

(No Model.)

A. G. MOORE & J. W. RAHN.

COAL BURNING FURNACE.

No. 279,969.

Patented June 26, 1883.

Fig. 1.

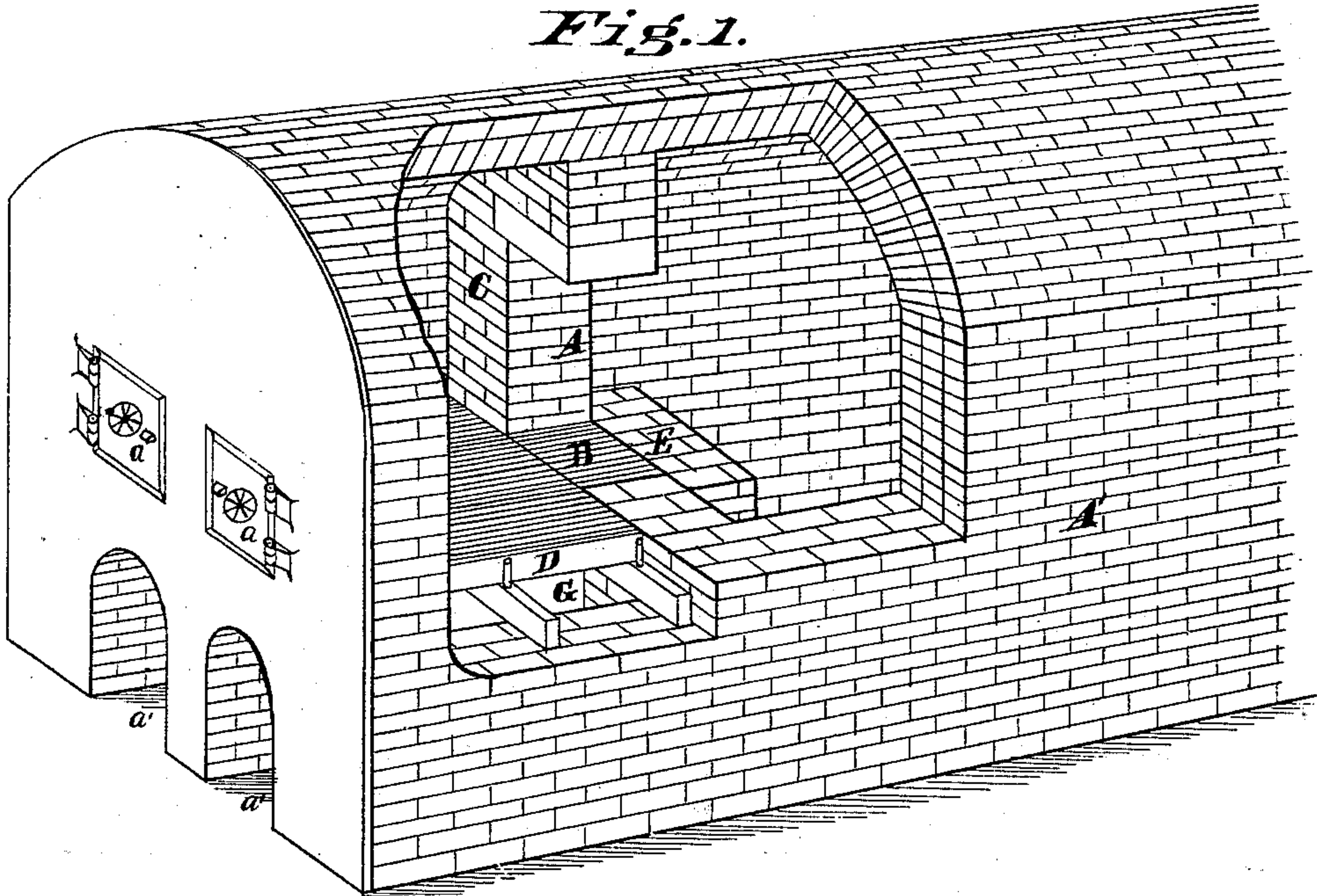


Fig. 2.

