April 28, 1942. R. C. GOWDY 2,280,820

ANTIFREEZE, ANTIPOLLUTION FRESH WATER CONNECTION

Filed Aug. 31, 1939

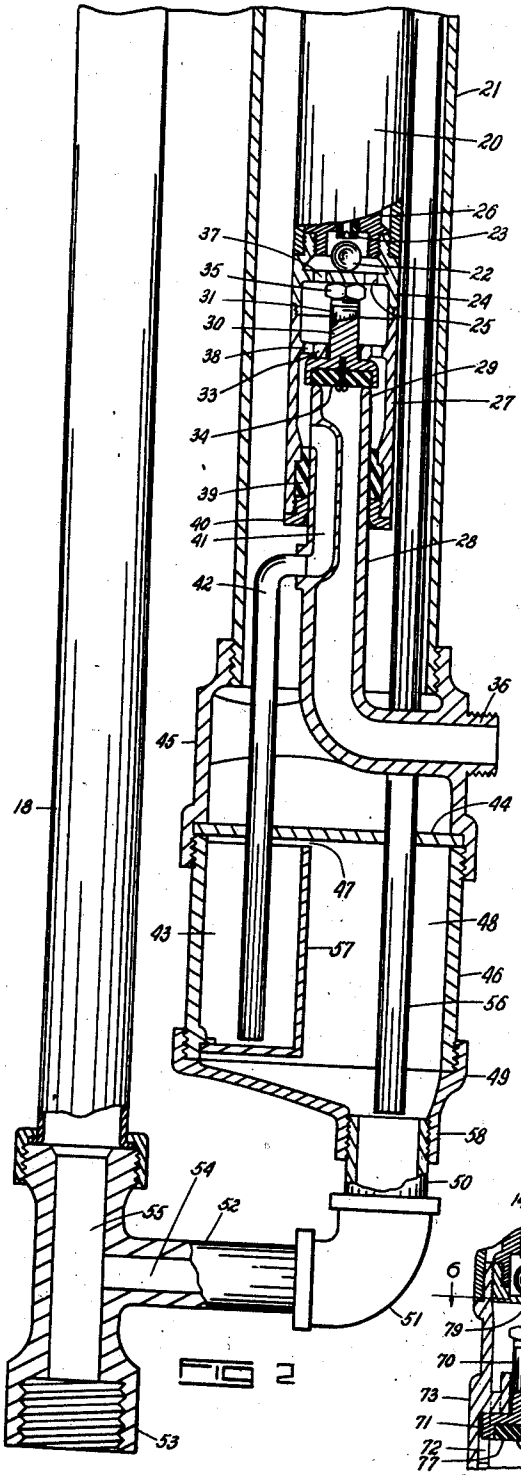


FIG 2

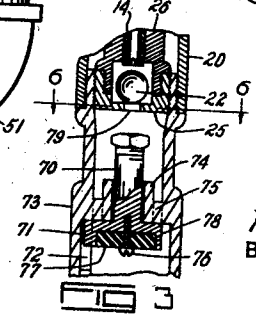


FIG 3

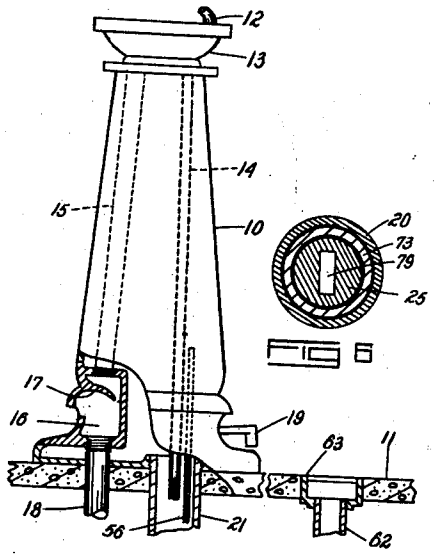


FIG 6

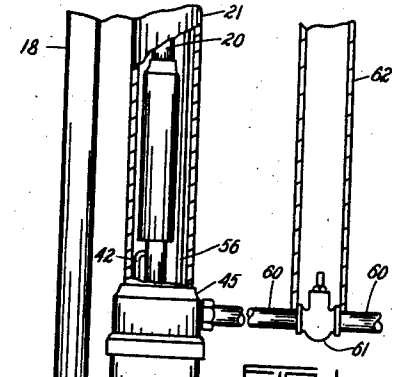


FIG 1

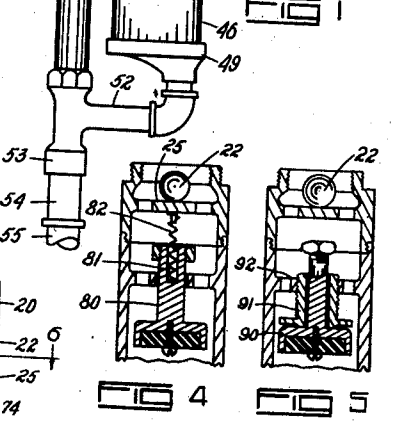


FIG 4

FIG 5

INVENTOR
Robert C. Gowdy
BY
Frank Jugelter
ATTORNEY

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ANTIFREEZE, ANTIPOLLUTION FRESH WATER CONNECTION

Robert C. Gowdy, Cincinnati, Ohio, assignor to The Murdock Manufacturing and Supply Company, Cincinnati, Ohio, a corporation of Ohio

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7 Claims. (Cl. 137—78)

This invention is concerned with antifreeze drinking fountains or the like.

While the invention is disclosed herein in connection with an antifreezing drinking fountain, it is to be understood that the principles thereof have application in other arts and that the disclosure herein is merely illustrative of the principles of operation and the cooperation of various parts thereof.

By reason of the fact that antifreeze drinking fountains are generally installed out in the open, in exposed places, they necessarily include a main water control valve which is buried in the ground at a sufficient distance to protect the same against freezing temperatures. By reason of the nature of such devices, it is also necessary to provide means for draining unused water from the device. It has been common practice in some communities to provide a drain pit for such unused water. The contents of the drain pit were in some instances permitted to dissipate themselves through the adjacent soil. In some communities the ground water is of such volume that such drainage arrangements are inadequate and moreover present various possibilities of back-siphonage and pollution of the water passing to the bubbler head which ordinarily constitutes a part of the fixture. In other types of installation, the unused water may be diverted to a sewer or sewer connection. Such latter types of installation present possibilities of pollution of the drinking water, by reason of possible stoppage of sewers and the flow of large volumes of water into sewers in excess of the capacity of the sewers to carry off such large quantities of water.

