

Steam Generator.

No. 53,118.

Patented March 13, 1866.

Fig. 1.

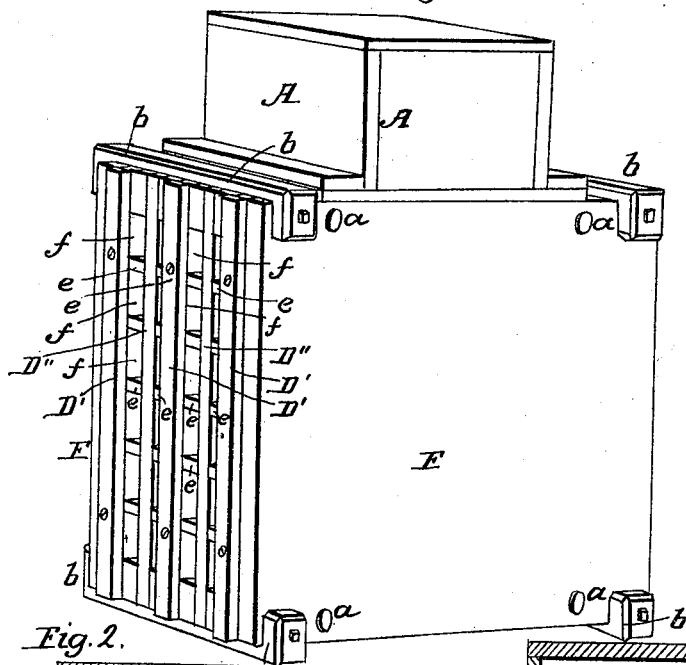


Fig. 2.

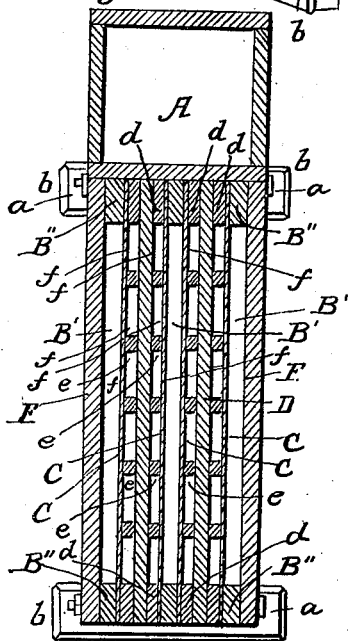
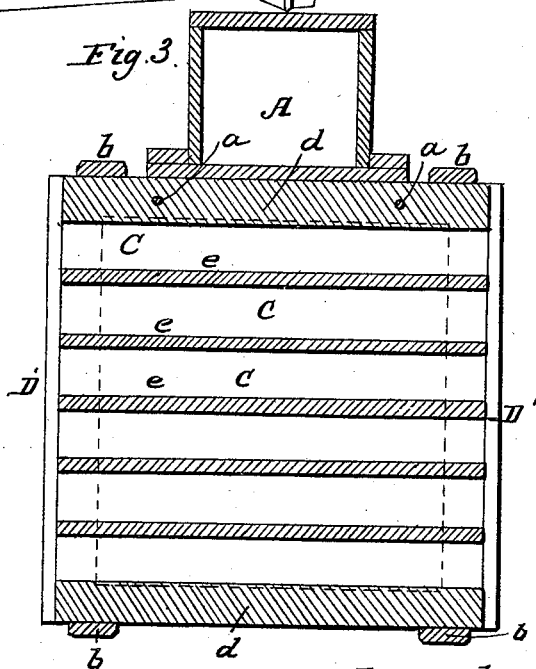


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

ISAAC E. CRAIG, OF CLEVELAND, OHIO.

STEAM-GENERATOR FOR HEATING PURPOSES.

Specification forming part of Letters Patent No. 53,118, dated March 13, 1866.

To all whom it may concern:

Be it known that I, I. E. CRAIG, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Steam-Generators; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the generator. Fig. 2 is a transverse vertical section. Fig. 3 is a longitudinal vertical section.

Like letters of reference refer to like parts in the different views.

My improvement relates to a steam-generator consisting of a series of plates so constructed and arranged that water-chambers and flues are formed alternating with each other, and the flue-plates form stays or supports for the sides of the water-chambers, in which a large amount of fire-surface is obtained, combining cheapness and strength of construction with economy in the use of fuel.

A represents the dome of the generator, underneath which are arranged a series of plates, that can be square, rectangular, or any other desired shape. They are represented square in the drawings, and are secured together by clamps *b* above and below at each end, or by bolts *a*, extending through them, or rivets can be used.

The water-chambers B B' are formed of square cast frames, B'', as shown and indicated by the dotted lines in Fig. 3, the sides C of which are made of plate or wrought metal, that are placed on the frames and fastened at the ends by being turned over onto the edges of the frame with a cap, D', on the outside, secured by bolts, as shown in Fig. 1, forming a water and steam tight joint, or a tight joint may be made in any other way. A tight, close joint is formed at the upper and lower ends by the edges being clamped or screwed tightly between the upper and lower portion of the frame and the corresponding part, *d*, of the adjacent plates, as shown in Fig. 2, or by any other suitable means.

The flue-plates D, between the water-chambers, are cast with ribs *e*, projecting on each side, forming rectangular openings *f* when in place between the sides of the chambers.

F F are the outside plates of the generator that form one side of each of the outside

chambers, B', the inner sides next the flues only required to be wrought-iron and both sides of the center chamber, B, where there are flues on each side.

The generator is supplied with water in the ordinary manner, and the chambers communicate with the dome either directly or by means of pipes. The dome may be square or round, and is made of cast-iron in two separate pieces, the bottom being placed on the top of the plates through which the pipes pass into the water-chambers if they do not communicate directly. The upper portion of the dome is attached by means of flanges and bolts to the plates, as represented in Fig. 1. The ribs of the plates fitting closely against the sides C of the chambers form a system of supports or stays that strengthen the generator so that the ordinary stay-bolts and bars are not needed, the wrought plates forming the sides of the flues next the chambers being so thin that as the fire and heat pass through the flues a larger amount of generated heat will be absorbed than in any other way, thus accomplishing one object of my invention, economy in the use of fuel; and it is likewise very cheap in its construction, and will be strong and durable.

There can be any desired number of chambers and flue-plates, alternating with each other according to the size of the generator, the central chambers all having wrought plates on each side, and the outside chambers need them only on the inner sides next the flues.

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

1. The flue-plates D, forming a system of supports, and flues *f*, when arranged between the water-chambers B B', substantially as and for the purpose set forth.

2. One or more water-chambers, B B', when constructed and arranged in relation to each other, and flue stay-plates D, as and for the purpose set forth.

3. The construction of the frame B'' in combination with the side plates, C, when arranged in the manner and for the purpose set forth.

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