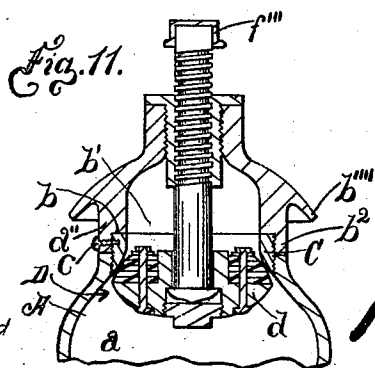
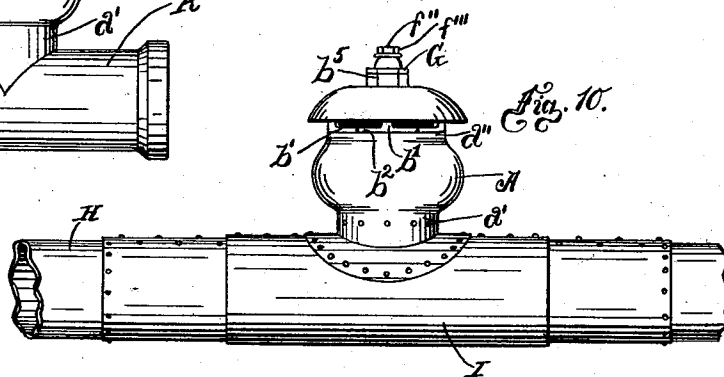
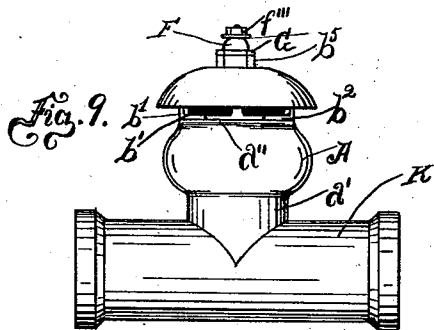
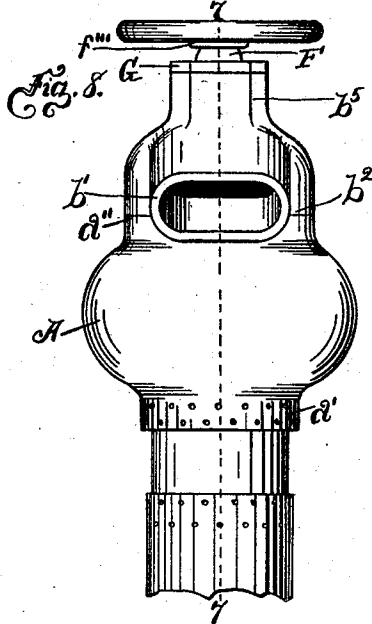
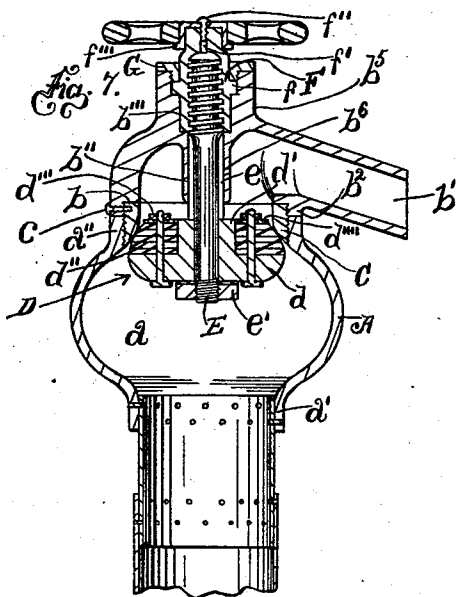


G. A. DOYLE.
IRRIGATION HYDRANT.

No. 548,779.

Patented Oct. 29, 1895.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE A. DOYLE, OF PERRIS, CALIFORNIA.

IRRIGATION-HYDRANT.

SPECIFICATION forming part of Letters Patent No. 548,779, dated October 29, 1895.

Application filed January 22, 1895. Serial No. 535,765. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. DOYLE, a citizen of the United States, residing at Perris, in the county of Riverside and State of California, have invented new and useful Improvements in Irrigation-Hydrants, of which the following is a specification.

My invention relates to hydrants designed to discharge a large volume of water, and is applicable to low or weir hydrants and also to stand-pipe hydrants. It is also applicable for use in other situations where valves are required; but it is specially adapted for large discharge-openings because of the increased liability of leakage which pertains to such large openings.

