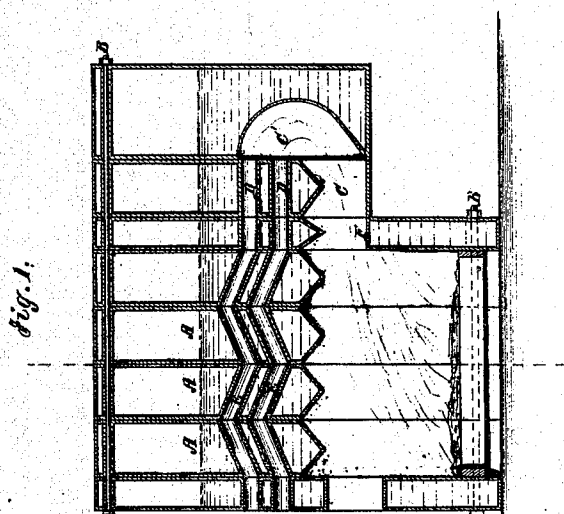
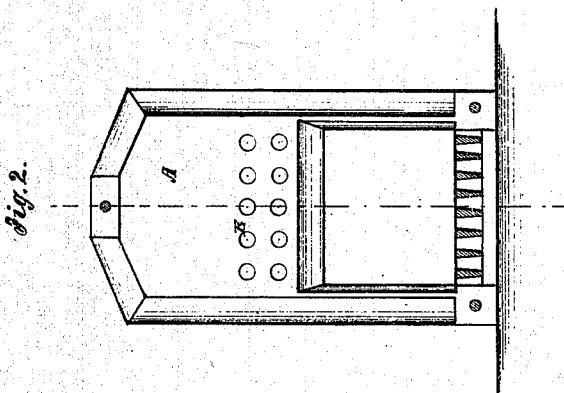


G.O. Sampson,

Fire Tube Boiler.

No. 103087.

Patented May 17, 1870.



Witnesses:

A. Rosenkrantz

Wm. K. Brooks
(11)

Inventor:

G. O. Sampson

PER

Munn & Co.
Attorneys.

United States Patent Office.

GEORGE O. SAMPSON, OF JAMESTOWN, NEW YORK.

Letters Patent No. 103,087, dated May 17, 1870.

IMPROVEMENT IN STEAM-GENERATORS.

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

To all whom it may concern:

Be it known that I, GEORGE O. SAMPSON, of Jamestown, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification.

This invention relates to steam-generators; and consists in certain improvements thereon, which will be specified hereinafter.

Figure 1 represents a longitudinal sectional elevation of a boiler constructed according to my improvements; and

Figure 2 represents a transverse sectional elevation of the same.

Similar letters of reference indicate corresponding parts.

A represents the hollow plates composing the sections of which the boiler is constructed, by clamping them together by the bolts B, and providing passages or water-connections from one to the other, and flue-passages through them; also providing a fire-space at the bottom by forming vertical notches in the lower end of the plates.

Hitherto, these sections have all been made the same length, and the lower flue has been extended through the rear end plate A, discharging into a sheet-metal bonnet, for conveying it to the upper return-flues D. This bonnet is exposed to the air, and radiates a large amount of heat which is lost to the upper flues.

To economize this heat, I propose to arrange this bonnet or flue in one or more of the rear plates or sections, as shown in fig. 1, where, instead of conducting the flue-passage C directly through the last plate, I have turned it upward, at C', to the return-flues D, leaving a water-space behind it for the water therein to receive the benefit of the heat now given off through the bonnet.

I also propose to make the plates behind the bridge E shorter than along the fire-space, as an economy of metal and cost of construction; for the application of heat at this part is so ineffectual as to be a waste instead of an economy.

For a further economy of heat, I arrange the return-flues in zigzag lines, as shown at E, to cause the heat-currents, which naturally flow in straight lines, to impinge against the sides, and thereby act more intensely upon the waters. These zigzag lines are formed by arranging the flues for each plate obliquely through it, and placing them together in the order represented in the drawings; that is to say, the sides of the plates from which the tubes issue nearest the top are placed together, and *vice versa*.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The arrangement of the return-flues E in the hollow plates A in zigzag lines, substantially as specified.

GEO. O. SAMPSON.

Witnesses:

SAML. G. LOVE,
W. HARRY BLINN.