

(No Model.)

A. P. MERRILL.
AIR VALVE FOR PIPES.

No. 442,529.

Patented Dec. 9, 1890.

Fig. 1.

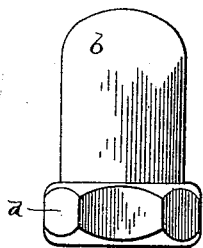


Fig. 2.

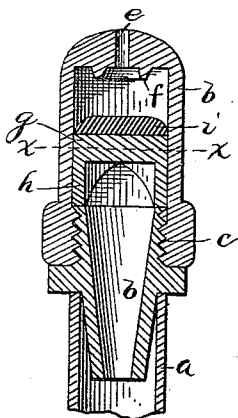


Fig. 3.

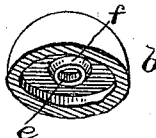


Fig. 4.

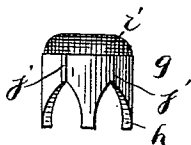


Fig. 5.

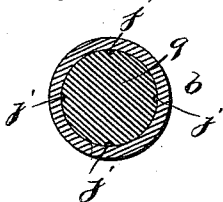
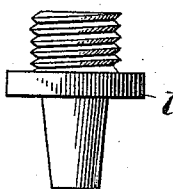


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

ANSON P. MERRILL, OF FALL RIVER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO CHARLES A. HICKS, OF SAME PLACE.

AIR-VALVE FOR PIPES.

SPECIFICATION forming part of Letters Patent No. 442,529, dated December 9, 1890

Application filed October 3, 1890. Serial No. 367,021. (No model.)

To all whom it may concern:

Be it known that I, ANSON P. MERRILL, of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Air-Valves for Pipes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in air-valves for liquid-pipes.

The object of the invention is to provide an automatic valve for easy attachment to liquid-pipes to counteract vacuum tendencies therein, exceedingly cheap, simple, and durable in construction, composed of a minimum number of parts, and accurate, effective, and reliable in action. These objects are accomplished by and this invention consists in certain novel features of construction and in combinations of parts, more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a side elevation of the valve-casing in form for attachment to an iron or hard-metal pipe. Fig. 2 is a longitudinal section of the device attached to a lead or soft-metal pipe. Fig. 3 is a detail sectional perspective of the valve-casing, showing the valve-seat. Fig. 4 is a detail elevation of the valve proper. Fig. 5 is a section on line *xx*, Fig. 2. Fig. 6 is an elevation of the nipple used on soft-metal pipes.

In the drawings, the reference-letter *a* indicates a liquid-pipe having an open upper end.

b is the cap or casing of the valve, preferably formed integral of suitable metal, and formed with the thread *c* in its lower open end to screw on the open end of the pipe *a*. The cap is also preferably formed angular on its lower exterior, as shown at *d*, to receive a tool for screwing or unscrewing the cap. The closed upper end of the cap is provided with air-vent *e*, surrounded at its inner end by the valve-seat *f*, formed by an annular boss or

annular V-shaped flange around the inner end of said vent on the under side of the upper end of the cap.

The valve proper *g* consists of a preferably integral imperforate disk of metal snugly fitting so as to freely slide, as a piston, within said cap. The valve is provided with the downwardly-extending legs *h*, to rest on and hold the valve the proper distance from the upper end of the pipe. On its upper side the valve is provided with rubber or other elastic cushion *i*, to engage and form a tight joint with valve-seat *f* when the valve is forced up. *j* are longitudinal air ducts or grooves in the outer periphery of the valve connecting the spaces on opposite sides of the valve.

Where this valve is employed on lead or other soft-metal pipes, a nipple *l*, such as shown in Fig. 2, is employed. This nipple has a threaded portion to receive the cap and a tapered portion to be driven into the open pipe end until the annular flange of the nipple rests on the edge of the pipe.

The purpose and operation of this invention are obvious. When the water rises in the pipe, (the valve being in position of Fig. 2,) the air flows out through ducts *j* and air-vent *e*. When all of the air has passed out, the water forces up the valve, which engages its seat and forms a tight joint and prevents escape of water, and when the water falls the valve drops and allows air to flow in and prevent formation of vacuum.

Simplicity and cheapness of construction and reliability and accuracy in action are the great advantages of this device.

What I claim is—

1. The herein-described valve, consisting of the integral cap having the lower open threaded end and the open air-vent through the outer end having the annular depending seat around its inner end, and the reciprocating piston-valve in the chamber of said cap, snugly fitting therein, having the air-passages to opposite sides thereof, and the packing on its upper side to engage said seat, substantially as set forth.

2. The herein-described article, consisting of the hollow cap having the lower open end,

the open-air vent through the opposite end
of said cap having the annular V-shaped
flange around the inner end thereof, and the
piston-valve snugly fitting in said cap having
5 the packing on its top, the depending lugs,
and the longitudinal air-ducts in its periph-
ery, as set forth.

3. The combination of the cap having the
lower open threaded end and the air-vent
10 through its upper end, the piston-valve in
said cap controlling the air-ducts, and the

nipple, on the upper open end of which said
cap is screwed, said nipple having the annu-
lar flange or shoulder, and the downwardly-
tapering lower end, as set forth. 15

In testimony that I claim the foregoing as
my own I affix my signature in presence of
two witnesses.

ANSON P. MERRILL.

Witnesses:

CHAS. A. HICKS,
EBEN L. HARRISON.