(No Model.)

E. A. DOTY.

STEAM GENERATOR.

No. 457,640. Patented Aug. 11, 1891.

Fig 1

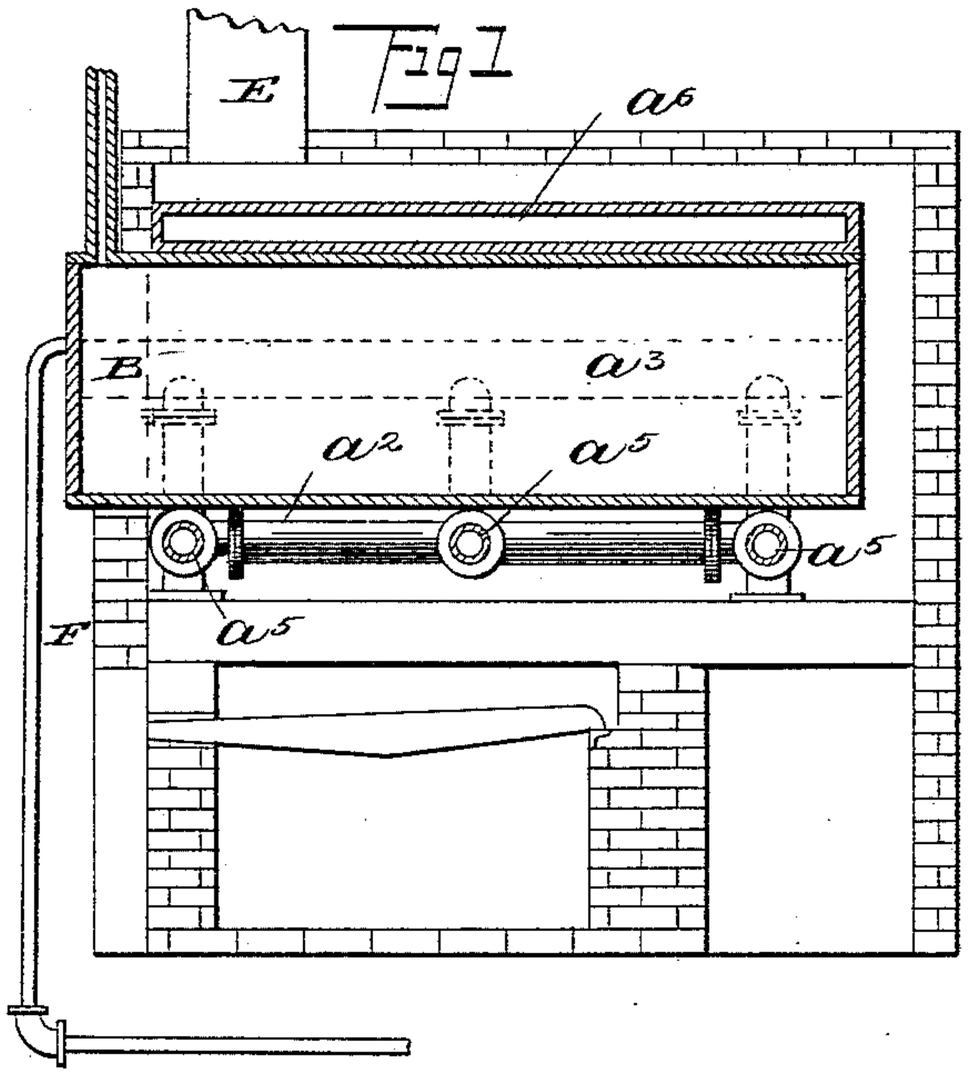


