

(No Model.)

G. E. PALMER & A. M. EWART.

FURNACE FOR STEAM GENERATORS.

No. 349,737.

Patented Sept. 28, 1886.

Fig. 2

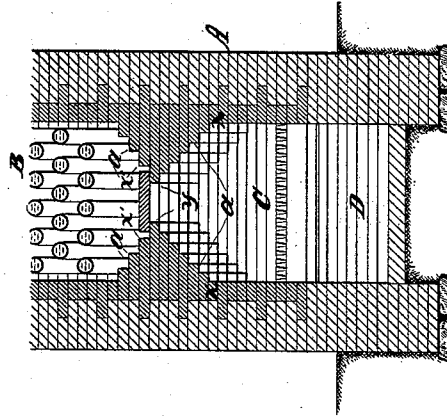
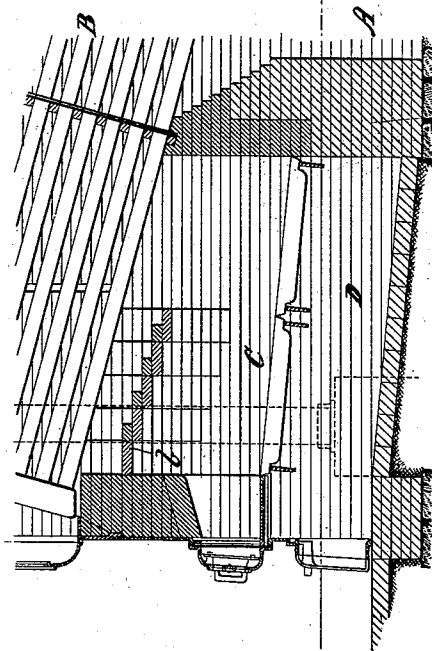


Fig. 1



WITNESSES:

Aug. 1886
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FURNACE FOR STEAM-GENERATORS.

SPECIFICATION forming part of Letters Patent No. 349,737, dated September 28, 1886.

Application filed July 29, 1886. Serial No. 209,384. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. PALMER and ARCHIBALD M. EWART, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Furnaces for Steam-Generators, of which the following is a specification.

Our invention relates to furnaces for steam-generators; and its object is to so construct the furnace as to derive the maximum advantage from the fuel employed, which object we aim to accomplish by the construction illustrated in the accompanying drawings and described hereinafter.

Referring to the drawings, in which like parts are indicated by like letters, Figure 1 is a longitudinal section of a furnace embodying our invention, and a small portion of a sectional generator; and Fig. 2 is a cross section of the same furnace and generator, or a section at right angles to Fig. 1.

In carrying out our invention we so construct the roof of the furnace as to cause the gases generated from the ignited fuel to be retarded in their passage to the heating-tubes, the effect of which is to produce an agitation and blending of the combustive gases and the oxygen which maintains the combustion. The construction is such as to cause the gases of combustion, when passing to such heating-furnace, to impinge against the roof of the furnace, and their escape being retarded they are sufficiently heated to accomplish the complete decomposition of such portions of the fuel as can reach the extreme point of oxidation only at a high temperature.

The features of novelty for which we desire protection are pointed out in the claims at the end of this description.

In the drawings, A indicates the outer walls of the furnace, B a tubular boiler in position over the furnace, C the furnace-grate, and D the ash-pit. These parts are of the usual construction. The interior of the furnace has its walls so constructed that they gradually approach each other toward the center, thus producing a conformation somewhat resembling the arch of a building, the inner end of the

arch being on a lower plane than the top line of its front, and the center of the arch capped by fire-brick, as shown.

The letter *a* indicates the interior walls of the arch, which from the points *xx* are built outward and upward in such a manner as to form offsets, as shown. From the points *xx'* the walls *a* extend backward and upward, with offsets to the main wall of the furnace. The inwardly-projecting points *yy* of this wall are covered by the brick slabs *b*, the edges of which overlap in such a manner as to form steps rising from the rear to the front of the arch, thus causing the outlet of the arch formed by the inwardly-projecting walls to open upon a lower plane than the plane occupied by the top line of the front of the arch. The arrangement of the slabs *b* in the manner explained provides a series of offsets on the under surface of the arch, as clearly shown in Fig. 1 of the drawings.

Within this peculiarly-constructed furnace the combustion is intended to be thoroughly effected, and the retardation of the products of combustion, due to the construction described, causes the gases to press or impinge against the walls and caps of the arch on their way to the heating-tubes, and during their passage thereto the gases which they contain are thoroughly intermingled with the oxygen that is admitted to support combustion, and thus are extracted the maximum heating qualities of the fuel. This form of arch is also found to render the walls more susceptible to the absorbing and communicating of the heat of the fuel, and the radiation of heat against the boiler-walls is obviated, thus preventing the fire-gases from cooling down before the degree of heat necessary to a complete decomposition of the same is reached, the gases in their most advantageous condition being thus brought in contact with the effective heating-surface.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A steam-generator furnace the interior walls whereof approach each other in the form of an arch, the surface of the walls of said

arch being constructed to form a series of offsets, whereby the escape of the products of combustion is retarded and a more intimate blending of the combustive gases is effected, substantially as set forth.

2. A steam-generator furnace the interior walls whereof approach each other in the form of an arch, the surfaces of the walls of said arch being constructed to form a series of offsets, and its rear end opening upon a lower plane than the plane occupied by the top line of its front, substantially as set forth.

3. The inwardly-projecting walls provided with offsets, as explained, combined with the cap-slabs, the edges of which overlap one another, substantially as and for the purpose set forth.

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Witnesses:

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