

J. R. GASTON.  
Hot-Air Furnace.

No. 130,913.

Patented Aug. 27, 1872.

Fig. 2

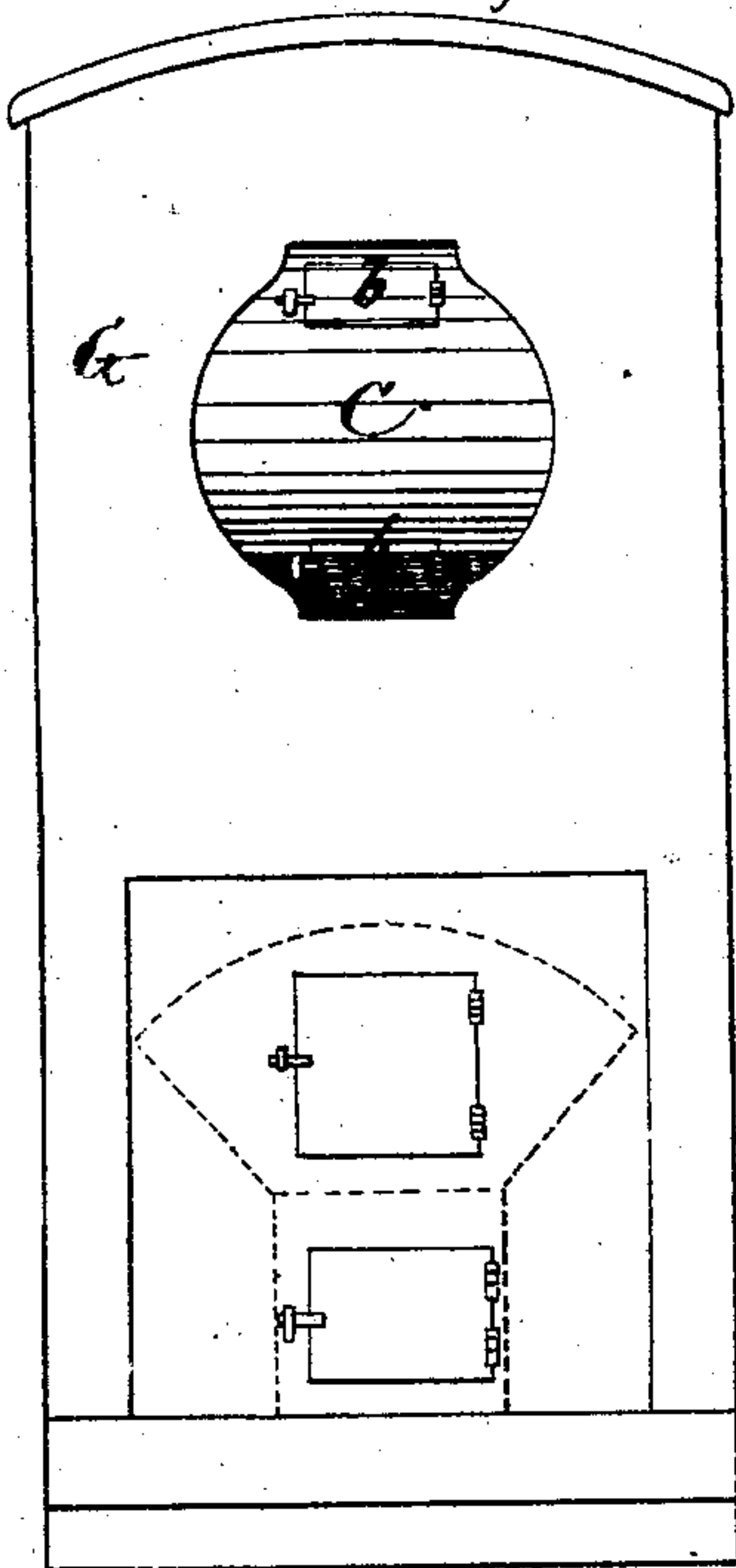


Fig. 1

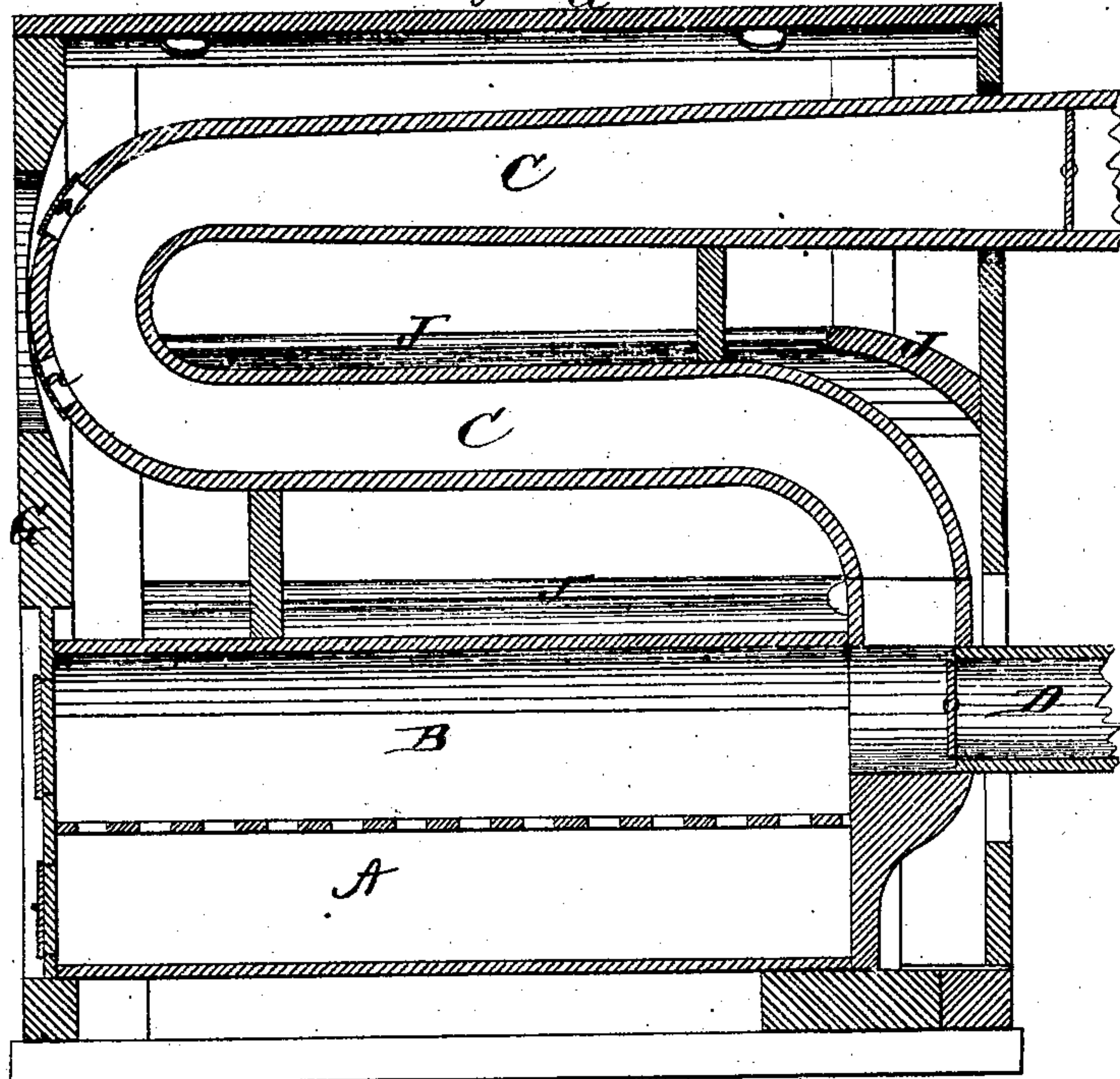
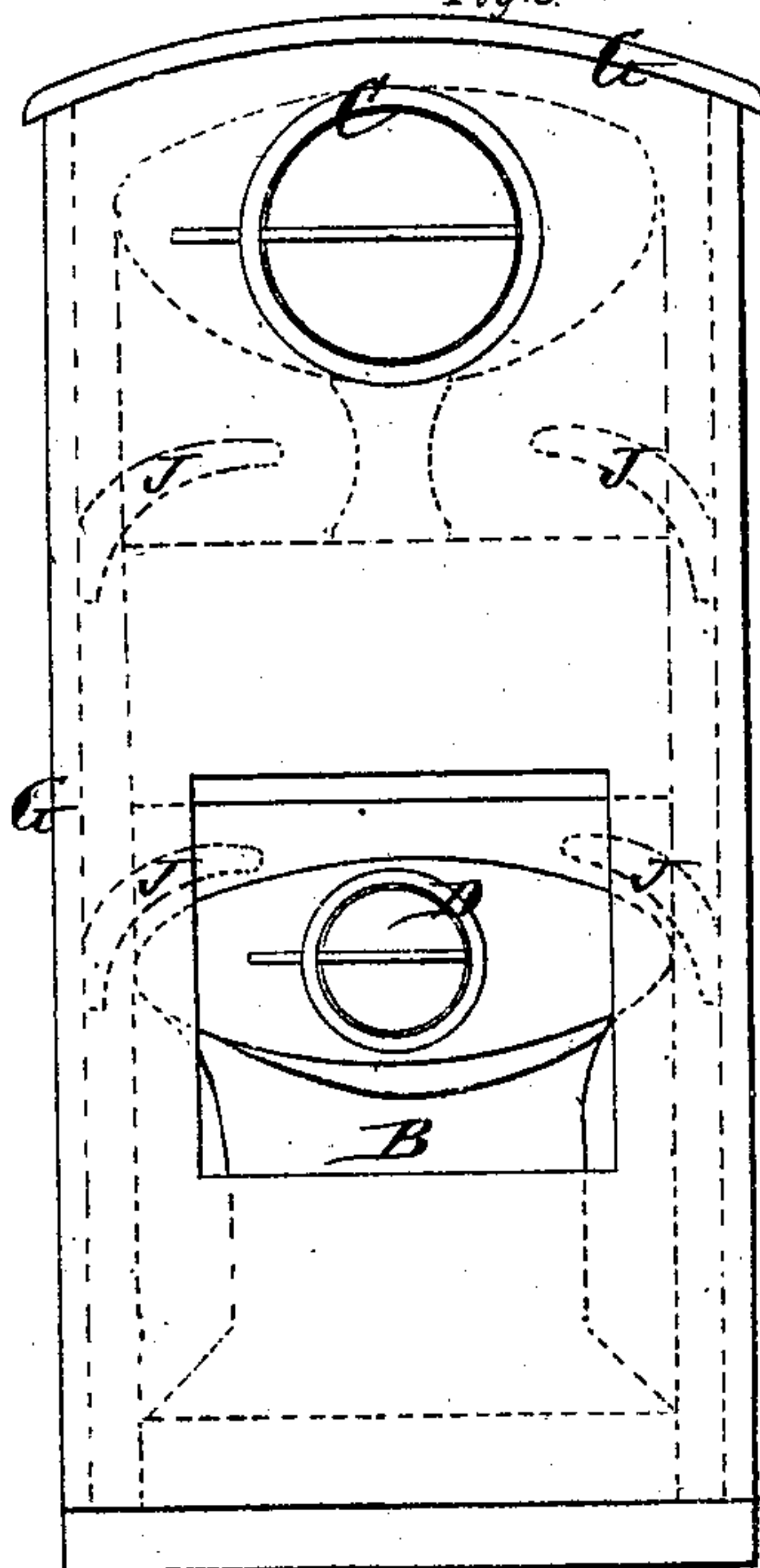


Fig. 3



Witnesses:

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L. L. Quert.

