(No Model.)

H. VOGT & W. D. ADAMS.

STEAM GENERATOR.

No. 261,412. Patented July 18, 1882.

Fig 2.

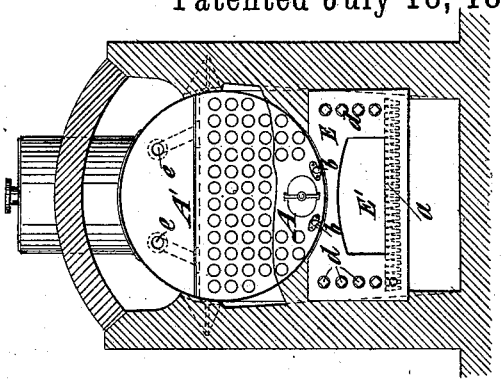
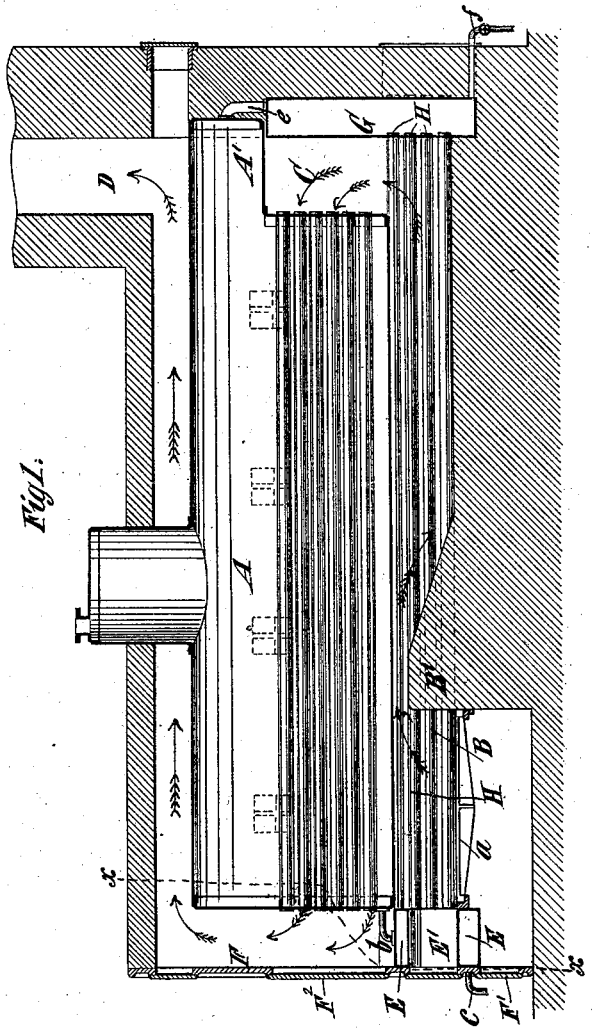


Fig 1.



Witnesses-
Fred. Haynes
Edward Glatzmayer

Inventor-
Henry Vogt
William D. Adams
by their Attorneys
Brown & Brown

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

HENRY VOGT AND WILLIAM D. ADAMS, OF BROOKLYN, NEW YORK.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 261,412, dated July 18, 1882.

Application filed February 11, 1882. (No model.)

To all whom it may concern:

Be it known that we, HENRY VOGT and WILLIAM D. ADAMS, both of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Steam-Generators, of which the following is a specification.

Our invention relates to that class of steam-generators in which water tanks or chambers are placed at the front and rear of a cylindric or tubular boiler, and are connected together by horizontal water-tubes, both said water tanks or chambers being also connected with the boiler proper.

Our invention consists in the combination, with a cylindric or tubular boiler having a rearward extension at its upper part, of a novel arrangement of parts hereinafter particularly described and claimed.

In the accompanying drawings, Figure 1 represents a longitudinal section of a boiler embodying our invention, and Fig. 2 represents a transverse section on the dotted line *x x*, Fig. 1.

Similar letters of reference designate corresponding parts in both the figures.

A designates a boiler of the return-tubular type.

B designates the furnace, which is provided with the usual grate-bars, *a*, bridge-wall B′, and uptake C. As here represented, the products of combustion pass from the furnace under the boiler to the rear end thereof, thence through the boiler-tubes to the front of the boiler, and finally over the top of the boiler to the chimney D at the rear thereof.

The boiler A is formed with a rearward extension, A′, at the upper part of its rear end, and this extension may be flat upon the under side and of segmental transverse section.

In the front of the furnace B is arranged a water tank or chamber, E, which is connected with the boiler A by two pipes, *b*, as shown in Fig. 2, and to which the feed-water pipe *c* is connected.

In the water tank or chamber E is an opening, E′, which constitutes the opening for the fire-door, and on all sides of this opening is water.

The front of the boiler F has in it the usual ash-pit door, F′, below the tank or chamber E, and the usual doors, F^2, which may be opened for cleaning the fire-tubes. At the rear of the boiler is also a water tank or chamber, G, which extends from the bottom of the setting up nearly or quite to the extension A′, and which forms the rear wall of the uptake C. Both the water-chambers E G are equal in width to that of the furnace B, and we connect them by means of tubes H, arranged in two upright or vertical series at opposite sides of the furnace B, and extending between the two water-chambers, as clearly seen in Fig. 1.

Opposite the ends of the tubes H in the outer walls of both the water-chambers E G are plugs *d*, (see Fig. 2,) which provide for replacing any of the tubes H when necessary, and which also provide for inserting a tube-cleaner for cleaning out the tubes when necessary. The chambers E G are provided in their inner sides or walls with tube-holes, into which the tubes H are expanded. The rear water-chamber, G, is connected with the extension A′ of the boiler by means of pipes *e*, (shown in full lines in Fig. 1 and in dotted lines in Fig. 2,) and to said water-chamber is also connected the blow-off pipe *f*. It will be seen that when the boiler is in operation the water-chambers E G and the tubes H are all subjected to the heat of the furnace B, and water rises into the boiler through the pipes *b*, while steam rises into the extension A′ from the rear chamber, G, through pipes *e*. It will be observed that the extension A′ is at nearly the hottest part of the boiler, and its surface is therefore very effective.

We are aware that boilers have been provided with rearward extensions, and that other boilers have been provided with water tanks or chambers connected by tubes, and hence we do not claim these features as of our invention; but

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

The combination of the boiler A, having the rearward extension A′, the front water-chamber, E, provided with the fire-door opening E′, which is surrounded by water, the rear water-chamber, G, extending upward to the extension A′, tubes or pipes connecting both said water-chambers with the boiler, feed and blow-off pipes connected with said chambers, and two vertical series of tubes, H, extending horizontally between said chambers and arranged in opposite sides of the furnace, all organized and adapted to operate substantially as herein described.

HENRY VOGT.
WILLIAM D. ADAMS.

Witnesses:
FRIEDRICH ZORN,
CHRISTOPHER W. WILSON,
WILLIAM VOGT.