An object of the invention is to provide a device of the general character indicated that may be sewer-drained and which is protected against contamination under any and all conditions that may exist in and about the fixture, the sewer associated therewith, and the fresh water supply lines provided for directing clean water to the device.

These and other objects are attained by the means described herein and illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmental view of an installation embodying the invention, as applied to an antifreeze drinking fountain, the lower portion of the installation being enlarged relative to the upper portion thereof.

Fig. 2 is an enlarged sectional view of parts shown in the lower portion of Fig. 1.

Figs. 3, 4 and 5 show various forms of main control valves, forming a detail of the invention.

Fig. 6 is a transverse sectional view on line 6—6 of Fig. 3.

The pedestal 10 is mounted upon a suitable slab or the like 11 at ground level. The pedestal is provided with a bubbler head 12 at its upper end and adapted to discharge a stream of water arcuately above the basin 13 disposed at the upper end of the pedestal and in which basin any unused water is caught. A suitable fresh water feed line 14 depends from the bubbler head 12 interiorly of the pedestal 10 to certain parts located at the lower part of the device. A drain tube 15 provided within the pedestal 10 is adapted to receive water from the basin 13 and direct same to a sewage relief chamber or vent chamber 16 provided near the base of the pedestal 10. Within the chamber 16 is disposed a deflector 17 which is adapted to extend over a vent and drain pipe 18 extending from the lower end of the chamber 16 so that any sewage that might rise in the pipe 18 would be deflected so as to prevent flow of sewage from the chamber 16 into the drain 15. The chamber 16 is provided with sufficient vent holes, so located as to drain the chamber 16 of any fluid that might enter the chamber 16 by way of pipe 18; however, such apertures are so related to other parts constituting or providing the chamber 16 that ordinary drainage from the pipe 15 would pass from the chamber 16 into the pipe 18 without escape thereof.

