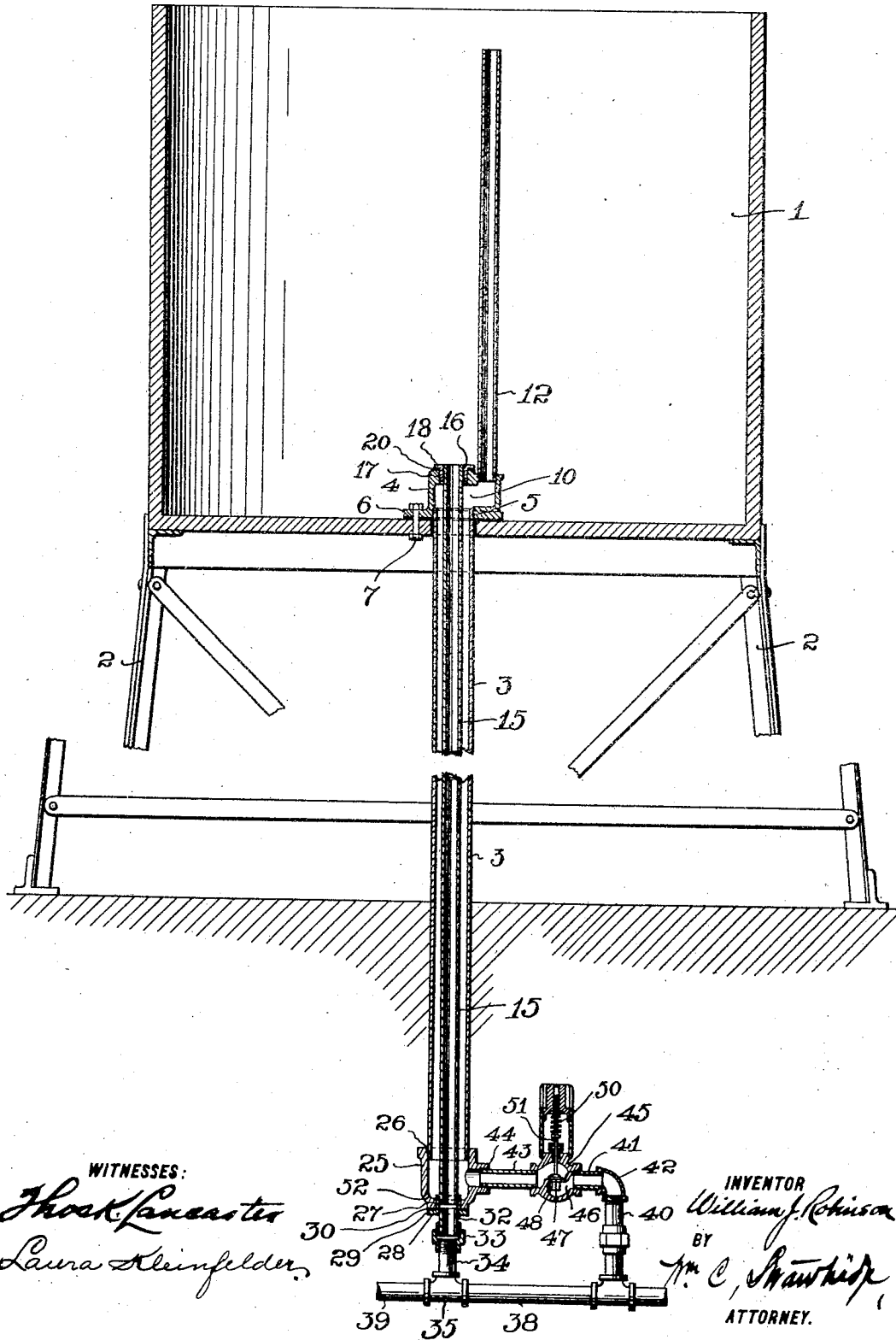


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W. J. ROBINSON.
AUTOMATIC THAW-OUT FOR WATER PIPES.

APPLICATION FILED OCT. 10, 1904.



UNITED STATES PATENT OFFICE.

WILLIAM J. ROBINSON, OF SMYRNA, DELAWARE, ASSIGNOR OF ONE-HALF TO JOHN P. HUDSON, OF SMYRNA, DELAWARE.

AUTOMATIC THAW-OUT FOR WATER-PIPES.

SPECIFICATION forming part of Letters Patent No. 779,316, dated January 3, 1905.

