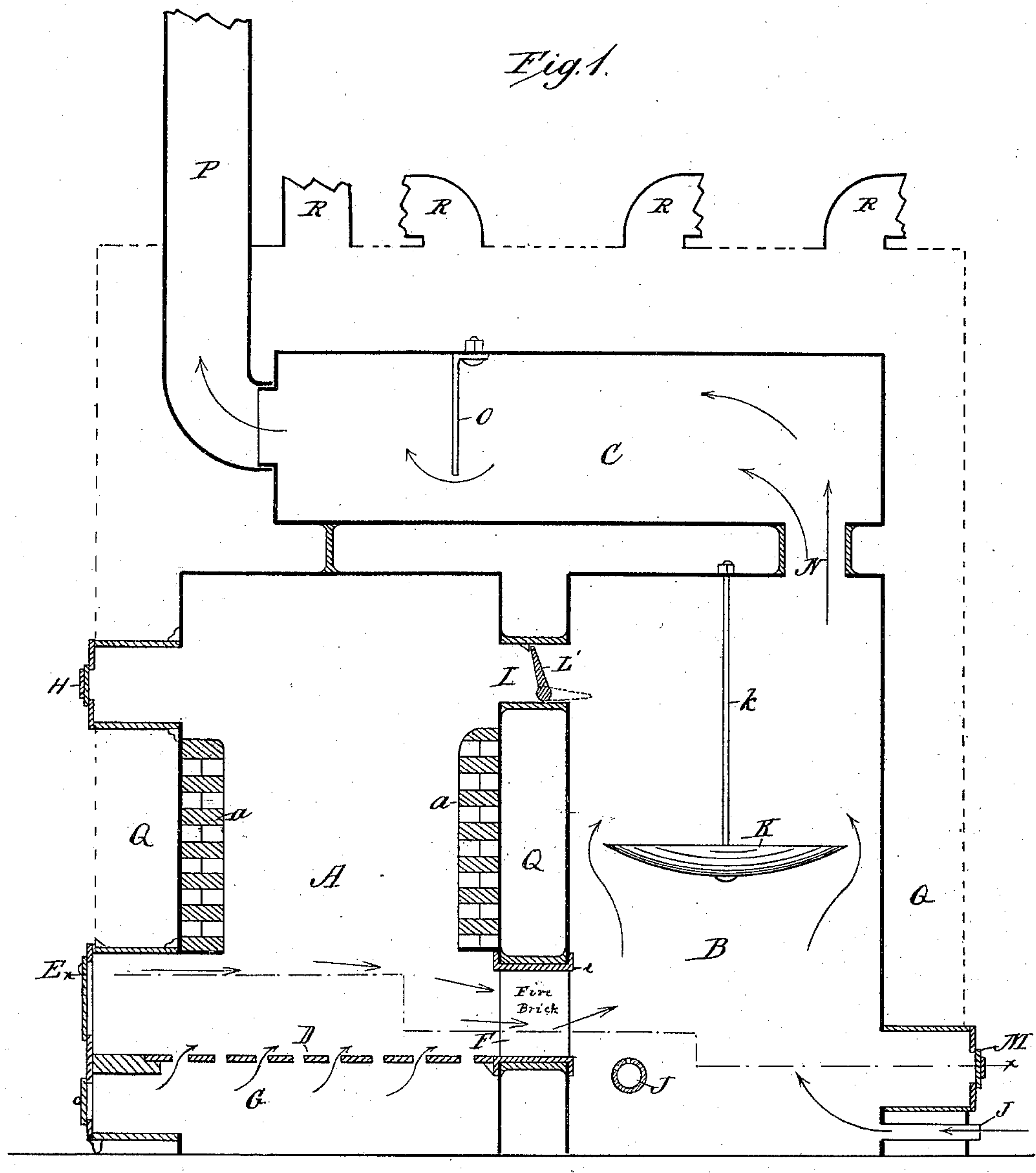


(No Model.)  
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 FURNACE.

No. 330,940.

Patented Nov. 24, 1885.



WITNESSES:

