

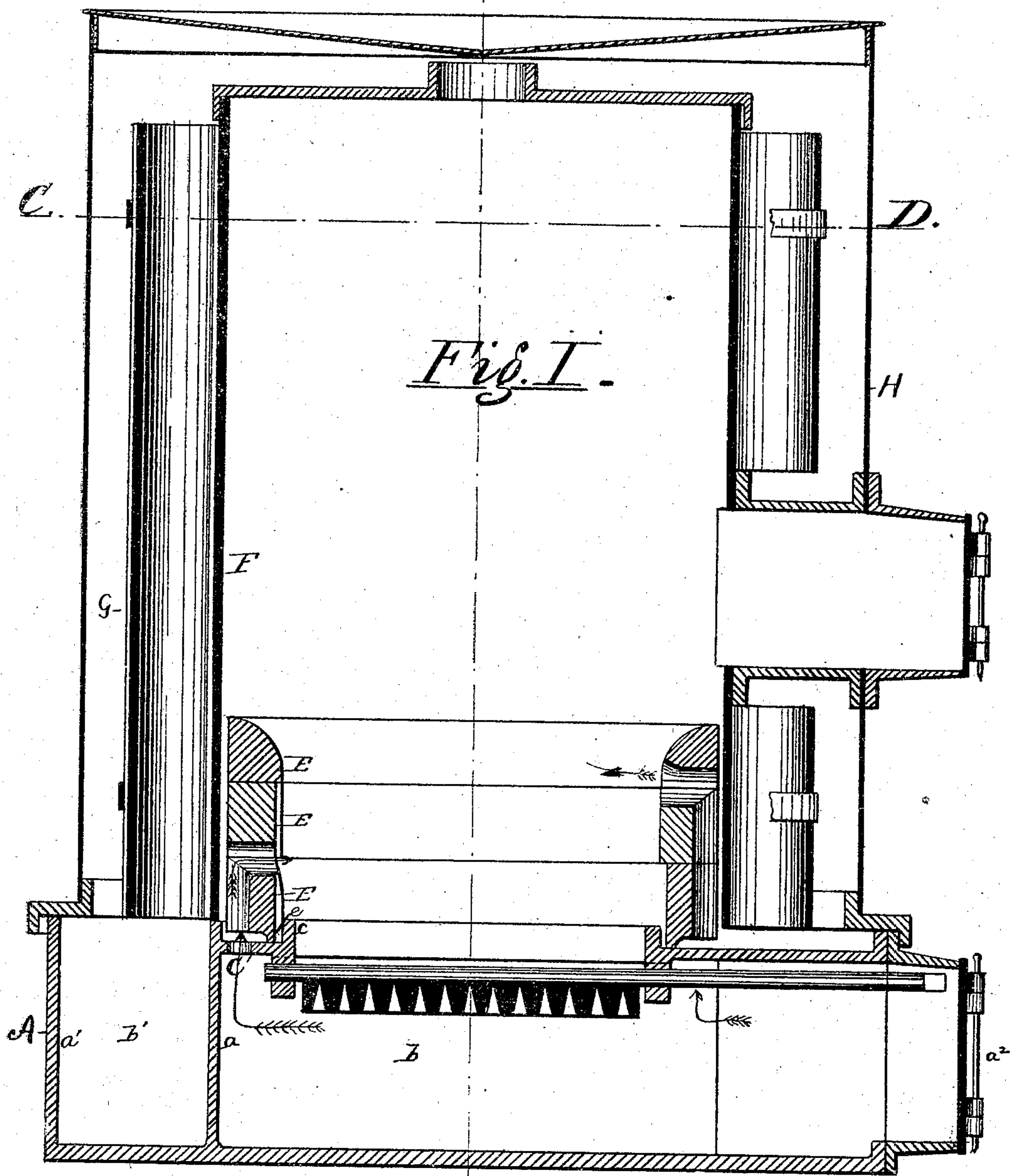
GEORGE G. THOMAS.

2 Sheets--Sheet 1.

Improvement in Hot Air Furnaces.

No. 118,299.

Patented Aug. 22, 1871.