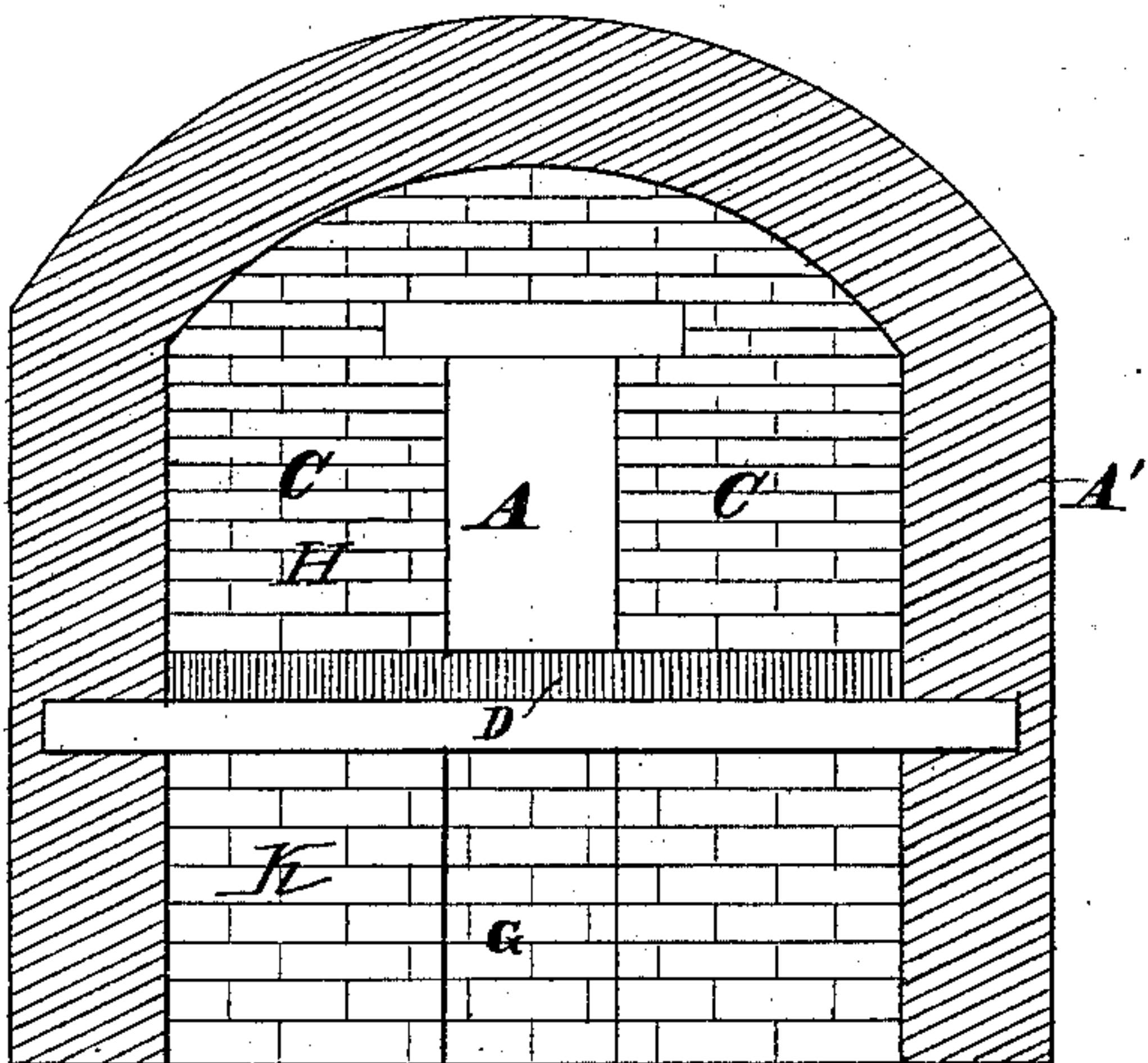