Application filed October 10, 1904. Serial No. 227,810.

To all whom it may concern:

Be it known that I, WILLIAM J. ROBINSON, a citizen of the United States, residing at Smyrna, Delaware, have invented certain new and useful Improvements in Automatic Thaw-Outs for Water-Pipes, of which the following is a specification.

This invention relates to an improvement in automatic thaw-outs for pipes, and it has for its object to provide a device of this character in which the frozen water in a pipe leading from a source of water supply to an elevated tank may be melted by the passage of water from such source of supply to the tank through a pipe surrounding that through which the water usually travels.

The invention resides in the novel features of construction hereinafter described, and which is set forth specifically in the claims, and which is illustrated in the accompanying drawing which forms a part of this specification.

In the drawing,—

1 designates a tank for the reception of water from a source of supply, for instance, a well, not shown. The tank is supported upon a suitable frame 2, as clearly indicated. 3 designates a pipe of relatively large diameter, the upper end of which extends through the bottom of the tank and is secured to the lower end of a hollow device 4 by means of screw-threaded connection at 5. The said device 4 is provided with a flange 6 which is secured to the bottom of the tank by means of bolts 7, which extend through the said flange and the said bottom and are secured by means of a nut in the usual manner.

The said hollow device 4 is provided upon one side with an opening 10, which is in communication with the pipe 3, and the said opening 10 is also in communication with a pipe 12 which extends upwardly to a point slightly below the upper edge of the tank 1.

Located interiorly of the pipe 3 is a pipe 15 having an external diameter which is less than the internal diameter of the pipe 3. The said pipe 15 extends up through the hollow device 4 and has screw-threaded connection with a stuffing ring or gland 16, a portion of which

fits within a circular opening 17 in the upper side of the device 4, and the said gland is provided with a flange 18 which rests upon a flexible compressible ring 20, preferably of rubber, which is located upon the upper side of the hollow device 4 and surrounds a portion of the gland 16.

25 designates an inverted cup-shaped device, which is secured to the lower end of the pipe 3 by means of a screw-threaded connection, as indicated at 26. The pipe 15 is secured to a gland or stuffing ring 28 by means of a screw-threaded connection, the said gland being located in a circular opening 27 provided in the lower end of the device 25, and the lower end of the said gland is provided with a flange 29 which rests upon a washer 30, preferably of rubber, which surrounds the said gland 28 and is located between the flange 29 and the lower end of the device 25.

32 designates a short pipe having screw-threaded connection with the lower end of the said gland, and the said pipe 32 is connected by a suitable union 33 to a short pipe 34 connected to the T-joint 35 and being in communication with a pipe 38 leading to the source of water supply.

It will be understood that by reason of the foregoing construction, the pipe 15 may be readily removed should it become desirable to do so.

39 designates a pipe which leads to the point to which it is desired to conduct the water, the said pipe being in communication with the pipe 34, consequently with the pipes 32 and 15, and with the tank 1.

It will be understood that as the upper end of the pipe 15 is open and in communication with the interior of the tank 1, it will always be full of water, and that consequently when the temperature of the water is below the freezing point, the water in the said pipe will become congealed.

In order to thaw out the pipe 15, when the water therein has become frozen, I have provided means whereby the water may be directed automatically from the pipe 38 leading from the well or other suitable source of supply into the large pipe 3, surrounding the

pipe 15 through the said pipe and the pipe 12 from the latter of which it is discharged into the tank 1.

The means provided for this purpose consists of what I call a cut-off pipe, composed of the sections 40 and 41 connected by means of the elbow 42 and a section 43, which is connected at one end, as shown at 44, to the inverted cup-shaped device 25, which is secured to the lower end of the pipe 3. The other end of the section of pipe 43 is connected to the section of pipe 41 by means of a coupling 45 having a passageway 46 therethrough, which is normally closed by a valve 47. The said valve being normally held upon its seat 48 by means of a coiled wire spring 50 which surrounds the stem 51 of the said valve 47.

The strength of the said spring 50 is sufficient to overcome the weight of the column of water in the pipe 15, but when the said pipe becomes closed or obstructed either by the freezing of the water in the said pipe, or in any other manner, the pressure of the water against the under side of a valve 47, occasioned by a pump or other suitable means for forcing the water into the tank (such means not being shown) is sufficient to overcome the pressure of the said spring and to raise the said valve from its seat and permit the passage of the water through the pipes 40, 41, 43, 3 and 12 into the said tank.

