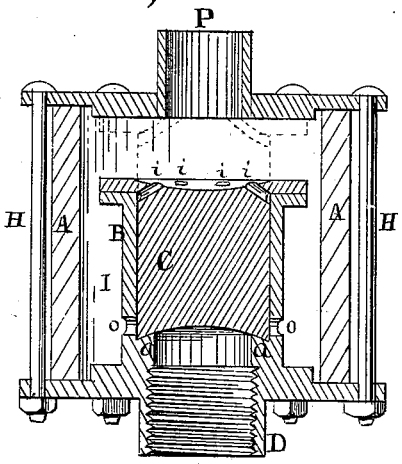
W. M. ERNST.

SAFETY-VALVE.

No. 190,298. Patented May 1, 1877.

Fig. 1.



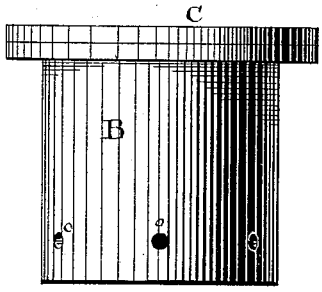


Fig. 2.

Attest

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UNITED STATES PATENT OFFICE.

WILLIAM M. ERNST, OF NEW YORK, N. Y.

IMPROVEMENT IN SAFETY-VALVES.

Specification forming part of Letters Patent No. **190,298**, dated May 1, 1877; application filed November 6, 1876.

To all whom it may concern:

Be it known that I, WILLIAM M. ERNST, of the city, county, and State of New York, have invented a new and useful Steam-Valve for Range and Stove-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

My invention has for its object the safety of water-boilers connected with stoves and ranges used in dwellings against explosion, bursting, or collapsing. The bursting or collapsing of these boilers are of frequent occurrence, and serious, as well as fatal, injuries are often sustained by such unforeseen accidents.

This invention consists in the combination of a piston-valve and an outer and inner cylinder so constructed as to leave an annular space between the two, to inclose the valve and permit the steam to escape to the outlet, and a convex valve-seat, secured to near the lower end of the inner cylinder, which is provided with several orifices for the purpose of allowing the steam to escape when the valve is forced from its seat by the pressure of steam, all arranged to operate together, as herein shown.

Figure I represents a longitudinal vertical sectional elevation, showing the location of the valve and valve-seat. Fig. II shows a side elevation of the inner cylinder and valve.

Letters of like name and kind refer to like parts in each of the figures.

A represents the outer cylinder, which may be made of metal or glass. B represents the inner cylinder, which may also be made of metal. C is the valve, cylindrical in form, with the lower end made concave, so as to fit closely upon the convex valve-seat *a*.

The valve-seat may be made in an acute angle with the valve, to correspond and fit the seat; or it may be made in any practicable shape without affecting my invention.

The valve is made to fit closely within the cylinder B, but so as to allow it to move readily up and down, according to the action or pressure of steam exerted upon it.

D is a pipe, attached to the cylinder-head for the purpose of connecting the same with the boiler. H H are bolts that secure the two cylinder-heads to the ends of the cylinder. *o o* are orifices, made near the lower end of the cylinder B, for the purpose of allowing the steam to escape into the annular space I as soon as the valve is raised from its seat by the pressure of steam in the boiler, thence into and through the escape-pipe P.

The dotted lines in Fig. I show the valve raised up against the valve-head, which is so arranged as to limit the upward movement of the valve C. When in this position the steam is allowed to escape through the orifices *i i i* in the top of the valve C. (Shown in dotted lines.)

It will be observed that the valve may be graduated in weight, so as to resist a sufficient amount of pressure; or it may be regulated by means of a coiled spring between the top of the valve and the cover of cylinder A.

By practice it is found that a weight is preferable to a spring, as the latter is more or less liable to corrode and become inoperative.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a safety-valve, the inner cylinder B, provided with orifices *o o* and valve-seat *a*, in combination with piston-valve C and outer cylinder A, provided with outlet P in the cover of said cylinder, all arranged and operating together, as shown and described.

2. The valve C, provided with the orifices *i i i*, in connection with the inner cylinder B, provided with the orifices or outlets *o o*, and outer cylinder A, provided with outlet P, as herein shown and described.

WILLIAM M. ERNST.

Witnesses:
NATHAN A. ULMAN,
CHARLES ROGERS.