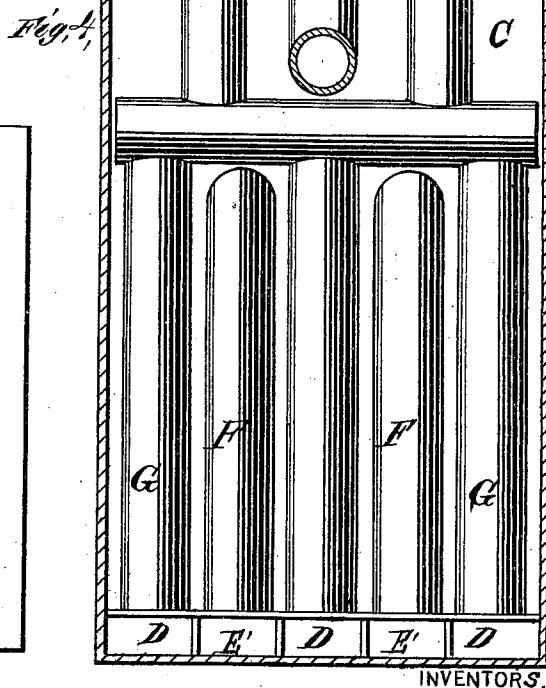
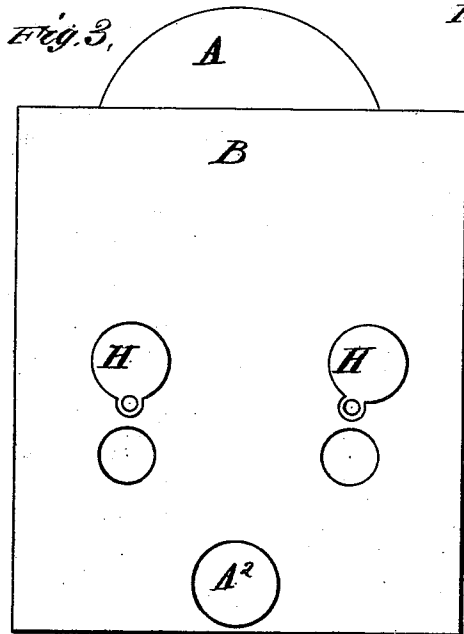
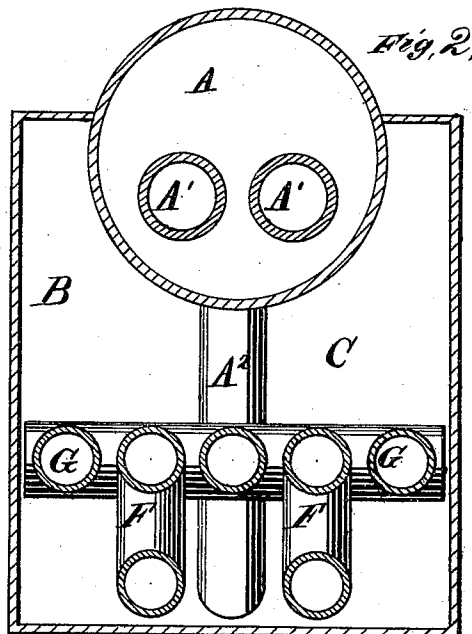
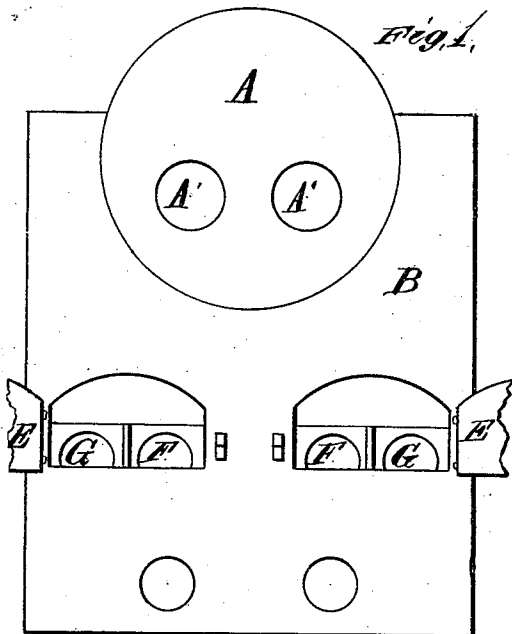


R. JENKINS & H. RUDGE.

FURNACES FOR STEAM GENERATORS.

No. 181,682.

Patented Aug. 29, 1876.



WITNESSES

*E. H. Bates*  
*Robert C. Smith*

INVENTORS.

*Robert Jenkins.*

*Henry Rudge.*

*Gilmore, Smith & Co.*  
ATTORNEYS.

