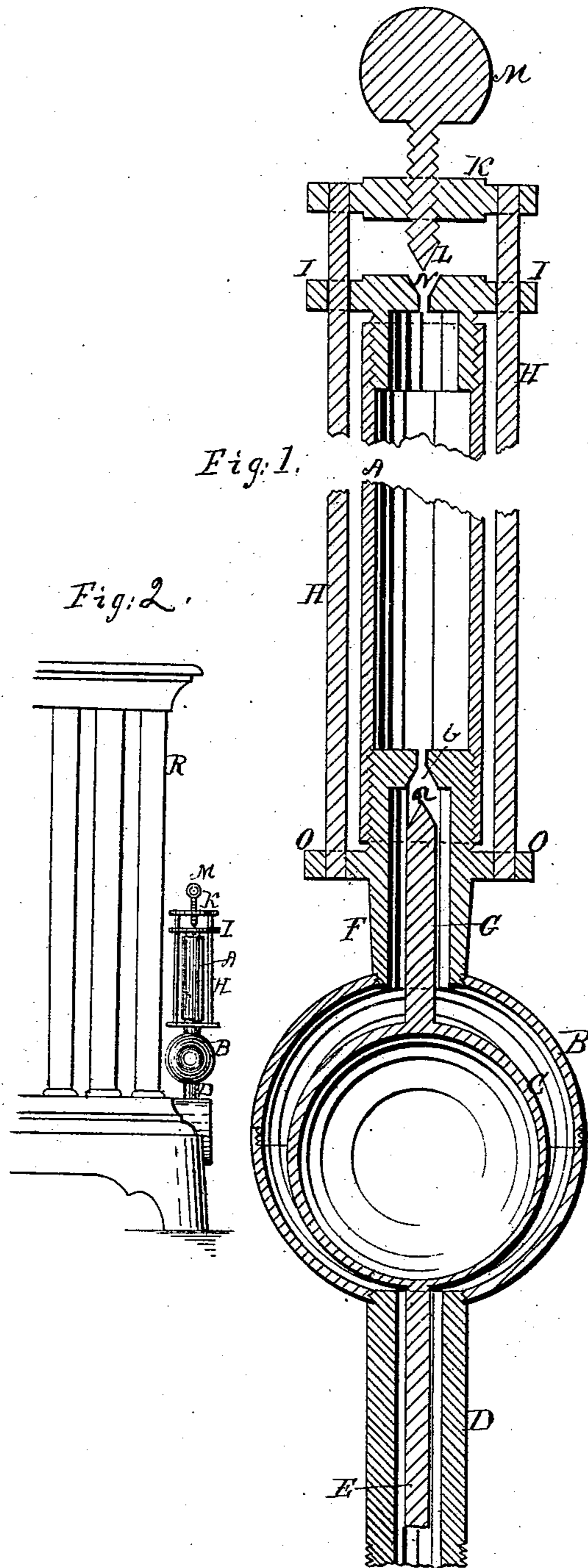


F. A. JONES & A. HOLT.
Air-Valve for Steam-Heaters.

No. 227,361.

Patented May 11, 1880.



Witnesses:
Harry VanDuzee
J. Cunningham

Inventors.
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by J. M. Adams Atty

UNITED STATES PATENT OFFICE.

FLORENTINE A. JONES, OF NEW YORK, N. Y., AND ALDEN HOLT, OF BOSTON, MASS.

AIR-VALVE FOR STEAM-HEATERS.

SPECIFICATION forming part of Letters Patent No. 227,361, dated May 11, 1880.

Application filed April 29, 1879.

To all whom it may concern:

Be it known that we, FLORENTINE A. JONES, of New York, county and State of New York, and ALDEN HOLT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Automatic Air-Valves for Steam-Heaters, of which the following is a specification.

In the use of steam-heating apparatus as ordinarily constructed provision is made for the escape of cold air from the same previous to the admission of steam in heating the apparatus by means of a screw-thread at the end of the tube fitting in the base of the radiator or attached to any other portion of the radiator, and after it has been cooled off. Following the escape of the air, the water of condensation is liable to be forced up, and, escaping from the apparatus, runs upon the floor, and often causes serious damage to the same and to the ceiling and walls of apartments below the apparatus.

It is the object of our invention to obviate this difficulty; and to that end the invention consists in the employment of an automatic valve so constructed and arranged that while the cold air is allowed to freely escape from the apparatus as the steam is entering the same any water that may be in the apparatus will be prevented from escaping by the closing of a valve, which is actuated by means of a float incased in a hollow globe attached to a tube connected in any convenient or suitable manner to the heating apparatus.

Referring to the drawings, Figure 1 represents a vertical section of an instrument embodying our invention. The instrument is represented as broken away to indicate that its length is greater than the drawing shows. Fig. 2 represents a portion of a steam-heater with our apparatus attached to the same.

D is a tube, which is to be connected with a steam-radiator or steam-heating apparatus in any suitable manner. The tube D is attached at its upper end to a hollow globe, B, within which is a copper float, C, of a diameter sufficient to leave a space of a quarter of an inch (more or less) between its outer sur-

face and the inner surface of the globe B. To the bottom of the float C is attached a guide-stem, E, passing through the tube D.

To the upper portion of the globe B is attached a throat-piece or cylinder, F, having on its upper part a head, O O, to which the connecting-rods H H are attached. To the throat-piece F is attached the cylinder A, extending upward, and connected at its upper end to the head I I.

K is a cross-piece or head, connected by means of the rods H H to the lower head, O. Through the head K passes a screw, having on its lower end a cone-valve, L, fitting in a seat, N, in the head I, and provided with a thumb-piece, M, so that the valve can be readily adjusted to its seat.

It is understood that the main cylinder A is to be made of brass, while the rods H H, which pass loosely through the ends of the head I, are of iron, the greater expansibility of the tube A, when heated, causing the valve-seat N to rise and be closed by the valve L, which is held by the less expansible rods H H.

To the upper portion of the float C is attached a stem, G, the upper end of which constitutes a cone-valve, *a*, fitting in a seat, *b*, in a diaphragm in the cylinder.

The valve-seat may be at the lower part of the tube or at the extreme upper end, the stem G, that carries the cone-valve *a*, being elongated accordingly.

The operation is as follows: The valve L is adjusted to close the opening N when the cylinder A is at its greatest expansion. When the apparatus is cold and free from steam the tube A will have contracted, leaving the valve N open. As the steam enters the apparatus or radiator the cold air is forced out at the valve N. Should any water ascend from the radiator into the tube D before the valve L N is closed, it will enter the globe B, and thus cause the float to rise, carrying up the stem G and closing the valve-opening *b*, thus effectually preventing the entrance of water into the cylinder A, and consequently the escape of any from the valve N.

Instead of the valve *a b*, any other suitable

valve which can be operated by a float may be used.

What we claim as our invention is—

5 The combination, with an automatic expansion air-valve, of a float connected with and operating a valve, substantially as and for the purpose specified.

In testimony whereof we have signed our

names to this specification in the presence of two subscribing witnesses.

F. A. JONES.
ALDEN HOLT.

Witnesses:

J. H. ADAMS,
M. F. GRIFFIN.