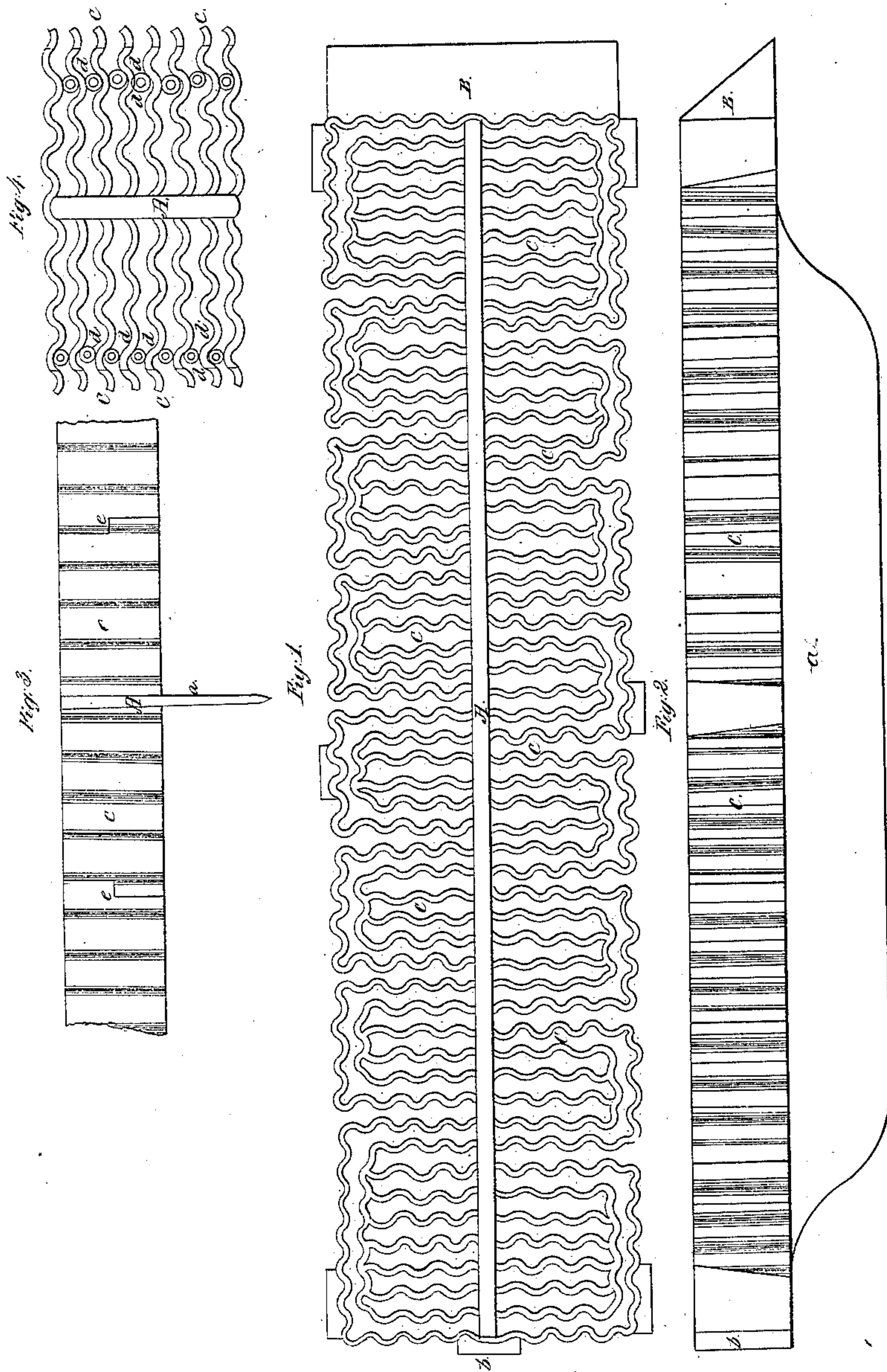


R. Montgomery,
Furnace-Grate Bar.

N^o 57,358.

Patented Aug. 21, 1866.



Witnesses
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UNITED STATES PATENT OFFICE.

RICHARD MONTGOMERY, OF NEW YORK, N. Y.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. 57,358, dated August 21, 1866.

To all whom it may concern:

Be it known that I, RICHARD MONTGOMERY, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Grate-Bars for Furnaces; and I do hereby declare the following to be a full and exact description thereof, reference being had to the annexed drawings, forming a part of this specification.

The nature of my invention consists in making a grate-bar with a central solid plate, from which corrugated plates extend laterally, so as to give a more free access of air to the fuel, or, as it is commonly called, a greater "breathing-surface," and consequently, as these sheets or corrugated plates are much thinner than a solid bar, they will be kept cooler by the air passing through them to the fire or combustible.

It also consists in the mode of connecting these corrugated sheets or plates at or near their outer extremities, to give them greater rigidity; and also in arranging their outer extremities so that, when desired, the extremities of two or more of these portions of the bar may be made to lock into and give additional support to each other.

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

Figure 1 is a top or plan view of one of my improved grate-bars. Fig. 2 is a vertical or side view. Fig. 3 is a vertical sectional view, showing the lateral connections between a central and two side bars. Fig. 4 is a view of the manner of connecting the lateral corrugated plates or sheets near their outer extremities, being a modification of the mode shown in Fig. 1.

In all these figures like letters refer to like parts.

In Fig. 1, A is the central rib of the bar, extending from the abutment B at one end of the furnace to b at the other. This rib is also shown in Figs. 3 and 4. To give additional strength to this rib it is projected downward into the ash-pit, as shown at a a, Figs. 2 and 3. From each side or face of this rib there is produced the fimbriated plates or sheets C C, so corrugated as to leave air-spaces or breathing-passages between them. These sheets or plates are about the same depth from top to bottom, as seen in Figs. 2 and 3, as the central rib, to enable them to sustain the

weight of the fuel piled upon them in the furnace, and to offer sufficient surface to the air ascending to the fire to keep them at a comparatively low temperature. By this arrangement I am enabled to prevent the heating of the thick grate-bars in common use. Besides giving additional strength to these fimbriated plates or sheets C C by giving them a corrugated form, this configuration greatly increases the area of the air-passages to the fire, thus enabling the same area of grate-surface to consume more fuel in the same time than is produced on an ordinary grate, or, what is equivalent thereto, enabling a smaller grate to produce as much efficiency as a larger one with less injury to the grate-bar.

When one, two, or even three bars only are required to form the entire grate-surface, these fimbriated plates may be connected together at their extremities, as shown in Fig. 1; but when a greater number is required for this purpose I prefer to construct and connect them at their outer extremities, as seen at Figs. 3 and 4. In these figures it will be seen that these plates, instead of being united at their extremities, as in Fig. 1, have no connection with each other at this point, but have an open tube interposed and connecting them together at a short distance from their extremities, as seen at d d, Fig. 4. The extremities of the plates, being thus left free, are notched, as seen at e e, Fig. 3, which enables the bars to support each other, at least to some extent, and thereby to continue the uniformity of the plane of the entire grate.

Having thus fully described my invention, what I claim therein, and desire to secure by Letters Patent of the United States, is—

1. The fimbriated corrugated plates or sheets C C, projecting from the sides of the bar A, constructed and arranged substantially as described.

2. The hollow tubes d d, in combination with the corrugated fimbriated plates C C, substantially in the manner and for the purpose set forth.

3. The notches e e, in combination with the plates or sheets C C, substantially as described.

RICHARD MONTGOMERY.

Witnesses:

H. KING,
JACOB JONES.