

(No Model.)

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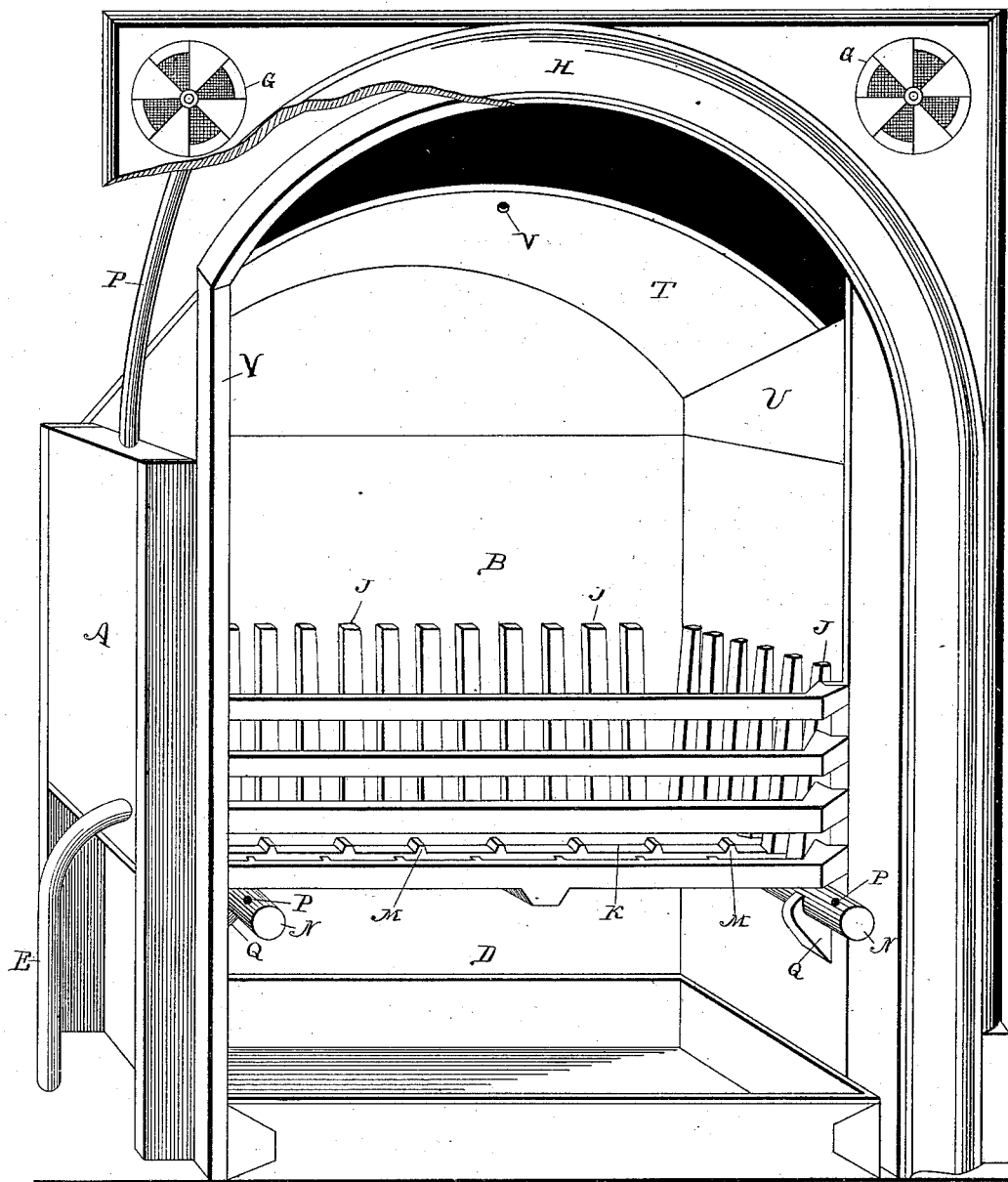
J. D. RICHARDS.

FIRE GRATE.

No. 302,428.

Patented July 22, 1884.

Fig. 1.



WITNESSES:

Thos. Houghton.
A. G. Syue.

INVENTOR:

James D. Richards
BY *Munn & Co.*

ATTORNEYS.

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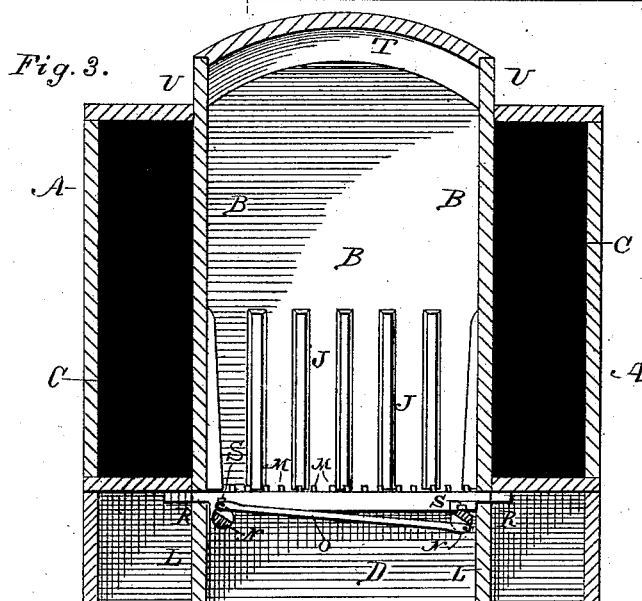
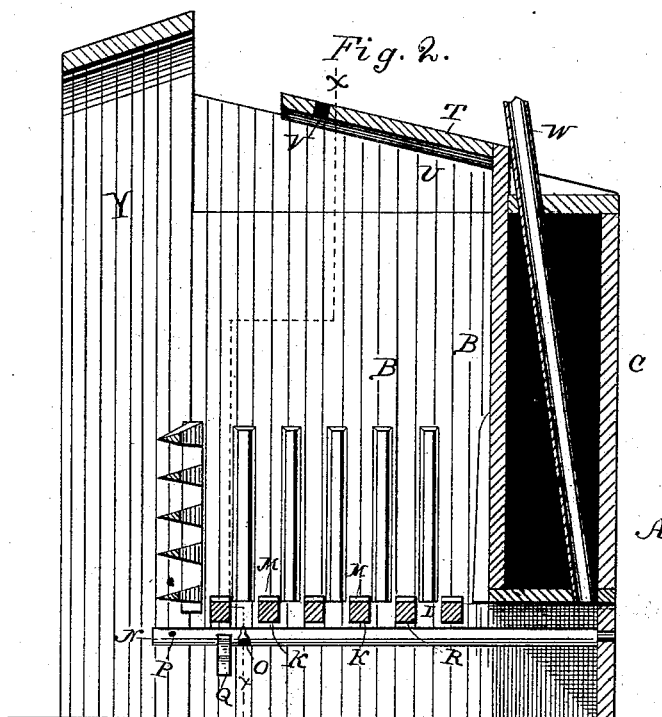
2 Sheets—Sheet 2.

