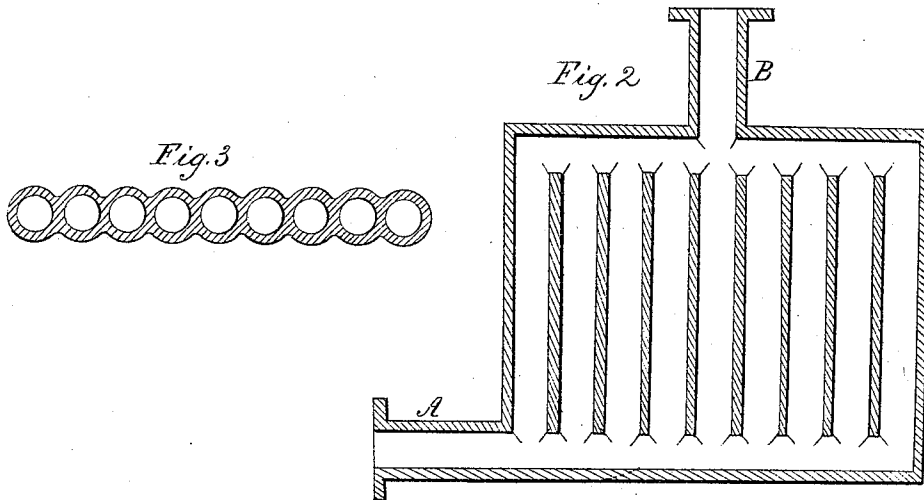
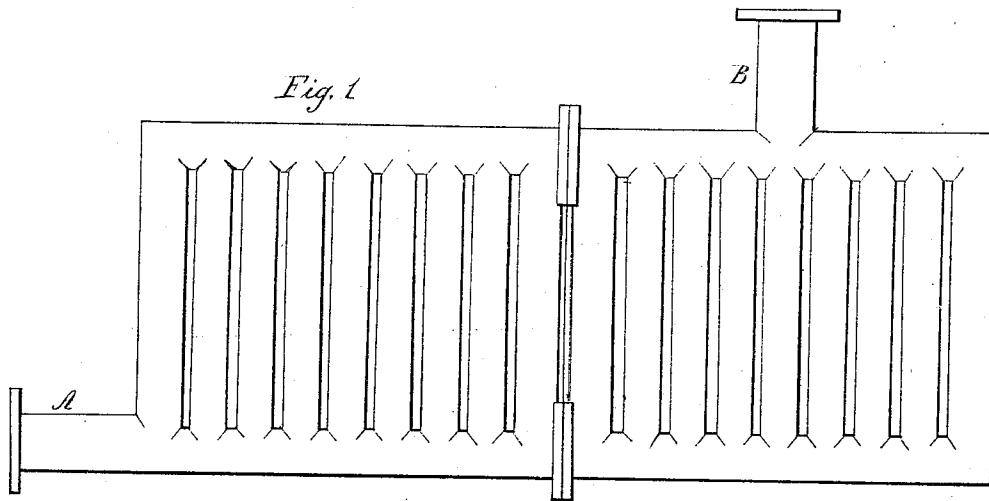


E. L. Robbins

Fire Box for Boiler.

N^o 95,727

Patented Oct. 12, 1869.



Witnesses
George Worthington,
A. W. Fox

Inventor
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United States Patent Office.

EDWIN L. ROBBINS, OF OWEGO, NEW YORK.

Letters Patent No. 95,727, dated October 12, 1869.

IMPROVEMENT IN FIRE-BOXES FOR STEAM-GENERATORS.

The Schcdul. referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EDWIN L. ROBBINS, of Owego, in the county of Tioga, and State of New York, have invented a new and improved Mode of Constructing Fire-Boxes or Heaters for Utilizing Heat in Furnaces of Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the accompanying drawings—

Figure 1 is a vertical longitudinal elevation.

Figure 2, a vertical longitudinal section.

Figure 3, a longitudinal transverse section.

The nature of my invention consists in forming the sides of fire-boxes or furnaces (in all cases where furnaces are beneath the boilers) of cast-iron in the form of a row of vertical pipes or tubes, connected together and made in a single casting.

The ends of the vertical pipes open into horizontal pipes, one at the top and one at the bottom of the casting, connecting all the pipes, and affording ample circulation for water in the pipes as steam is generating.

The vertical pipes are a short distance apart, and have a sufficient thickness of metal between them to give necessary strength to the structure.

The iron surrounding the pipes being equal in thickness, makes the sides of the castings corrugated, (see fig. 3,) thus presenting a greater amount of heating-surface to the action of the fire, and concentrating heat upon the water in the pipes.

The castings thus made are placed at the sides of the furnace next the fire, and extend as far back from the fire-doors as the grates reach, and in height they rise from the grates to the sides of the boiler, thus utilizing heat that would otherwise be wasted on the walls, and forming a fire-box easily and cheaply made, and attached without seams, rivets, or stay-bolts, and not liable to leak, like wrought-iron structures for similar purposes.

Each casting has a branch-pipe, A A, figs. 1 and 2, or rather an extension of the lower horizontal pipe, with a flange at the end, which is connected with a supply-pipe to keep the heaters filled with water; and also another branch-pipe, B, on the top edge of the fire-box, from which a pipe extends to the top of the boiler, and is connected thereto, so that steam generated in the fire-box passes directly into the boiler.

In cases where furnaces are so large that a single casting would not fill the space desired, they are put in in sections, and bolted together through flanges for the purpose, as shown in fig. 1.

What I claim as my invention, and desire to secure by Letters Patent, is—

The construction and arrangement of the tubular circulating cast-iron lining for fire-boxes and furnaces, with pipes A and B, substantially as herein described.

EDWIN L. ROBBINS.

Witnesses:

GEORGE WORTHINGTON,
A. W. Fox.