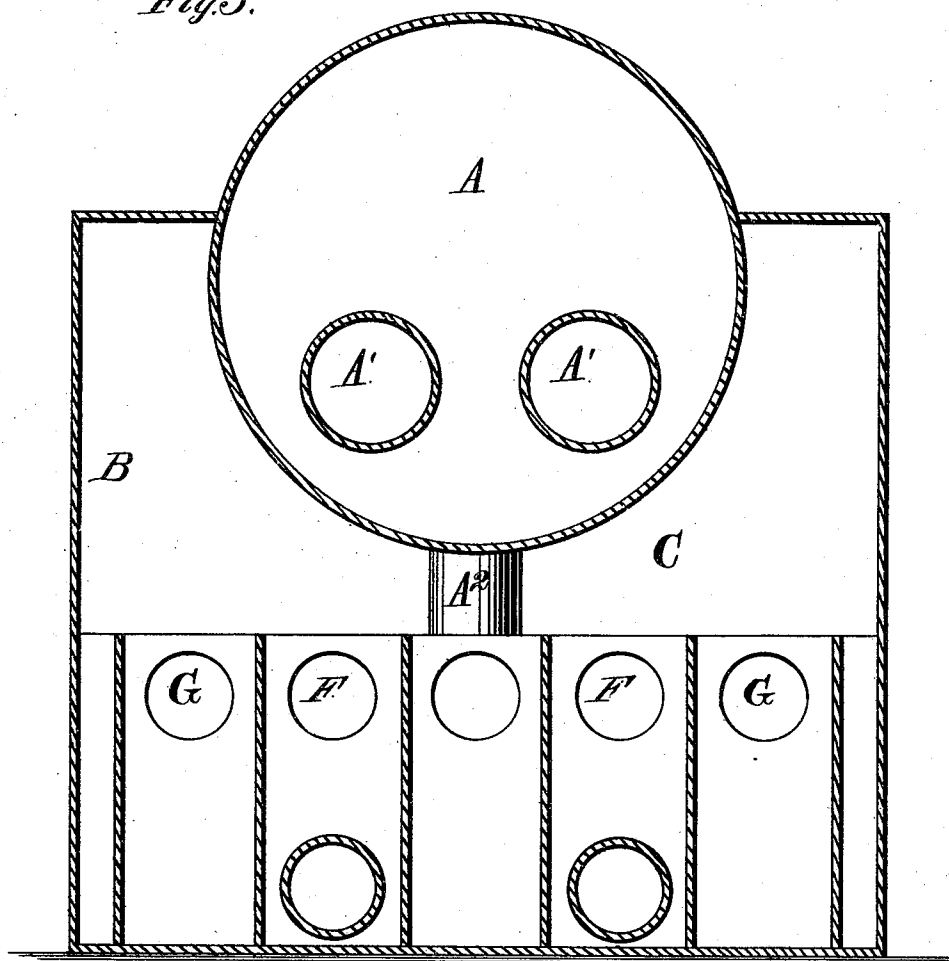
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*Fig. 5.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

REUBEN JENKINS AND HENRY RUDGE, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN FURNACES FOR STEAM-GENERATORS.

Specification forming part of Letters Patent No. **181,682**, dated August 29, 1876; application filed July 1, 1876.

### *To all whom it may concern:*

Be it known that we, REUBEN JENKINS and HENRY RUDGE, of Chicago, in the county of Cook and State of Illinois, have invented a new and valuable Improvement in Steam-Generators; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front elevation of our steam-generator, and Fig. 2 is a transverse vertical sectional view of the same. Fig. 3 is a rear vertical view, and Fig. 4 is a longitudinal sectional view thereof. Fig. 5 is a vertical cross-section through the cells D E.

Our invention relates to certain improvements in steam-generators, as will be hereinafter more fully set forth.

In the accompanying drawings, A designates a boiler or steam-generator of any ordinary construction, which is set into and sustained by a casing, B. A<sup>1</sup> A<sup>1</sup> are pipes or flues traversing said boiler, and opening at one end into combustion-chamber C at the rear end under the boiler, inside of said casing, and at the other end opening into the escape-flue or the air outside. A<sup>2</sup> is a pipe extending from the bottom of said boiler through said casing, and allows the water contained in the boiler to be drawn off at will. D D E' E' are cells or boxes arranged along one side of said chamber, and against one of the upright walls of casing B. In said wall are doors E E, communicating with said cells. F F are gas-pipes, communicating with the gen-

erator or reservoir of carbonic oxide, and with cells E' E'. G G are air-pipes, communicating at one end with some air-heating device or hot-air reservoir, and at the other end with cells D D. The pipes F and G are arranged alternately with reference to the cells, only one pipe communicating with each cell. Thus gas-receiving cells alternate with air-receiving cells, and as their tops are left open, the contents mingle in combustion-chamber C. The air introduced through the pipes G G is sufficiently hot to ignite the carbonic-oxide gas, and thereby to generate steam in boiler A. This is facilitated by tubes A<sup>1</sup> A<sup>1</sup>, through which the products of combustion pass in escaping from the apparatus. Pipes F F and G G are arranged partly or wholly at such a height that the burning gas and heated air of the combustion-chamber will circulate around them, and thereby heat their contents, thus facilitating the above-described operation, and lessening the initial amount of heat required for heating the air in pipes G. The air-pipes G are each provided with door, valve, or cut-off H, for regulating the supply of hot air.

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

The combination of pipes F and G, in combustion-chamber C, with cells D D E' E' and pipes or flues A<sup>1</sup> A<sup>1</sup>, substantially as and for the purpose set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

REUBEN JENKINS.  
HENRY RUDGE.

Witnesses:

ARTHUR J. O'LEARY,  
WILLIAM KELLY.