

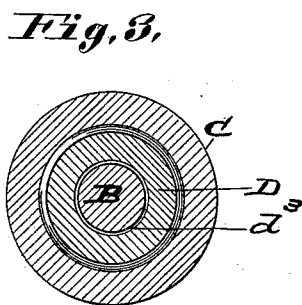
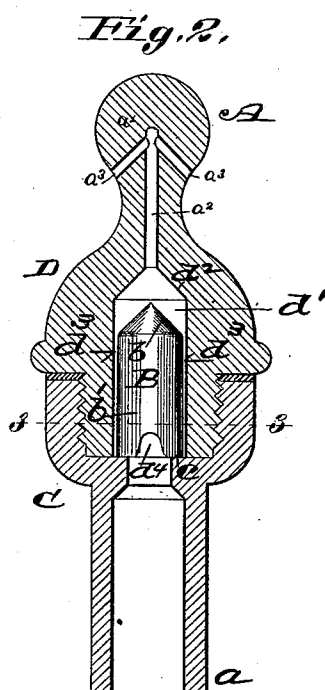
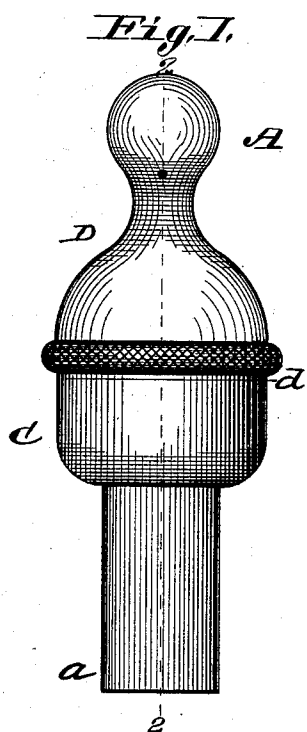
(No Model.)

J. C. KUPFERLE.

AIR VENT FOR WATER PIPES.

No. 352,093.

Patented Nov. 2, 1886.



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UNITED STATES PATENT OFFICE.

JOHN C. KUPFERLE, OF ST. LOUIS, MISSOURI.

AIR-VENT FOR WATER-PIPES.

SPECIFICATION forming part of Letters Patent No. 352,093, dated November 2, 1886.

Application filed December 17, 1885. Serial No. 185,978. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. KUPFERLE, of St. Louis, Missouri, have made a new and useful Improvement in Air-Vents for Water-Pipes, of which the following is a full, clear, and exact description.

Vents of the class of construction to which this improvement relates are used in connection with stop and waste cocks, and are placed on the ends of water-supply pipes throughout buildings. Merely turning off a stop or waste cock and closing the water-supply does not insure the draining of an upper pipe. Unless automatic air-vents are used it is necessary to open the cocks to vent the pipes at the upper end, and with self-closing cocks this is quite inconvenient. Where these vents are used servants cannot through mistake cause the pipe to be frozen, nor, on the other hand, by forgetting to turn off the cock before turning on the water cause the house to be flooded. For, in the one case, the needed air for venting is automatically supplied, and, in the other case, the air-vent is automatically closed against the egress of water, but with air-vents as hitherto made difficulty is experienced either from the needed air being inadequately supplied to the pipe or from the air-vent opening being imperfectly sealed against the wastage of water from the pipe, for this is likely to occur if the air-valve and its inclosing chamber are so relatively constructed as to permit of air being compressed by the water pressure above or without any part of the air-valve, in which case the compressed air operates to keep the air-valve from perfectly seating, and hence the water wastes past the air-valve. To provide an air-vent which is free from the objections named, and which, when it is needed, freely admits the air and again effectually incloses the water, is the aim of the present improvement, which consists in a cylindrical, conically pointed air-valve, in combination with a valve-seat conforming to the conical point, and a chamber extending inward from the valve-seat and larger in diameter than the cylindrical portion of the valve, as seen in the annexed drawings, making part of this specification, and in which—

Figure 1 is a side elevation of the improved air-vent. Fig. 2 is a vertical section on the line 2 2 of Fig. 1, and Fig. 3 is a horizontal section on the line 3 3 of Fig. 2.

The same letters of reference denote the same parts.

A represents the air-vent. At its end a it is adapted by any suitable means to be attached to the water-pipe, which is not shown in the drawings. At its upper end, a' , it is provided with the central passage, a^2 , which terminates in the downwardly-inclined passages a^3 . There may be two or more of these latter. These passages a^2 a^3 will constitute an air-inlet. The ends a^3 are downwardly inclined so as not to be filled with dust, and, being placed at the sides, cannot be easily tampered with by children, so as to be filled up, as one or more of the mouths of these inclined ends will be removed from easy access for any such purposes.

B represents the valve. The part which contains the valve is in practice made in two parts—the part C, that is immediately connected with the water-pipe, and the part D, which is in the nature of a cap, and is at d screwed into the part C. The chamber d' , in which the valve works, is formed in the cap D and communicates at its upper end with the air-escape a^2 a^3 . The pointed end b of the valve is adapted to seat at d^2 , Fig. 2.

It will be noticed that the valve-point and valve-seat conform in shape, so that when the valve, by the action of the water-pressure, is seated no air can pass upward around the valve-body b' to come above any part of the valve-point. At the same time there is an annular space, d^3 , around the body of the valve, through which the air, which, when the vent is in use, enters through the perforation in A and passes into the chamber d' , can pass downward around the valve to the lower end thereof, and thence through a notch, d^4 , in the end of the valve, (or, what is the equivalent, a notch in the ledge c , that constitutes a shoulder to limit the downward movement of the valve,) into the tubular part C and to the water pipe.

I claim—

An air-vent for water-pipes, having a vertical opening, a^2 , a conical valve-seat, d^2 , and a conical valve, said vertical opening extending up considerably beyond the upward limit of the valve, and two or more inclined openings; a^3 a^3 , branching from said vertical opening, substantially as and for the purposes specified.

Witness my hand.

JOHN C. KUPFERLE.

Witnesses:

C. D. MOODY,
J. W. HOKE.