One object of my invention is to provide a very compact and strong irrigation-hydrant which will close with the pressure and in which all the working strains are upon and against the same castings, so that there is no danger of causing leaks.

Another object of my invention is to provide a hydrant in which the top, with the working parts, screws onto the barrel or lower casting instead of bolting, whereby the top and the working parts can be easily removed for cleansing or repairs, the same being so constructed that when the top is removed it and all the working parts lift out together, so that the working parts are convenient to get at.

Another object is to so construct the hydrant that the hydrant top or cap can be removed by unscrewing with a socket-wrench or other wrench used on the top of the hydrant or in case the top becomes stuck can be turned by a bar passed through the outlets of the hydrant-top under the bell and engaged with the standards which support the bell.

My hydrant is adapted for being fastened to the main in various ways. The barrel of my hydrant can be cast solid with a T or cast separate and set on a sheet-iron T and the joints tinned or dipped in asphaltum, or both, or can be riveted onto a clamp and so be made to fit any size or kind of pipe, or can be screwed onto a threaded T, or can be set on a cement or vitrified pipe and banded into place by cement or by any other practicable means.

In my improved irrigation-hydrant the

valve stem or spindle is covered and protected from dust and grit. I also make provision for oiling the valve-stem.

The accompanying drawings illustrate my invention.

Figure 1 is a vertical midsection showing my improved hydrant applied as a low hydrant mounted upon a T and riveted thereto. In this view the valve is shown closed. Fig. 2 is a view, partially in section and partially in elevation, showing my irrigation-hydrant applied as a low hydrant to a pipe by means of a plate riveted to such pipe. In this view the valve is shown open. Fig. 3 is a horizontal section on line 3 3, Fig. 1. Fig. 4 is a horizontal section on line 4 4, Fig. 2. Fig. 5 is a view of my improved hydrant attached to a pipe by means of a clamp. Fig. 6 is a detail indicating means of connecting the hydrant to a cast-iron pipe. Fig. 7 is a vertical mid-section on line 7 7, Fig. 8, showing my improved hydrant provided with a spout and arranged for a stand-pipe hydrant. Fig. 8 is an elevation of the same. Fig. 9 shows a hydrant in which the barrel is cast with a T. Fig. 10 shows a hydrant riveted to a sheet-iron T. Fig. 11 shows my invention applied with a valve-stem journaled in the valve to rotate therein and arranged to screw up and down through the hydrant top or cap.

A indicates the barrel, provided with a valve-chamber *a*, the straight cylindrical attaching-collar forming the inlet-neck *a'* and the internally screw-threaded collar forming the outlet-neck *a''*.

B indicates the hydrant top or cap, provided with a base-ring *b*², which forms the lower margin of the lateral outlets or discharge-openings of the hydrant, the valve-seat socket *b* in such base, the discharge-openings *b'* above such socket, the downwardly-projecting spindle-guide *b''*, and the socket *b'''* for the revolving collar or spindle-operating cap.

b'''' indicates the rim of the bell, which in my hydrant I make of less diameter than those now in use, as the present ones undermine brickwork because of the contracted stream and force of discharge.

C is an annular valve-seat detachably secured within the outlet-neck of the barrel A

of the hydrant and seated in and secured in the valve-seat socket *b* of the hydrant top or cap.

D indicates the valve, which is mounted upon the valve stem or spindle E, which spindle screws into the revolving sleeve F, which is provided with a flange *f* and is seated in the socket *b'''* in the hydrant-top and secured therein by the bushing G, which is screwed into the socket *b'''* and fits over the flange *f*, which surrounds the revolving collar. The valve D is composed of a valve-plate *d*, provided on its upper face with a hub *d'*, and suitable packing *d''*, arranged around the hub on the upper face of the valve-plate and secured thereto by bolts *d'''*. *d''''* is a washer fitted upon the top of the packing and through which the bolts pass to hold the packing in place.

As shown, the packing or seat-engaging portion of the valve is formed of a series of sheets or layers of well-hammered sole-leather, which are turned true to a convex surface on a lathe after they have been clamped in place on the valve-plate. This valve fits upward into the convex-faced valve-seat, so as to effectually close the same. The valve is arranged in the valve-chamber to fit up into the valve-seat, which is screwed into the socket in the hydrant-top, and when the valve is drawn upward by the valve-stem the pressure is exerted through the valve, the valve-seat, and the hydrant-top and presses all the joints together, so that there is no danger of straining any of the joints and thus causing a leak where the hydrant connects to the main pipe. I am aware, however, that other hydrants have this feature and I do not claim it as my invention.

