(No Model.) 2 Sheets—Sheet 1.

C. MASON & A. MILLER.

STEAM GENERATOR AND FURNACE.

No. 347,816. Patented Aug. 24, 1886.

Fig. 1.

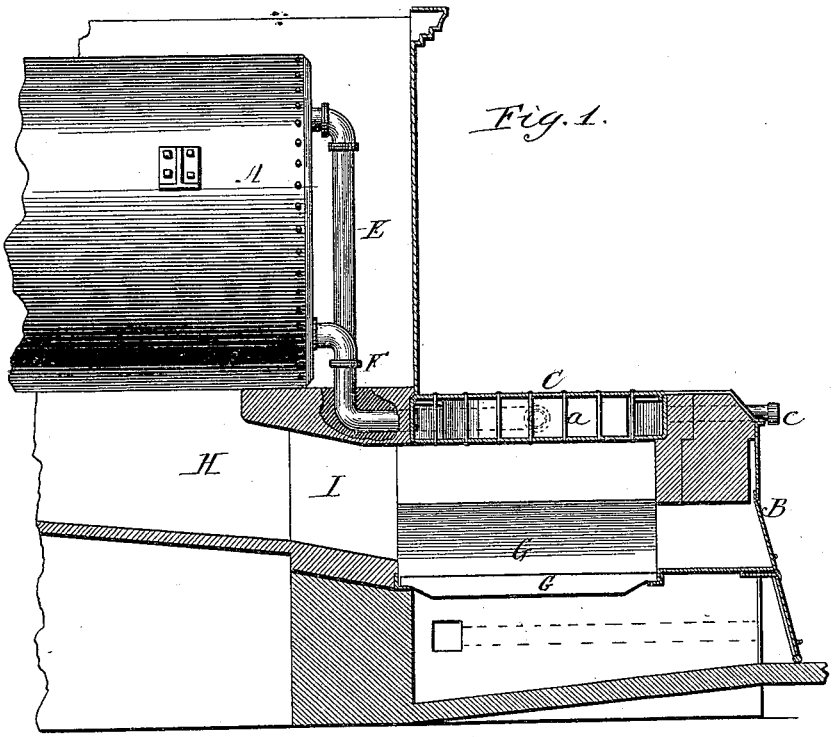
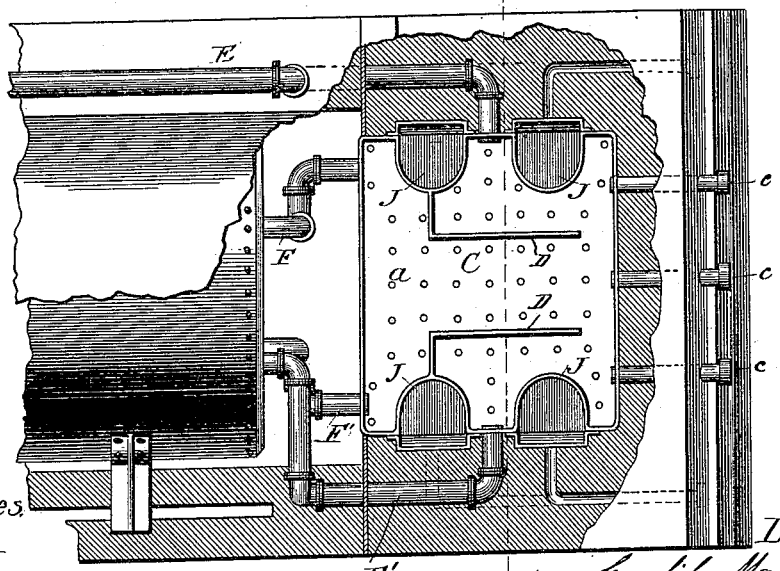


Fig. 2.