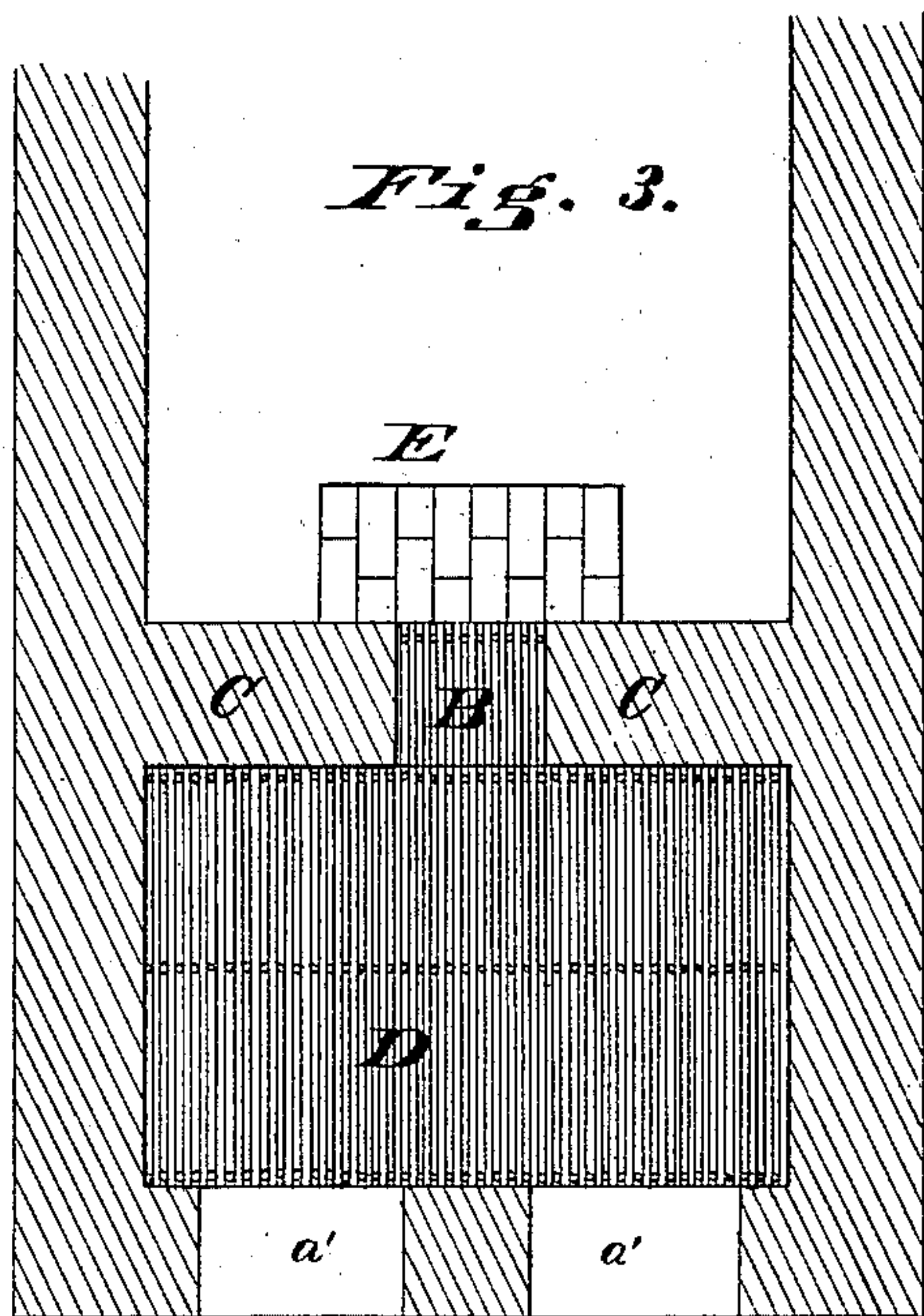


