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SANITARY DRINKING FOUNTAIN AND VALVE THEREFOR

Filed March 16, 1951

2 Sheets-Sheet 1

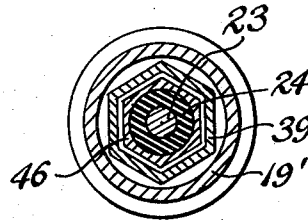
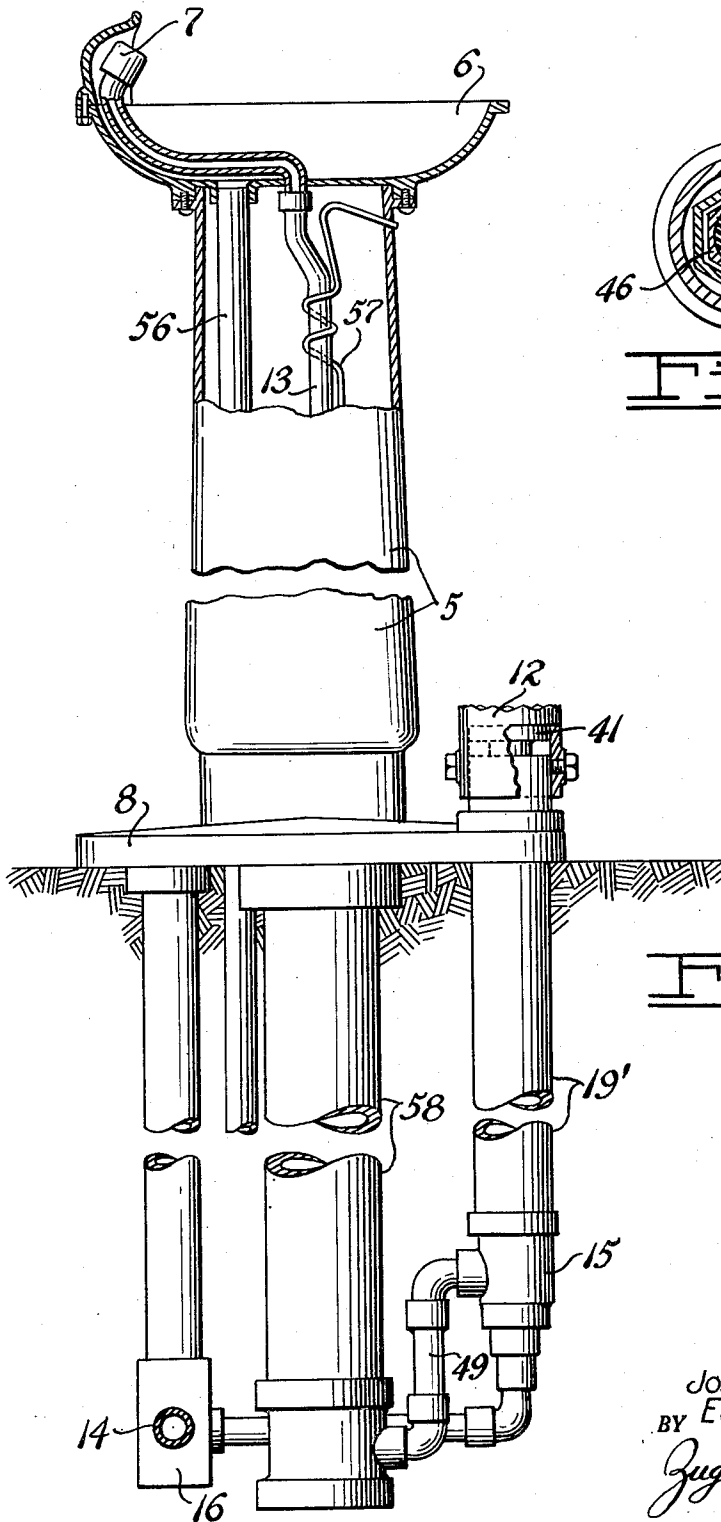


Fig. 3.

Fig. 1.

