C. H. FOX.

Improvement in Furnaces for Steam-Boilers.

No. 131,871. Patented Oct. 1, 1872.

Fig. 1.

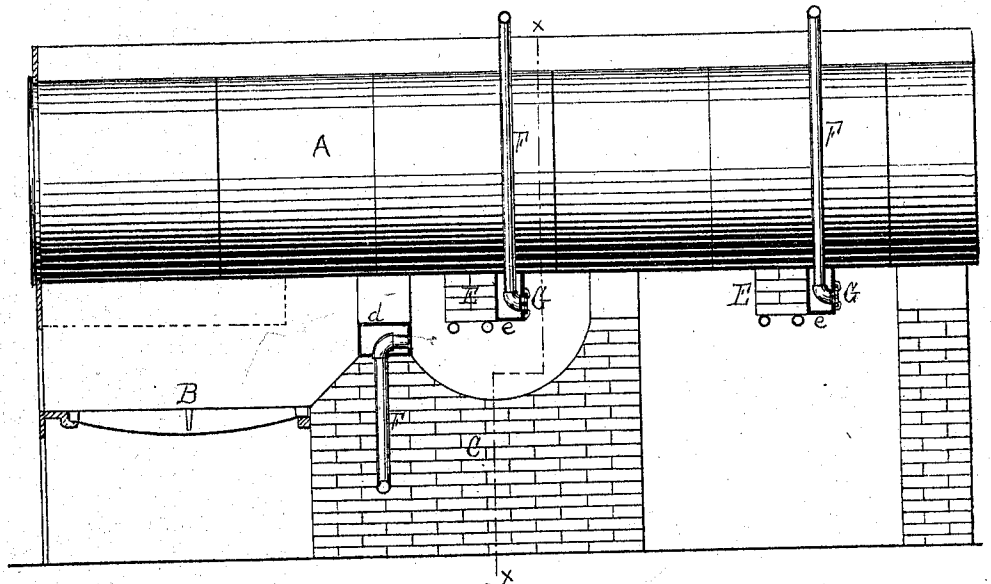
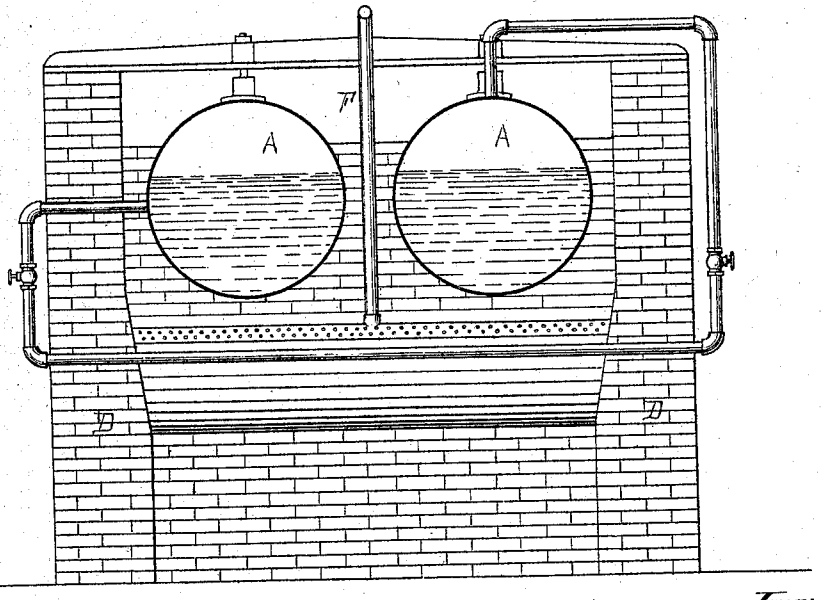


Fig. 2.



Witnesses:
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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

CHARLES H. FOX, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN FURNACES FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **131,871**, dated October 1, 1872.

To all whom it may concern:

Be it known that I, CHARLES H. FOX, of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Steam-Boiler Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing and the letters of reference marked thereon making a part of this specification, in which—

Figure 1 is a side elevation, partly in section; and Fig. 2 is a vertical section on the line *x x*, Fig. 1.

This invention is an improvement on my patent dated February 20, 1872, No. 123,882; and consists in the use, in combination with a suspended deflector, of a bridge-wall having its upper section concave in form, lined with fire-brick, by which it becomes a reflector and heats the gases and products of combustion to a high degree of temperature, and thereby assisting in their consumption.

The construction and operation of my invention are as follows: A represents the boilers, under the front end of which is arranged the usual fire-grate B. Immediately in the rear of said grate is the bridge-wall C, extending from side to side of the walls D. Upon the top of the bridge-wall is arranged an air space or tube, *d*, preferably made of fire brick or tiles, as these not only last longer, but also retain and give out more heat than iron or other material. Any other material may, however, be used, if preferred. If desirable, the ceiling or flat crown-wall described and shown in my former application may be also used. This bridge-wall is also supported on water-pipes, as are the deflectors in the rear of the bridge-walls. The top of the bridge-wall C I construct of a concave form, lined with fire-brick, which retains a sufficient amount of heat to raise the gases to a temperature high enough for combustion. The gases are then consumed. The deflectors E are also provided with air spaces or tubes *e;* and to these spaces or tubes I attach or connect the air pipes or tubes F to supply the said spaces or tubes with air, which is to assist in the consumption of the products of combustion, smoke, and sparks. These pipes F may be arranged with sliding perforated dampers G to regulate the admission of air to the spaces or tubes *d* and *e;* and said pipes may be placed in the brick walls and extend to the outside of the walls of the furnace to communicate with the air.

If preferred, the air-pipes may be made of fire-tile, fire-brick, or any other material, although I have shown iron pipes.

The fire brick or tiles employed in the bridge-walls and deflectors against which said products of combustion impinge are of a higher temperature than the boiler, which has a much lower temperature, and thereby assist in consuming the gases and communicating their heat to the boiler; and the entire heat developed is employed for the generation of steam.

There is no danger with my improvement from sparks setting anything on fire, the sparks having been retarded sufficiently in their travel to the smoke-stack to be entirely consumed; and besides there is a gain in fuel, as has been fully demonstrated, more particularly in locomotives and steam-boats, where my improvements may be also employed to a great advantage. I have, however, shown them in connection with a stationary boiler.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination with a suspended deflector, of the bridge-wall C, when its upper section is concave in form, substantially as described.

2. The arrangement of one or more air-tubes, F, deflectors E, bridge-walls C, with or without concave deflectors, and the air-spaces *d e* provided with dampers G, all substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES H. FOX.

Witnesses:

F. M. MOHRMANN,

J. STREWEL.