

(No Model.)

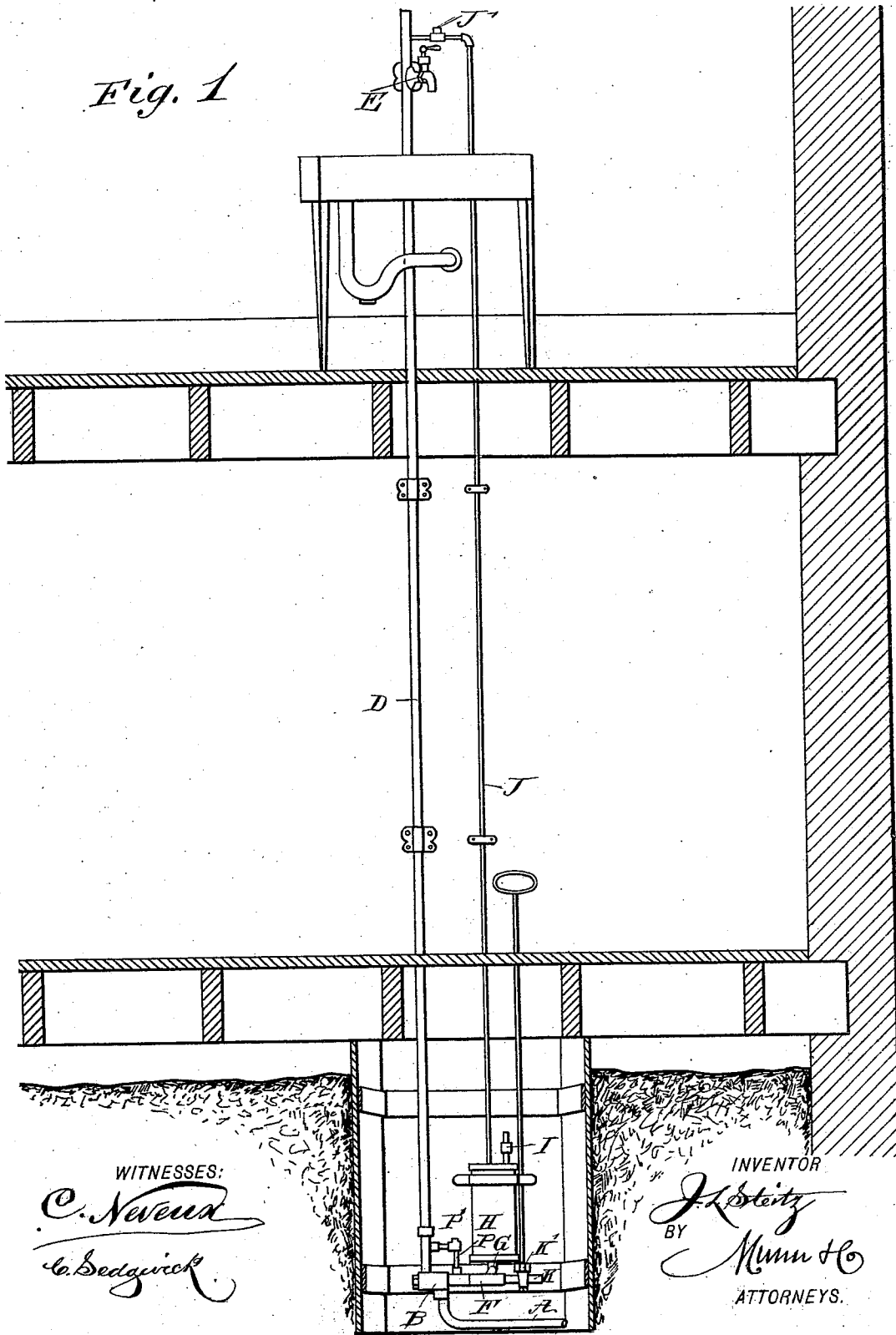
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J. L. STEITZ.
DRAIN.

