

R. O'NEILL.
Feed-Water Heaters.

No. 149,148.

Patented March 31, 1874.

Fig. 1

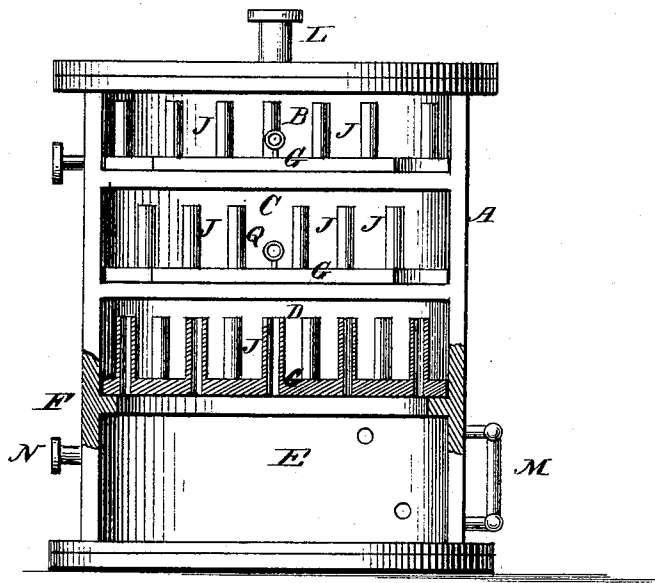
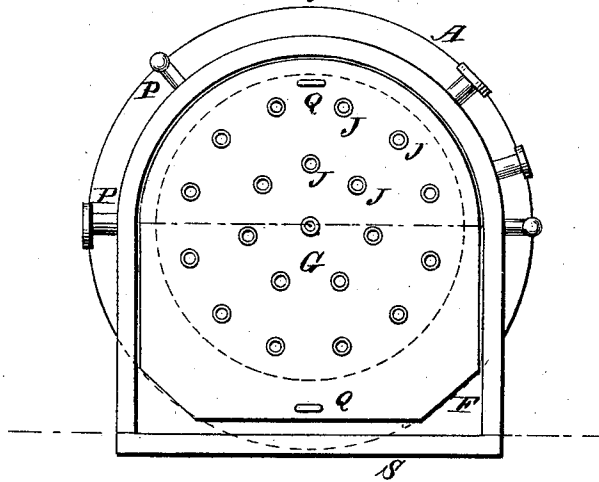


Fig. 2



Witnesses:

Chas. Kida
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UNITED STATES PATENT OFFICE.

ROBERT O'NEILL, OF NEGAUNEE, MICHIGAN.

IMPROVEMENT IN FEED-WATER HEATERS.

Specification forming part of Letters Patent No. 149,148, dated March 31, 1874; application filed May 10, 1873.

To all whom it may concern:

Be it known that I, ROBERT O'NEILL, of Negaunee, in the county of Marquette and State of Michigan, have invented a new and useful Improvement in Boiler Feed-Water Heaters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification.

My object in this invention is to provide an apparatus for heating and filtering feed-water for steam-boilers; and consists in the features of improvement hereinafter described.

In the drawing, Figure 1 is a vertical section of Fig. 2, taken on the line *x x*. Fig. 2 is a top view of Fig. 1, with the cover removed.

A represents the casing or shell, which is divided into four sections or compartments, marked B, C, D, and E, from the latter of which, E, the water is taken for the supply of the boiler. F represents flanges or ribs projecting inward from the inner surface of the shell, which support the heating-plates G. The plates rest upon the flanges F. The plates G are provided with a series of tubes, J, twelve inches (more or less) in length,

through which the water passes in descending from one section to another. These tubes are about three-fourths of an inch in diameter, and each plate is provided with a large number of them, so that the water is divided and exposed to the exhaust steam from the engine, and is heated by condensing and absorbing the heat thereof. The water to be heated is introduced through the pipe L in the top of the shell. M is a glass water-gage, to indicate the quantity of water in the heater. P is a tube for draining the heater. Q Q are screw-eyes in the plates G, by means of which the plates are removed. The shell A is made with one side flat, as seen at S, which is removable in section, so that the plates may be removed separately.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The shell A, divided by inside ribs F, in combination with plates G and tubes J, as and for the purpose set forth.

ROBERT O'NEILL.

Witnesses:

JOHN Q. ADAMS,
GEO. W. HAYDEN.