

A. C. Fletcher,

Steam Generator.

No. 88,288.

Patented Mar. 30. 1869.

Fig. 1.

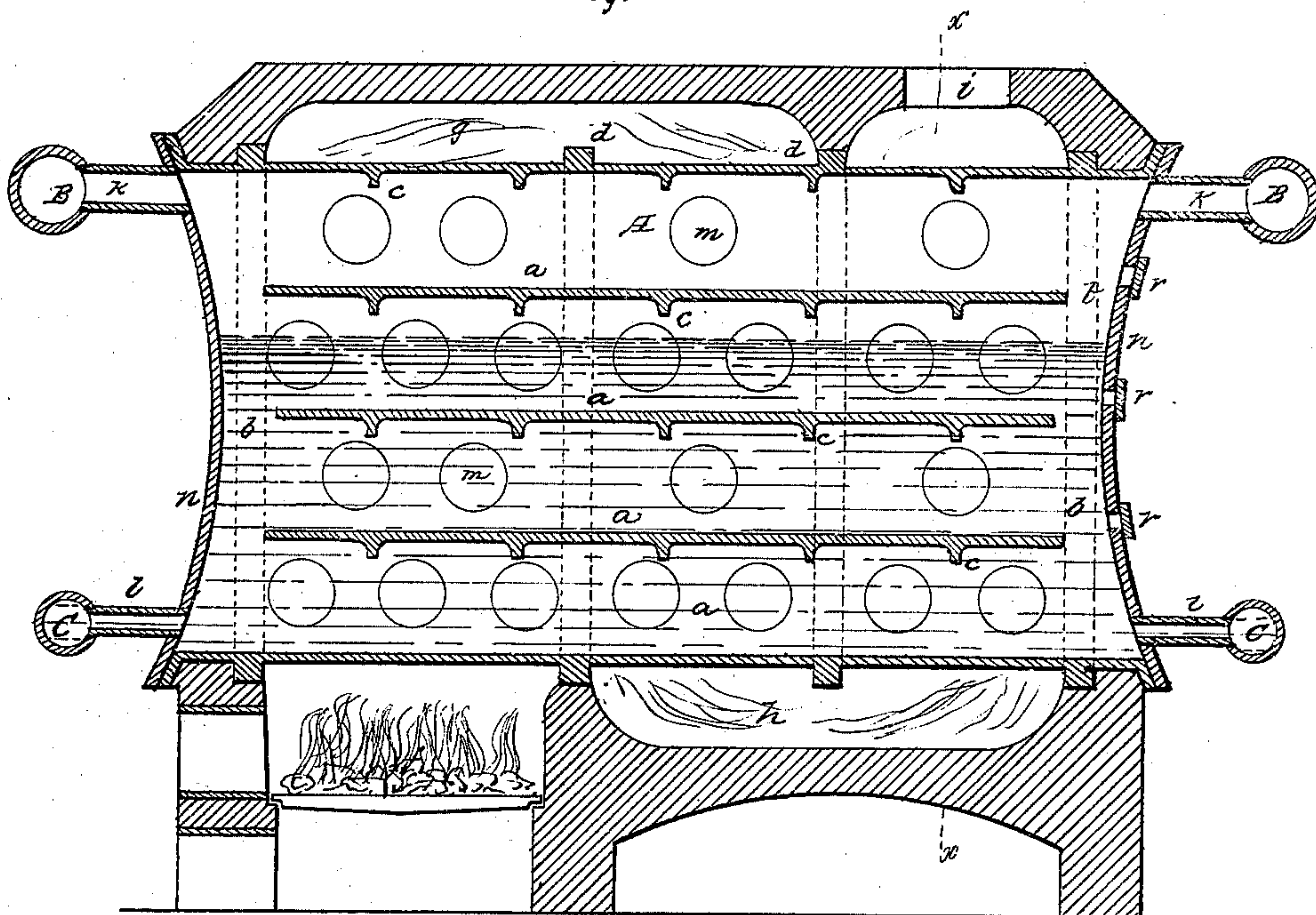
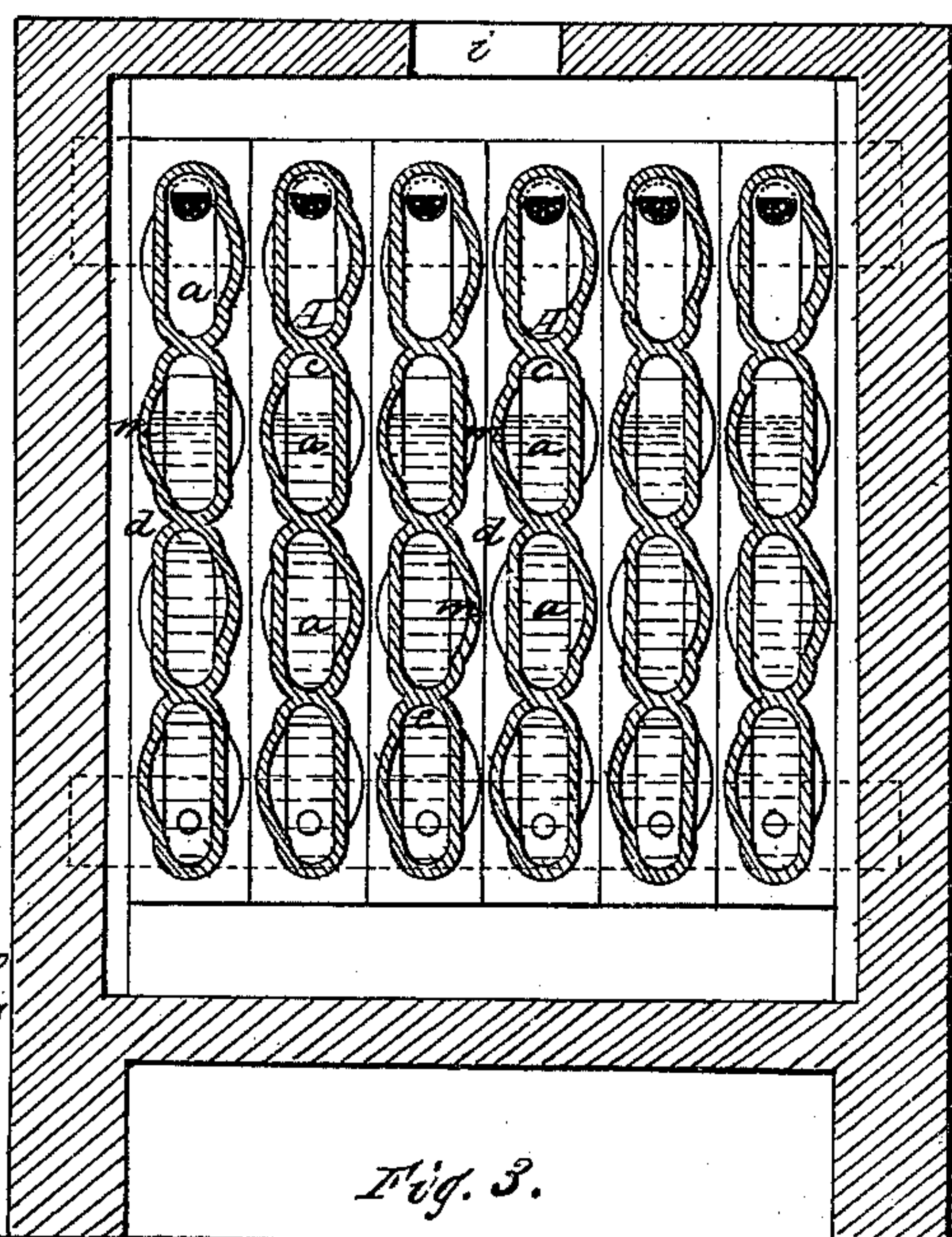