The pedestal 10 carries an actuating foot lever 19 whereby the opening and closing of the main fresh water supply valve may be controlled. The operation of such pedal or foot lever 19 and its connection with various cooperating parts, may conform substantially with the disclosure in Murdock Patent 1,146,946. It is sufficient, in view of said Murdock patent, to bear in mind that operation of the foot lever 19 causes raising and lowering of the pipe or hollow standard 20 disposed within a suitable pipe 21 depending from the base of the pedestal and serving as a housing for the various operating or moving parts of the device.

As disclosed herein, the device is provided with a float regulating construction comprising a ball 22 corresponding to similar means provided in the said Murdock patent. The water supply line pipe 14, or the lower extension or continuation thereof, is shown at 23 and is adapted to cooperate with the ball 22 in the manner explained in the said Murdock patent.

The lower end of the pipe 20 carries the housing 24. The housing 24 is provided with a spider 25 for supporting the ball 22. The upper end of the housing 24 is secured to the member 26 and within which member 26, the water supply pipe 23 is adjustably mounted.

Attached to the housing 24 is another housing 27 which has slidable connection with the fresh water supply inlet pipe 28. The pipe 28 terminates in a nozzle-like structure, the upper end 29 of which forms part of a valve and valve seat structure which controls the flow of fresh water incident to operation of the foot pedal 19. Within the housing 27 is disposed a valve 30. The valve 30 comprises a stem 31 which is slidable through a spider 33 formed within the housing 27. The valve may comprise a suitable composition valve disc 34 which is adapted to make sealing contact with the valve seat 29. A suitable nut or stop means 35 is secured on the valve stem in order to preclude separation of the valve stem from the spider.

The valve and valve stem are so related to the actuating housing 20 and the movement thereof that the valve is not removed from its engagement upon the valve seat 29 as a result of the upward movement of the member 20 under the action of the foot lever 19. It is intended that the valve 30 shall leave its seat only as a result of the pressure within the water line terminating in the pipe or nozzle 28. Consequently, in those instances when there is an absence of water under pressure in the fresh water supply mains or pipes and which are connected to the nozzle 28 by means of the threaded extension 36, or when there might be an absence of pressure or a tendency towards vacuum within the fresh water supply line 28, the valve remains upon its seat. On the other hand, the relationship of the valve, the spider supporting the valve, and the movement of the actuating standard 20 is such that the valve is normally retained upon its seat. To that end, spring means, for example, as shown in the referred to Murdock patent, may be relied upon for retaining the valve upon its seat under periods of non-use of the device.

The spiders 25 and 33 are provided with suitable apertures 37 and 38 through which any unused water that has passed the valve seat 29 but which has failed of discharge at the upper end of the pipe 14 or bubbler nozzle 12, may drain downwardly and exteriorly of the fresh water supply nozzle 28 but interiorly of the housings 24 and 27. The lower end of the housing 27 is provided with packing 39 and a suitable packing nut 40 for providing a sealed sliding connection between the nozzle 28 and the lower end of the housing 27. The nozzle 28 is provided with a drain passage 41, the upper end of which, in the normal inoperative relationship of parts, permits drainage of the water from about the valve 29 and exteriorly thereof, through the drain pipe 42 into a fresh water reservoir 43. The fresh water reservoir 43 is disposed beneath the sealing diaphragm 44 secured between the coupling 45 and the casing 46. The coupling 45 and casing 46 are fixedly secured to the lower end of the casing or housing 21. The fresh water reservoir 43 is arranged to overflow at its upper end by means of a gate or passageway 47, into an air cell or air chamber 48. The air cell or air chamber 48 discharges at its lower end into suitable sewer connections comprising the various couplings and pipes and other fittings 49, 50, 51 and 52. As shown herein, the fitting 52 constitutes an ejector fitting or coupling, the lower end 53 of which has direct connection to a sewer by suitable pipes and the like 54 and 55. The upper end of the coupling 52 has connection with the vent tube or pipe 18, and the internal passages 54 and 55 of the coupling 52 and the internal diameter of the pipe 18 are so related that if sewage under pressure should back up into the fitting 52 by way of the sewer connections 54 and 55, any high pressure operative upon such sewage, would cause the fitting 52 to operate upon the principle of an injector whereby to reduce the air pressure within the air cell 48. In order to relieve a condition of low pressure within the cell 48, a relief tube 56 is provided. The lower end of the relief tube 56 is open and is disposed at the lower extremity of the air cell. The relief tube 56 extends upwardly through diaphragm 44 and through the housing 21 to an elevation above ground level and higher than the drain chamber 16. Thus, the relief tube provides assurance against low pressures within the cell 48 which might tend to disturb the conditions within the housing 46 and might precipitate undesired discharge of the fresh water supply within the reservoir 43 under conditions of high sewage back pressure.