WITNESSES:-

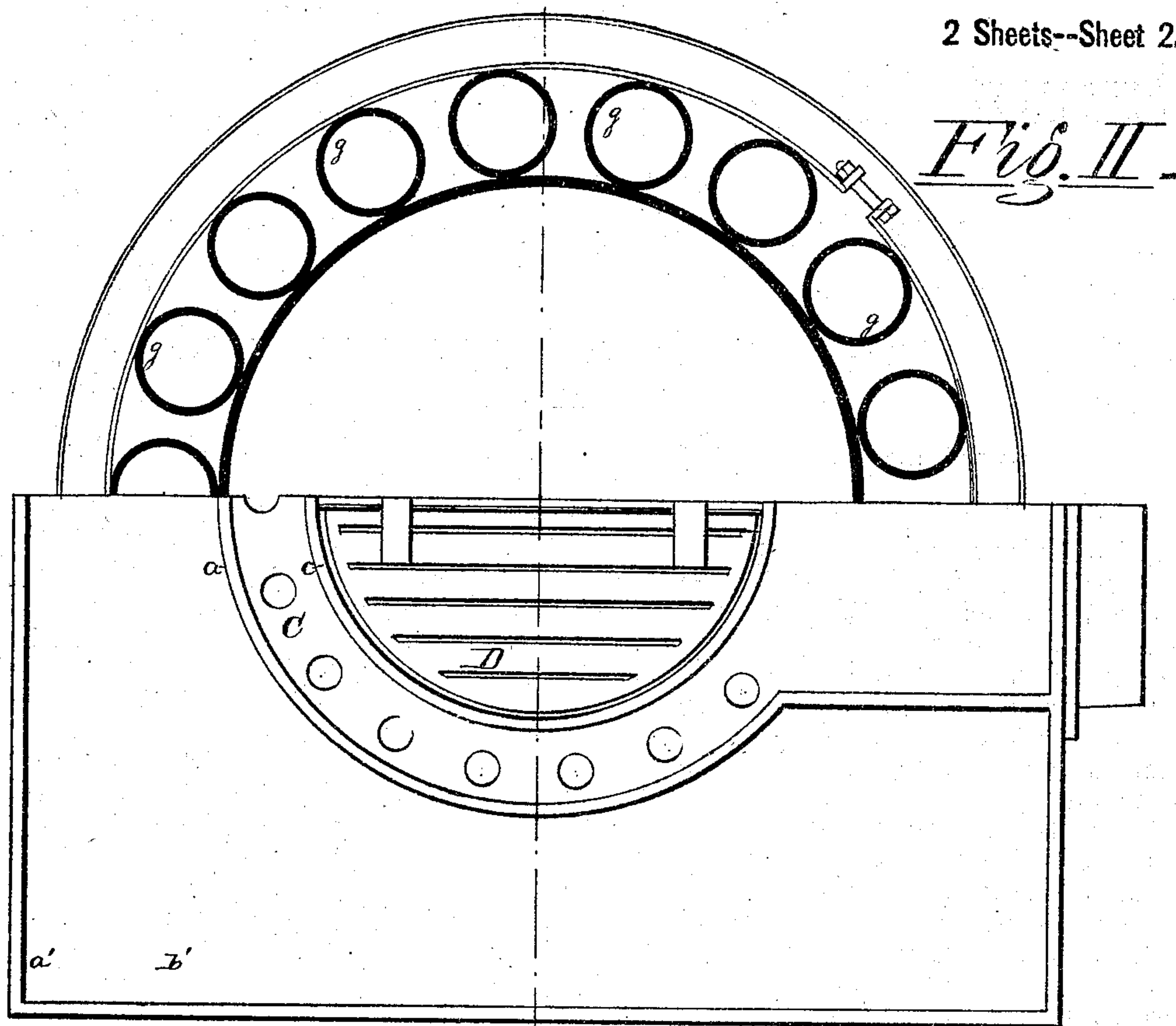
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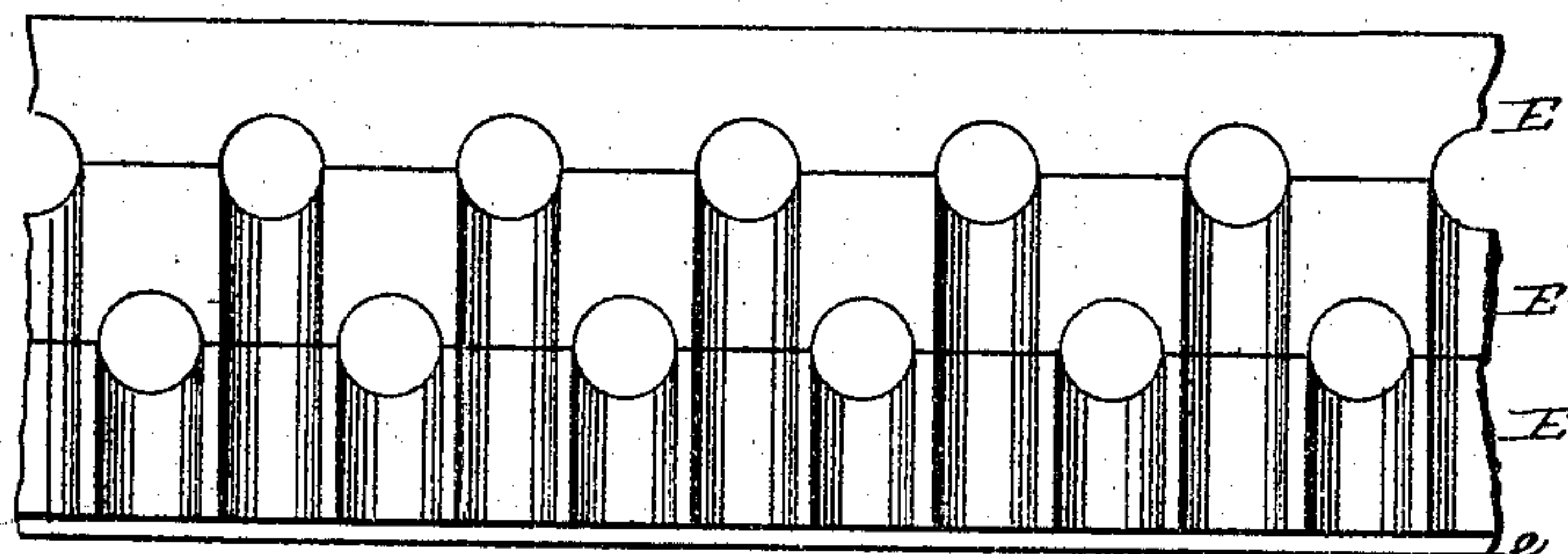
*Fig. II.*