Inventor

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per  
Alexander M. Mason

Attorneys.

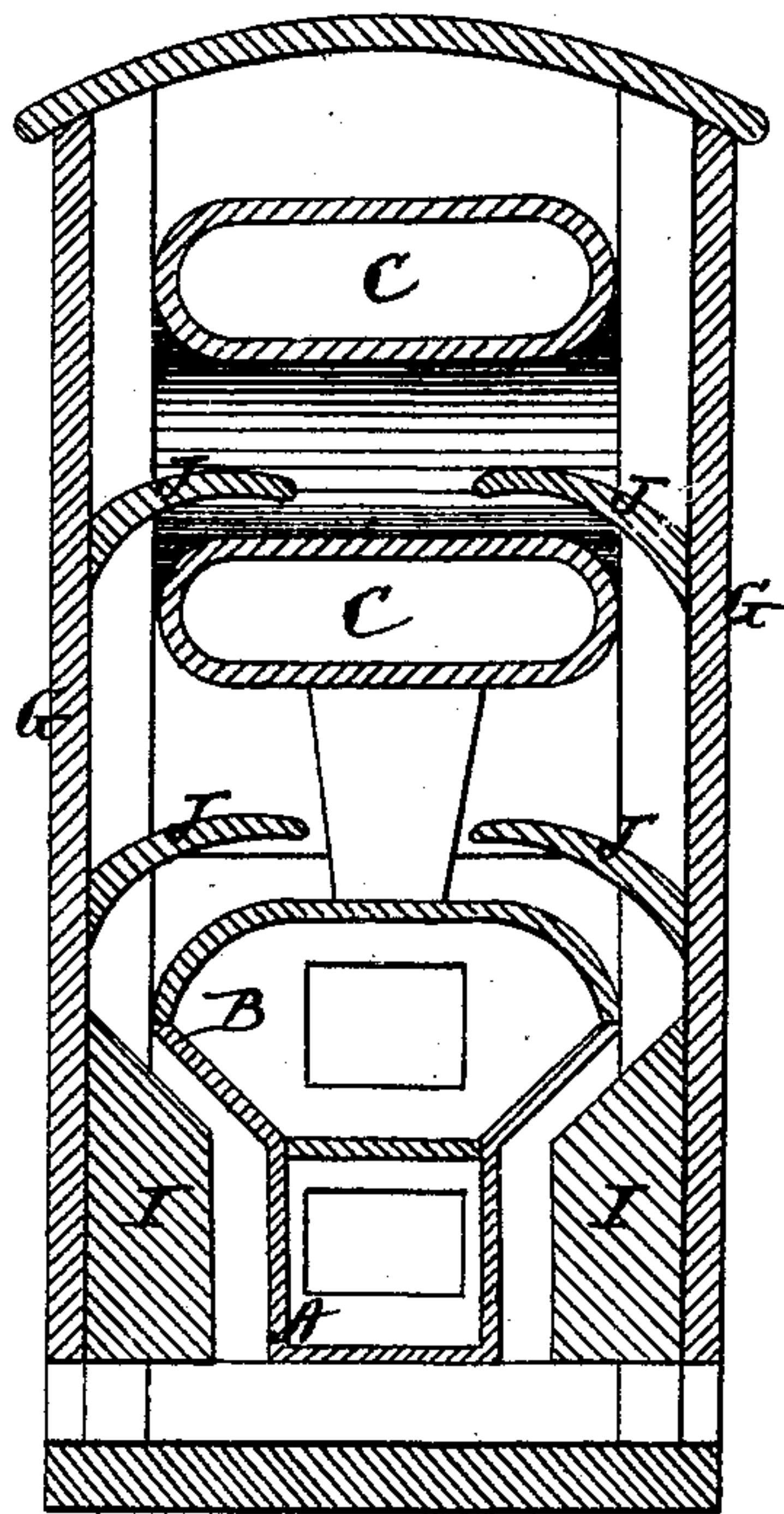
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Fig. 4.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JOHN R. GASTON, OF NORMAL, ILLINOIS.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 130,913, dated August 27, 1872.

