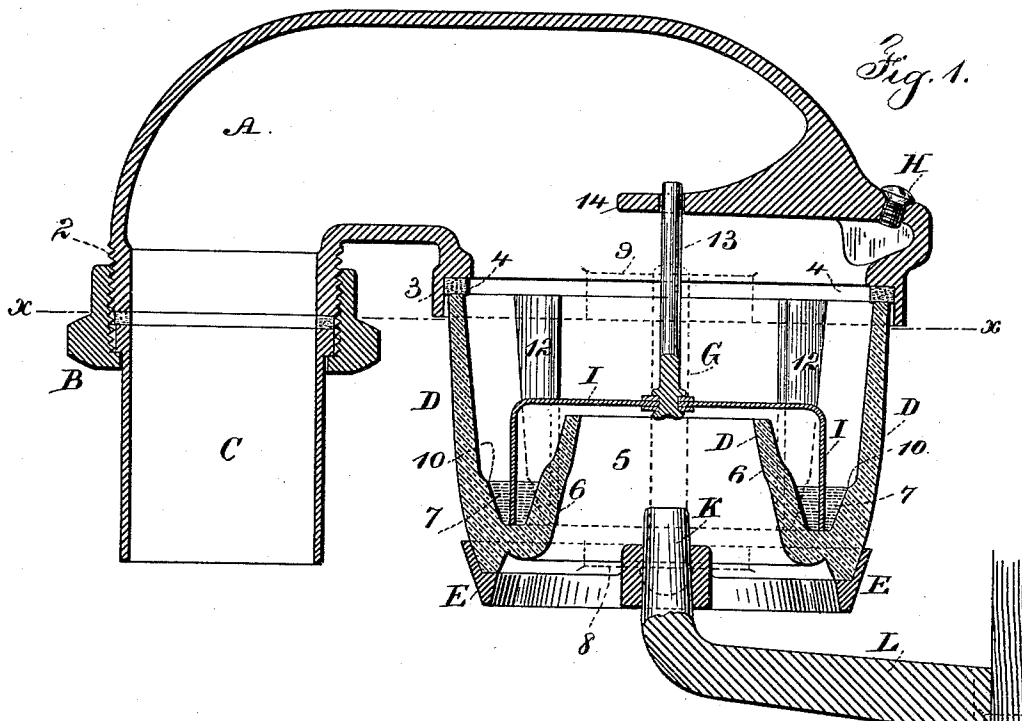


(No Model.)

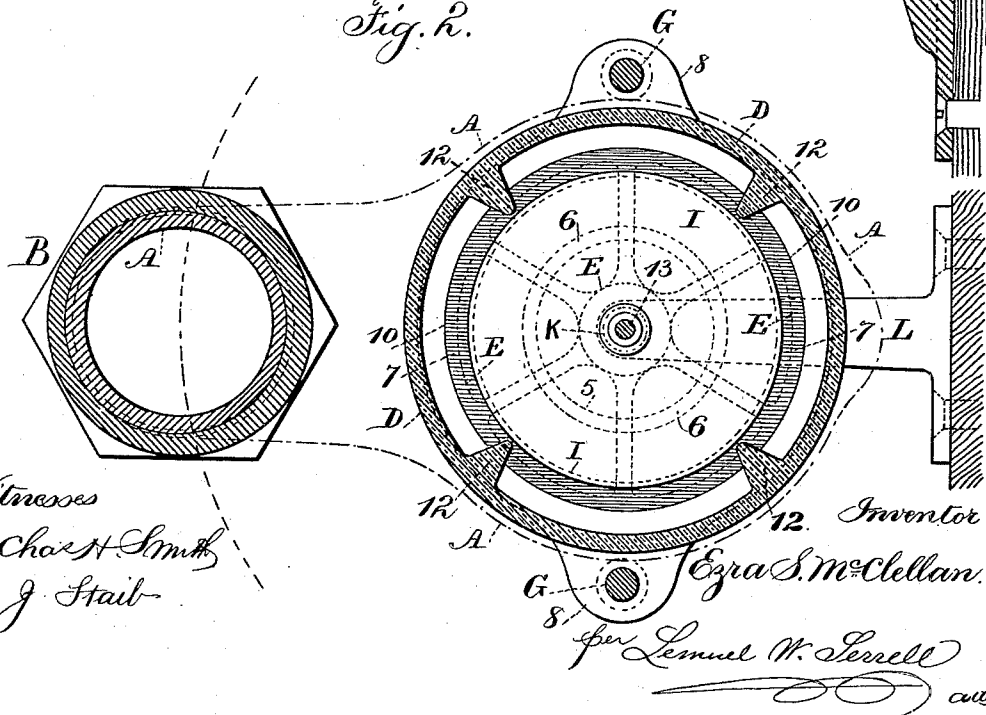
E. S. McCLELLAN.  
AIR VALVE FOR DRAIN PIPES.

No. 465,534.

Patented Dec. 22, 1891.



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

EZRA S. McCLELLAN, OF PATERSON, NEW JERSEY.

## AIR-VALVE FOR DRAIN-PIPES.

SPECIFICATION forming part of Letters Patent No. 465,534, dated December 22, 1891.

Application filed August 29, 1891. Serial No. 404,049. (No model.)

*To all whom it may concern:*

Be it known that I, EZRA S. McCLELLAN, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented an Improvement in Air-Valves for Drain-Pipes, of which the following is a specification.