The valve-seat is a ring having no cross-bars and nothing to obstruct the free passage of water therethrough, so that when the valve is opened downward the water passes above the valve and through the ring without any obstruction and finds free outlet through the discharge-openings *b'*.

c indicates set-screws which screw through the base or lower ring *b²* of the top into the valve-seat socket *b* to hold the valve-seat from unscrewing from the base-ring, and when the set-screws *c* are in place the hydrant-top can be unscrewed and carries the valve-seat and valve with it. The hydrant-top is provided with a hexagon boss at its top, as shown at *b⁵*, to receive a wrench by which it can be turned.

e indicates a feather upon the valve-stem E and the same slides in the guideway or channel *b⁶* in the spindle-guide *b''*. *f'* is an oil-hole in the revolving sleeve F for oiling the spindle, and *f''* is a screw-plug to close the oil-hole.

f''' indicates a cap for protecting the upper end of the revolving sleeve F.

The feather *e* prevents the valve-stem and valve-seats from turning, and the valve, therefore, always seats in the same place and does

not turn in the valve-seat, and there is no twisting strain on the valve-stem caused by friction between the valve and its seat.

e' is a nut which screws upon the end of said valve-stem and against the valve-plate and in conjunction with a shoulder such as that formed by the lower ends of the feathers *e* which engage the hub of such plate, holds the valve-plate rigid in position on the spindle E.

H indicates the main to which the hydrant is attached.

I indicates a sheet-metal T on which the hydrant can be riveted.

J indicates a clamp-plate on which the hydrant can be riveted.

K indicates a cast-iron T.

To construct my improved hydrant the barrel A, the cap B, the valve-seat C, and valve-plate *d* may all be cast. The valve-seat C and valve-stem E are preferably made of brass. The other parts being made of iron, the whole may be assembled as follows: The brass valve-seat C is screwed into the socket *b* in the cap B and secured by the set-screw *c*. The valve is then placed in position to fit into the valve-seat and the valve-stem is screwed into place in the rotating sleeve, which is seated in the socket therefor in the hydrant-top. The bushing G is then screwed into place and the top is secured to the barrel by screwing the valve-seat down into the neck *a''*. The hydrant is thus ready for operation and can be applied to the pipe and secured thereto by the inlet-neck through different means, as shown in the several different views, and in other ways which may be found practicable. To open the valve the revolving sleeve F is rotated, thus forcing the valve-stem E down. This allows the water to flow through the valve-seat ring C and out through the lateral discharge *b'*. When it is desired to remove the hydrant top or cap for repairs or to gain access to the interior of the hydrant, the cap can be unscrewed from the barrel by a wrench applied to the hexagonal portion *b⁵*, or by a bar applied through the openings *b'* and brought into engagement with the standards or supports, which support the bell, so that great power can be applied to tighten or loosen the hydrant top or cap B.

The water-ways through and the discharge-openings from the hydrant are to be made of greater area than the inlet-opening from the main pipe, so as to compensate for friction.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The hydrant set forth comprising the barrel provided with the valve-chamber and with a neck; an annular valve-seat detachably secured within such neck; the cap provided with lateral discharge opening and with the base ring which is secured to such valve-seat and forms the lower margin of the lateral discharge opening; a valve arranged

within the valve-chamber to fit the valve-seat; and valve-reciprocating means connecting the valve and the cap.

2. The hydrant set forth comprising the barrel provided with a valve-chamber and with an internally threaded neck; an annular externally threaded valve-seat screwed into the neck and projecting therefrom; the cap provided with lateral discharge opening and with the internally screw-threaded base ring which is screwed onto such valve-seat and forms the lower margin of the lateral discharge opening; the set screws screwed through the base ring to hold the valve-seat from unscrewing from the base ring; a valve arranged within the valve-chamber to fit the valve-seat; and

valve reciprocating means connecting the valve and the cap.

3. The hydrant body consisting of a barrel provided with an internally screw-threaded neck; a cap provided with a discharge opening and with the base ring which forms the lower margin of said opening and is provided with the valve-seat socket; and an externally threaded annular valve-seat seated and fixed in such socket and screwed into such neck.

GEO. A. DOYLE.

Witnesses:

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HORATIO N. DOYLE.