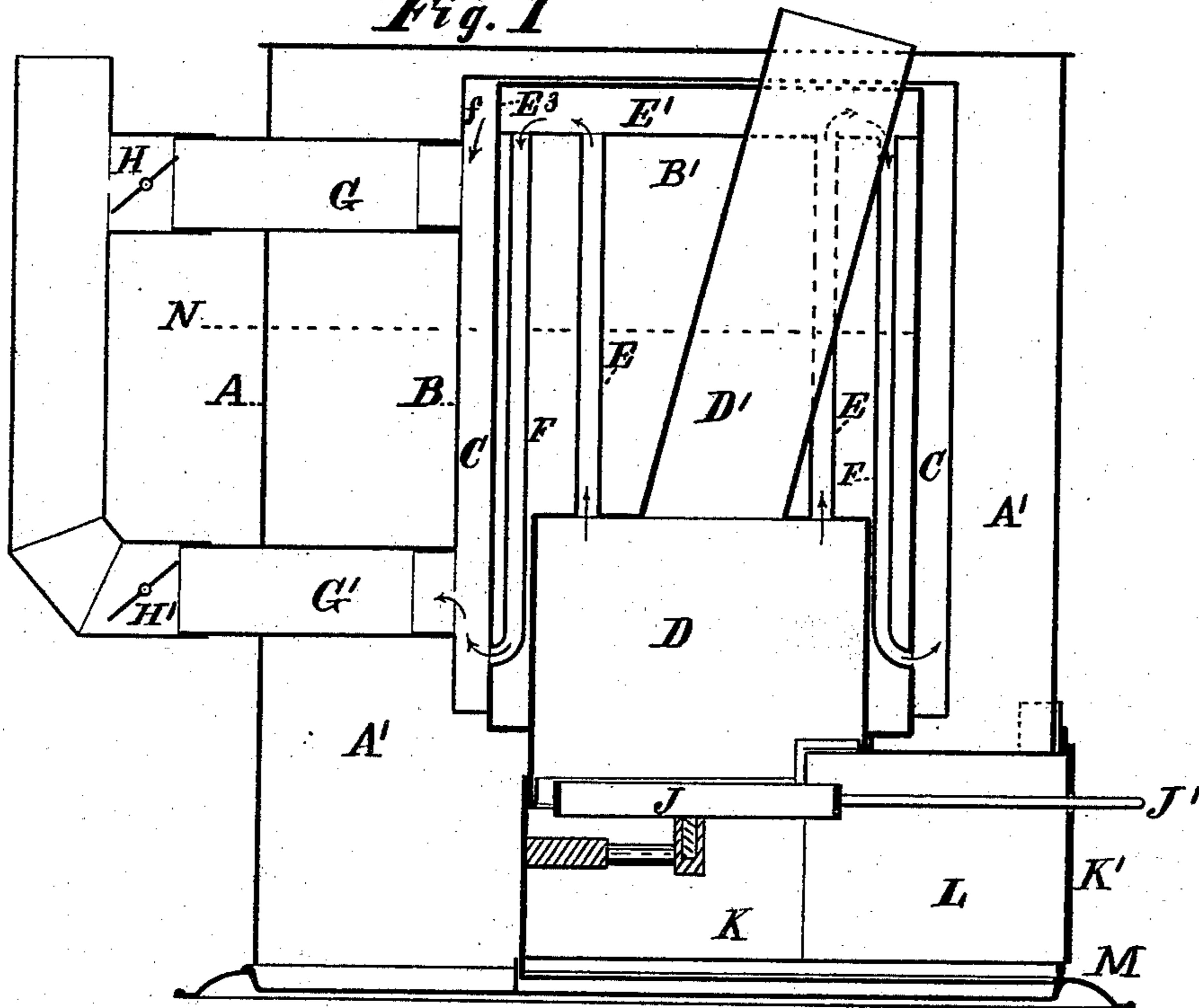


**J. B. PIERCE.