It is to be understood that the diaphragm 44 shall provide a seal for the upper end of the chamber 48 and that the tubes or pipes 42 and 56 shall be so passed through the diaphragm 44, that the indicated seal is not disturbed or avoided.

Under conditions of back sewage under low pressure, some of the sewage will enter the air cell 48 and will compress the air contents of the cell 46. Incident thereto the clean water contents of the reservoir 43 is forced upwardly through the pipe 42 so as to build up a column of water in the tube 42 and about the main operating valve 29 and in the water supply tube or pipe 14 to a height equivalent to the height that the sewage would reach in the pipe 18. If sewage within the pipe 18 should ever rise to a height sufficient to overflow pipe 18 and be discharged from the chamber 16, there should still remain sufficient water within the reservoir 43 to prevent rise of the sewage within air chamber 48 so as to overflow the upper edge of the wall 57 of the fresh water reservoir 43. Ordinarily, as a factor of safety, it will be found sufficient to provide the reservoir 43 of a capacity of one and one-half times the cubic content of the tube or pipe 42 and the passageway extending therefrom upwardly through the fixture and including the fresh water supply pipe 14. Likewise, in order to provide an adequate factor of safety between the reservoir 43 and the air cell 48, the air cell 48 should have not less than one and one-half times the cubic capacity of the fresh water reservoir 43. The capacity of the air cell 48 is dependent upon the position at which the lower end of the tube 56 is disposed and therefore it is desirable to have the lower end of the tube 56 disposed adjacent to and preferably centrally of the outlet port 58 of the coupling 49. It is also deseriable to have the indicated relationship of the lower end of the tube 56 and the port 58 so that under conditions of high sewage pressure discharge through the venturi or ejector fitting 52 and pipe 18, the air flowing downwardly through the relief tube 56 and discharging at the lower

end of the air cell 48 will create a minimum of disturbance in the air cell 48.

It is to be understood that the fresh water supply line 60 which has connection with the coupling end 36 of the fixture may have included therein, a suitable shut-off valve 61, access to which may be controlled by means of a suitable pipe or casing 62 associated with a suitable box or housing 63 disposed at ground level as shown in Fig. 1.

Referring to Fig. 3, the valve 70 corresponds to the valve 30. The valve 70 is provided with a key 71 which may be slidably received in a way 72 in the housing or casing 73 whereby to preclude rotation of the valve 70 and its stem in the bearing 74 associated with the spider 75. This arrangement is provided in order to facilitate mounting and demounting of the attachment screw 76 whereby the composition washer or the like 77 is secured to the body 78 of the valve.

When parts are made as shown in Fig. 3, the housing 73 may be made in one piece as distinguished from the two-piece housing 24—27 in Fig. 2. The assembly of parts shown in Fig. 3 makes it unnecessary for a service or repair man to disconnect any of the various parts 29, 73, and 25 when it is necessary to renew the washer 77. When ever renewal of washer 77 may be necessary or desired, the entire assembly carried by the housing 20 is pulled upwardly from the enclosing housing or casing 21. The same procedure is followed when it may be necessary to renew or replace the packing 39. The opening 79 in the member 25 shown in Fig. 3, is preferably an elongated slot in order to assure adequate flow of water beyond the regulating ball 22.

In the form of valve structure shown in Fig. 4, the valve 80 may be provided with a central bore 81 for receiving a spring 82, the opposite ends of which spring abut the spider 25 and the valve 80.

In the form shown in Fig. 5, the valve 90 is slidably received by the sleeve 91. The sleeve in turn is adjustable by means of cooperating threads, relative to the sustaining or supporting spider 92. Thus the position of the valve 90 in relation to the other cooperating parts may be readily adjusted and controlled so as to effect the most efficient cooperation of parts.

In connection with the various forms of values that may be employed, it is to be understood that the valve corresponding to the valve 30 may be forcefully or positively retained on its seat. However, the operating mechanism connected with the foot lever 19 shall be incapable of lifting the valve from the valve seat 29.

In connection with the foregoing disclosure, it is to be understood that spring means of the character indicated in the said Murdock patent may be provided for normally retaining the valve upon its seat and that operation of the foot lever serves to move the necessary cooperating parts against the yielding resistance of such spring.

