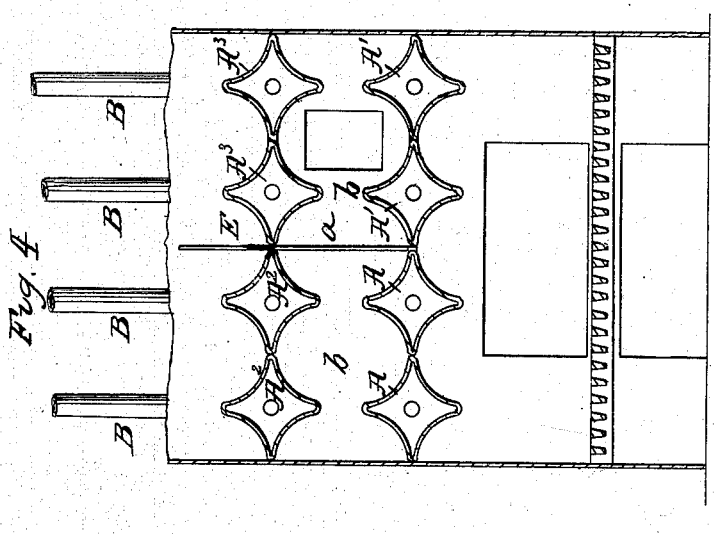
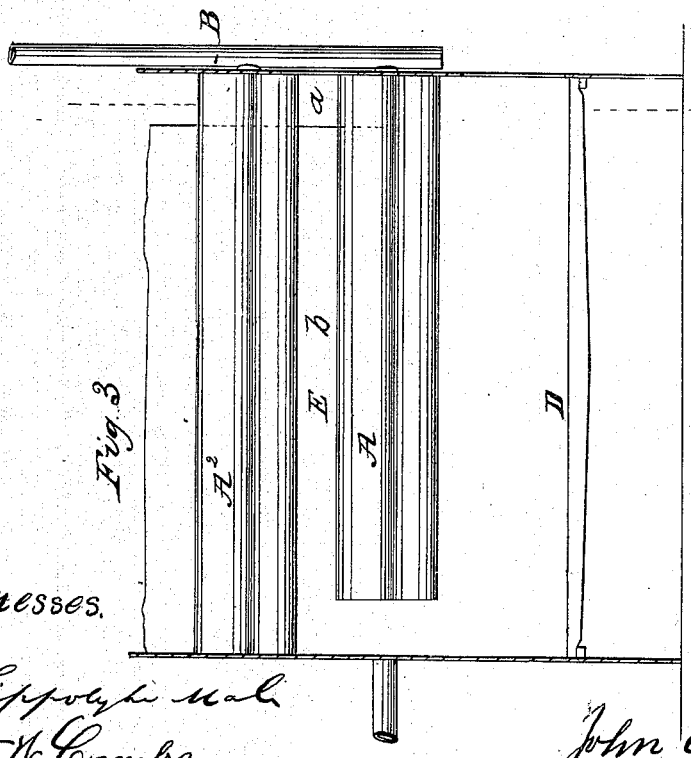
J. CHILCOTT.

CAST IRON STEAM GENERATOR.

No. 48,518. Patented July 4, 1865.





Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN CHILCOTT, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN CAST-IRON STEAM-GENERATORS.

Specification forming part of Letters Patent No. **48,518**, dated July 4, 1865; antedated June 21, 1865.

To all whom it may concern:

Be it known that I, JOHN CHILCOTT, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Cast-Iron Tubular Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Cast-iron, it is well known, is capable of resisting a much greater compressive than tensional force, and one of the best forms for resisting compressive force is the arch.

One object of this invention is to take advantage of the above-mentioned properties of cast-iron and the arch in the construction of steam-generators the water and steam spaces of which are composed of tubes. Another object is to increase the heating-surface of the tubes, and to provide for the better formation between them of flues for the circulation of gaseous products of combustion.

To these ends my said invention consists in the construction of a steam-generator of tiers of cast-iron steam and water tubes having their transverse sections of arch-sided polygonal form, with the convex surfaces of the arches inward, and arranged to form flues between the several tiers.

Figure 1 is a transverse section of the cast-iron water or steam tube constructed according to my invention. Fig. 2 is a transverse section of two such tubes cast together. Fig. 3 is a longitudinal vertical section of a steam-boiler having its water and steam spaces composed of such tubes. Fig. 4 is a transverse vertical section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

A A′ A^2 A^3 are the cast-iron arch-sided polygonal tubes. These are represented as having four sides, but may be made with any desired number. In the boiler represented the tubes are cast with closed ends; but the said tubes may be cast with open ends and have their ends closed by caps applied and secured in any suitable manner. The said tubes are represented as connected at one end by means of pipes B B, to provide for a proper circulation of steam and water. They may, however, be similarly connected at both ends, or at suitable points in their length. The tubes A and A′ are represented in Fig. 4 as exposed directly to the vertically-radiating heat from the fire on the grate D. In Fig. 3 the arrows indicate the manner in which the heated gaseous products of combustion circulate between A and A^2, and through an opening, *a*, in the vertical longitudinal partition-wall E, provided between A A^2 and A′ A^3, to circulate between A′ and A^3 on their way to the chimney, the spaces *b b* between the several tiers of tubes forming flues. A similar system of circulation may be further carried out by increasing the number of tiers.

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

A steam-generator composed of tiers of arch-sided polygonal cast-iron water and steam tubes, arranged, substantially as herein described, to form flues between the tiers.

JOHN CHILCOTT.

Witnesses:
HIPPOLYTE MALI,
J. W. COOMBS.