W. W. Martin.

Steam-Boiler Water-Heater.

No. 38,870. Patented June 9, 1863.

Fig 2.

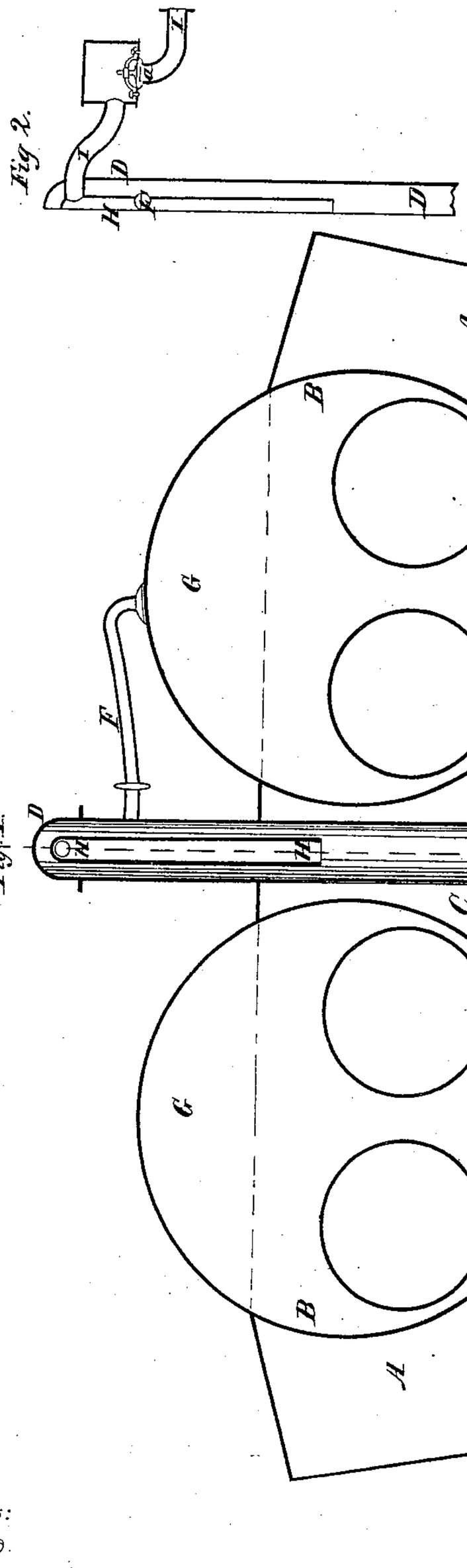

Fig 1.

Witnesses:
S. E. Wilson
E. Brunel Jr.

Inventor:
W. W. Martin.
By atty. H. B. Stoughton.

UNITED STATES PATENT OFFICE.

W. W. MARTIN, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN FEED-WATER HEATERS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **38,870**, dated June 9, 1863.

To all whom it may concern:

Be it known that I, W. W. MARTIN, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Supplying Boilers with Feed-Water; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical section through a pair of boilers and portions of the furnace, stand-pipe, &c. Fig. 2 represents a transverse vertical section taken at the red line *x x* of Fig. 1, to show the arrangement of the inlet and heating pipes.

Similar letters of reference, where they occur in the separate figures, denote like parts of the apparatus in both of the drawings.

I am aware that a feed-water pipe has been carried into or through the steam-space in a boiler for the purpose of heating the supply-water before it is delivered into the boiler; but this produces condensation in the boilers, and is objectionable on this and other accounts.

I propose to heat the feed-water by the heat from the furnace without interfering with the boilers in any manner; and my invention consists in carrying the feed-water through a vertical pipe located within an exterior vertical pipe, which is in direct contact with the furnace heat, and thence heating and carrying the water to the boiler direct in a highly-heated condition, or to the mud and stand pipe, and thence to the boiler, as may be preferred.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same, with reference to the drawings.

A represents a furnace, and B the boilers connected therewith. In the furnace space C, between the boilers, I arrange a large vertical pipe, D, which should be of iron, as it is to resist high heat. This pipe I propose to connect with the stand-pipe E, as shown, and from its top or upper portion a pipe, F, should lead into the steam-space G of one or both of the boilers, to allow such steam as may generate in the pipe D to pass into the steam-space in the boiler or boilers. Within this vertical exterior pipe, D, there is placed a pipe, H, much smaller than the exterior one, and it may be made of copper. The top of this interior pipe, H, connects with a supply-pipe, I, that leads to the pump or doctor, and a check-valve, *a*, should be arranged in this supply-pipe, as shown at Fig. 2. The supply-water, being forced through the pipe I, enters the pipe H, where it is partially heated, but immediately after leaving the pipe H it passes in a thin film or column through the outer pipe, D, which is in direct contact with the furnace heat, and becomes highly heated therein, and may pass on into the stand-pipe E, and thence into the boilers; but, if preferred, and it is not necessary to settle the feed-water before it enters the boilers, then the supply-water may pass directly from the pipe H into the boiler or boilers without taking it to the stand-pipe first, and may enter the boiler or boilers at any convenient point below the water-line. By this means I effectually heat the feed-water and introduce it thus heated into the boiler, which prevents condensation in the boiler, as must take place where the supply-water is heated by the steam in the boiler being introduced therein in a cold state.

Having thus fully described the nature, object, and purpose of my invention, what I claim is—

Locating a feed-water pipe within an external vertical pipe arranged in the furnace-space for the purpose of heating the water that is to supply steam-boilers, substantially in the manner herein described and represented.

W. W. MARTIN.

Witnesses:
G. W. REED,
ALEXANDER HAYS.