No. 514,784.

Patented Feb. 13, 1894.

Fig. 1



(No Model.)

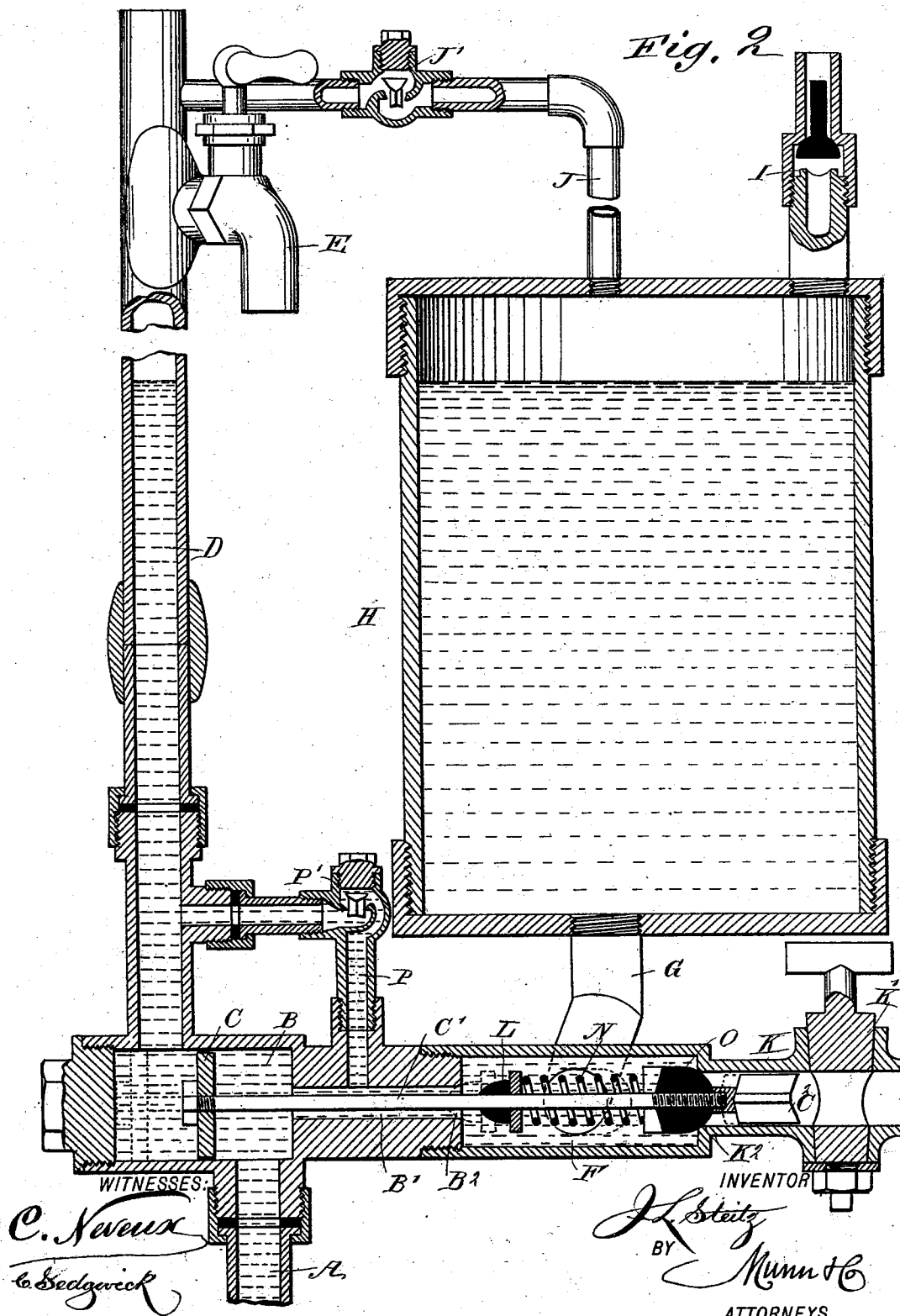
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Fig. 2



UNITED STATES PATENT OFFICE.