**  
Steam-Heater.

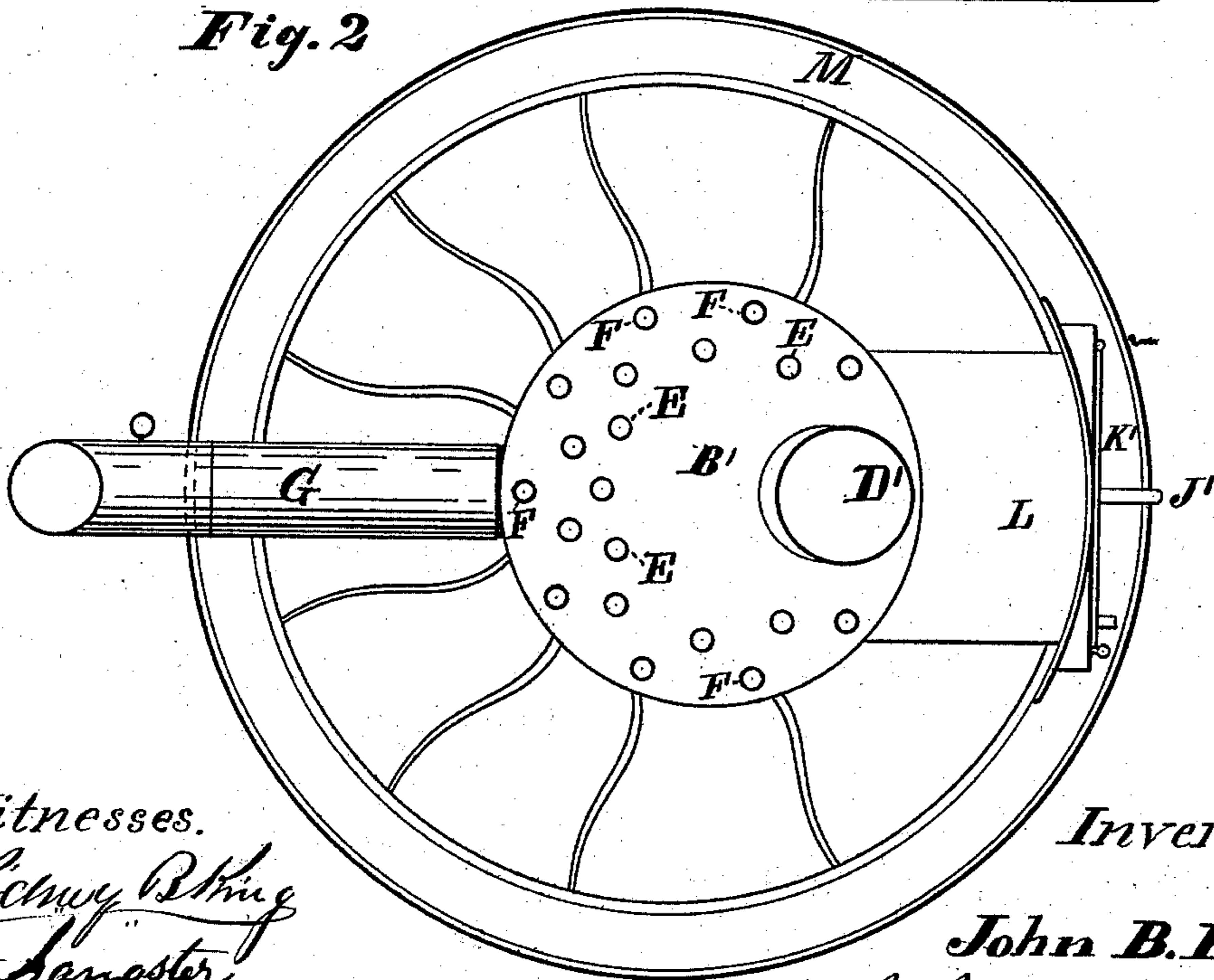
No. 221,860.