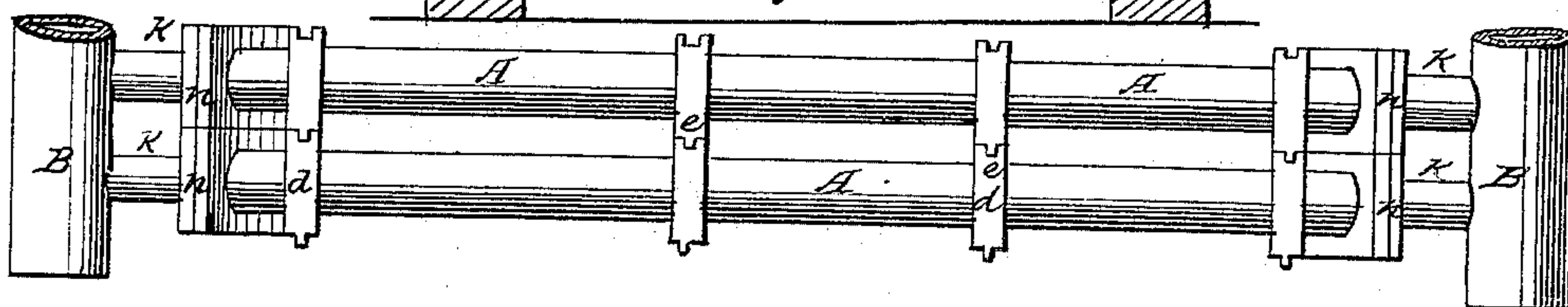
Fig. 2.