JOHN LEWIS STEITZ, OF CHICAGO, ILLINOIS.

DRAIN.

SPECIFICATION forming part of Letters Patent No. 514,784, dated February 13, 1894.

Application filed October 11, 1893. Serial No. 487,867. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEWIS STEITZ, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Drain, of which the following is a full, clear, and exact description.

The invention relates to stop and waste devices used in cold weather for draining water supply pipes to prevent their freezing.

The object of the invention is to provide a new and improved drain, which is simple and durable in construction, very effective and automatic in operation, and arranged for convenient disconnection and inactivity during the warm weather.

The invention consists of certain parts and details, and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

Figure 1 is a side elevation of the improvement as applied in connection with a building, the latter being shown in section; and Fig. 2 is an enlarged sectional side elevation of the improvement detached from the building.

The water supply pipe A, is connected with the usual water main and also with a cylinder B, located a suitable distance below the surface of the ground so as to be out of reach of frost. This cylinder B contains a piston C, and is connected with the house pipe D, provided with a faucet E, or other device for drawing water from the pipe D for various purposes. As illustrated in Fig. 1, the faucet E is arranged over the usual kitchen sink.

The piston C fits loosely in the cylinder B, (as shown in an exaggerated manner in Fig. 2,) in order to permit water to leak behind it, and has its piston rod C' passed loosely through a reduced opening B' formed in one of the heads of the cylinder B, the outer end of the said opening or bore B' being formed with a valve seat B², opening into a cylinder F, screwed on the head of the cylinder B and connected by a pipe G, with the bottom of a receptacle H, adapted to receive water from the cylinder B and also air through the air inlet valve I, arranged on the top of the receptacle, as illustrated in Fig. 2. The top of

the receptacle H is also connected by a short pipe J, containing a check valve J', with the house or service pipe D, above the faucet E, as plainly illustrated in the drawings. The outer end of the cylinder F connects with a waste pipe K, containing a stop valve K', which when open permits the water to drain into the ground or to a sewer, and when closed renders the drain inactive.

On the piston rod C' is mounted loosely a valve L, adapted to be seated on the seat B² previously mentioned, and on this valve presses a spring N, coiled on the piston rod C' and resting with its outer end on a second valve O, rigidly attached to the piston rod C'. This valve is adapted to be seated on the inner end of the waste pipe K to disconnect the latter from the cylinder F, as illustrated in Fig. 2.

The piston rod C' is provided with an extension C², adapted to slide into the waste pipe, so as to properly hold the piston rod in place to insure proper seating of the valves L and O.

The bore B' connecting the cylinders B and F with each other is connected by a small pipe P, containing a check valve P', with the service pipe D, as will be readily understood by reference to Fig. 2.

The operation is as follows: When the several parts are in the position illustrated in Fig. 2 the faucet E is closed, and when it is desired to draw water from the service pipe D, then the faucet is opened and the pressure on the left hand side of the piston C is reduced, so that the pressure of the water flowing through the pipe A into the cylinder B, forces the piston C to the left until the pipe D is in communication with the pipe A by means of the cylinder B. Water now flows from the main through the pipe A, the cylinder B, and the pipe D to the faucet E, and out of the same. When the piston C moves to the left, the valve L is carried in the same direction until it finally seats itself on the seat B², thus disconnecting the cylinders B and F. At the same time the valve O is unseated from its seat K², whereby the cylinder F is connected with the waste pipe K and the water in the receptacle H can drain through the pipe G into the cylinder F, and out of the cylinder through the waste pipe K.