The device disclosed herein is intended to be effective for precluding pollution of any drinking water supply passing upwardly through the feed pipe 14 and also against pollution of any other fixture connected with the water supply line 60 by way of any polluted material returning from about the operating parts of the device to or through the fresh water supply nozzle 28.

In connection with the installation of devices of the character explained herein, it is to be understood that when the invention is embodied in antifreeze drinking fountains, such devices are installed at ground level. Consequently, devices of the character under consideration are so positioned in connection with a fresh water supply line that the problems of back siphonage ordinarily encountered in connection with fixtures installed in tall building and the like, are not experienced. Nevertheless, various testing laboratories and the like insist upon applying vacuum tests to devices of the character disclosed herein, by drawing a vacuum upon the fresh water supply line including the nozzle 28. Obviously, there is no practical condition under which the water supply line including the nozzle 28 would be subjected to a condition of vacuum. Nevertheless, if such a condition should occur, it is obvious that the main valve 30 will remain upon its seat because of absence of pressure within the supply line nozzle 28 of any pressure that would dislodge the valve 30. Moreover, any tendency towards a reduction of pressure below atmospheric pressure in the water supply line including the nozzle 28 would tend to more firmly seat the valve 30 and thus avoid any loss of the water column supported by the fresh water reservoir 43 and which might extend above the valve 30 under conditions of low pressure back sewage which may have entered the air cell 48 to such degree as to displace some of the contents of the fresh water reservoir 43 and to so extend a column of fresh water to and above the main operating valve 30.

The condition presupposed in the foregoing paragraph is obviously very rare, for it is unlikely that a sewer adjacent a drinking fountain would be stopped or plugged coincident with an absence or falling of pressure in the water supply line including the nozzle 28. Obviously, if a sewer were plugged so that sewage would leave the lower end of the pedestal 10 by way of the chamber 16, that condition would be promptly called to the attention of proper authorities and the necessary repairs would be undertaken. Unless there should be a condition of lack of pressure or a condition of vacuum existent within the water supply line 28, there would be no reason to be concerned with maintaining the valve 30 upon its seat regardless of the sewage conditions because as long as there is any fresh water under pressure within the nozzle 28, it will be impossible to dissipate the fresh water supply or contents of the reservoir 43. Thus, the fresh water reservoir 43 is the effective means for preventing any polluted material or sewage rising to a position about or adjacent to the valve 30 and which would be necessary in order to contaminate the fresh water discharged from the device.

The nut 40 is preferably tapered at its lower end as indicated in Fig. 2 in order to facilitate ready centering and encircling of the nozzle 29 within the parts assembled on the housing 20 when the various parts are replaced within the casing 21 after servicing the valve disc 34 or the packing 39, as well as for return thereof because of removal of the assembly from normal position for any other cause.

As previously stated, the invention is adaptable to other usages besides that exemplified herein in connection with antifreeze drinking fountains, and therefore it is to be understood that the claims appended hereto are not to be restricted to antifreeze, antipollution drinking fountains.

The main operating or control valves shown in the various forms of the invention are all positively returned to their seats, either by gravity

or by spring action. Each of those valves are therefore yieldingly held upon their respective seats, at such times that the foot lever is actuated for lifting the pipe or hollow standard **20**. When the hollow standard is lifted so as to release the main control valve from the normal function of the standard **20** and its associated parts of holding the valve on its seat, the valve is free to open in response to water under pressure in the fresh water supply line.

The housing **20** may have connection with the basin **13**. The basin in turn may have detachable connection with the upper portion of the pedestal. Thus, by detaching the basin from the pedestal, the entire structure comprising the standard **20** may be withdrawn upwardly through the pedestal. This permits ready servicing of the main valve or any other moving parts of the device that are normally buried in the ground. In connection with this statement of relationship of parts, it is to be understood that the drain tube **15** shall have appropriate connection to the basin **13** and vent chamber **16** to permit such ready assembly and separation of parts.

By reason of the spring structure, shown in said Murdock Patent 1,146,946 and which is preferably used to yieldingly retain the main valve **34** on its seat **29**, the valve, in its normal state or position is always firmly seated under considerable pressure. When the valve is called upon to function as a means for sustaining any column of fresh water that may be bottomed in the reservoir **43**, the control valve need not find its seat, but will continue the adhesion already formed under pressure.

