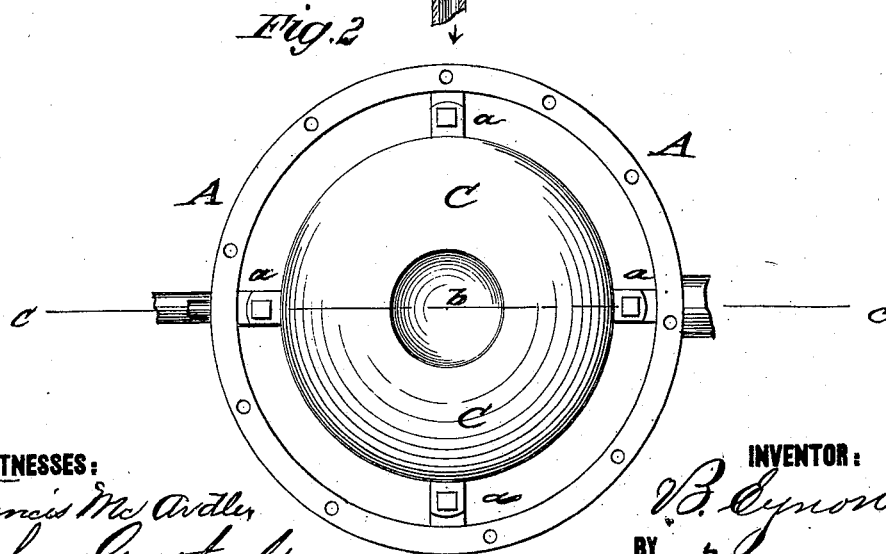
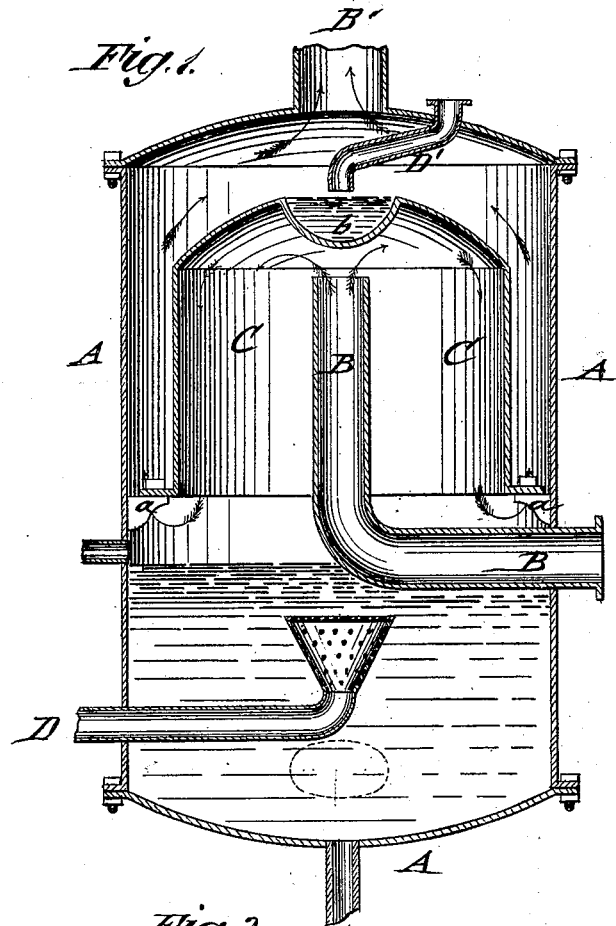


B. EYNON.

FEED-WATER HEATER.

No. 189,206.

Patented April 3, 1877.



WITNESSES:

Francis Mc Ardler
John Goethals

INVENTOR:

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UNITED STATES PATENT OFFICE.

BENJAMIN EYNON, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN FEED-WATER HEATERS.

Specification forming part of Letters Patent No. 189,206, dated April 3, 1877; application filed July 1, 1876.

To all whom it may concern :

Be it known that I, BENJAMIN EYNON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Feed-Water Heater, of which the following is a specification :

In the accompanying drawing, Figure 1 represents a vertical central section of my improved feed-water heater, taken on line *c c*, Fig. 2; and Fig. 2, a top view of the same, with top plate taken off to show interior construction.

Similar letters of reference indicate corresponding parts.

My invention has reference to an improved feed-water heater, of simple and effective construction, that is worked by exhaust steam, supplying pure water to the boiler.

The invention consists of a heater with interior dome, supported at the upper part of the heater. The central top part of the dome is made dishing, to expose the water in a thin sheet to the action of the exhaust steam, that is thrown on the lower part of the dome, passing up in opposite direction to the water, and escaping at the top. The water is drawn off from the center of the heater by the pump feed-pipe.

In the drawing, A represents a heater of cylindrical shape, with curved top and bottom parts—the top part to facilitate the escape of the exhaust steam, the bottom part to insure the settling of the sediments near the center, where they may be readily blown off by means of a blow-off cock and pipe at the lowermost point of the same.

The exhaust steam from the engine enters through a pipe, B, at the side of the heater, which pipe is bent upward at the center of the heater, and terminates at a suitable distance below an interior dome, C, that is supported on side lugs *a* of the heater, and formed with depending cylindrical wall, which forms an annular channel between heater and dome.

The exhaust-steam is first thrown against the under side of the dome, then passed downward along the sides of the same, and, finally, upward in the space formed between heater and dome to the exit-pipe B' at the top of the heater. The water enters the heater at the top through a pipe, D', and is discharged near the bottom of a central dish-

ing or recess, *b*, of the dome, which dishing serves to distribute the water equally over the surface of the dome, exposing it in a thin sheet to the action of the exhaust steam that passes up in opposite direction to the water. The exhaust steam enters at a point above the waste-water pipe, and prevents thereby the entering of water into the exhaust-pipe when the engine is at rest, which forms an annoying feature of many heaters.

The feed-pipe D, with a suitable strainer-head, is arranged at the center of the heater near the water-line, for the purpose of receiving the pure, and also the condensed, water from the center of heater at all times.

A great portion of the exhaust steam is condensed by contact with the under side of dome, that is kept cool by the cold water discharged thereon. This condensed water furnishes pure water near the center of heater, and produces a considerable decrease in the quantity of feed-water required.

The sediments are collected at the sides and bottom of the heater, and may be cleaned out by a man-hole at the side, and by the blow-off cock at the bottom.

As the exhaust steam is mostly condensed and fed to the boiler with the feed-water, less fuel is required in the use of the boiler, on account of the purity of the water and absence of scale, while the heater, being constructed entirely of cast-iron, without complicated parts, may be manufactured at about half the cost of most other heaters in use.

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

In a feed-water heater, the combination of the casing A, the dome C, having depending cylindrical wall, separated by an annular space from the casing; and the steam-induction pipe B, entering said dome and terminating near the top, whereby the admitted steam is brought in contact with the interior of the dome, the surface of the heated feed-water and the water falling between the dome wall and casing, substantially as described and shown.

BENJAMIN EYNON.

Witnesses:

JOHN DAVIES,
JAMES JONES.