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NON-FREEZABLE YARD HYDRANT

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1 Claim. (Cl. 137-302)

This invention relates to hydrants and more particularly to a yard hydrant of the non-freezable type.

The use of non-freezable manually controlled water valves for yard use is old. Usually such well known yard hydrants consist of a valve and pipe means, a lever means secured to the outlet head, and a drainable compartment associated with the valve means. These well known yard hydrants, however, have many objections, i.e., the drained water may become polluted and flow back into the water system, and secondly, due to the character of their construction, there is no gradual increase of the flow of water relative to the opening of the valve means. A still further objection is that heretofore when the hydrant is opened there is a time lapse before the water flows from the outlet nozzle.

Therefore, one of the principal objects of our invention is to provide a non-freezable yard hydrant of the drain system and one that eliminates any possibility of the drained water becoming polluted and flowing back into the water system to produce an unsanitary situation.

A still further object of this invention is to provide a yard hydrant that permits gradual progressive valve opening.

A still further object of this invention is to provide a yard hydrant that is capable of employing heat from the earth below the frost line for preventing the freezing of its water column above the valve means and adjacent the valve means.

A still further object of this invention is to provide a non-freezable yard hydrant that is economical in manufacture, and durable in use.

These and other objects will be apparent to those skilled in the art.

Our invention consists in the construction, arrangements, and combination, of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in our claim, and illustrated in the accompanying drawings, in which:

FIG. 1 is a side view of our device in use,

FIG. 2 is an enlarged perspective view of the valve core portion of our device,

FIG. 3 is an enlarged vertical sectional view of our valve unit with the valve core in closed position,

FIG. 4 is an enlarged longitudinal sectional view of the valve unit and shows the valve core in an open position, and

FIG. 5 is a bottom end view of the valve core portion.

In these drawings we have used the numeral 10 to designate a ground pipe adapted to be in communication with a source of water under pressure. Threaded onto the free end of this pipe 10 is my valve unit housing designated by the numeral 11. Preferably the valve unit is located in the ground and below the frost line which has been designated by the numeral 12 in FIG. 1. The numeral 13 designates an upwardly extending pipe having its lower end threaded into the upper end portion of the valve unit housing. This pipe 13 extends above the ground surface 15. The numeral 16 designates the outlet head threaded onto the upper end of the pipe 13 and having the outlet nozzle 17 and the usual and well known valve operating handle 18. This handle 18 is pivoted to the head and is operatively connected to the operating

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rod 19 for opening and closing the valve unit. The lower end of this rod is threaded into the upper end portion of the valve core which we have designated by the numeral 20. Inasmuch as the rod 19 extends downwardly in the pipe 13, its diameter is much less than the inside diameter of the pipe 13 to provide a passage way 21 at each side of the rod 19 as shown in FIG. 4. The valve core generally designated by the numeral 22 extends downwardly within the valve unit housing and has a plurality of radially extending ridges or flanges 22 as shown in FIG. 3. Directly above the uppermost flange 22 the valve core extends upwardly and outwardly in a curved path, also shown in FIG. 3. The numeral 23 designates a flexible, resilient valve core outer casing of rubber or like and which embraces the inner metal core portion. This portion 23 is generally of cylindrical construction, embracing the lower end portion of the metal portion of the valve core and the flanges 22. The purpose of the flanges 22 is to retain this portion 23 onto the metal portion of the valve core and also to give strength and support to the flexible, resilient portion 23. The upper end portion of the flexible portion 23 is flared outwardly at its upper end to conform with and to the upwardly and outwardly flared portion of the metal part of the core. The lower end of this flexible and resilient portion extends downwardly and inwardly to provide a dome portion which we have designated by the numeral 25. The numeral 26 designates a plurality of slit grooves in this bottom dome portion 25 of the resilient flexible portion of the valve core. These openings 26 extend upwardly and outwardly terminating prior to the top plane of the dome portion 25. The numeral 27 designates a curved dish portion in the lower end portion of the valve unit housing. This curved dish portion 27 serves as one of the valve seats and is engageable by the dome portion 25 of the core, when the valve core is in lowered position. When the valve core is in such lowered position, the slot openings 26 will be completely closed by this curved dish portion 27 of the valve housing. The lower bottom of this curved dish portion 27 communicates with the inside of the pipe 10. The numeral 28 designates a cylinder centered in the central portion of the valve housing and having an outside diameter substantially less than the inside of the valve housing 11 to provide a passageway through the housing 11. The lower end of this cylinder 28 terminates in a plane above the valve seat portion 27 and its upper end terminates a substantial distance below the lower end of the pipe 13 when the same is threaded into the upper end of the valve unit housing. The inside diameter of the cylinder 28 is substantially that of the inside diameter of the upper end portion of the valve seat 27. On the outer side wall of the resilient portion 23, we have provided two spaced apart continuous, horizontal rings 29 and 30. These two rings are integrally formed of the same material and are a part of the flexible resilient member 23. In the drawings we show three spaced apart ridged flanges 22. The two upper ridged flanges 22 are directly in the same plane as and back of the two ring portions 29 and 30, respectively, thereby giving support to the two rings 29 and 30. The two rings 29 and 30 slidably engage the inner wall of the cylinder 28 and are of a diameter substantially that of the lower dome portion 25. The numeral 31 designates a passageway through the side wall of the cylinder 28 and through its supporting web. When the handle member 18 is in a lowered position and the valve core is in a lowered seal closed condition, this passageway 31 will communicate with the inside of the cylinder 28 at a point above the uppermost ring 29 as shown in FIG. 3. When the handle member 18 is raised to a position where the valve core is in an extreme raised position, as shown in FIG. 4, this passage-