When the water recedes in the receptacle H the air valve I opens to permit entrance of air into the said receptacle H. Water in the pipe D cannot flow through the pipe J into the receptacle H, as the check valve J' is closed by the water in the pipe D. As soon as the faucet is closed the pressure on both sides of the piston C becomes equal, and as water pressure is exerted against the valve L the latter is pushed to the right, carrying the piston rod C' and valve O in the same direction, whereby the valve O is finally seated on the seat K² and the piston C is returned to the position shown in Fig. 2, and the valve L is unseated from its seat B². Water now flows from the pipe A through the cylinder B, the bore B', into the cylinder F, and through the pipe G into the receptacle H, to fill the same, the air valve closing soon after water begins to fill into the receptacle. The air in the latter is thus compressed to the same pressure as that of the water entering the cylinder B at the pipe A. The water in the pipe D, on account of being heavier than the air in the receptacle H, falls until the level of the water in the pipe D is the same as that of the water in the receptacle H, see Fig. 2. The water in the pipe D can fall, on account of the pipe P connecting with the bore B' leading from the cylinder B to the cylinder F, it being understood that the check valve P' opens for that purpose. As the valve L is pressed on by the spring N, it will quickly seat itself on its seat B² at the time the piston C moves to the left, as previously described, and before the said piston has moved far enough to the left to allow the water to pass into the pipe D. In order to move farther to the left the piston C compresses the spring N, so that the valve L is securely held to its seat.

This improved drain is intended to be used in places where the water pressure does not exceed twenty pounds, as the amount of water that would be used in compressing air to a higher pressure would render the device impracticable. It is understood that in this device the valve L does not shut off the water from the pipe D, but simply permits of draining the receptacle H as previously described. The device is entirely automatic and during warm weather can be rendered inactive by closing the stop cock K'.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A drain, comprising a cylinder connected with the water supply and with the service pipe, a piston fitted to slide in the said cylinder, valves held on the piston rod of the said piston, a cylinder in which operate the said valves and which is connected with the first named cylinder, and a receptacle connected

with the said second cylinder, substantially as shown and described.

2. A drain, comprising a cylinder connected with the water supply and with the service pipe, a piston fitted to slide in the said cylinder, valves held on the piston rod of the said piston, a cylinder in which operate the said valves and which is connected with the first named cylinder, a receptacle connected with the said second cylinder, and a waste pipe leading from the said second cylinder, substantially as shown and described.

3. A drain, comprising a cylinder connected with the water supply and with the service pipe, a piston fitted to slide in the said cylinder, valves held on the piston rod of the said piston, a cylinder in which operate the said valves and which is connected with the first named cylinder, a receptacle connected with the said second cylinder, and a spring pressing on one of the said valves to firmly seat the same to disconnect the said cylinders, substantially as described.

4. A drain, comprising a cylinder connected with the water supply and with the service pipe, a piston fitted to slide in the said cylinder, valves held on the piston rod of the said piston, a cylinder in which operate the said valves and which is connected with the first named cylinder, a receptacle connected with the said second cylinder, and an air inlet valve arranged in the said receptacle, substantially as shown and described.

5. A drain, comprising a cylinder connected with the water supply and with the service pipe, a piston fitted to slide in the said cylinder, valves held on the piston rod of the said piston, a cylinder in which operate the said valves and which is connected with the first named cylinder, a receptacle connected with the said second cylinder, an air inlet valve arranged in the said receptacle, and a pipe containing a check valve and connecting the said receptacle with the service pipe, substantially as shown and described.

6. A drain, comprising a cylinder connected with the water supply and with the service pipe, a piston fitted to slide in the said cylinder, valves held on the piston rod of the said piston, a cylinder in which operate the said valves and which is connected with the first named cylinder, a receptacle connected with the said second cylinder, an air inlet valve arranged in the said receptacle, and a pipe containing a check valve and connecting the service pipe with the passage or bore connecting the cylinders with each other, substantially as shown and described.

JOHN LEWIS STEITZ.

Witnesses:

JOHN G. MITCHELL,
M. J. GILLANE.