

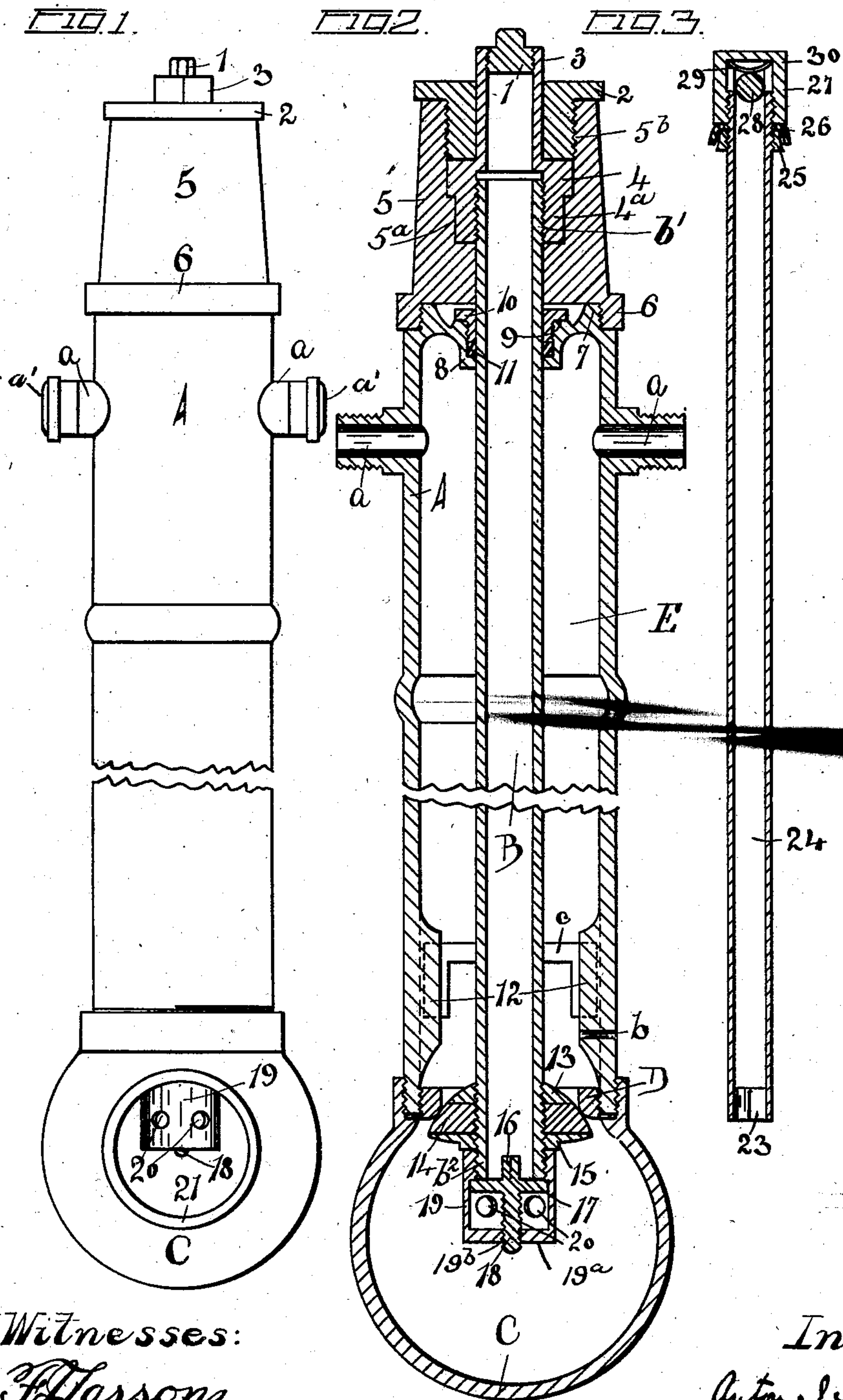
No. 724,742.

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A. I. SANDBO.
HYDRANT.

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NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

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HYDRANT.

SPECIFICATION forming part of Letters Patent No. 724,742, dated April 7, 1903.

Application filed March 19, 1902. Serial No. 98,877. (No model.)

To all whom it may concern:

Be it known that I, ANTON I. SANDBO, residing at Waukon, in the county of Allamakee and State of Iowa, have invented certain useful Improvements in Hydrants; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to provide a hydrant with a valve having a tubular valve-stem extending therethrough and means which when the valve-stem becomes fixed and inoperative by the water freezing around it will enable it to be readily loosened, so as to become operative by admitting water from the service-pipe to the interior of the tubular valve-stem. The water being of a higher temperature than the valve-stem will quickly thaw the ice around the latter.

