

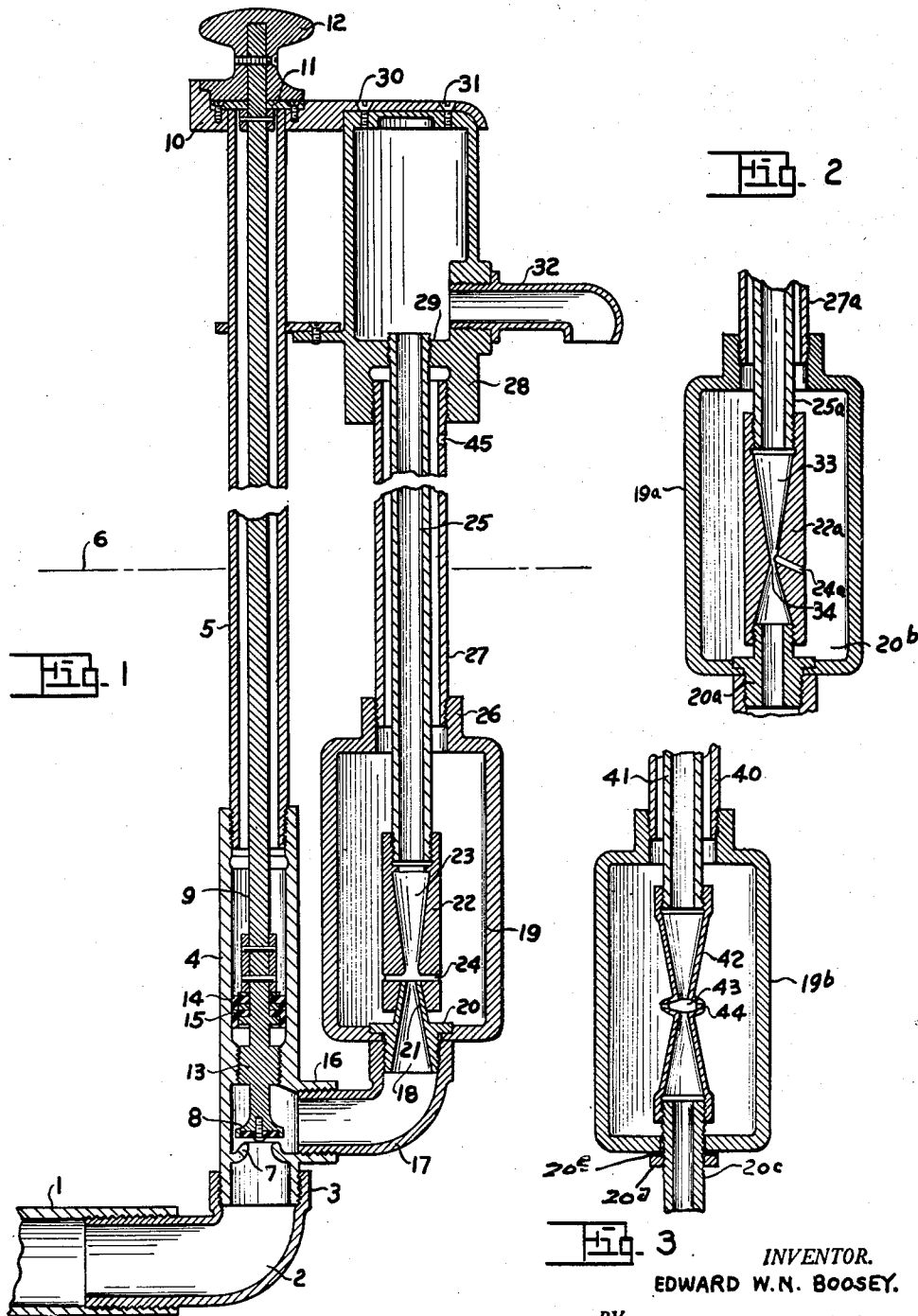
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HYDRANT

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HYDRANT

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1 Claim. (Cl. 137—13)

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This invention relates to hydrants connectable in a water supply line and the principal feature and object of the invention is to provide a hydrant so constructed as to permit water in the hydrant, upon closing the valve, to automatically drain from the hydrant and thus prevent freezing.

The main object of the invention is not only to prevent freezing but to prevent a cross connection between the waste outlet and the water supply whereby ground water could be syphoned through the waste opening during periods of operation and polluting the water supply.

A further object of the invention is to prevent ground water being syphoned through the waste opening during periods of operation and thus polluting the water in the supply conduit.

By the arrangement and relationship of parts as hereinafter more fully described water remaining in the hydrant upon closing the valve accumulates in a chamber below the frost line and is therefore particularly adapted for use in the North and South Frigid and Temperate Zones.

A hydrant embodying my invention is shown in the accompanying drawing in which—

Fig. 1 is a vertical section of the hydrant.

Fig. 2 is a vertical section showing a different form of chamber into which the water in the discharge line may accumulate.

Fig. 3 is another form of drainage chamber having the same function as that shown in Fig. 1.

As will be understood more clearly from Fig. 1 a water main is indicated at 1 and lies substantially in a horizontal plane. To the water main is connected an elbow 2 having a threaded end to receive the threaded end of the water main 1 and the opposite end 3 of the elbow is positioned to receive the threaded end of a vertical tubular element 4 threaded to receive a tube 5 which extends to above the ground level indicated by dotted lines 6.

