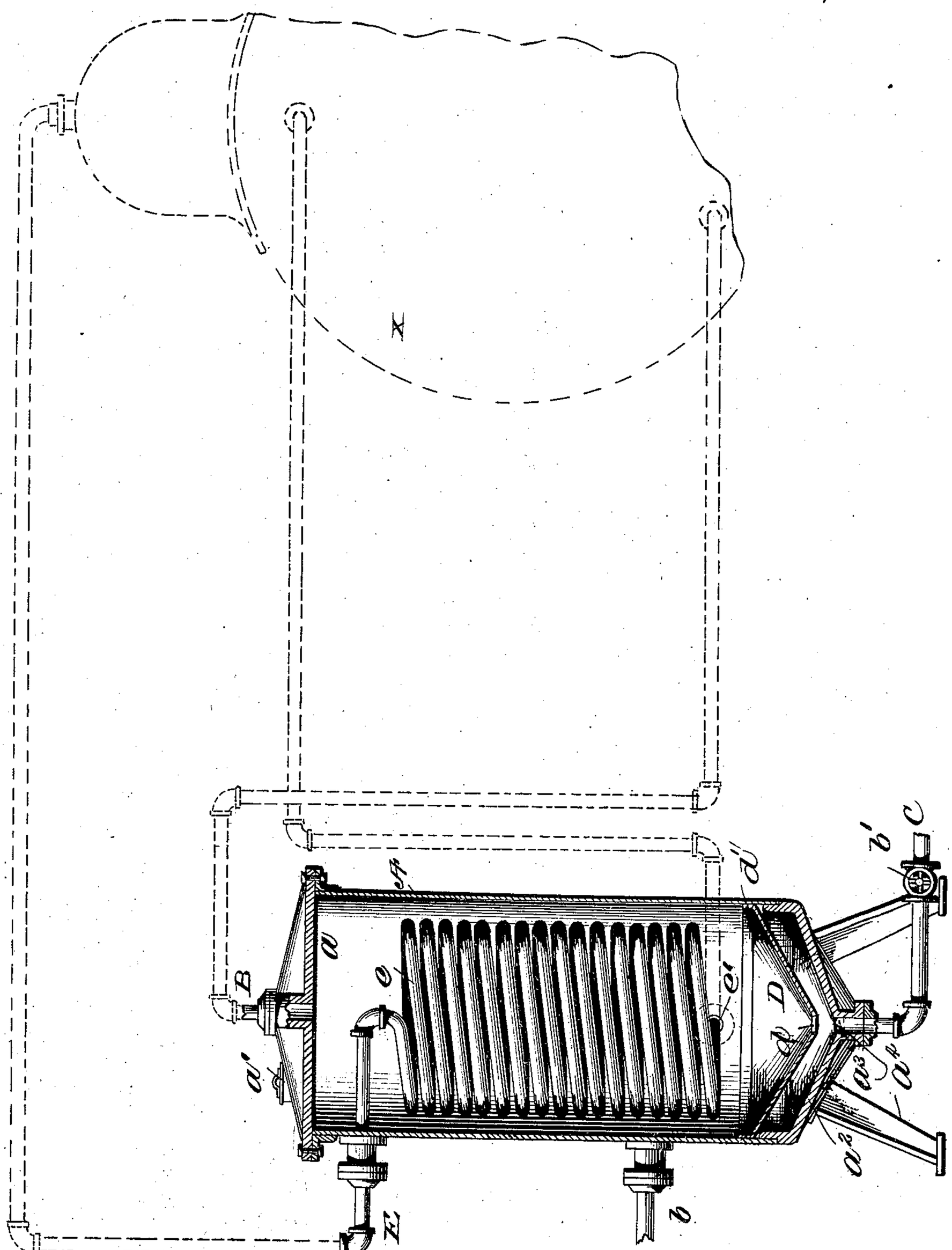
(No Model.)

T. GUNNING.

FEED WATER PURIFIER.

No. 547,719. Patented Oct. 8, 1895.



Witnesses

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THOMAS GUNNING, OF PITTSBURG, PENNSYLVANIA.

FEED-WATER PURIFIER.

