

J. H. RHODES.
Steam Heater.

No. 102,970.

Patented May 10, 1870.

Fig. 1.

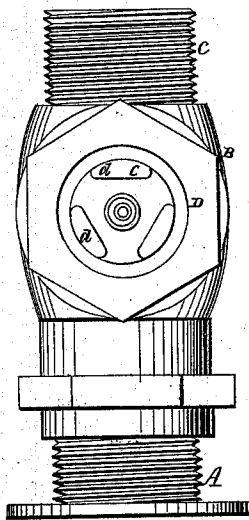


Fig. 2.

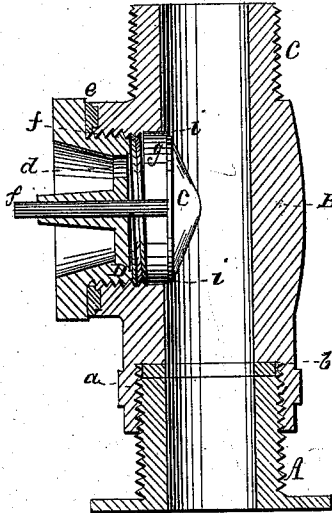
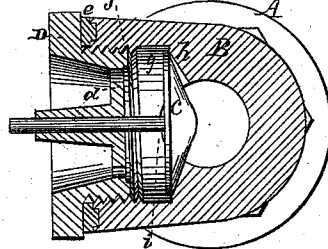


Fig. 3.



Witnesses:

Fred. Haynes
R. W. Kaber

Inventor:

John H. Rhodes

United States Patent Office.

JOHN H. RHODES, OF BROOKLYN, NEW YORK.

Letters Patent No. 102,970, dated May 10, 1870.

ATMOSPHERIC VALVE FOR HOUSE BOILERS.

The Schedule referred to in these Letters Patent and making part of the same

To whom it may concern:

Be it known that I, JOHN H. RHODES, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Atmospheric Valves for House Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents an exterior longitudinal view, and

Figure 2, a longitudinal section, at right angles to fig. 1, of an atmospheric valve for house boilers, constructed in accordance with my invention.

Similar letters of reference indicate corresponding parts.

The object of the improvement will be best explained by stating that house boilers, as at present constructed or provided, are not unfrequently exposed to collapsing from external pressure and the pipes to injury, by reason of a vacuum being formed within the same, and which, when the service-pipes are tight, there is usually no relief to, or prevention of. Thus the breaking or emptying of the main which supplies the service-pipe, or raising of steam in the boiler of superior pressure to the head of water, and subsequent condensation of said steam, after the same has become attenuated by the return of water, to take the place of that previously forced out of the boiler by the steam, produces a vacuum within the boiler, which causes or endangers its collapse.

To provide against any such danger in an automatic manner, and thus to secure perfect safety, is the purpose of the invention, which consists in a peculiarly-constructed valvular device, designed to be arranged in connection with the inlet-pipe to the boiler, and so that it can readily be applied to any or all boilers, whether new or old, said valve automatically opening for the admission of air, whenever the external pressure is in excess of that within the boiler, thereby preventing the production of a vacuum within the latter, no matter from what cause.

Referring to the accompanying drawing—

A represents a screw-nozzle, which may be permanently secured to the boiler on its outside, for attachment within it of the cold-water supply-pipe, that leads down into the boiler, and for connection on its outside of the atmospheric valvular device proper, which is made in the form of a coupling, B, provided at its one end with a female thread, *a*, to establish connection with the nozzle A, and seat for a packing, *b*, to make tight such connection, and furnished at its opposite end with a male thread, *c*, to make the connection with the outside supply or inlet-pipe, also, which

coupling or casting B is fitted on its side with a valve, C, that is free to open inward, and closes against or over orifices *d d*, made in an external hollow nut or box, D, that constitutes on its inner side or face the valve-seat *f*, said nut or box, which may also serve as a guide to the valve-stem, being open or exposed to the air on its outside, and communicating, by the orifices *d d*, with the interior of the coupling.

This nut or box is represented as screwing into the side of the piece or casting B, under closure by packing, as at *e*, in figs. 2 and 3.

The cavity *g*, in which the valve plays, is not only of somewhat larger diameter than the valve, to allow of free play of the latter, and of air working past its edge, when said valve is thrown inward or away from the orifices *d d*, but the bottom *h* of said cavity is made at such a depth, or of such irregular formation, that, while it acts as a check to restrain the valve from being forced into the pipe or coupling B, to an extent that will allow of water, when returned or caused to fill the pipe, acting upon both faces of the valve to keep it open, and so that the shutting of said valve over the orifices *d d*, is insured by the flow or pressure of the water through the pipe and coupling, yet free passage for air around the edges of the valve or through uncovered sections *i i* of the interior of the pipe or coupling is secured when the valve is thrown inward by the formation of a vacuum on the inside of the pipe. These provisions are essential to the proper operation of the valve.

Thus constructed, said atmospheric valve may be applied with facility and dispatch to boilers now in use, as well as new ones, and forms a cheap and simple attachment or intervening device to the inlet-pipe, which will effectually prevent the formation of a vacuum in the boiler or pipes, by freely admitting air to equalize the pressure whenever the pressure on the outside is in excess of that within.

What is here claimed, and desired to be secured by Letters Patent, is—

The atmospheric valve for house boilers, constructed of a coupling or body part, B, having male and female screw-threads *a* and *c* at its opposite ends, also provided with a side valve, C, a hollow nut, D, forming a valve-seat, *f*, and a check or stop, *h*, establishing openings *i i*, all being arranged substantially as described, for operation in connection with the inlet-pipe to the boiler, essentially as and for the purpose herein set forth.

JOHN H. RHODES.

Witnesses:

FRED. HAYNES,
R. E. BABEAU.