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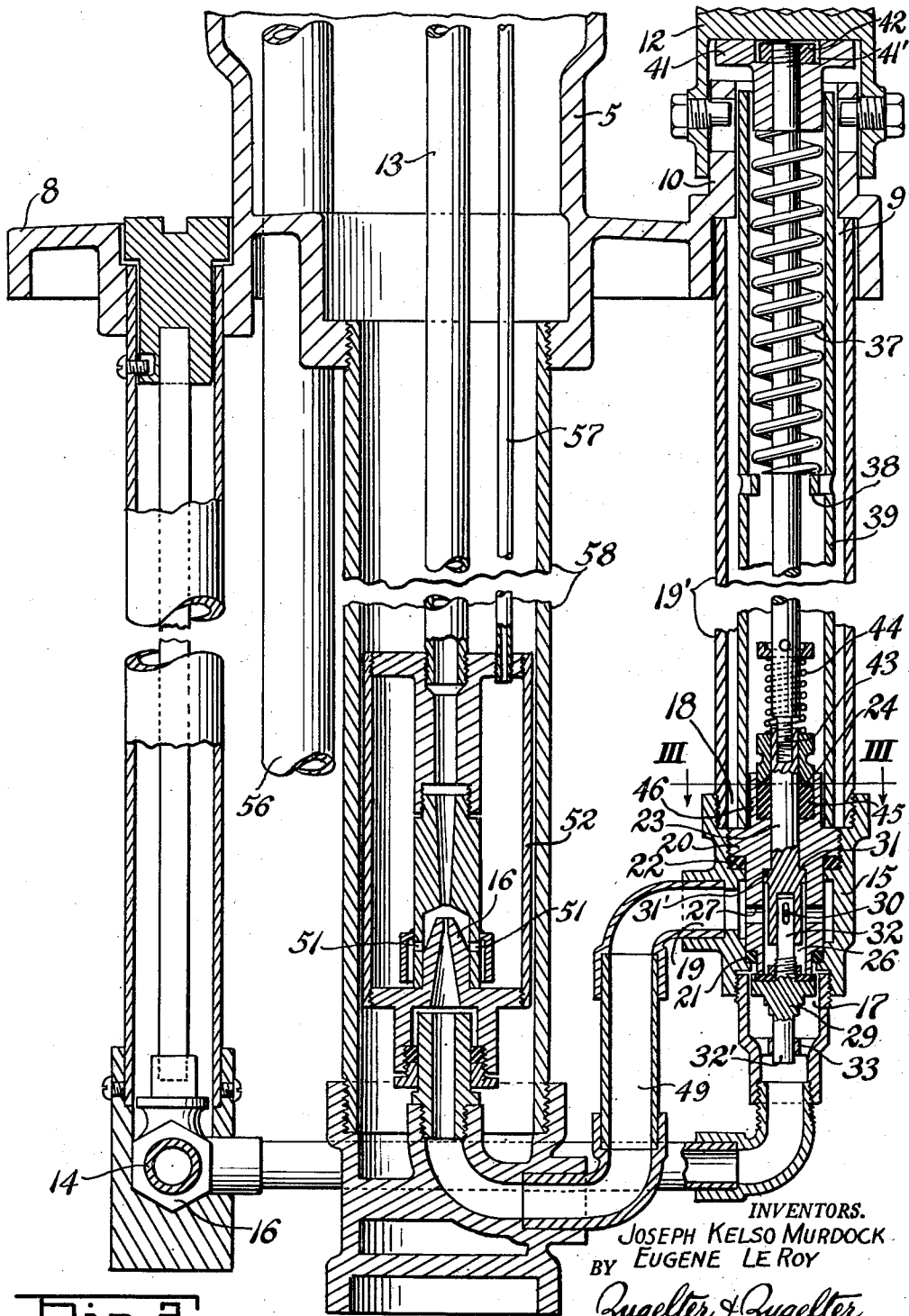


Fig. 2.

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SANITARY DRINKING FOUNTAIN AND
VALVE THEREFOR

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1 Claim. (Cl. 137-284)

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This invention relates to non-freezing and pollution-proof drinking fountains and more particularly it relates to an improved valve mechanism for such fountains.

Drinking fountains used in parks, railroad stations and the like are exposed to freezing temperatures during winter weather. The water mains and valves which service such fountains are located in the ground below frost levels. The valves periodically require service and must be removed from below ground level.