The normal movement of the operating housing **20** is rectilinear. Consequently, the valve is not subjected to any rotary or grinding action relative to its seat. Thus the valve and valve seat are not subjected to any action which might tend to produce a leaking valve. When the valve is held closed by the referred to spring loading of the device, the complete closing of the valve prevents wire drawing and the conditions occasioned thereby.

Every movable and wearable part of the device is readily removable for inspection and service. Accordingly, there need be no doubt about the proper condition of the fountain or other device wherein the invention is incorporated.

What is claimed is:

1. A device of the class described for dispensing potable water from a potable water supply and for preventing contamination thereof, comprising a water supply nozzle having connection with a water supply normally under pressure, a chambered valve carrying supply line for receiving water at its lower end from said nozzle and for discharging water at its upper end at an elevation above ground level, and comprising a valve for cooperation with said nozzle for controlling flow of water from said nozzle to the upper end of said water supply line, and means for retaining said valve on said nozzle and adapted for movement relative to and independent of said valve, whereby in the absence of water under pressure in said nozzle the valve may yieldingly retain closing engagement with and on said nozzle, said last mentioned means including means for moving said retaining means relative to said valve and said nozzle, whereby the valve may be released for independent movement responsive to the influence of water under pressure in said nozzle and may be returned to sealing engagement with and on the nozzle, means for draining the chamber and water supply line when the valve is closed and comprising a conduit connected with said chamber, a water trap in said conduit having an overflow wall and means for providing an air pocket having connection with the overflow wall for drawing fluid passing over said overflow wall and resisting return movement of water over said overflow wall from said air pocket, and means communicating with said air pocket at the lower portion thereof for relieving tendency toward low pressure conditions in said air pocket.

2. A device of the class described for dispensing potable water from a potable water supply and for preventing contamination thereof, comprising a water supply nozzle having connection with a water supply normally under pressure, a chambered valve carrying supply line for receiving water at its lower end from said nozzle and for discharging water at its upper end at an elevation above ground level, and comprising a valve for cooperation with said nozzle for controlling flow of water from said nozzle to the upper end of said water supply line, and means for retaining said valve on said nozzle and adapted for movement relative to and independent of said valve, whereby in the absence of water under pressure in said nozzle the valve may yieldingly retain closing engagement with and on said nozzle, said last mentioned means including means for moving said retaining means relative to said valve and said nozzle, whereby the valve may be released for independent movement responsive to the influence of water under pressure in said nozzle and may be returned to sealing engagement with and on the nozzle, means for draining the chamber and water supply line when the valve is closed and comprising a conduit connected with said chamber, a water trap in said conduit having an overflow wall and means for providing an air pocket having connection with the overflow wall for escape of fluid over said overflow wall and resisting return movement of water over said overflow wall from said air pocket.

3. In a device of the class described for dispensing potable water from a potable water supply and for preventing contamination thereof, the combination of a water supply nozzle, a chambered valve carrying water supply line for receiving water from said nozzle and comprising a valve for cooperation with said nozzle for controlling flow of water from the nozzle, means for operating said valve relative to said nozzle and means for draining the chamber in said water supply line when the valve is operative with said nozzle for preventing flow of water from said nozzle, said last mentioned means comprising a reservoir, a connection for draining said chamber into said reservoir and discharging into said reservoir near the bottom of said reservoir, said reservoir having a capacity as large as the volume of said chamber and said connection therefrom to said reservoir, said reservoir being sealed except for an overflow port located near its upper end and except for said drain connection to said chamber, means for providing an air pocket communicating with the overflow port of the reservoir, said pocket being of a cubic content larger than said reservoir and having connection with the overflow port of said reservoir, a drain connection at the lower end of said air pocket, means for connecting said drain to a sewer and comprising a relief vent and an ejector fitting adapted to discharge high pressure back sewage

through said relief vent, and a low pressure relief tube connected with said air pocket at the lower portion thereof, said tube adapted to be entered by back sewage that may enter said air pocket for sealing the air pocket against the atmosphere, said valve having a lost motion connection with said valve operating means arranged to provide for movement of said operating means for releasing the valve for independent movement of the valve from the nozzle and to return the valve to its seat on the nozzle.