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*Fig. III.*



*Fig. IV.*

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# UNITED STATES PATENT OFFICE.

GEORGE G. THOMAS, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 118,299, dated August 22, 1871.

*To all whom it may concern:*

Be it known that I, GEORGE G. THOMAS, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Furnace; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention relates especially to that class of furnaces which is designed for burning soft coal; and consists in certain details of construction which will be fully described hereinafter.

In the drawing, Figure 1 represents a central sectional elevation of my improved furnace. Fig. 2 represents two half-sections, the upper being taken in the line C D, Fig. 1, and the lower on a line above the ash-chamber of the furnace. Fig. 3 represents a side elevation of the fire-brick, and Fig. 4 a plan view of one edge of the same.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

A represents the base of the furnace, consisting of an inner circular wall, *a*, constructed of any proper material, which wall incloses the ash-chamber *b*, and an outer quadrangular wall, *a*<sup>1</sup>, inclosing an air-chamber, *b*<sup>1</sup>, as shown. The wall *a* is extended out in front to meet the wall *a*<sup>1</sup>, by which means access is obtained to the ash-chamber through the door *a*<sup>2</sup>, as shown. C represents a circular ring or plate, set preferably a little below the upper edge of the wall *a*, and provided with an internal flange, *c*, as shown. This plate is suitably perforated, as indicated in the drawing. D represents the grate, which may be of any suitable construction, and arranged in any proper manner. E E represent series of fire-brick, the lower edges of the lower series of which rest upon the plate C, as shown. These brick are peculiarly constructed; they are deeply grooved or fluted upon their outer circumference, with the exception of the upper ring or series, and they are also provided with semicircular depressions upon their adjacent edges. The lower series also is further provided with a flange or projection, *e*, upon its inner edge, by which means an open space is left over the openings in the plate C. F represents the radiator which incloses the fire-chamber. It consists of a cylinder of any proper material and construction, which is

provided with the usual openings for receiving fuel and discharging the products of combustion. G represents a series of open tubes, *g g*, arranged contiguously about the cylinder F, and fastened thereto by means of a band, as shown in Figs. 1 and 2, by which means they are made removable at will. H represents the outer cylinder which incloses the hot-air chamber, and is provided with the usual pipes for conveying the heated air to any desired point.

The operation is as follows: Fuel is applied to the fire-chamber in the usual manner, and the products of combustion, as it is consumed, pass off through the smoke-pipe. From the peculiar construction, however, of the plate C and the fire-brick air is admitted from the ash-chamber up through the flues formed by the grooves in the brick, and through the various openings directly into the fire. By this means the consumption of the gases and smoke of the soft coal is very materially aided. The open tubes in the hot-air chamber retain the heat, which would otherwise, to a certain extent, be thrown off through the outer cylinder into the cellar, and convey it to the upper part of the chamber to the discharge-pipes.

Some of the advantages of this construction are that the smoke and gases of the soft coal are very much more perfectly consumed than in the ordinary furnace; and also that a very large proportion of the heat is retained by the open tubes in the hot-air chamber, while the tubes themselves are not brought in contact with the products of combustion, and they cannot therefore possibly become filled with soot.

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

1. The series of open tubes G, arranged in the hot-air chamber about the radiator F, and held by the securing-band, as described.

2. The furnace described, consisting of the base A, constructed as described, plate C, bricks E, radiator F, removable tubes G G, and cylinder H, the parts being constructed and arranged as described.

GEO. G. THOMAS.

Witnesses:

H. L. GROSE,  
W. F. GREENE.