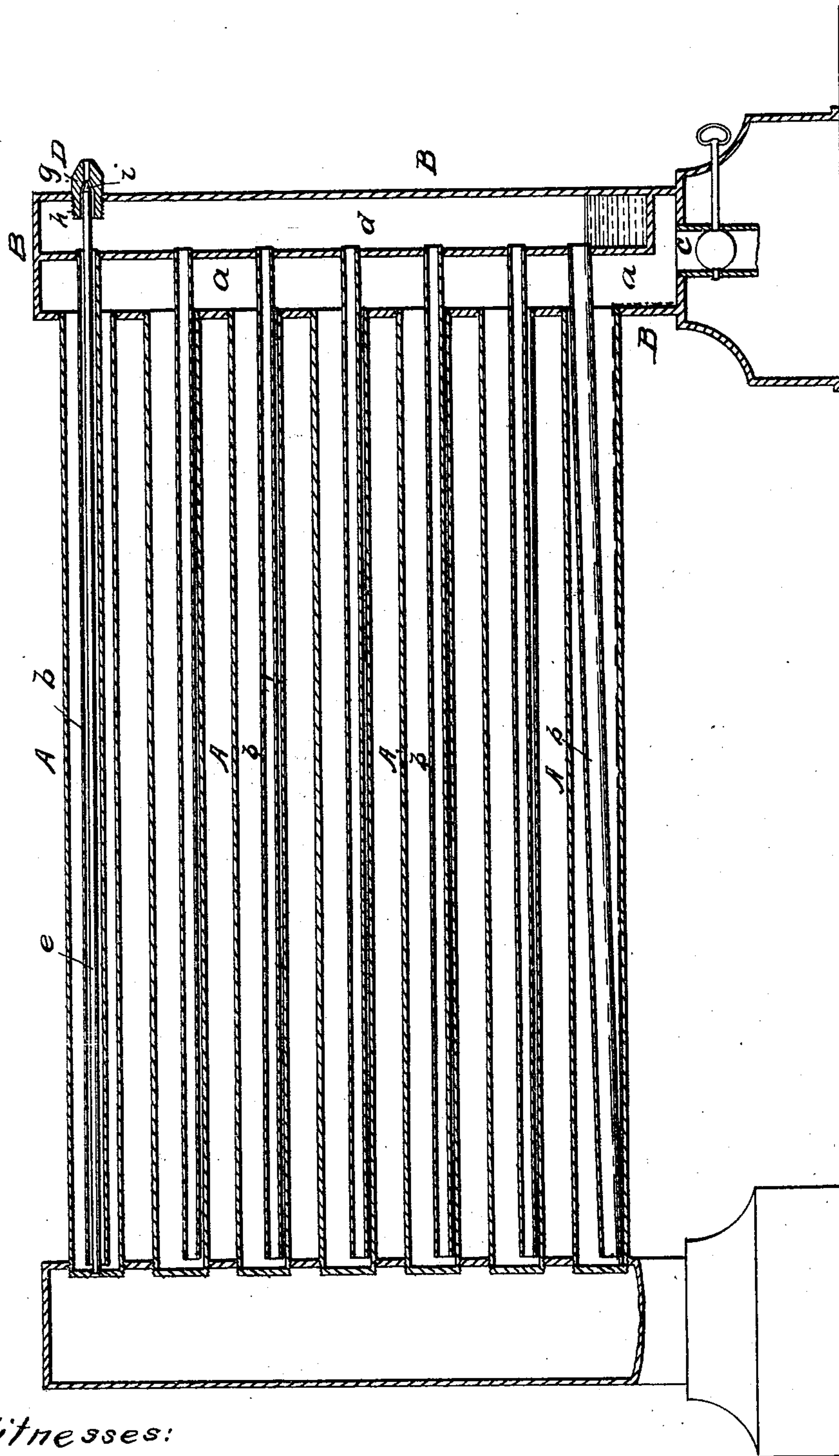


G. W. BLAKE.
AIR VALVE FOR STEAM RADIATORS.

No. 44,155.