In order that my invention may be fully understood, I will proceed to describe it in detail in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of my improved hydrant. Fig. 2 is a vertical longitudinal central section thereof on a somewhat larger scale. Fig. 3 is a vertical longitudinal central section of my combined key and pump used in connection with the tubular valve-stem.

A is a housing or casing having a water-chamber E and outlets or nozzles *a*, provided with caps *a'*; B, a tubular valve-stem located within the housing; C, a globe or pipe coupling in which the valve is located and into which the housing is screw-threaded and with which a service-pipe is connected, and D a flanged valve-seat secured between the pipe-coupling and the housing and screw-threaded to the latter.

b is a drainage-opening at the lower end of the housing, and *c* is a cross-bar secured to the tubular valve-stem and adapted to engage ribs 12 on the interior wall of the housing to prevent the rotation of the tubular valve-stem within the housing, while permitting the tubular valve-stem to be guided in its vertical movement.

The upper end of the housing is formed with an exteriorly-screw-threaded shoulder 7 to receive the interiorly-screw-threaded flange 6 of a head 5, formed with a stepped opening 5^a and interiorly-screw-threaded outer end 5^b, within which is fitted a stepped nipple 4, having an interiorly-screw-threaded lower end 4^a, receiving the exteriorly-screw-threaded upper end *b'* of the tubular valve-stem B, and a non-circular and interiorly-screw-threaded upper end 3, receiving a sealing or closing plug 1.

2 is an exteriorly-screw-threaded flanged cap seated within the head 5 and fitting around the upper end of the nipple and against the stepped portion thereof for retaining the nipple in place.

Within the upper end of the housing and integral therewith is a depending stuffing-box 8, surrounding the tubular valve-stem and formed with an interiorly-screw-threaded shoulder 9, receiving the exteriorly-screw-threaded collar 10. Within the stuffing-box I locate a packing 11.

*b*² is the exteriorly-screw-threaded lower end of the tubular valve-stem which projects through the flanged valve-seat and into the pipe-coupling, where it receives the interiorly-screw-threaded adjustable valve which controls the flow of water into and through the chamber E between the housing and the tubular valve-stem. The valve is formed with an upper nut 13, an intermediate packing-ring 4, and a lower nut 15.

Suspended on the lower extremity of the tubular valve-stem against the valve is a cage 19, having openings 20 in the wall thereof for the admission of water thereto. The bottom 19^a of the cage is formed with a screw-threaded opening 19^b.

17 is an adjustable auxiliary valve located in the cage for normally closing the lower end of the tubular valve-stem. This auxiliary valve is constructed with a screw-threaded stem 18, adjustable in the opening 19^b in the bottom of the cage, and with a non-circular boss 16, projecting within the main valve-stem.

21 is a screw-threaded opening in the pipe-coupling for receiving the service-pipe.

It will be clearly apparent that the valve

can be opened and closed by a suitable handle applied to the non-circular upper end 3 of the nipple, so that by turning the nipple in the proper direction the tubular valve-stem will be unthreaded or threaded to lower or raise it, and consequently the valve will be opened or closed. With this construction of hydrant there is a liability of the tubular valve-stem becoming fixed by the freezing of the water within the surrounding chamber E. For the purpose of thawing the ice in this chamber, and thereby loosening the tubular valve-stem, I provide the means hereinbefore described for admitting water from the service-pipe to the interior of the tubular valve-stem. The water from the service-pipe being of a higher temperature quickly thaws the ice within the chamber, so as to enable the tubular valve-stem to be loosened and the valve to be operated.

When it is desired to thaw the ice in the chamber, the sealing-plug 1 is removed from the nipple and a suitable key is inserted and engaged with the non-circular boss 16 of the auxiliary valve, and the latter is turned in the proper direction to open the lower end of the tubular valve-stem, when the water from the service-pipe will pass through the cage into and through the tubular valve-stem and raise the temperature of the same and thaw the surrounding ice in the chamber, so as to release the tubular valve-stem and enable the valve to be operated. After this result is accomplished the auxiliary valve is again closed; but as there is liability of the auxiliary valve becoming frozen if water remains therein I pump out the water in the tubular valve-stem, fill it with oil, and then replace the sealing-plug.

In Fig. 3 I show my combined key and pump, which I use for the purpose of opening and closing the auxiliary valve and for pumping out the water within the tubular valve-stem after the auxiliary valve has been used.

24 is a tube having at one end a socket 23, adapted to receive the angular boss 16 on the auxiliary valve. The other end of the tube is exteriorly screw-threaded for the reception of a nut 25, an elastic or leather valve-washer 26, and a valve-cage 27. This end of the tube provides a seat within the cage for a puppet or ball valve 28, which is seated by a spring 29, located between the puppet or ball valve and the bottom plate 30 of the cage.

