

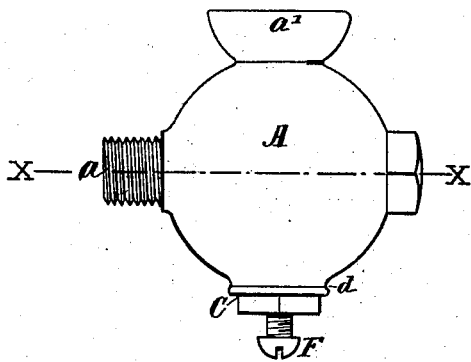
(No Model.)

G. L. ALLEN.

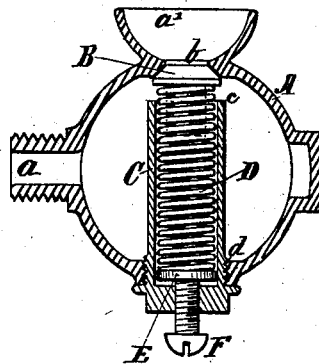
AUTOMATIC AIR VALVE FOR STEAM RADIATORS.

No. 260,148.

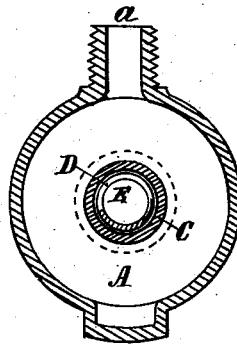
Patented June 27, 1882.



— FIG. 1 —



— FIG. 2 —



— FIG. 3 —

WITNESSES —

Walter B. Allen.
W. L. French.

INVENTOR —

George L. Allen
By Chas. H. Dursleigh
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE L. ALLEN, OF WORCESTER, MASSACHUSETTS.

AUTOMATIC AIR-VALVE FOR STEAM-RADIATORS.

SPECIFICATION forming part of Letters Patent No. 260,148, dated June 27, 1892.

Application filed April 17, 1892. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. ALLEN, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Automatic Air-Valves for Steam-Radiators; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The object of my present invention is to provide a simple and efficient automatic valve device for use on steam heating-radiators and other steam apparatus for the purpose of permitting the discharge of cold air from the interior of the radiator or apparatus when the steam is turned on, and for preventing the escape of the steam or water of condensation when the air has been discharged, also for admitting air and preventing a vacuum when the supply of steam is shut off.

To this end my invention consists in a valve mechanism constructed and operating substantially as hereinafter described.

Figure 1 is a side view of my improved valve mechanism. Fig. 2 is a central vertical section of the same; and Fig. 3 is a central horizontal section at line *x x*, Fig. 1.

My improved mechanism consists of a metal body or shell, A, of globular or other suitable form, and provided with a hollow stem or nipple, *a*, for attachment to the radiator or steam apparatus when used, and through which communication is maintained with the interior thereof.

In the upper part of the shell A there are formed an opening and valve-seat, *b*, to which the valve B is fitted from the interior.

Fixed in the bottom of the shell A, under the valve-seat *b*, is a tube, C, extending upward nearly to the top, or so far that its top rim, *c*, will be a considerable distance above the level of the inlet-channel through the nipple *a*.

Within the tube C is arranged a coiled rod or expansion-bar, D, the bottom end of which rests upon an adjustable step-plate, E, while upon its top end the valve B is supported, said valve being provided with a spindle or

shank that extends down within the coiled rod D, or is otherwise connected so that it will work squarely against the seat *b*. A screw, F, is arranged in the bottom end of the tube C for raising and depressing the steps or disk E, and thereby adjusting the position of the valve B in relation to its seat. The lower end of the tube C is screwed into the shell A, so as to make a tight-fitting joint at their junction *d*, the opening before the tube is inserted being of sufficient size to facilitate boring out and fitting the valve-seat *b* on the inner face of the shell and axially in line with the tube-opening. Wrench-bosses may be formed on the ends of the shell A and tube C to facilitate driving the screw-threads.

A cup, *a'*, may be formed, as shown, on the top of the shell A about the valve-opening; or, if preferred, such cup may be omitted.

The operation is as follows: The parts are adjusted so that when cold the valve B will fall away from the seat *b* to a slight degree. This permits the cold air in the radiator to escape until the steam enters the shell A, when the heat of the steam expands the coiled rod D, which forces the valve against the seat *b*, and thus closes the opening against the escape of steam.

The rod D is not a spring at its ordinary adjustment, but simply acts by metallic expansion, the coil form being employed in order to inclose a great length of rod in a small compass. Said rod can, however, yield or act as a spring when the expansion exceeds the movement of the valve, thus avoiding any excessive strain on the parts. Any water occasioned by steam condensing within the shell flows back through the nipple *a*, as the level thereof is only at half-height of the interior space, and there being ample room above this level for the circulation of steam there occurs no liability of water being forced out through the valve-opening.

The valve B can, if preferred, be telescoped with the tube C, the rod D extending up into a hollow within said valve in lieu of fitting the shank of the valve into the coil.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. An automatic air-valve mechanism for radiators and other steam apparatus, consist-

ing of a hollow body or shell provided with an outlet-opening and valve-seat in the upper part thereof, and an inlet-passage at a lower level, a guard-tube extending upward within the
5 shell to a position above the level of said inlet-passage, an expansion-rod coiled or arranged within said tube and supporting a valve adapted for stopping said outlet from the inner side, and a screw or means for adjusting said rod
10 and valve in relation to the valve-seat, substantially as set forth.

2. The combination, with the globe or shell A, provided with the connecting-nipple *a* and valve-seat opening *b*, of the tube C, the expan-

sion-rod D, and the valve B, arranged for operation substantially as hereinbefore set forth. 15

3. The combination, in an automatic valve mechanism, of the valve B, the valve-seat *b*, the coiled expansion-rod D, the disk E, and the screw F, substantially as and for the purposes
20 set forth.

Witness my hand this 10th day of April, A. D. 1882.

GEORGE L. ALLEN.

Witnesses:

CHAS. H. BURLEIGH,
W. A. WHEELER.