SPECIFICATION forming part of Letters Patent No. 547,719, dated October 8, 1895.

Application filed January 30, 1895. Serial No. 536,654. (No model.)

To all whom it may concern:

Be it known that I, THOMAS GUNNING, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Feed-Water Purifiers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention is a feed-water purifier for boilers and is designed to remove all impurities from feed-water before entering the boiler, thereby preventing scales or incrustations from forming on the interior of the boiler-shell.

A further object is to provide a purifier of this nature which shall possess advantages in point of simplicity and inexpensiveness, and also one which will be practically automatic in its operation and not require constant attention. These objects I accomplish by employing a casing or cylinder into which the feed-water is first fed and passing through this cylinder a coiled steam-pipe. One end of this pipe connects with the dome or upper portion of the boiler, and its other end opens into the boiler-shell at a point above the water-line therein. Thus the steam is continuously passing through the coiled pipe in the purifier and the feed-water in the latter is heated to about the same degree as that in the boiler, causing the impurities to separate and fall on a false bottom of the casing, by which they are directed to the blow-off pipe.

The invention comprises the novel features of construction and also the detail combination and arrangement of parts, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawing, the figure is a view showing my improved water-purifier connected to a boiler.

Referring to the drawing, A designates a casing or cylinder; a, an upper head-plate rigidly secured thereto; a', a hand-hole in said head-plate; a^2, an inclined bottom having a central outlet a^3, and a^4 are legs secured to this bottom. To the center of the head-plate a is connected a pipe B, which leads to boiler X. The feed-water from the exhaust-heater (not shown) is supplied to casing A by a pipe b, opening thereinto at a point above the lower end thereof. A blow-off pipe C is connected to outlet-opening a^3 of bottom a^2 and is provided with a valve b', designed to be operated to effect the blow-off of sediment from the casing. Above the bottom a^2 is a false bottom D of cone-like shape and having an opening d at its vertex, through which the sediment passes to the bottom proper. This false bottom is secured at its peripheral edge d, to the interior of the casing A.

E is a steam-pipe which opens through the side of casing A near the top thereof, leading from the steam-dome of the boiler. Within this casing this pipe is formed into a coil e and is passed out through the side of the casing at e' above the false bottom, and is then carried to the boiler-shell, into which it opens at a point above the water-line therein. Thus there is a continuous circulation of steam and a constant passage thereof from the boiler to and through the purifier and thence back to the boiler. In this way the steam-pressure in the boiler is not perceptibly diminished, as the steam is merely directed therefrom and then returned thereto.

In practice water from the exhaust-heater is fed through pipe b to the purifier, and the heat generated by the steam-coil causes the impurities in the water to fall to the bottom and the purified water ascends and passes through pipe B to the boiler. The sediment falling onto the false bottom passes through the opening in the latter to the outlet and is removed from the purifier by opening the valve in the blow-off pipe.

From what has been said it will be seen that a purifier constructed as herein described is extremely simple and inexpensive, that there is no waste of steam from the boiler, a continuous circulation being maintained between the latter and the purifier. It will also be noted that the liability of sediment collecting on the bottom of the purifier is reduced to a minimum, since all sediment will fall through the tapered false bottom directly to the outlet opening. The purifier can be located at any suitable point relatively to the boiler.

I claim as my invention—

1. In a feed-water purifier, a casing or cylinder provided with a lower blow-off opening and water inlet and outlet openings, a blow-

off pipe connected to said blow-off opening, a tapered false-bottom in said casing having a lower central opening, and the coiled steam-pipe in said casing above said false-bottom, said water inlet and outlet openings being above said bottom, substantially as set forth.

2. The combination with a water boiler having an upper steam space, of a feed-water purifier comprising a casing or cylinder having an upper head-plate provided with an outlet opening, the pipe connected thereto leading to the boiler, a lower bottom plate having a central outlet opening a pipe connected thereto, a tapered false-bottom above said former bottom having a central opening, a feed-water supply pipe opening into said casing above the said false bottom, and the continuous steam pipe coiled within said casing or cylinder and having its ends connected to said boiler at points above the water line therein, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS GUNNING.

Witnesses:
CHAS. F. RANKIN,
CHAS. H. RHODES.