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Albert H. Adams.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

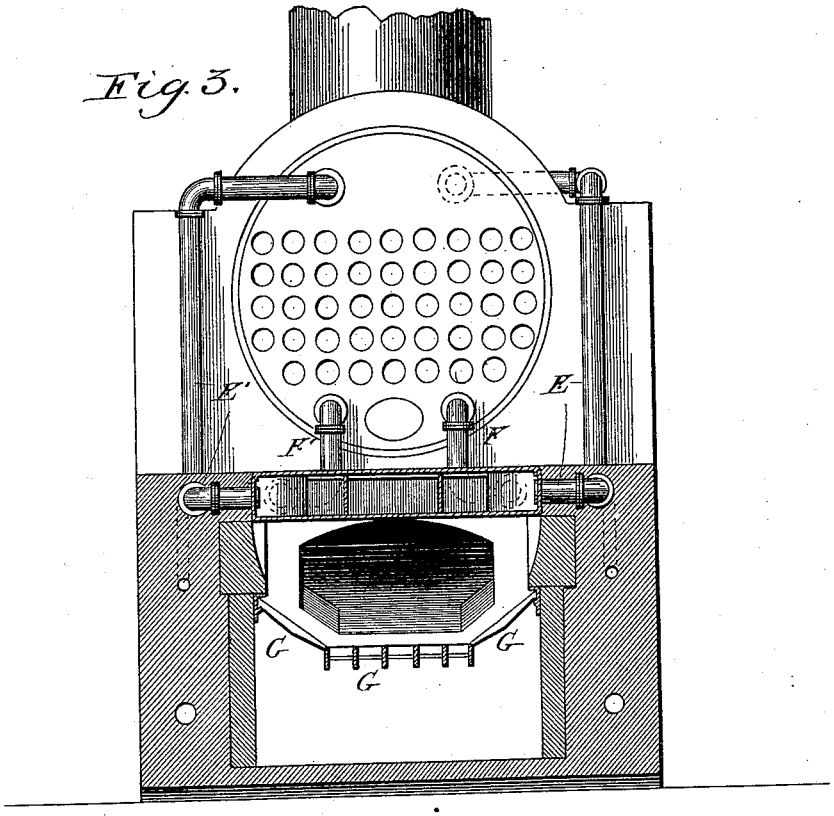
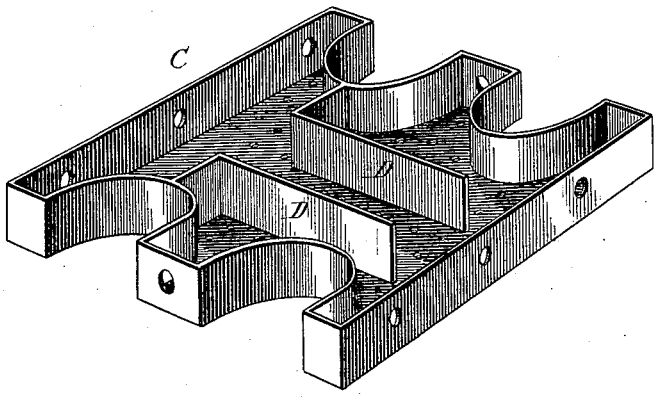


Fig. 4.



Witnesses.
E. A. Wish,
Albert H. Adams.

Inventor.
Carlile Mason
Alexander Miller

UNITED STATES PATENT OFFICE.

CARLILE MASON AND ALEXANDER MILLER, OF CHICAGO, ILLINOIS.

STEAM-GENERATOR AND FURNACE.

SPECIFICATION forming part of Letters Patent No. 347,816, dated August 24, 1886.

Application filed January 2, 1886. Serial No. 187,364. (No model.)

To all whom it may concern:

Be it known that we, CARLILE MASON and ALEXANDER MILLER, residing at Chicago, in the county of Cook and State of Illinois, and citizens of the United States, have invented a new and useful Improvement in Steam-Generators and Furnaces, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section, some parts being in elevation. Fig. 2 is a plan. Fig. 3 is a front elevation, some parts being in section. Fig. 4 is an enlarged detail showing the water-chamber over the furnace, with the cover removed.