Fig 2

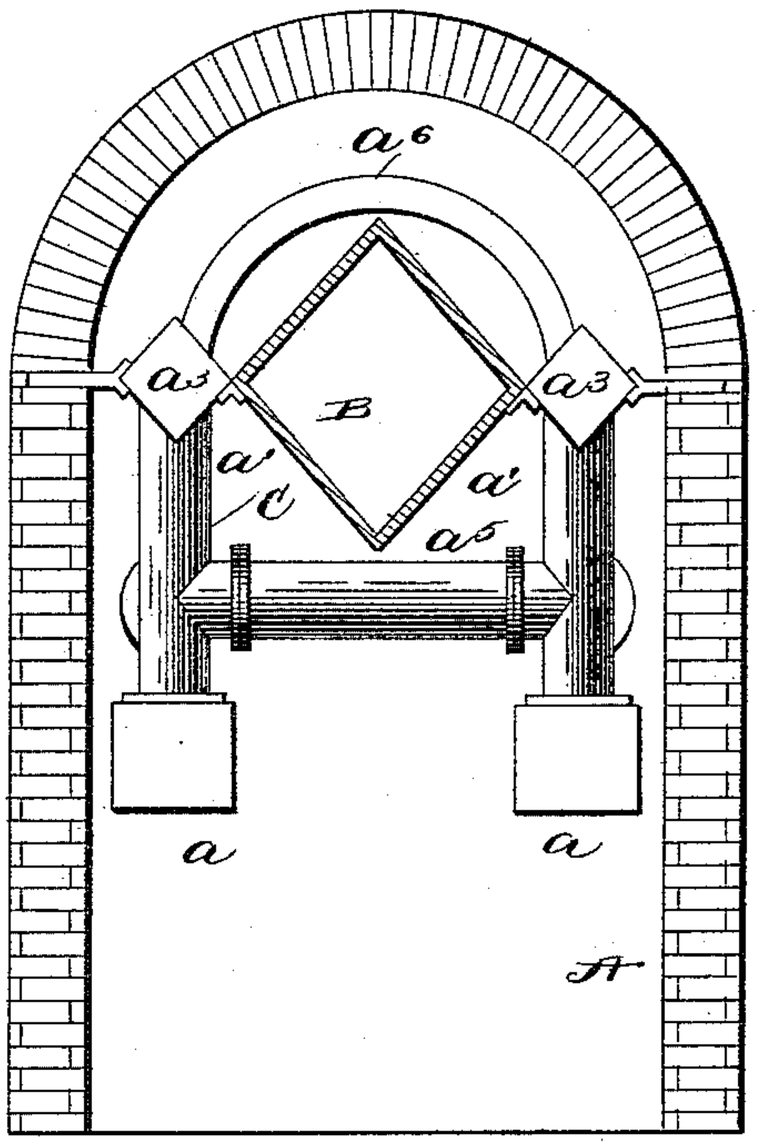
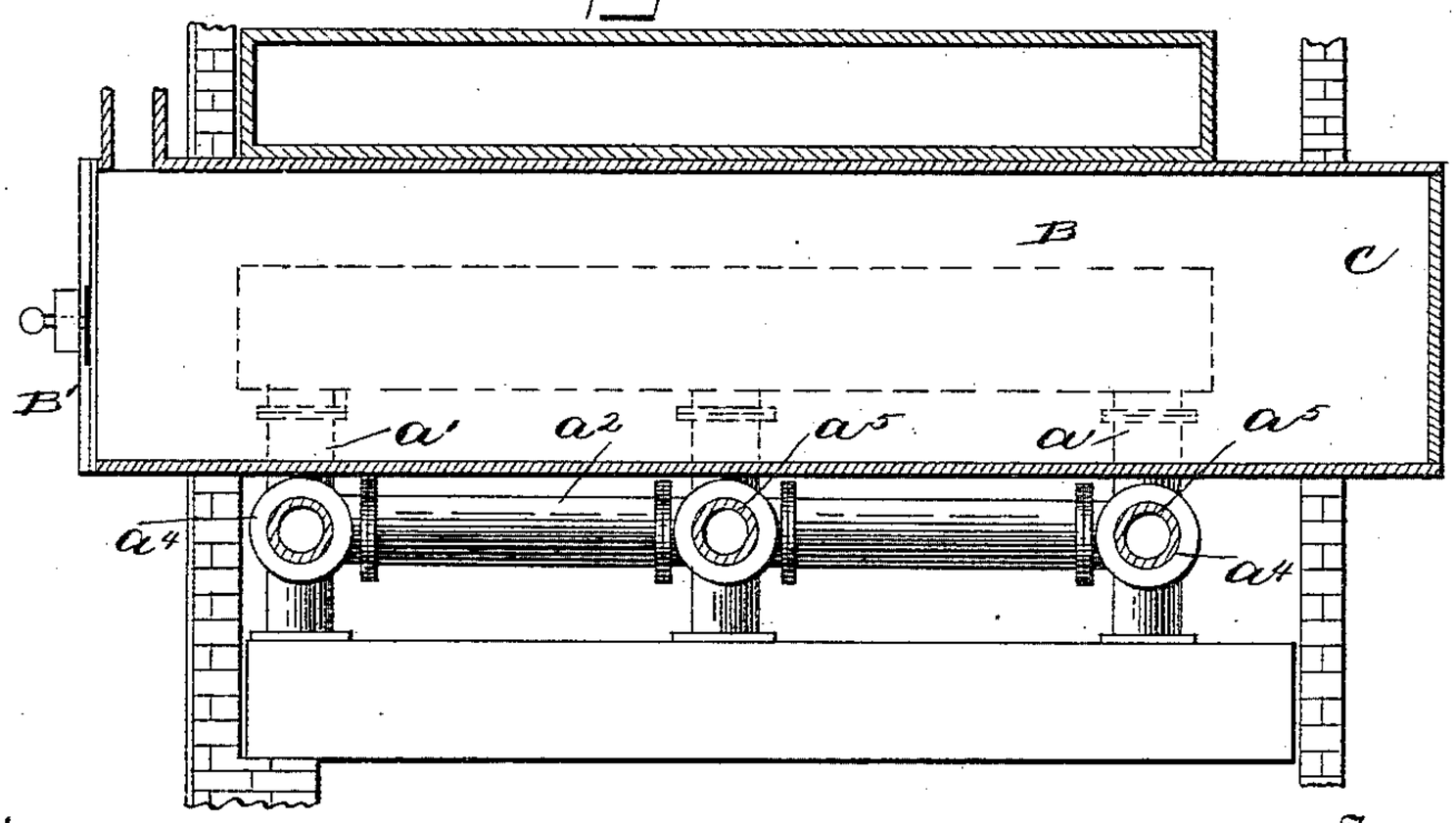


