

J. McNeill,
Steam-Boiler Furnace.
N^o 12,602. Patented Mar. 27, 1855.

Fig: 1.

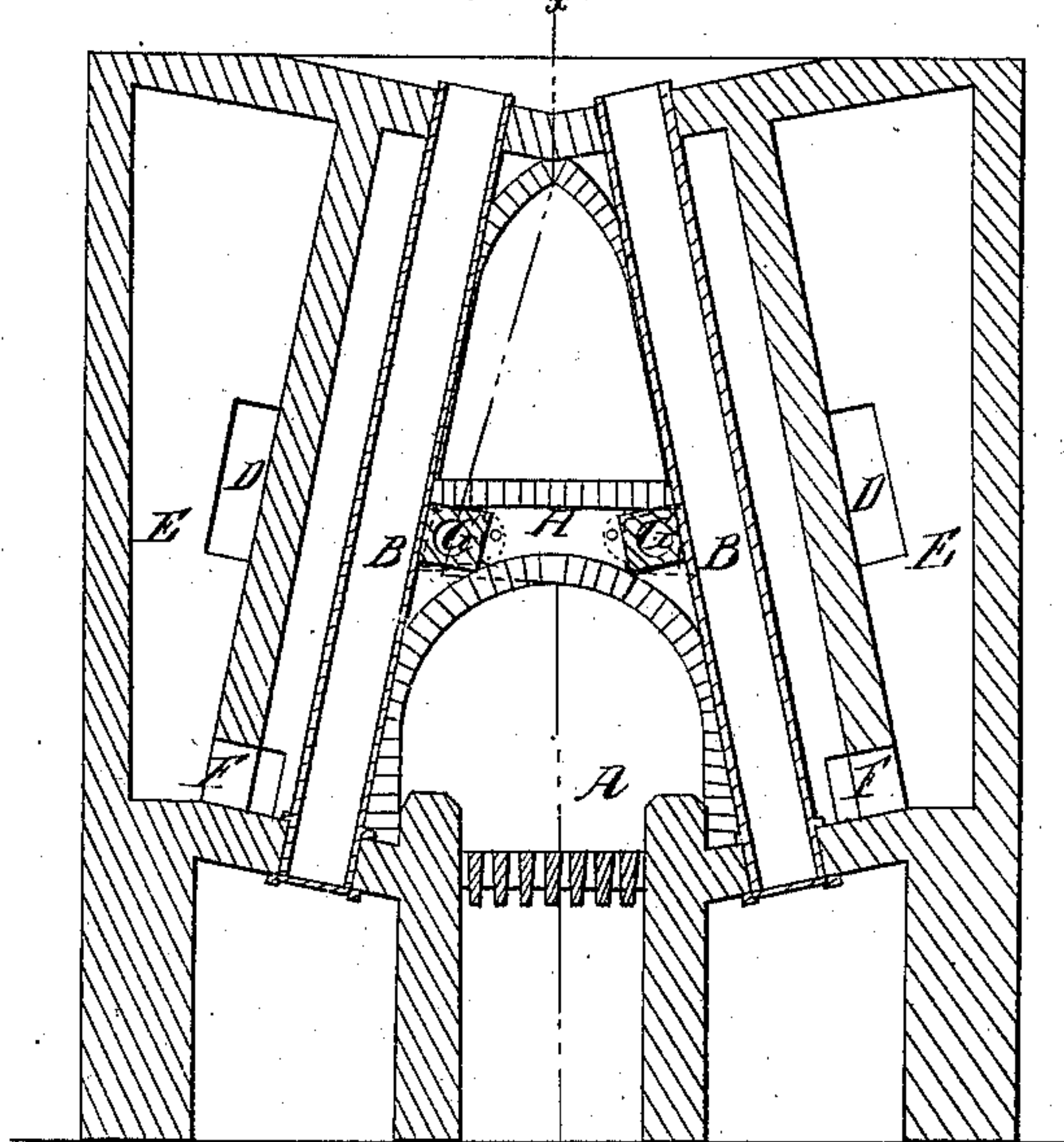


Fig: 2.