**Patented Nov. 18, 1879.**

***Fig. 1***



*Fig. 2*



*Witnesses.*

Lucy King  
Hampster

*Inventor:*

*John B. Pierce.*

By James Sangster,  
Atty.

# UNITED STATES PATENT OFFICE.

JOHN B. PIERCE, OF BUFFALO, NEW YORK.

## IMPROVEMENT IN STEAM-HEATERS.

Specification forming part of Letters Patent No. **221,860**, dated November 18, 1879; application filed July 16, 1879.

*To all whom it may concern:*

Be it known that I, JOHN B. PIERCE, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Steam-Heaters, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a vertical longitudinal section through the center of the heater, and Fig. 2 represents a plan or top view of the feeder or coal-reservoir and steam-heater below the casings A B.

The first part of my invention relates to the combination of a steam-heating boiler, an inclined feeder, forming the inside shell of the boiler, and a series of tubes for carrying off the products of combustion through a casing or covering, forming an annular flue for the same, as will be more clearly hereinafter shown.

The second part of my invention relates to the combination of a steam-heating boiler, the inside shell of which forms a fire-chamber and coal-reservoir, with a casing or covering, forming an annular flue around it, and an outer casing, forming a hot-air chamber, for purposes which will be more clearly hereinafter described.

In the drawings, A represents an outer casing, forming the hot-air chamber A'. B is a casing or covering surrounding the boiler B', and forming an annular flue around it. D represents the fire-chamber, and D' the inclined feeder or coal-reservoir. This arrangement of the reservoir D' places it in a convenient position for feeding it with coal, and at the same time makes the water-space narrower on one side of the boiler, through which the heat can pass more readily, and thereby produce a circulation of water within the boiler.

By forming the fire-chamber and coal-reservoir of the inside shell of the boiler, the fire and coal are brought in contact with the inside of the shell, and the water with the other side, so that the coal is kept cooler, and the generation of gas in the reservoir is thereby prevented.

The letters E represent a series of tubes, through which the heat passes up from the fire-chamber into the space E' at the top of

the boiler, and then down through the tubes F into the annular space C, and from thence out through the pipe G.

The pipes E and F pass up through the steam and water space of the boiler, and thereby impart a large amount of heating-surface; but, if desired, the pipes F may be dispensed with by cutting out at E<sup>3</sup>, and thereby allow the hot air and other products of combustion to pass through and down in the direction of the arrow *f* and out through the pipe G', in which case the damper H should be closed and the damper H' opened; or the products of combustion can be made to pass directly through the pipe G by closing the lower damper and opening the upper one.

J represents the fire-grate; J', a handle by which it is operated, constructed and arranged in the usual way. L is a box leading to the ash-pit K. It is provided with an ordinary door, K'. M is the base-plate or bottom of the furnace.

The hot-air chamber A' is combined with the furnace or steam-heater for the purpose of receiving and holding the heat that would otherwise be lost, so that it can be conducted through pipes to any point desired.

In Fig. 1 of the drawings I have shown only the tubes E and F, through which a section-line would pass. In Fig. 2 it will be seen that I have placed more of the tubes E nearer the back part of the boiler than at the front, so as to permit the greater portion of the heat or products of combustion to pass that way, and that the position and inclination of the reservoir D' allows sufficient room for that purpose.

I claim as my invention—

1. The combination of the boiler B', inclined coal-feeder D', and a series of tubes, E F, greater in number on one side of the water-chamber, as specified.

2. The combination of the boiler B', coal-feeder D', fire-chamber D, tubes E F, greater in number on one side of the water-chamber, casing or shell B, flue C, air-chamber A', and casing or shell A, substantially as and for the purposes described.

J. B. PIERCE.

Witnesses:

JAMES SANGSTER,  
HUGH SANGSTER.