way 31 will be closed by the ring ring portion 30. Also, when the valve core is in this position, the dome valve seat portion 25 will be in and sealing the lower end portion of the cylinder 28 and the ring 29 will still be in but sealing the upper portion of the cylinder 28 and above the passageway 31. The numeral 32 designates a pipe threaded through the wall of the valve unit and communicating with the passageway 31. This pipe 32 is adapted to run into and communicate with any suitable receiving means such as a sump, sand, gravel, or like.

The practical operation of the device is as follows: When the handle 18 is in lowered position the valve core will be in a lowered position and the resilient dome seat of the core will be engaging and sealing the inside wall of the valve seat 27 as shown in FIG. 3. With the valve in such condition, water will be prevented from passing from the supply pipe 10 into and through the valve mechanism. However, all surplus water in the pipe 13, from last usage of the hydrant, will pass downwardly, first into the upper end portion of the valve housing, thence downwardly into the upper end portion of the cylinder 28, thence through the passage 31, and then out and through the drain pipe.

The rings 29, 30 and valve head core 25 are in sealed condition below the drain outlet passageway 31 and therefore if water pressure were to cease to exist in the pipe 10 it would be impossible for polluted water to flow in reverse through the pipe 32 and into the water supply system. With water under pressure in the pipe 10, when the handle 18 is lifted, fresh water will flow upwardly and through the unit and any pollution in the space 21 will be immediately discharged through the outlet nozzle 17. By virtue of the slot openings 26, the initial upward movement of the lever 18 will permit a small flow of water through the same and the volume will be gradually and uniformly increased as the member is moved upwardly. Therefore, the volume of water passing through the outlet nozzle 17 is easily controlled and regulated as distinguished from yard hydrants heretofore that operated in substantially full off and on positions. With the raising of the handle lever 18, the valve core will be raised and first the ring 29 and then the ring 30 will close the drain passageway 31. With the handle in elevated position, the water will flow through the pipe 10 into the valve housing and around the collar 28, thence upwardly through the pipe 13, and exit out through the nozzle portion 17. By the upper inwardly and outwardly dish portion of the upper portion of the metal core and the upper portion of the flexible, resilient member 23 being located substantially above the ring 29, as shown in FIG. 3, any longitudinal strains on the resilient, flexible member 23 as it slides upwardly and downwardly within the cylinder 28 that might cause "bunching" of the wall of the flexible resilient member 23, will form above the ring 29. However, any such longitudinal "bunching" of the flexible resilient member 23 will be

above the ring 29 and into a space area within the cylinder 28 where it will do no harm to the proper functioning of the device.

From the foregoing it will readily be seen that we have provided a yard hydrant that will not pollute the water system, and one that is easily controlled and regulated merely by the manual movement of the handle lever 18.

Some changes may be made in the construction and arrangement of our non-freezable yard hydrant without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claim, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim:

In a yard hydrant, a valve housing having a valve seat in its lower portion and a passageway communicating with the bottom of said valve seat and adapted to be in communication with a source of water under pressure, a cylinder mounted in said housing having an outside diameter substantially less than that of the inside diameter of said housing, a drain passageway extending through the wall of said cylinder and housing, an outlet pipe communicating with the inside top of said housing, an inner metal valve core portion having a radial ring flange, a flexible resilient outer valve core portion on said inner metal valve core portion having a bottom valve head capable of engaging said valve seat when in a lowered position; said portion being slidable inside said cylinder, the part of said outer valve core portion above said head having a main section of smaller diameter than the inner diameter of said cylinder and carrying at least one projecting ring portion embracing the radial ring flange of said inner metal valve core, slidably engaging the inside of said cylinder and being positioned below said drain passageway when said valve core portions are in a lowered position, and an actuating rod operatively connected to said inner metal valve core; said flexible resilient portion having an outwardly and upwardly curved rim embracing said inner metal valve core portion, and said inner metal valve core portion having a curved portion engaging the curved rim of said flexible resilient portion; whereby when said flexible resilient portion is forced upwardly relative to said valve core portion, it will be expanded in diameter.

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