4. In a device of the class described for dispensing potable water from a potable water supply and for preventing contamination thereof, the combination of a nozzle providing a valve seat, a valve for said seat, an operating means having sliding connection with said valve adapted in its normal position to retain the valve on the seat and movable to position for releasing the valve for independent movement, the valve being adapted to move from its seat under the influence of pressure within the nozzle, the operating means being adapted on return to its normal position to return the valve to said seat against the action of pressure within said nozzle, means for directing fluid from said valve upon unseating of the valve and a drain connection for draing fluid from about the valve and its seat, when the operating means is in its normal position, said drain connection including successively a water trap, an air cell and an overflow connection whereby water drained from said valve successively passes to the trap, to the air cell and to the overflow connection in the event that waste water should back up into said drain, the drain connection, trap and air cell being so proportioned and related to one another that any waste fluid that may tend to back up into the device will establish a compensating fluid column in said trap and drain connection for preventing rise of backed up fluid in the trap in excess of the normal overflow level or elevation of the trap.

5. In a device of the class described for dispensing potable water from a potable water supply and for preventing contamination thereof, the combination of a nozzle providing a valve seat, a valve for said seat, an operating means having sliding connection with said valve adapted in its normal position to retain the valve on the seat and movable to position for releasing the valve for independent movement, the valve being adapted to move from its seat under the influence of pressure within the nozzle, the operating means being adapted on return to its normal position to return the valve to said seat against the action of pressure within said nozzle, means for directing fluid from said valve upon unseating of the valve, a drain connection for draining fluid from about the valve and its seat, when the operating means is in its normal position, a fluid reservoir into the lower portion of which said drain connection discharges, said reservoir forming a trap from which fluid may return to said drain connection under conditions of pressure operative upon the contents of the reservoir, and an air cell closed at its top and having a sewer connection at its bottom into which it discharges, said reservoir adapted to overflow into the top of said air cell, the cubic content of said reservoir exceeding the cubic content of said drain and the cubic content of said air cell exceeding the cubic content of said reservoir.

6. In a device of the class described for dispensing potable water from a potable water supply and for preventing contamination thereof, the combination of a nozzle providing a valve seat, a valve for said seat, an operating means having sliding connection with said valve adapted in its normal position to retain the valve on the seat and movable to position for releasing the valve for independent movement, the valve being adapted to move from its seat under the influence of pressure within the nozzle, the operating means being adapted on return to its normal position to return the valve to said seat against the action of pressure within said nozzle, means for directing fluid from said valve upon unseating of the valve, a drain connection for draining fluid from about the valve and its seat, when the operating means is in its normal position, a fluid reservoir into the lower portion of which said drain connection discharges, said reservoir forming a trap from which fluid may return to said drain connection under conditions of pressure operative upon the contents of the reservoir, an air cell closed at its top and having a sewer connection at its bottom into which it discharges, said reservoir connected to overflow at its top into the top of said air cell, the cubic content of said reservoir exceeding the cubic content of said drain and the cubic content of said air cell exceeding the cubic content of said reservoir, and a vent connection between the air cell and the atmosphere, said connection communicating with the air cell at the lower end of the air cell, and a sewer connection communicating with the air cell at or below the vent connection to said air cell.

7. In a device of the class described for dispensing potable water from a potable water supply and for preventing contamination thereof, the combination of a nozzle providing a valve seat, a valve for said seat, an operating means having sliding connection with said valve adapted in its normal position to retain the valve on the seat and movable to position for releasing the valve for independent movement, the valve being adapted to move from its seat under the influence of pressure within the nozzle, the operating means being adapted on return to its normal position to return the valve to said seat against the action of pressure within said nozzle, means for directing fluid from said valve upon unseating of the valve and a drain connection for draining fluid from about the valve and its seat, when the operating means is in its normal position, said drain connection including successively a water trap, an air cell and an overflow connection whereby water drained from said valve successively passes to the trap, to the air cell and to the overflow connection in the event that waste water should back up into said drain, and a vent to the atmosphere at ground level and communicating with said drain, the drain connection, trap and air cell being so proportioned relative to one another that any waste fluid that may back up into the drain connection will also over flow the vent at ground level before any such waste may pass beyond the air cell and into said trap.

ROBERT C. GOWDY.

CERTIFICATE OF CORRECTION.

Patent No. 2,280,820. April 28, 1942.

ROBERT C. GOWDY.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, second column, line 6, claim 1, for "drawing" read --draining--; page 5, first column, line 28, claim 4, for "draing" read --draining--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of June, A. D. 1942.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)