*To all whom it may concern:*

Be it known that I, JOHN R. GASTON, of Normal, in the county of McLean and in the State of Illinois, have invented certain new and useful Improvements in Furnaces; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a furnace for heating purposes, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a longitudinal vertical section of my furnace. Figs. 2 and 3 are end views; and Fig. 4 is a transverse vertical section of the same.

A represents the ash-box, and B the fire-box, of my furnace. The ash-box A, below, is of the same length and width as the bottom of the fire-box. The fire-box B is made long and shallow, designed to contain a large quantity of fuel, to be burnt slowly, thus saving fuel, frequent renewal of fuel, and great labor in taking care of the furnace. The sides of the fire-box are made slanting, at an angle of about forty-five degrees; thus the fire or burning fuel lies on these sides, heating them without engendering a great heat from the fuel, as would be necessary in case the fuel were below them and not in actual contact. These inclined sides also facilitate the falling down of ashes when the fire is stirred. The fire-box is made shallow, or the top of the same brought near the burning fuel, so as to bring this heating-surface near the fuel, this being desirable in view of the general plan to construct a furnace that will generate great heat with what may be called a slow fire, viz., a fire not under a strong draft. Above the fire-box B, and connected with it, is the flue C. This flue runs back and forth above and parallel with the fire-box. It is made broad and shallow, and as wide as the fire-box, except near the end where it enters the chimney, which end may be brought to a cir-

cular form at the point, as shown in Fig. 3. The turns at the extremities of the flue may be rounding, as shown, or the horizontal sections of the flue may terminate in a rectangular box where it joins the fire-box and at the turn above the front end of the fire-box. The flue may be made of sheet, galvanized, or cast iron, or other desired material. At the rear end of the fire-box may be a pipe, D, with a damper, leading directly into the chimney, which damper can be opened in case of necessity when supplying the fire-box with fuel or otherwise working in the fire-box with the fire-box door open. The entire furnace is surrounded or inclosed within a jacket, G, which may be made of brick, mason-work of any kind, iron, or any suitable material, and as nearly air-tight as possible. In the front of this jacket, a suitable distance above the fire-box door, is an opening for the purpose of gaining access to two small openings in the bend of the flue C. These latter openings are for the purpose of cleaning out the ashes which may accumulate in the bottom of each horizontal section of the furnace-flues. The flues, being large, will burn themselves clean most generally; but to obviate all danger these openings are made; and said openings are closed by doors *a a* when not in use. On each side of the jacket G, on the inside, is a heavy projection, I, and two flanges, J J, constructed substantially as shown, or in any other suitable manner to answer the object for which they are intended; their object being to compel the cool air, as it enters near the bottom of the jacket at any desired point or points, and in any desired manner, to follow the outside, and near to it, of the heating-surface both of the fire-box and the furnace-flues, thus making, in fact, of these flanges and projections near the fire-box and flues a sort of inner jacket, following the general outline of the fire-box and flues. The top of the jacket G may be perforated for any number of pipes to conduct the hot air to any desired place; or the hot air may be all thrown into a single pipe or chamber and conveyed thence, with a connecting pipe or pipes, to any desired place or places. The fire-box and ash-box, as well as the flues and jacket, may be made in sections of any form and size desired, and connected in any suitable or convenient manner.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of fire-box B, broad and shallow flue C passing back and forth over the fire-box, and the curved deflectors J connected to the casing, all constructed substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of January, 1872.

JOHN R. GASTON.

Witnesses:

THOS. SLADE,  
N. T. PUSEY.