

(No Model.)

J. MAHONY.

GRATE BAR.

No. 388,426.

Patented Aug. 28, 1888.

Fig. 1.

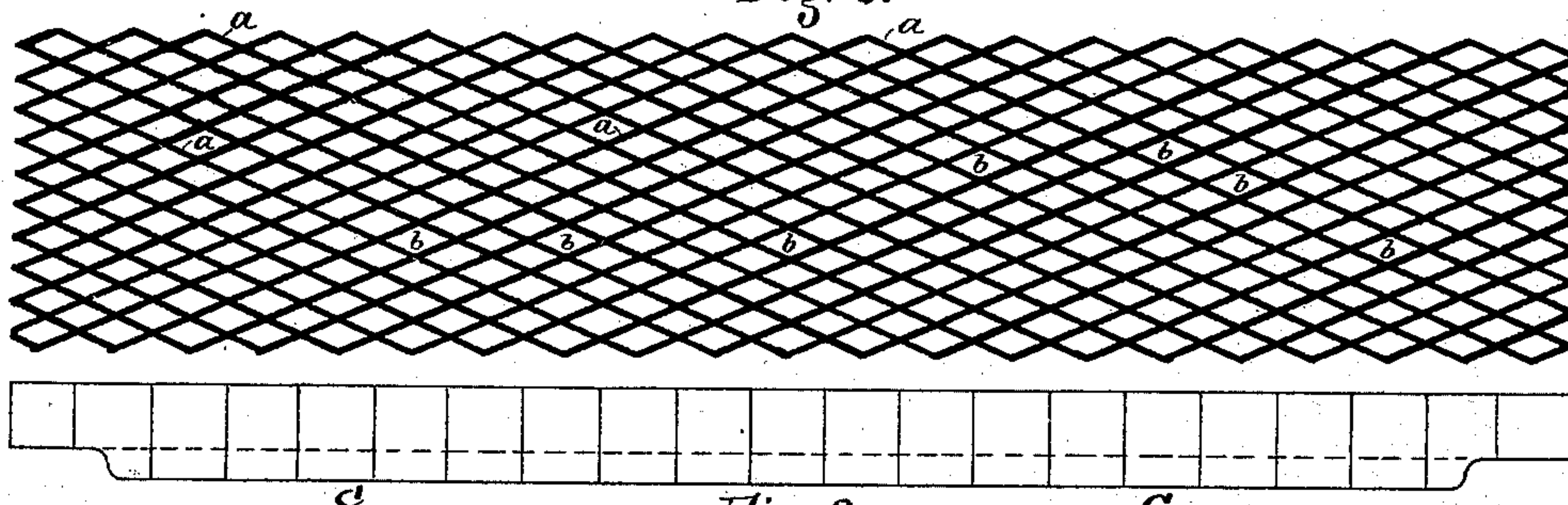


Fig. 2.