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Thos. Houghton.
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INVENTOR:

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UNITED STATES PATENT OFFICE.

JAMES D. RICHARDS, OF PATRIOT, INDIANA.

FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 302,428, dated July 22, 1884.

Application filed December 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. RICHARDS, of Patriot, in the county of Switzerland and State of Indiana, have invented a new and useful Improvement in Fire-Grates, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, forming part of this specification.

This invention relates to fire-grates for heating rooms; and the invention consists of the construction hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of my improved grate, partly broken away. Fig. 2 is a section cutting the front and back, and Fig. 3 is a section cutting the sides of the grate on line *x x* of Fig. 2.

The grate, which is to be made in sections, according to the convenience of the manufacturer and builder, is formed with double walls A B, providing a closed hot-air chamber, C, which extends around the sides and back of the grate above the level of the ash-pit D. A pipe, E, leading to this chamber from under the floor or from the room, is to supply cold air to be heated in the said chamber, while pipes F, leading from this chamber to the registers G in the mantel-front H, are to supply hot air to the room which is to be heated. The pipes F are to be provided with valves, which are to be so arranged that they may be operated from within the room to allow the hot air to escape up the chimney when the heat becomes too great. The inner walls, B, of the grate are to be made of tiles joined together, and are to be set in a perpendicular position to prevent the ashes from choking the grate. The inner surfaces of these tiles are provided with vertical ribs J, to prevent the fuel from packing close to the walls and obstructing the draft. The bottom of the grate is formed of independent removable bars K, which are adapted to have a slight longitudinal movement in supports L underneath the lower edges of the tiles. The bars have lugs M on their upper surfaces, which serve to agitate the coals when the bars are reciprocated, and the bars are alternately connected to two rock-shafts, N, located in opposite sides of the ash-pit and connected together by a cross-bar, O, in such manner that when one of the rock-shafts is turned in one direction by means of

a poker inserted into a hole; P, the other rock-shaft will be turned in the opposite direction. In this manner alternate bars K will be reciprocated in opposite directions by the proper rocking of either of the shafts N. The shafts are supported in holes in the rear wall of the grate and on brackets Q at the front, and they engage with the bars K by means of lugs R, fitted in recesses S in the bars. The cross-bar O is pivoted to the upper part of the surface of one rock-shaft and the lower part of the other, to communicate a movement in the opposite direction from one to the other, as above stated. Such a construction has been employed for lifting opposite ends of alternate bars, but not for reciprocating them in opposite directions, as in my invention. The roof of the grate is formed of a curved plate, T, which is loosely supported on walls U, which incline downward from the front to the rear. The plate T is thus adapted to slide forward and backward on said inclined supports. By proper adjustment the draft may be made to pass up in front of the plate or behind it, and when the plate is adjusted backward it serves as a reflector to throw the heat forward into the room. When the plate is adjusted forward, the smoke will pass off at the rear of the same, so that the grate may be utilized for cooking purposes. The plate T is provided with a hole or recess, V, in its under surface, to receive the end of a poker by which it is to be adjusted.

To prevent ashes from the ash-pit from being carried up in front of the grate and thus escaping into the room, I provide a flue, W, leading up from the rear of the ash-pit through the rear part of chamber C into the chimney.

Y is a continuous jamb-plate arranged in front of the grate, to prevent heat from passing up behind a mantel, where one is used, and injuring the enamel or other finish on the same. This plate is to have lugs formed thereon adapted to engage with corresponding lugs on the grate to hold it in position.

Some of the advantages of this grate are the following: It is adapted to control and economize hot air, thus saving fuel. By means of the cold-air pipe damp air or malaria rising underneath the house may be carried through the hot-air chamber and purified, thus ventilating the foundation or basement or cellar of

the house, and preventing such foul air from entering the rooms.

What I claim is—

The combination, with the walls and front
5 bars of the grate, of the bottom bars made longitudinally adjustable, the two rock-shafts connected to or engaging with said adjustable bars alternately, and the bar for connecting

said rock-shafts together, whereby the oscillation of either shaft will reciprocate alternate bottom bars in opposite directions, substantially as shown and described.

JAMES D. RICHARDS.

Witnesses:

ALBERT L. NORTH,
SAMUEL DIBBLE.