Fig. 3.



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UNITED STATES PATENT OFFICE.

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COAL-BURNING FURNACE.

SPECIFICATION forming part of Letters Patent No. 279,969, dated June 26, 1883.

Application filed January 17, 1882. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR G. MOORE, of Winton Place, Hamilton county, Ohio, and JOHN W. RAHN, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Coal-Burning Furnaces, of which the following is a specification.

Our invention has for its object the economizing of fuel and preventing the production of an undue amount of smoke.

Our invention is applicable to all classes of furnaces, whether for heating purposes or for generating steam; but for purposes of illustration we have shown it as employed in an ordinary heating-furnace.

Referring to the drawings forming part of this specification, Figure 1 is a perspective view of the furnace, part of the outer wall being broken out to show the parts within. Fig. 2 is a vertical transverse section through the fire-chamber, looking toward the rear of the furnace. Fig. 3 represents a horizontal section of the furnace, the section being taken a short distance above the grate-bars.

A' represents the outer wall of the furnace, which is made of any desired shape. This furnace is provided with the usual fuel-doors, *a*, and ash-pit doors *a'*. The fire-chamber H is provided with the grate-bars D, made of any desired form and supported in the usual manner. At the rear of the fire-chamber is located the bridge or division wall C, extending from bottom to top or roof of the furnace, and completely separating the fire-chamber and ash-pit K from the openings or combustion-chamber M, as the case may be, in the rear, excepting for and at the throat or opening A, through the upper portion of which latter the products of combustion pass. The sides of this throat are formed by the portions *ee* of the bridge-wall. A wall or equivalent obstruction, E, is placed against the rear face of the bridge-wall, extending up to the level of the upper surface of the grate-bars, closing the opening through the bridge-wall below the grate-bars, forming a chamber, G, at the rear of the ash-pit and immediately below the throat A. This chamber G is for the purpose of admitting air to the grate B, and need not necessarily be of the precise form shown, but may, if desired, be in the form of

a closed chamber and receive its air-supply from a source other than through the ash-pit. The grate-bars are extended back into the openings in the bridge-wall toward the rear face of the bridge-wall; or separate bars B may be placed in the opening instead of extending the main grate-bars.

Instead of the wall E, as shown in the drawings, the furnace in the rear of the bridge-wall may be filled to a level with the grate-bars; but the small wall E serves the same purpose and is less expensive.

We do not confine ourselves to the particular shape of the throat A shown in the drawings, as it may be made of any desired shape without materially interfering with the operation of our invention. It has been found that a narrow and high throat operates more effectively than a wide throat, and we preferably employ the narrow form.

The manner in which our invention, as above described, operates is as follows: When the fire has been started in the fire-chamber, a draft is created and the smoke passes through the contracted throat A. Air enters the ash-pit through the openings provided and passes back to the bridge-wall, where it enters the chamber G, and passes up through the grate B, supplying the requisite oxygen to the incandescent fuel resting upon it. As the products of combustion from the fire-chamber enter the contracted throat A, the heat is concentrated at this point and a complete combustion takes place as a consequence.

By the employment of our invention as above described the production of an undue amount of smoke is effectually prevented and a great saving of fuel is effected.

We do not confine ourselves to the employment of one throat A and chamber G at the rear of the fire-chamber, as it will be obvious that more than one may be employed. So, also, the grate B may be in the form of a plate having perforations to allow the passage of air from below, or of any other desired equivalent construction.

Having thus described our invention and its mode of operation, what we claim as new and of our invention, and desire to secure by Letters Patent, is as follows:

1. The combination, substantially as before set forth, of the fire-chamber, the grate, the pit, the bridge-wall at the end of the said fire-chamber, grate, and pit, the combustion-chamber in rear of the bridge-wall, and a laterally-contracted opening (one or more) in the bridge-wall rising from the grate and fed with air.
- 5 2. The combination, substantially as before set forth, of the fire-chamber, the grate, the
10 pit, the bridge-wall at the end of the said fire-chamber, grate, and pit, the combustion-chamber in rear of the bridge-wall, a laterally-contracted opening (one or more) in the bridge-wall rising from the grate, the extension of the grate to form the bottom of said opening, and 15 the air-duct below the extension of the grate.

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Attest:

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