, a self-closing valve disposed adjacent the inside surface of the wall on which said nozzle is mounted and at a greater height than the predetermined height of said nozzle, said valve being provided with an inlet port in communication with a source of fluid supply and an outlet port, control means adjustably mounted on said valve for effecting, when in one position of adjustment, communication of said inlet and outlet ports, said means having a portion thereof extending from said valve through the wall on which said nozzle is mounted and terminating at a point adjacent the outside surface of the wall and in close proximity to said nozzle, a hollow connector element disposed on the same side of the wall as said valve and at a height less than the latter, said element being provided with a plurality of ports, one of which facing upwardly and being in communication with

the outlet port of said valve, a second of which is in communication with and disposed at a height less than the predetermined height of said discharge nozzle, and a third of which facing downwardly and being disposed beneath said first port and provided with an orifice of lesser size than the orifices of said other ports, and a hollow drain unit disposed on the same side of the wall as said connector element and at a height less than the height of said connector element, said unit being provided with a plurality of ports, one of which facing upwardly and being disposed in spaced registered relation with respect to the third port of said connecting element whereby an air gap is formed therebetween, said air gap being at a height greater than the whole of said receptor basin, a second of which is in communication with said receptor basin and disposed at a height less than the height of said air gap above the given base plane, and a third of which is in communication with a sewer.

3. In a non-freeze and pollution-proof wall-hung hydrant, the combination of a discharge nozzle mounted on the outside surface of a wall at a predetermined height above a given substantially horizontal base plane, a receptor basin for said nozzle mounted on the same outside wall surface and having the whole of said receptor basin disposed at a height less than the predetermined height of said nozzle, a valve disposed adjacent the inside surface of the wall on which said nozzle is mounted and at a height greater than the latter and being provided with an inlet port in communication with a source of fluid supply and an outlet port, control means adjustably mounted on said valve for effecting opening and closing of said valve, said means extending from said valve through the wall on which said nozzle is mounted and terminating adjacent the outside wall surface, a hollow connector element disposed adjacent the inside wall surface and

at a height less than said valve, said element being provided with a plurality of ports one of which faces upwardly and communicates with the outlet port of said valve, a second of which communicates with said nozzle and is disposed at a height less than said predetermined height, and a third of which faces downwardly and is provided with an orifice of lesser size than the orifices of the other ports of said element whereby fluid flows inwardly through said first port and simultaneously outwardly through the second and third ports of said element, when said control means is adjusted to open position, and will continue to flow outwardly through said third port and inwardly through said first and second ports, subsequent to said control means being adjusted to a close position, until the fluid trapped between said element and nozzle, and between said element and valve is drained, and a hollow drain unit disposed adjacent the inside wall surface and at a height less than the height of said connector element, said unit being provided with a plurality of interconnected ports, one of which is disposed in registered spaced relation beneath the third port of said element whereby an air gap is formed therebetween which is at a height greater than the height of the whole of said receptor basin, a second port which is in communication with said receptor basin and at a height less than the height of the latter, and a third of which is in communication with a sewer.

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