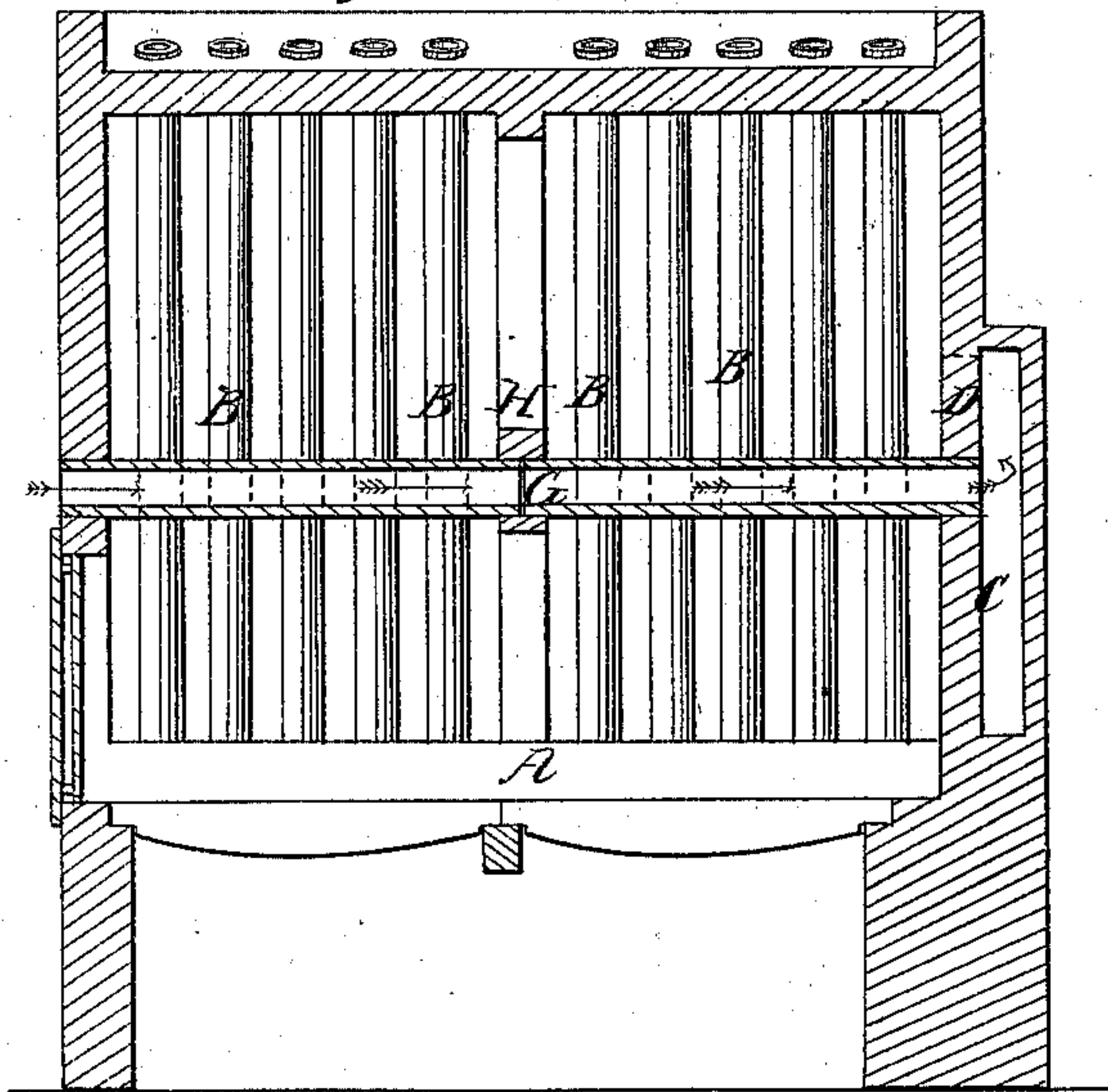


Fig: 3.