Fig 3



Witnesses

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EDWIN A. DOTY, OF LOCKPORT, NEW YORK.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 457,640, dated August 11, 1891.

Application filed January 9, 1891. Serial No. 377,392. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. DOTY, a citizen of the United States of America, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Steam-Generators, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain improvements in steam-generators; and it consists in the novel combination and arrangement of parts, as hereinafter described and illustrated in the drawings, and as pointed out in the claim; and to these ends the nature of my invention consists in the novel construction and combination of parts, as hereinafter more fully disclosed by the description and drawings.

In the accompanying drawings, Figures 1 and 2 are a longitudinal and a cross-sectional view, respectively, of my improved steam-generator furnace; and Fig. 3 is a broken longitudinal sectional view of a modification thereof.

In carrying out my invention I arrange or inclose within the usual brick-work or masonry inclosure A the retort or chamber B, having its front end B′ extended beyond the front wall of said inclosure and supporting it by means of the tubular hot-water heater or boiler C, itself arranged within said inclosure, said retort or chamber being preferably diamond-shaped in cross-section, having its top and bottom central portions each formed of a longitudinal tapering surface, thus presenting, as is obvious, the maximum surface to the heating action of the products of combustion in the combustion-chamber. The extension of the front end portion of the retort provides for easy or ready access to the interior of the retort without having to remove any of the brick-work or masonry for that purpose.

The tubular water heater or boiler C consists of parallel longitudinal bottom tubes or chambers a, suitably braced together by transverse hollow tubular pieces a^4, and upon which at their ends and intermediately thereof are secured communicating vertical tubes a', having connected to themselves upper and lower longitudinal tubes a^2 a^3, and transverse tubes a^5, one at each end and one at about the middle. Spanning the space between and secured to the longitudinal tubes a^3 is an arched crown-sheet chamber a^6 designed together with the other chambers or tubes of the boiler or heater thus described to contain or hold water, thereby providing an extended water-heating or steam-generating surface, said crown-sheet chamber also having the effect to prevent the waste of heat by cutting off its passage to the crown of the brick-work or masonry of the inclosure.

The products of combustion for heating the retort, it will be seen, are also utilized to generate steam or furnish hot water, which may be used, among other purposes, for supplying hot water or steam to heating-pipes for buildings or for domestic purposes.

The conjoint superficial area of the upper longitudinal tubes and the crown-sheet chamber is equal to the width of the inclosure A, as seen, thus subdividing into longitudinal compartments the said inclosure; but the retort, or boiler or heater, does not extend the entire length of said inclosure, leaving sufficient space between the back end thereof and the inclosure to provide for the return passage of the products of combustion to the forward end of the inclosure or furnace, the smoke exit or pipe E being located thereat, whereby the entire superficial area of the retort is encompassed by or exposed to the heating action of said products of combustion.

In the modification, as illustrated in Fig. 3, the rear end of the retort is also extended, as at c, whereby provision is made for increasing the containing or heating capacity of the retort, the heater or boiler, as in the aforesaid arrangement, stopping a short distance inward from the back wall of the inclosure to provide for the passage thereat around the retort of the products of combustion from the lower to the upper longitudinal compartment of the inclosure.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The tubular boiler or water-heater con-

sisting of the bottom longitudinal tubes having connected therewith the vertical transverse tubes, upon which are superposed longitudinal tubes having connected thereto the arched crown-sheet chamber spanning the space between said tubes, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN A. DOTY.

Witnesses:
O. M. BALL,
JOSEF A. HAGMANN.