An object of this invention is to provide a valve mechanism for a drinking fountain of the type referred to above which can be mounted in a casing below frost level and which can readily be removed from the casing without disturbing the casing and underground pipe connections.

A further object of this invention is to provide a valve adapted for mounting at the bottom of an elongated upright casing and which can be withdrawn as a unit from the casing for servicing and repair.

A further object of this invention is to provide a valve of the above mentioned type that is arranged to be opened and closed by a vertically reciprocating stem housed in the casing.

The above and other objects and features of the invention will in part be obvious and will in part be apparent from the following detailed description and the drawings, in which:

Figure 1 is a view partly in side elevation and partly in section showing a drinking fountain having valve mechanism constructed in accordance with an embodiment of the invention;

Fig. 2 is a view in vertical section of the lower portion of the fountain illustrated in Fig. 1; and

Fig. 3 is a view in section taken along a line III-III in Fig. 2.

In the following detailed description, and the drawings, like reference characters indicate like parts.

In Fig. 1, a drinking fountain is shown which includes a casing 5 having a bowl 6 at the top thereof. Water for drinking is supplied by a spout or nozzle 7 mounted within and at one side of the bowl as shown.

The casing is supported by a plate 8 which rests on the ground, as shown in Fig. 1. Plate 8 is integral with casing 5, and is provided with an opening 9 (Fig. 2) having a collar 10. A cup shaped button 12 is mounted on and fits over collar 10 and can be pushed down to operate valve mechanism, to be described below, to turn on the supply of water to nozzle 7.

Water is supplied to the nozzle by a riser pipe

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13. Riser 13 in turn is supplied from a main 14 buried in the ground below frost level. Water supplied to riser 13 from the main 14 passes through a valve body 15 and a water jet ejector 16 (Fig. 2) connected to the bottom of riser 13 and the outlet of the valve body. Normally the inlet of the valve body is connected to the main, but when it is necessary to service the fountain, the supply of water to the valve body may be shut off by means of a valve 16, which may be of conventional structure and is not described in detail.

Valve body 15 and the mechanism associated therewith is so designed that all moving parts can be withdrawn from the body without disturbing any part of the mechanism which is buried in the ground. Valve body 15 is provided with an inlet opening 17 at the lower end thereof, an upper opening 18 at the upper end thereof through which a valve mechanism described infra is inserted, and a discharge opening 19 on one side between openings 17 and 18. As shown in Fig. 2, the openings 17 and 18 are in alignment. A casing tube 19' is threaded into opening 18 and extends upwardly therefrom to a point above ground level and inside the opening 9 in ground plate 8.

The valve body contains a removable annular valve seat member 20. Member 20 is threaded into opening 18 and extends through the valve body into the inlet opening 17. Member 20 is seated on sealing gaskets 21 and 22 located respectively at points above and below the outlet or discharge opening 19 as shown. Member 20 has a vertical bore through which stem 23 extends. The upper end of the stem 23 extends through a packing box 24 to prevent leakage of water past the stem. The lower portion of stem 23 extends into a chamber 26 in the lower end of member 20, the walls of which are provided with ports 27 that communicate with outlet port 19 in the valve body.

The lower end of member 20 forms a seat 28 for a vertically movable valve 29 that is connected by a lost motion joint 30 to the lower end of stem 23. Valve 29 includes an upwardly facing valve disc 31 disposed to seat on seat 28 to close the valve.

Lost motion connection 30 is so arranged that, when the stem is in its uppermost position, the valve is held closed by the pressure of water in the inlet, thereby avoiding the application of excessive force on the valve by the valve operating leakage. Cooperating shoulders 31 and 31' on

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the stem and inside member 20 limit the distance to which the stem 23 can be raised. When the stem is depressed, the lost motion of connection 30 is taken up and the stem pushes the valve downwardly to open position, whereupon water can flow past the valve disc into chamber 26 and through ports 27 into discharge opening 19. The valve is steadied by stub stems 32 and 32' attached to upper and lower sides of the valve disc respectively. Stub stem 32' is guided by a spider 33 in an inlet fitting 34, while stub stem 32 slides telescopically in the lower end of stem 23. The stub stems hold the valve properly centered in the inlet opening as it opens and closes.

