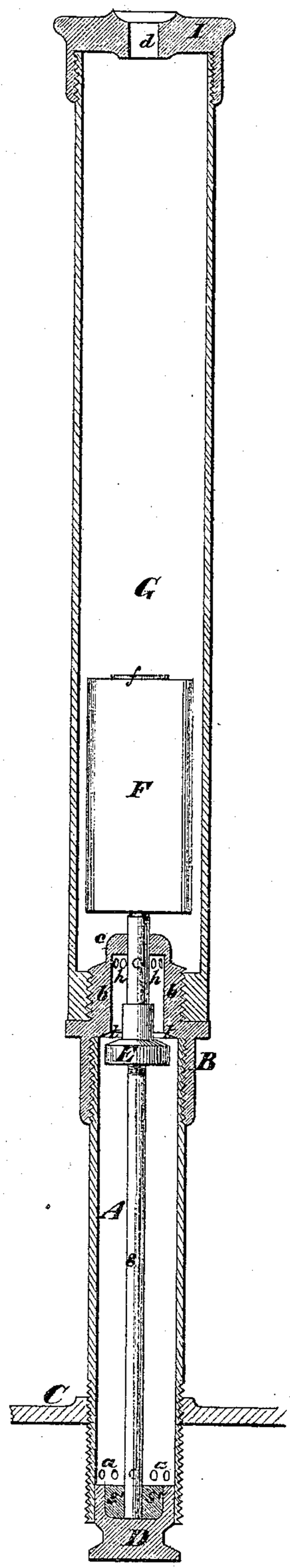
A. B. ENSIGN.

Air-Valve for Radiators and other Steam-Heating Apparatus.

No. 132,064. Patented Oct. 8, 1872.



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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

ALBINUS B. ENSIGN, OF NEW YORK, N. Y.

IMPROVEMEMT IN AIR-VALVES FOR RADIATORS AND OTHER STEAM-HEATING APPARATUS.

Specification forming part of Letters Patent No. **132,064,** dated October 8, 1872.

To all whom it may concern:

Be it known that I, ALBINUS B. ENSIGN, of the city, county, and State of New York, have invented an Improved Air-Valve for Radiators and other Steam Apparatus, of which the following is a specification:

This invention consists in a novel arrangement in a case projecting into a steam-radiator of an air-valve, and in the combination thereof with a cup of fusible metal, which, when surrounded by air and cool, will remain hard and retain the valve in an open position, but when surrounded by steam and thereby heated will fuse and release the valve and allow it to be closed by the pressure of the steam, thus permitting the escape of air without allowing steam to escape. It also consists in the arrangement in an extension of the aforesaid case, and in relation with suitable openings in the air-valve case of a floating valve, which, while it permits the escape of air, will prevent any water from being blown out by the steam into the room in which the radiator is situated.

The accompanying drawing represents a central vertical section of a device made according to my invention.

A is the case, which is of tube-like form, having a cap, B, screwed on its upper end, and being screwed into the upper portion of a radiator, which is represented by C in the drawing. In its lower end there is inserted a plug, D, which constitutes a cup for the reception of the fusible metal *s' s'*, before alluded to. Just above this cup there is formed in the sides of the case A series of perforations, *a a*, through which air or steam from the radiator enters it. The cap B contains the seat *t* of the air-valve E, and has on its upper side an externally screw-threaded boss or head, in the top of which, around a central projection, *c*, there is a series of holes, *h h*. The air-valve E is of the puppet kind and closes upwardly, and when inserted within its case the lower end of its stem *s* is soldered into the cup of the plug D by the fusible metal contained therein. The upper end of said stem projects through the cap B, but when the stem is held by the fusible solder the valve E is out of contact with its seat *t*. G is what may be termed an extension of the case A, consisting of a cylindrical tube secured to the said case by being screwed on the boss or head *b* of its cap B. It contains the floating valve F, of pumice-stone or other material having a specific gravity less than that of water, it being square-sided to permit the passage of air around it to the vent *d* in the cap I, which is screwed on the upper end of the pipe, a valve-seat being formed in the said cap around the said vent. The valve F, when open, may rest on the end of the stem of the air-valve E, or on the top of the boss *c* of the cap B, and on its upper side it is faced with India rubber or other soft material, *f*.

When steam is turned onto the radiator it drives the air before it into the case A, through its perforations *h h*, and the air being cool does not affect the fusible solder *s' s'*, which retains the valve E open, but as soon as the air is expelled and the steam follows it into the case it heats the said fusible metal and melts or fuses it, and so releases the stem of the valve and allows the latter to be closed by the pressure of the steam, and so prevent its escape. The fusible metal remains in a melted state as long as the steam is in contact with or surrounds it, but as soon as steam is shut off from the radiator the air-valve drops and the said fusible metal hardens and secures its stem in place. Should any water be driven from the radiator by the incoming steam into the case A and pass the valve E into the extension G of the valve-case it lifts the floating valve F, and buoys it up and closes the vent *d*.

Claims.

1. The arrangement of a valve, E, in a case, A, in communication with a steam-radiator, in combination with a cup, D, of fusible metal, substantially as and for the purpose set forth.

2. The floating valve F, arranged in the extension G of the case, in combination with the openings *h h* in the cap B of the case A, and with the vent *d*, essentially as and for the purpose described.

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