Our invention relates to that class of steam-generators and furnaces in which the furnace is not located beneath the boiler, but usually in front thereof. Heretofore the furnace, when so located, has been provided with a brick arch over the top, which is not durable.

The leading objects of our invention are to increase in effect the boiler-capacity, and at the same time make the furnace durable, which we accomplish by providing a water-chamber over the furnace, and connecting the same with the boiler by means of pipes, and by providing the water-chamber with deflecting-plates to aid the circulation in the chamber, as illustrated in the drawings and herein described.

That which we claim as new will be set forth in the claims.

In the drawings, A is an ordinary boiler.

B is the furnace.

C is a water-chamber over the furnace.

D are deflecting-plates in the water-chamber.

E E′ are connecting-pipes leading from the boiler to the water-chamber. As shown, one of these pipes communicates with the rear end of the boiler, while the other communicates with the front end.

F F′ are return-pipes leading from the water-chamber to the boiler. As shown, E E′ communicate with the boiler near its top and F F′ near the bottom. The bottom and the top of the water-chamber are connected and supported by stay-bolts *a*.

G are the grate-bars, a portion of which are placed on an angle and a portion are horizontal.

H is a flame-chamber beneath the boiler.

I is a contracted passage leading from the furnace to the flame-chamber.

c are pipes, one end of which communicate with the water-chamber, and their outer ends are closed by caps which can be removed. These pipes are for the purpose of receiving a hose for the purpose of cleaning the water-chamber.

Fuel can be introduced into the furnace through openings in the top of the furnace, which are closed by doors J. The form of the water-chamber which permits such passages for the introduction of fuel is shown in Fig. 4.

A suitable ash-pit is to be provided; also doors, by which access may be had to the furnace at the front and to the ash-pit.

The operation is as follows: An intense heat can be produced in the furnace and the water in the water-chamber C will be quickly heated, and a circulation of water from the water-chamber to the boiler and from the boiler back to the water-chamber will be maintained through the pipes F F′ and E E′. The deflecting-plates D assist materially in maintaining the proper circulation in the water-chamber C. As shown, the water from the boiler enters the chamber C on opposite sides through the pipes E E′, and by the deflecting-plates D it will be passed to the front of the chamber C, and then back over the central portion of the chamber, passing out to the boiler through the pipes F F′. A large portion of the heat which passes from the furnace will be utilized in the chamber H beneath the boiler.

The water-chamber C furnishes in effect additional boiler-surface, taking the place at the same time of the arch heretofore used over the furnace, and by reason of the rapid circulation of the water through this chamber it provides a durable top for the furnace.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a boiler and a furnace located in front of said boiler, of a water-chamber placed entirely above the furnace and circulation-pipes forming a communication between said boiler and water-chamber, substantially as described.

2. The combination, with a furnace and a boiler, of a water-chamber placed entirely above the furnace, pipes E E′, leading from

the front and rear ends of the boiler to said water-chamber, and the return-pipes F F', substantially as described.

3. The combination, with a furnace and a boiler, of a water-chamber placed entirely above the furnace, pipes forming communication between the boiler and water-chamber, and deflecting-plates placed in said chamber to cause the water to circulate therethrough, substantially as described.

4. The combination, with a furnace and a boiler, of a water-chamber located over the furnace and provided with openings through which fuel is fed to the furnace from the top, said water-chamber being in communication with the boiler, substantially as described.

5. The combination of a boiler, a furnace, a water-chamber above the furnace, circulating-pipes E F, and deflecting-plates D in the water-chamber, substantially as and for the purposes specified.

CARLILE MASON.
ALEXANDER MILLER.

Witnesses:
E. A. WEST,
ALBERT H. ADAMS.