In Letters Patent No. 339,800, granted to me April 13, 1886, an air-valve is represented in the form of a cup, having its lower edge within mercury contained in an annular trough, and this valve is lifted by the pressure of the atmosphere in cases where a rush of water through the drain-pipe produces a minus pressure, thereby preventing the siphoning action that frequently causes the water to escape from the trap in the sewer-pipe.

My present invention is an improvement upon the aforesaid devices, and is made for the purpose of lessening the risk of the loss of mercury and for easily observing the action of the air-valve, and for cheapening the construction of the parts and for sustaining of the same in position adjacent to a sewer pipe or trap.

In the drawings, Figure 1 is a vertical section of the improved air-valve, and Fig. 2 is a sectional plan view at the line *x x* of Fig. 1.

The body A of the case is made with a screw-thread at 2 around the downwardly-projecting pipe to which the coupling-ring B is screwed, and the ferrule is connected with the upper part of a sewer-trap or with the pipe leading to the crown of a trap or to a sewer-pipe; and my air-valve is to be placed in any convenient position relative to the wall or inclosure where a trap or sewer-pipe is provided, the pipe or connection to the ferrule C being led off in any desired direction.

There is a circular opening in the under side of the body A, having a seat and rim 3, within which is received an elastic packing-ring 4 and the upper end of the glass mercury-cup D, which mercury-cup is annular, having a central opening at 5, so that the cup has an inner wall 6, and the annular recess is adapted to receive the mercury at 7. This mercury-cup is clamped and held to the body A of the case by any suitable means. It is preferable to have a flat upper edge to the mercury-cup resting against the packing 4 and to provide an open ring E, having a flange

around its edge, within which is received the bottom of the glass mercury-cup D, and this ring E is attached or connected with the case, preferably at the rim 3, by the bolts G, which pass through lugs 8 upon the ring E and into screw-threaded lugs 9, projecting from the rim 3. By this means the cup can be clamped air-tight to the body A of the case, and the glass, being transparent, allows for the mercury 7 in the cup being observed, so that it may be known that said mercury is in its proper position and condition, and I prefer to make an offset or shoulder at 10 around the mercury-cup to form a gage or mark by which the attendant can determine when the proper amount of mercury has been poured into such cup D, and to facilitate the insertion of the mercury a screw-plug H is provided through the body A of the case, so that by the removal of this screw-plug access is given for pouring in the mercury, after which the screw-plug is returned to position. It is to be understood that the mercury is not poured into the cup until all the connections have been completed and the parts are otherwise ready for use.

The inverted cup I forms the air-valve, and it is made of aluminum, so as to be as light as is consistent with the proper strength, and this metal is not injured by the mercury. Hence a durable air-valve is obtained which is sufficiently light to lift by the atmosphere when there is but a slight suction or minus pressure in the sewer-pipe, and thereby the air necessary is admitted to restore the internal and external pressure to an equality. This air-valve is guided in its vertical movement preferably by parallel ribs 12, cast in the glass of the cup and projecting inwardly, there being freedom of movement of the air-valve between these ribs, and as an additional means for guiding this air-valve a stem 13 is provided, that passes up freely through a projecting arm 14 or bridge within the body A of the case.

The ring E is provided with radial arms and a central opening for the reception of a pin K upon a projecting arm or bracket L, which can be screwed to the wall or wood-work and forms a support for the entire parts of the air-valve, and in consequence of the pin being circular the bracket and its arm can be placed in any desired position at the proper level,

and the case of the air-valve can be rotated upon this pin into any desired position to bring the coupling and ferrule C in the proper position in relation to the sewer pipe or trap, in order that the connections of the parts may be the most convenient.

I claim as my invention—

1. The combination, with the case-body, of a glass mercury-holding cup, means for securing the glass cup to the case, a cup-shaped air-valve having its lower edge in the mercury, and means for guiding the air-valve as it moves vertically, substantially as set forth.

2. The combination, with the case-body, of an annular glass mercury-cup, with packing between the upper end of the cup and the case-body, a ring for supporting the glass cup, a connection between the same and the case-body, and an inverted-cup-shaped air-valve with its lower edge in the mercury, substantially as set forth.

3. The combination, with a supporting-bracket having a vertical pin and the inverted-cup-shaped air-valve, of a case containing the air-valve and a mercury-holding cup and having an opening central to the annular mercury-holding cup for the reception of the pin of the bracket, substantially as specified.

4. The combination, in an air-valve, of a case-body, an annular glass mercury-cup having internal guide-ribs, means for connecting the glass mercury-cup with the case-body, and an inverted-cup-shaped valve, the lower edge

of which is in the mercury, substantially as set forth.

5. The combination, in an air-valve, of a metallic case-body having a rim around the downward opening, a cup-shaped air-valve, an annular glass mercury-cup, packing between the glass and the case-body, a ring, and clamping-bolts connecting the ring to the case-body and securing the glass mercury-holding cup in position, substantially as set forth.

6. The combination, in an air-valve for traps in sewers, of a case and annular mercury-holding cup, an inverted-cup-shaped air-valve, a ring below the mercury-cup, having a central opening, and a bracket having a pin entering the opening for supporting the mercury-holding cup and parts connected therewith, substantially as set forth.

7. The combination, with an annular mercury-holding cup, of a cup-shaped air-valve, a case connected with the mercury-holding cup, with an opening through the case for supplying mercury to the cup, a removable plug for filling the opening, and a ring for supporting the mercury-holding cup and connections from the same to the case-body, substantially as set forth.

Signed by me this 17th day of July, 1891.

E. S. McCLELLAN.

Witnesses:

WILLIAM G. MOTT,  
GEO. T. PINCKNEY.