Witnesses:
McComb
Fred. Haynes

Inventor:
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Fig. 3.



United States Patent Office.

ADDISON C. FLETCHER, OF NEW YORK, N. Y.

Letters Patent No. 88,288, dated March 30, 1869.

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, ADDISON C. FLETCHER, of the city, county, and State of New York, have invented a new and useful Improvement in Steam-Generator, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 represents a longitudinal section of a steam-generator constructed in accordance with my improvement;

Figure 2, a transverse section thereof, taken as indicated by the line *x x* in fig. 1; and

Figure 3, a plan, or partial plan of such boiler removed from the brick-work in which it is set.

Similar letters of reference indicate corresponding parts.

This, my improved generator, is made up of a construction and arrangement of cast-iron sections of hollow slabs, whereby great simplicity and cheapness, with durability, strength, and extended metallic heating-surface, together with safety and other advantages, are secured.

Referring to the accompanying drawing—

A represents cast-iron slabs or sections, made with a series of tubular passages, *a*, preferably of oblong, or flattened oval form, one above the other, in each vertical section A, and extending mainly throughout the length of each section, leaving passages *b*, at their opposite ends, to establish vertical communications between them.

Thus constructed, these sections, which constitute the water and steam-spaces of the generator, present, as clearly seen in fig. 2, somewhat of a corrugated exterior to the sides of the slabs, which are strengthened internally by projections *c*, and externally by strap-like ribs *d*, these latter projections, or ribs further serving to keep the several sections A at a suitable distance apart, and the same being tongued and grooved, as at *e*, down their vertical edges, to tie the sections longitudinally, establish a proper connection and arrangement of the several sections, and likewise serving, conjointly with the side masonry, or setting, fire-place, *f*, upper chamber *g*, and back lower chamber, or flue *h*, to give a serpentine course, in a vertical direction, to the flame and gaseous products of combustion, first upward, then downward, and afterward in an upwardly direction, to the outlet *i*; or such return-flue arrangement may, if desired, be similarly extended, before reaching said outlet, to the smoke-stack.

The water and steam, while free to flow vertically through the end-openings *b*, are also at liberty to circulate horizontally, in reverse or return directions, by or through the tubular passages *a*.

This serves to establish uniformity of temperature throughout the section, and the steam may be drawn off from either or both ends thereof by connections *k*, which unite with steam-drums B, common to the sev-

eral sections; also the water may be fed into the boiler from either or both ends, by supply-pipes C, united to the several sections by branches *l*.

The steam generated in the lower tubular passages *a* of each section A, which form independent boilers, as it were, escapes by the openings *b* to the next tubular passage *a* above, and so on in succession throughout the entire vertical tier of such passages, the steam gradually becoming drier in its passage through the boiler.

The several sections, or hollow slabs A, should be of similar configuration and size, thereby cheapening construction, inasmuch as they may be cast from the same patterns, and are more readily replaced when necessary; also, whereby the fitting together of the generator is facilitated.

Said sections are covered or fitted at their ends with arched plates *n*, presenting an outward concave configuration to secure strength, by resisting internal pressure.

These plates, at the one end of the generator, may be cast on to their respective sections, or they may be bolted at both ends to flanges cast on the sections.

Manhole-lids, or covers *r*, to openings in said plates at one end of the boiler, should be provided opposite each tubular passage *a*, to facilitate cleaning out said passages.

From this description, it will be seen that a cheap, yet strong and durable steam-generator is produced, combining safety with working economy and efficiency, and with no liability to destruction of its joints, as the same are protected from action of the fire on them.

The water lying in thin films, steam is rapidly generated, while the divided, or sectional character of the boiler adds to its safety.

The sides of the several sections or slabs A may be formed with a series of hollow protuberances, *m*, to add to the heating-surface of the boiler.

What is here claimed, and desired to be secured by Letters Patent, is—

1. A steam-generator, constructed substantially as described, of a series of vertical slabs, A, arranged at suitable distances apart, side by side, and each being cast or formed with tubular steam and water-passages *a*, arranged one above the other, and running in direction of the length of the slabs, with openings *b*, establishing communication between them at their ends, in combination with a vertical return fire-flue arrangement on the exterior of the slabs, essentially as specified.

2. The hollow slabs A, arranged as described, and formed with outside ribs *d*, made with tongues and grooves on their edges, for locking the slabs longitudinally, and keeping them at suitable distances apart, essentially as shown and described.

ADDISON C. FLETCHER.

Witnesses:

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