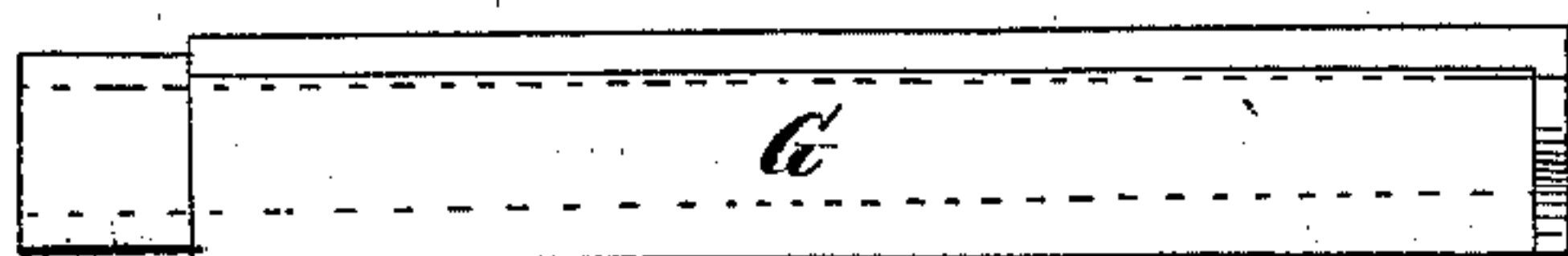


Fig: 4.



UNITED STATES PATENT OFFICE.

JOHN McNEILL, OF NEW YORK, N. Y.

CHARCOAL-FURNACE.

Specification of Letters Patent No. 12,602, dated March 27, 1855.

To all whom it may concern:

Be it known that I, JOHN McNEILL, of the city, county, and State of New York, have invented a new and useful Improvement in Charcoal-Furnaces for Reburning the Animal Charcoal used in Sugar-Refining; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1, is a transverse vertical section of a furnace constructed according to my invention. Fig. 2, is a longitudinal vertical section of the same in the line *x, x*, of Fig. 1. Fig. 3, is a side view on a larger scale, of one of the hollow beams which support the tubes. Fig. 4, is a transverse section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to prevent the sagging and speedy destruction of the retort tubes which in the furnaces now in use for re-burning animal charcoal in sugar refineries, is consequent upon the intense heat to which they are exposed.

In carrying out my invention I do not depart from the general construction of the furnace and arrangement of the tubes therein, but my invention consists chiefly in supporting the tubes near the middle of their length by hollow or tubular beams one end of each of which enters the chimney or escape flue and the other end is open to receive cold air from the exterior of the furnace. The draft of the chimney causes constant currents of cold air to pass through the beams and thus prevent their being burned out and failing to give an efficient support to the retort tubes.

A is the fire chamber, in the center of the furnace; and B, B, the retort tubes arranged in two rows on opposite sides of the grate inclining toward each other at the top in the usual way.

C, is the flue which is in immediate communication with the chimney, communicating with the fire chamber of the furnace by the openings D, flues E, and openings F.

G, G, are the tubular beams, which support the retort tubes about midway between the top and bottom. These beams are of cast iron. They may be square externally and cylindrical internally as shown, or of other form externally and internally. They run longitudinally from end to end of the

furnace and are built into the front end thereof, and into the wall separating the rear end thereof from the flue C, and are open at the ends to admit currents of cold air through them from outside the front of the furnace into the flue C, as indicated by arrows in Fig. 2, which currents will always be induced by the draft of the chimney when fire is started in the furnace. These currents of cold air will prevent the rapid burning of the beams which without them would ensue, and by keeping the beams comparatively cool will enable them to serve as a stiff and durable support to the tubes.

In order to avoid making the beams too long and also to provide better for expansion and contraction I make each in two lengths united by flanges and a bolt or bolts or in any suitable manner whereby expansion is provided for and support them by an arched wall H, of masonry reaching across the furnace at about the middle of its length. This wall also serves to support and strengthen the side walls of the furnace and support the roof or top plates.

Having thus fully described my invention I will proceed to state what I claim and desire to secure by Letters Patent.

I do not claim a hollow or tubular iron beam, merely as such, as I am aware that hollow beams have been and are commonly used in various structures. But

1. I claim supporting the retort tubes B, by a hollow or tubular beam or beams with open ends, applied substantially as herein described so that one end of each is in communication with the cold or atmospheric air outside the furnace and the other with the chimney or escape flue, whereby a current of cold air is caused to be induced through the beam by the draft of the chimney or flue, for the purpose of keeping it comparatively cool, preventing it burning, and rendering it a firm and durable support to the retort tubes.

2. And I also claim constructing the furnace with one or more arched walls H, extending across it substantially as described to support the joints in the beams G, G, when the said beams are made in two or more lengths, and also to support the side walls and roof.

JNO. McNEILL.

Witnesses:

JOS. GEO. MASON,
J. W. COOMBS.