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*Geo. H. Evans*

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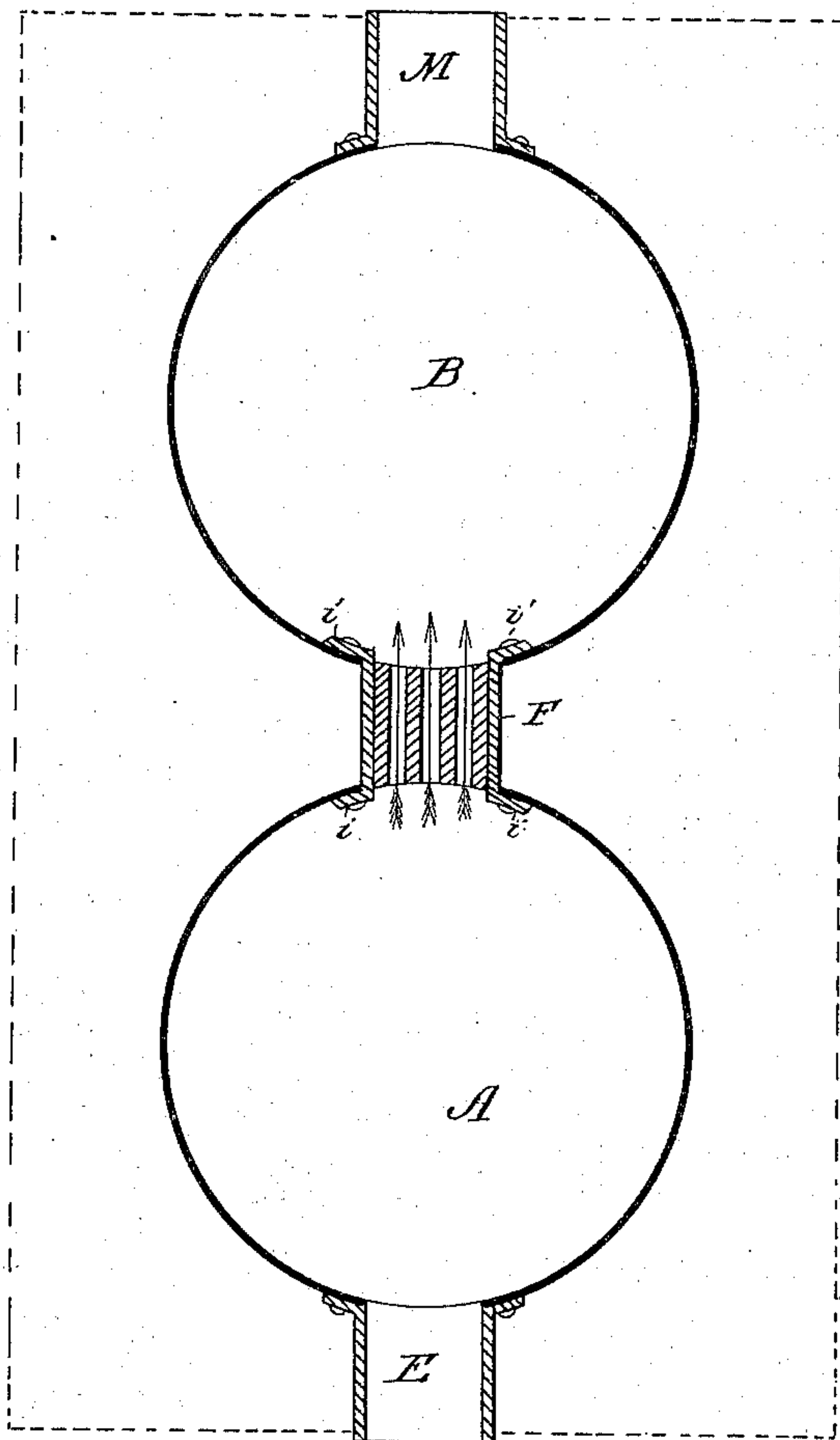
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*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

JOHN A. TOPLIFF, EDWARD S. CROSS, WILLIAM S. COX, AND JOHN A. McCOLLUM, OF ELYRIA, OHIO.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 330,940, dated November 24, 1885.

Application filed February 27, 1884. Serial No. 122,249. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN A. TOPLIFF, EDWARD S. CROSS, WILLIAM S. COX, and JOHN A. McCOLLUM, citizens of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented a new and useful Improvement in Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to furnaces for heating public buildings, dwelling-houses, &c., with hot air; and it consists of a furnace specially adapted for burning soft or bituminous coal in such manner as to secure a thorough consumption of the gases and smoke that are rapidly given off by such coal, all as hereinafter described and claimed.

In the drawings, Figure 1 is a central vertical section of our improved furnace, and Fig. 2 is a section on line *x x* of Fig. 1.

The furnace embraces a fuel-chamber, A, a combustion-chamber, B, located on the same level with chamber A, and a heating-drum, C, located above chambers A B and communicating with chamber B. The fuel-chamber is lined with fire-brick *a* and has a grate, D. D is a horizontal grate on a level with draft-door E and the flue F.

G is the ash-pit, through which air is supplied to the fuel from under the grate, as indicated by the arrows, and H is the door opening into the fuel-chamber. The flue F at the rear end of the grate D consists of a flanged lining, *i*, which is bolted to the wall of chamber A and B. Within this flanged lining are built a series of flues, four or more, according to the size of the furnace, out of fire-brick. Said flues are about one and a half or two inches in width, from eight to twelve inches in height, and from six to ten inches in depth. The object of flue F is, first, to retain the coal in its place, and, second, to assist very materially in the combustion of smoke and gases when they (the flues) become thoroughly heated.

The combustion-chamber B is supplied with air through the pipes J.

M is a door opening into the combustion-chamber B with the draft, for the purpose of supplying air and for cleaning out the ashes that may fall in chamber B. This chamber is provided with a diaphragm, K, somewhat smaller than its internal diameter, which is suspended by a rod, *k*, in such a manner as to direct the flames against the walls of chamber B.

L indicates a flue leading from chamber A to chamber B above the fuel, and L' is a valve located in said flue. When the door H is opened to supply fuel to chamber A, the valve L' is first to be opened to prevent a backward draft through the door. The drum C is supported on the walls of the chambers A B, and communicates with chamber B by a flue, N. The drum C is provided also with a diaphragm, O, and it communicates with the pipe P, leading to a chimney. (Not shown.)

Q indicates an air-space in which the air is heated, and R indicates pipes for conducting hot air to the rooms which are to be heated.

What we claim is—

A heating-furnace consisting, essentially, of the vertical fuel-chamber A, having the feed-door H, the draft-door E, the horizontal grate D, in line with the draft-door, an ash-pit, the vertical combustion-chamber B, the flanged lining *i*, connecting said chambers in line with the grate, the vertical fire-bricks therein, the flue L, valve L', the air-supply pipes J in the lower end of the combustion-chamber, the exit N, the horizontal drum or radiator C, and the outer surrounding casing, substantially as herein set forth.

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Witnesses:

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