It is to be understood that the lower ends of the pipes 3 and 15, and also the cut-off pipe between the said pipe 3 and the pipe 38 are located below the frost line.

I desire it to be understood that various changes in the details of construction herein shown may be made without departing from the spirit and scope of my invention. For instance, it is to be understood that the means connecting the upper end of the pipe 15 to the hollow device 4 may be changed as desired, the only restriction being that the connection between the upper end of the said pipe and the device 4 should be water tight, so as to prevent the passage of water from the tank into the pipe 3 at this point; and it is also to be understood that changes may be made in the manner of connecting the pipes 38 and 39 to the lower end of the said pipe 15 without departing from my invention.

Stated broadly, my invention consists in the provision of means for permitting the passage of water from the source of supply into the tank 1 when the pipe 15 through which the water usually passes becomes obstructed from any cause. If the cause of this obstruction happens to be the freezing of the water in the said pipe, the passage of the water from the source of supply through the pipe 3 around the pipe 15 occasions, by its warmth, the thawing out of the said pipe 15, and as soon as said pipe has thawed out, the valve 47 resumes its seat closing the cut-off pipe and

the water again passes to the tank through its normal channel, namely the pipe 15.

It will be understood that when the ice has been thawed out of the pipe 15 and the water begins to flow therethrough, the water in the pipe 3 surrounding the said pipe 15 should be permitted to escape. Accordingly, I have provided a drain hole 52 to permit the passage of the water from the said pipe 3. It will thus be seen that usually the pipe 3 is free from water, and that it is adapted for the passage of water therethrough when the pipe 15 becomes obstructed from any cause.

It will be understood that as the water is discharged from the tank 1 it passes through the pipe 15 and the pipe 39 and thence to its proper destination.

Having thus described my invention, I claim—

1. A device of the character described, comprising a pipe leading from a source of water supply to a tank, a second pipe which is in communication with the said tank and said water supply, and means for normally closing said second pipe or passageway, which means is adapted to be opened to permit the passage of the water to the tank when the first pipe or passageway is closed.

2. A device of the character described comprising a pipe leading from a source of water supply to a tank, a second pipe surrounding the first named pipe, the internal diameter of the said second pipe being sufficiently greater than the external diameter of the interior pipe to leave a space between the outside of the said interior pipe and the inside of the exterior pipe and each of the said pipes being in open communication with the said tank, and means for directing water from the said source of supply to the exterior pipe when the interior pipe becomes closed.

3. A device of the character described, comprising a plurality of pipes, one of which is located inside the other, and each of which is in communication with a tank and with a source of water supply, and one of the said pipes being normally open to permit the passage of the water therethrough, and means for closing the communicating passageway from the other of said pipes to the water supply, the said means being adapted to be opened to permit the passage of the water therethrough in the event of the passageway through the other of said pipes becoming obstructed.

4. A device of the character described, comprising a pipe in open communication with a tank, a second pipe leading to the source of water supply and connected to the end of the said first named pipe which is farthest removed from the said tank, a third pipe surrounding the first named pipe, a pipe connection between the said third pipe and the second named pipe, and means for closing the said

pipe connection, the said means being adapted to be opened to permit the passage of the water therethrough in the event of the passageway through the first named pipe becoming obstructed.

5 5. A device of the character described, comprising a pipe in open communication with a tank, a second pipe leading to the source of water supply and connected to the end of the
10 said first named pipe which is farthest removed from the said tank, a third pipe surrounding the first named pipe, a pipe connection between the said third pipe and the second named pipe, and means for closing the
15 said pipe connection, said means being adapted to be opened by the pressure of water against the same in the event of closure of the first named pipe.

20 6. In combination, a tank, a hollow device secured to the bottom of the said tank, a pipe

detachably connected to the said device, the said pipe opening into the said tank, a pipe surrounding the said first named pipe, a cup-shaped device connected to the lower end of the surrounding pipe, and the first named pipe
25 being detachably connected to the said cup-shaped device, a pipe leading from a source of water supply also connected to the said cup-shaped device, and a pipe connection interposed between the pipe leading from the said
30 water supply and the lower end of the surrounding pipe, substantially as and for the purpose described.

In testimony that I claim the foregoing as my invention I have hereunto signed my name
35 this 1st day of October, A. D. 1904.

WILLIAM J. ROBINSON.

In presence of—

JNO. P. HUDSON,
E. W. McDOWELL.