The stem is moved downwardly or depressed by means of push button 12, which is at the top of the stem. The stem extends the length of casing 19' and through collar 35 to push button 12. The push button is arranged to drive the stem downwardly. When released, the push button is returned by a spring 37. Spring 37 is seated on lugs 38 which project inwardly of the walls of a tube 39. Tube 39 is inside casing 19' and surrounds stem 23. The lower end of the tube rests on a member 20 while the upper end extends into collar 36 and surrounds and confines spring 37. The upper end of spring 37 bears on a sliding plug 41. Plug 41 slides along the stem and engages the push button. The upper end of plug 41 includes a well 41' which receives a nut 42. Nut 42 is threaded to the head of the stem and can be turned to adjust the position of the stem and regulate the distance the valve is opened when the button is depressed.

The stem is made in two pieces which are threaded together as indicated at 43. The upper portion of the stem carries a spring 44 which is disposed just above the threaded connection. Spring 44 bears on the packing gland 45 to compress the packing in packing box 24. As shown, the spring 44 is compressed as the stem is pushed downwardly so that the compression on the packing is increased as the valve is opened. When the stem is released, spring 44 maintains pressure on the packing at all times.

The stem, springs, packing box, and tube 39 are all housed inside casing 19'. As shown in Fig. 2, the casing is larger in diameter than valve 29 or member 20. Member 20 is provided with a hexagonal head 46 (see Fig. 3). Head 46 can be engaged by a wrench to unscrew member 20 from the valve body. When member 20 is unscrewed, member 20 and valve 29 can both be raised from the valve body to the surface of the ground without disturbing the valve body or casing 19'.

From valve body 15, water flows through a line 49 to enter ejector 16 (Fig. 2). The ejector is provided with side openings 51 which communicate with the interior of a reservoir 52. When valve 29 is open, water flows up through ejector 16 and riser 13 to be discharged through spout 7 (Fig. 1) and into bowl 6. The bowl drains through a drain pipe 56. When the valve is closed, water remaining in the riser drains down from the riser through ports 51 into reservoir 52. Then, when the valve is again opened and water is again driven up through the ejector, the water in reservoir 52 is drawn back through openings 51 into the riser and ejected through spout 7 (Fig. 1). The reservoir is provided with an air vent tube 57 (Figs. 1 and 2) through which air can enter the top of the reservoir so that atmospheric pressure is maintained therein and water can enter and leave the reservoir freely. As shown in Fig. 2, the reservoir and ejector are

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housed inside a lower fountain casing 58. Casing 58 is larger in diameter than the reservoir and ejector so that the reservoir and ejector can be withdrawn up the casing when necessary for servicing without disturbing casing 57.

The fountain provides potable drinking water at all seasons of the year. When the fountain is turned off, water remaining in the riser is stored in reservoir 52 below frost level where safe from danger of pollution and freezing. When the fountain is turned on this riser water passes into the riser again and is discharged.

The fountain described above and illustrated in the drawings is subject to structural modification without departing from the spirit and scope of the appended claim.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

A valve for a frost- and pollution-proof fountain which comprises an upright hollow casing, a valve body attached to the lower end of said casing, said body having an inlet opening at the lower end thereof and a side outlet, a plug in the body and extending past said outlet and into the inlet thereof, said plug being secured by internal screw threads to the body, seals between the plug and the body above and below the outlet, a packing box on the top of the plug, said plug having a chamber in the lower end thereof communicating with said inlet and outlet, the lower end of the chamber terminating in a valve seat, a valve stem extending through said packing box and body into said plug chamber, a valve disk below said valve seat and adapted to seat on the same, said disk being suspended from the stem, a tubular member in said casing surrounding said stem and packing box, said tubular member extending to a level above the top of the casing, said packing box and the lower end of said tubular member having cooperating wrench flats whereby said plug may be screwed into or out of the body from above the top of said casing and removed with the stem and tubular member from the casing as a unit, an inwardly projecting spring supporting boss on the tubular member located above said packing box, a compression spring surrounding the stem and supported on said boss, and a button removably attached to the upper end of the stem and engaging the upper end of the spring, the spring urging the stem upwardly to normally seat said valve disk on the valve seat, the valve being opened by depressing said button.

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