The tubular element 4 is provided with a valve seat 7 and a valve 8 is provided with a stem 9 which extends to above the ground surface. On the upper end of the tube 5 is a plate 10 apertured to receive the same and a plate 11 is secured to the plate 10 and seats on the upper end of the tube 5. At the upper end of the stem 9 is a knob 12 by means of which the stem 9 may be rotated. Said stem 9 is provided with a threaded aperture above the valve seat 7 to receive an enlarged threaded portion on the stem 9 and on the lower portion of the stem 9 are preferably two cupped washers 14 and 15 to prevent water accumulating in the tubular element 4 and the tube 5. The lower end of the tubular member 4

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has a tubular threaded portion 16 on one side to receive one end of the elbow 17 the opposite end of which is threaded to receive a nozzle 18 and on the vertical end of the elbow 17 is a chambered member 19 apertured at its lower end to receive the nozzle which is provided with a flange as indicated at 20.

The nozzle has a conical end portion 21 on which is seated a drainage element 22 having a chamber 23 opening to the horizontal passageways 24 just above the upper end of the nozzle 21.

By this arrangement when the valve 8 is closed, subsequent to use of the hydrant, any water remaining in the tube 25 may drain back into the chambered element 19 positioned in the earth below the frost line.

The upper end of the chamber 19 has a hub-like extension 26 internally threaded to receive the lower threaded end of the vertically positioned tube 27 and the upper end of the tube 27 is likewise threaded in a recess in the lower end of the chambered member 28. The chambered member 28 has the bottom wall 29 centrally threaded to receive the upper threaded end of the tube 25.

The plate 10 at the upper end of the tube 5 extends over the upper end of the chambered member 28 and is secured thereto by the screws 30 and 31. The chambered member further has a threaded aperture in the side wall to receive the threaded end of the discharge nozzle 32.

In Fig. 2 is shown a different form of drainage element which includes a chamber 19a corresponding to the chamber 19 shown in Fig. 1 and has the same function as that shown in Fig. 1. The drainage element 22a differs somewhat from that shown at 22 in Fig. 1 but has the same function as the element 22 in that the apertures 24a are upwardly inclined in respect to the horizontal and the member 22a has a Venturi-like chamber 33 and the apertures 24a open to the chamber 33 just above the restricted area 34 of the chamber.

The upper end of the chambered member 19a has a hub-like extension to receive the tube 27a in which is the tube 25a having the same function as the tube 25 shown in Fig. 1. The lower end of the Venturi tube 22a is threaded to engage the threaded end of a fitting 20a corresponding in function to that of the fitting 20 shown in Fig. 1.

In Fig. 3 another form of venturi is shown in which the chambered member 19b corresponds to that shown at 19 in Fig. 1 and a tube 40 is threaded in the upper end of the chambered member 19b and a tube 41 is provided within

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the tube 40 and has the same function as the tube 25 of Fig. 1. The Venturi element 42 in Fig. 3 differs from the venturi 22 of Fig. 1 or 22a of Fig. 2 in that it has a central chamber 43 having openings 44 therein which have the same function as the apertures 24 in the member 22 as shown in Fig. 1, namely, to permit flow of water remaining in the tube 41 upon the closing of the main valve corresponding to the valve shown at 8 in Fig. 1. The tube 27 has an opening 45 therein above the ground surface which permits air to flow into the tube 27 as the water level in the reservoir 19 falls or from the tube 27 as the water level rises. This arrangement prevents a waste of water and prevents a vacuum occurring in the chamber 19, 19a or 19b.

The member 20a has a central longitudinal aperture of cylindrical form and thus differs from that shown at 21 in Fig. 1. In Fig. 3 a tube 20c is threaded for a distance from its end and is inserted into a threaded aperture in the bottom of the chambered element 19b and a nut 20d is threaded on the tube 20c and engages the bottom of the chambered member 19b. A gasket 20e is provided between the nut and the bottom of the chambered element 19c.

With either of the forms of the invention shown closing of the main valve 8 permits water in the conduits 25, 25a or 41 to drain back into the chambered members 19, 19a, or 19b of the respective forms of the invention which, as hereinbefore stated, are positioned in the earth below the frost line. The device is particularly useful in the watering of lawns.

One of the outstanding requirements for lowering the maintenance costs of hydrant operation is that all working parts be accessible for repairs at a point above the ground level.

It is believed obvious from the foregoing description that the various objects and features of the invention are attained irrespective of the form of the drainage members 22, 22a or 40.

Having thus briefly described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is:

A hydrant adapted to be connected with a water supply pipe positioned in the earth below the frost line, comprising a vertical conduit with its lower end connected with said supply pipe and extending to a point above the earth's surface, a valve in the lower end of said vertical

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conduit, a seat for the valve, a valve stem on said valve extending upwardly through said vertical conduit for opening and closing said valve, said vertical conduit having a fluid outlet above said valve seat, a fluid drain chamber below the frost line and adjacent said valve, a second vertical fluid pipe with its lower end extending into said drain chamber, an ejector for fluid accumulating in said chamber joined to the end of said second vertical conduit within said chamber, and including fluid inlet openings adjacent the lower end of said chamber, a discharge nozzle for said ejector associated with said fluid inlet openings and extending through the bottom wall of said chamber; a coupling pipe interconnecting said valve outlet and nozzle, a plate at the upper end of said first vertical conduit and arranged normally thereof, a chambered member supported at its upper end by said plate, a fluid outlet pipe at the lower end of said member, the upper end of said second vertical pipe being joined to and extending up through the bottom wall of said member, and an air vent pipe surrounding said second vertical conduit with its upper end secured to said member and with its lower end extending down into said drain chamber establishing air communication therewith.

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