Patented Sept. 13, 1864.



Witnesses:

Wm. W. Winton
Geo. W. Reed

Inventor
Geo. W. Blake

UNITED STATES PATENT OFFICE.

GEORGE W. BLAKE, OF NEW YORK, N. Y.

IMPROVEMENT IN AIR-VALVES FOR STEAM-RADIATORS.

Specification forming part of Letters Patent No. 44,155, dated September 13, 1864.

To all whom it may concern:

Be it known that I, GEORGE W. BLAKE, of the city, county, and State of New York, have invented a new and useful Improvement in the Air-Valves of Radiators for Heating by Steam; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and apply the same, reference being had to the accompanying drawing, forming part of this specification, said drawing representing a central longitudinal vertical section of my improved air-valve applied.

This invention consists in the employment, within one of the iron tubes of a tubular radiator, or within the shell of any other radiator, of a brass or composition metal rod secured at one end to the tube or shell, and having at the other end a valve fitted to a stationary seat, whereby the difference of expansion, under changes of temperature, between the brass or composition of which the rod is composed and the iron of which the tube or shell is composed is caused to leave the valve open until the radiator is full of steam, and then to close it.

The radiator represented is composed of a series of radiating tubes, A, closed at one end and open at the other, which communicates with the chamber *a* of a two chambered steam-box, B, with which the steam-inlet pipe C is connected. Within the tubes A there are arranged smaller tubes *b*, open at both ends, communicating at one end with the tubes A, near the closed ends of the latter, and having their other ends screwed into the partitions *c* between the two chambers *a* and *d* of the box B, and communicating with the chamber *d*. The steam enters *a*, filling the pipes A, and especially the air therefrom through the pipes *b* into the chamber *d*, whence it escapes by the air-valve, which is applied in the upper part of the latter chamber.

e is the brass rod, at one end of which is the conical air-valve *i*, which may be made of separate pieces and secured to the rod *e*, or formed on the end of the rod itself. This rod is long enough to extend right through the upper tube A and through the chambers *a* and *d*. The opposite end to that at which the valve is attached, or on which it is formed, is

rigidly secured in the closed end of the upper tube A, and the said rod is arranged within the upper tube *b*. The valve-seat *g* is formed within a nozzle, D, which is screwed into the outside of the box B. This seat is counter-sunk, as shown at *h*, to serve as a guide to the rod *e*. When the radiator is cool, the length of the rod *e* is such that the valve *i* is at some distance from the seat *g*, and the interior of the radiator is in free communication with the atmosphere, and when steam is first admitted to the radiator the air escapes freely between the valve *i* and seat *g* and through the open nozzle D; but when the radiator becomes full of steam, and the rod *b* is thereby heated, the said rod, expanding in a greater degree than the tube A within which it is arranged, quickly brings the valve close to its seat and shuts in the steam.

One advantage of this mode of applying the base rod to which the valve is attached, or on which it is formed, is, that the upper tube A, in which it is arranged, which is a part of the radiator, is made to perform the duty usually performed by a separate iron tube or rod, and in this way the application of the air-valve is simplified. Another advantage consists in the great length of rod permitted to be used, which enables it to be quickly expanded sufficiently close to the valve when the steam reaches it.

In a plate radiator or any other radiator not composed of tubes the brass rod may be attached to any suitable part of the shell of the radiator and the same advantages will not be obtained.

I do not claim the formation of the air-valve upon, or its attachment to, a brass rod; but

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

The combination of the brass or composition rod to which the valve is attached, or on which it is formed directly, with one of the iron tubes of a tubular radiator, or to any part of the interior of the shell of any other kind of radiator, substantially as and for the purpose herein specified.

GEO. W. BLAKE.

Witnesses:

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