Should it be desired to open the auxiliary valve, the tube is inserted and the socket engaged with the non-circular boss 16, the tube turned in the proper direction and the tube removed, when the inflowing water will first expel the oil and continue to flow there-through and thaw the ice in the chamber of the housing. When the auxiliary valve is to be closed, the tube is reinserted to engage the boss 16 and turned in the opposite direction and then removed and inverted. The tube is again inserted into the tubular valve-

stem, pump end first, the elastic or leather valve-washer yielding, so as to permit the water to pass to the outer side thereof, and the puppet or ball valve remaining closed, and as soon as the pump end reaches the bottom of the tubular valve-stem the tube is reciprocated, the leather or elastic washer-valve spreading and raising the water therewith at each upward movement of the tube. At the same time the puppet or ball valve opens to permit air to pass down the tube to take the place of the water which is withdrawn. After the tubular valve-stem is filled with oil it is closed by inserting the sealing-plug in the nipple. This placing of oil within the tubular valve-stem prevents the water from ascending in the tubular valve-stem with the liability of its freezing within the top of the tubular valve-stem, which would prevent the key-tube from being inserted without recouring to some means to remove the ice within the tubular valve-stem, so as to gain access to the auxiliary valve.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A hydrant comprising a housing having a water-chamber and an outlet; a pipe-coupling having a water-chamber and provided with an opening for a service-pipe, a valve-seat, a valve having a tubular valve-stem extending through the valve and through the chamber of the housing, means for lowering and raising the tubular valve-stem for opening and closing the valve, and means for opening and closing communication between the interior of the tubular valve-stem and the chamber of the pipe-coupling.

2. A hydrant comprising a housing having a water-chamber and an outlet, a pipe-coupling having a water-chamber and provided with an opening for a service-pipe, a valve-seat secured between the lower end of the housing and the pipe-coupling, a valve located within the chamber of the pipe-coupling, having a tubular valve-stem extending through the valve and through the chamber of the housing, means for lowering and raising the tubular valve-stem for opening and closing the valve, and means for opening and closing communication between the interior of the tubular valve-stem and the chamber of the pipe-coupling.

3. A hydrant comprising a housing having a water-chamber and an outlet and a depending stuffing-box, a pipe-coupling having a water-chamber and provided with an opening for a service-pipe, a valve-seat, a valve having a tubular valve-stem extending through the valve and through the chamber and stuffing-box of the housing, means for lowering and raising the tubular valve-stem for opening and closing the valve, and means for opening and closing communication between the interior of the tubular valve-stem and the chamber of the pipe-coupling.

4. A hydrant comprising a housing having

a water-chamber and an outlet, a head having a stepped opening and secured to the housing, a nipple having a stepped lower portion fitting in the stepped opening of the head
5 and a non-circular upper end, means for closing the upper end of the nipple, a pipe-coupling having a water-chamber and provided with an opening for a service-pipe, a valve-seat, a valve having a tubular valve-stem extending through the valve and through the
10 chamber of the housing and secured to the nipple, and means for opening and closing communication between the interior of the tubular valve-stem and the chamber of the
15 pipe-coupling.

5. A hydrant comprising a housing having a water-chamber, and an outlet, a pipe-coupling having a water-chamber and provided with an opening for a service-pipe, valve-
20 seat, a valve having a tubular valve-stem extending through the valve and through the chamber of the housing, a cage secured to the lower end of the tubular valve-stem, an auxiliary valve located within the cage, normally
25 closing the lower end of the tubular valve-stem, and having a screw-threaded stem adjustable in the bottom of the cage and a non-circular key-boss, and means for lowering and
30 raising the tubular valve-stem for opening and closing the valve.

6. A hydrant comprising a housing having

a water-chamber and an outlet, a head having a stepped opening and secured to the housing, a nipple having a stepped lower portion, fitting in the stepped opening of the
35 head, and a non-circular upper end, means for closing the upper end of the nipple, a collar surrounding the nipple for seating the latter, a pipe-coupling having a water-chamber and provided with an opening for a service-
40 pipe, a valve-seat, a valve having a tubular valve-stem extending through the valve and through the chamber of the housing and secured to the nipple, a cage secured to the lower end of the tubular valve-stem, and an
45 auxiliary valve located within the cage and normally closing the lower end of the tubular valve-stem, and having a screw-threaded stem adjustable in the bottom of the cage and a
50 non-circular key-boss.

7. A combined key and pump-piston comprising a tube having at one end a socket and at the other end a cage, a nut and an elastic washer-valve between the cage and the nut,
55 and a spring-valve within the cage.

In testimony whereof I affix my signature in presence of two witnesses.

ANTON I. SANDBO.

Witnesses:

S. H. EDDY,
H. A. HEWITT.