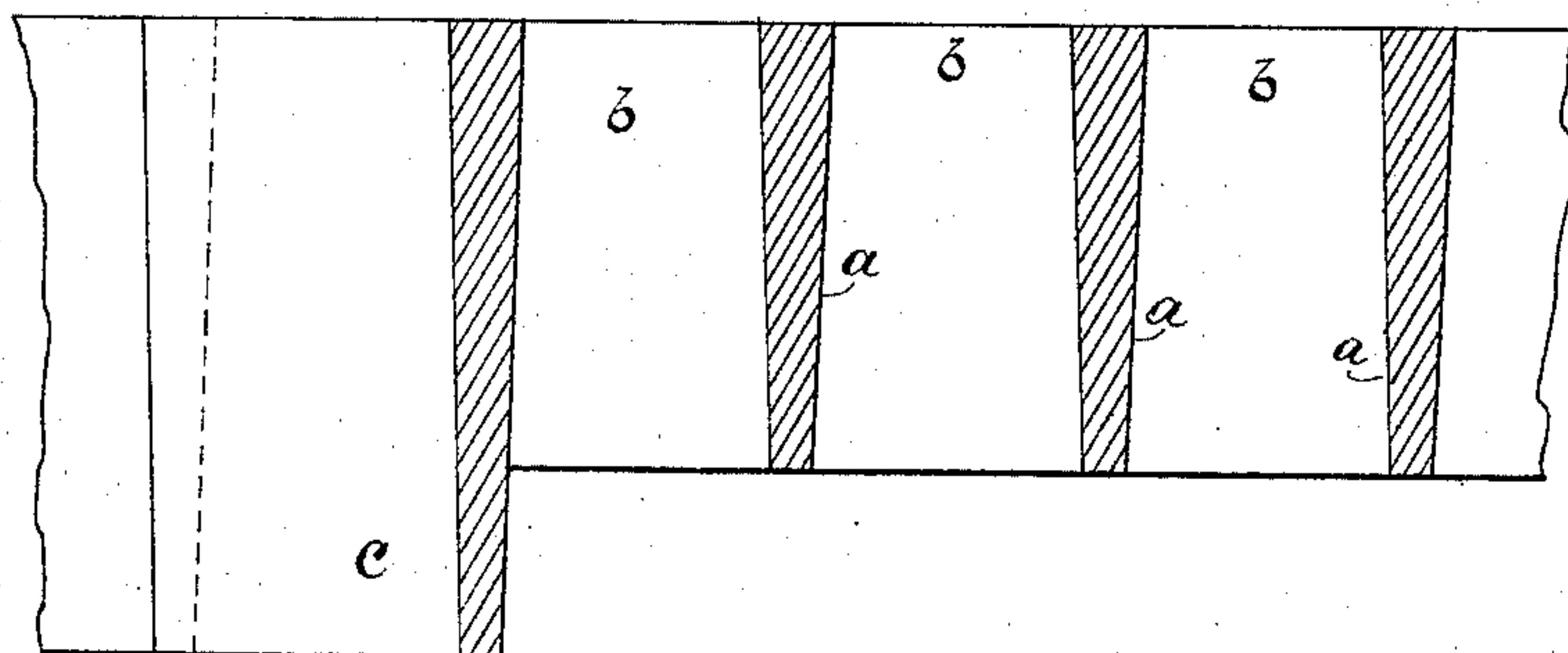
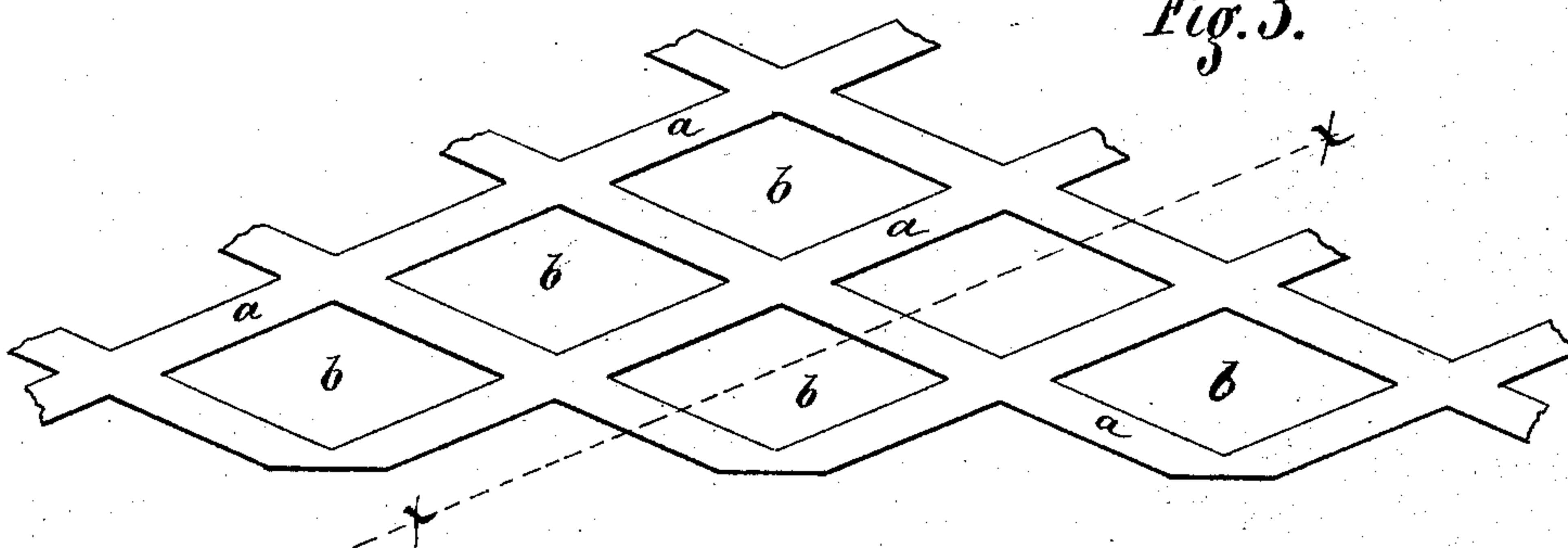


Fig. 4.

WITNESSES:-
W^m H. Weightman,
A. M. Pierce.

INVENTOR:-
James Mahony

UNITED STATES PATENT OFFICE.

JAMES MAHONY, OF NEW YORK, N. Y.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 388,426, dated August 28, 1888.

Application filed March 25, 1887. Serial No. 232,379. (No model.)

To all whom it may concern:

Be it known that I, JAMES MAHONY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification, reference being had to the accompanying drawings.

The object of my improvements is the production of a grate-bar that, while reliably supporting the fuel, presents the greatest possible freedom for the expansion of the bar and assistance to the air for producing combustion in its passage to and association with the fuel and its gases. The main object in the detailed construction and design of this bar has been of course the well-known object in all such constructions, that of producing a grate having a maximum of air-admission space both within and between the grate-bars with a minimum of metal volume associated with a proper capacity to support the fuel. To effect such object I construct a bar of the style shown in the drawings, having straight diagonal ribs crossing each other at angles other than a right angle and forming an air-space of diamond, rhomb, or lozenge shape—*i e*, having four equal sides and including two obtuse and two acute angles. Such construction provides an air space of liberal area but narrow clearance, and having the zigzag siding continued in a downward direction deeper than the rest of the bar to provide stiffening ribs and to form the diamond air-spaces between two adjoining grate-bars. These diamond-shaped air-spaces are sharply defined to provide an even thickness of metal throughout the whole bar. A bar of such construction has a great number of ribs, and they can of course be proportionately thinned, presenting in the same area of grate an increased heat-giving surface for raising the temperature of the air before it reaches the coal.

In the accompanying drawings, Figure 1 represents a plan view of a grate-bar embodying my improvements. Fig. 2 represents a side view of the same. Fig. 3 shows an enlarged

view of a portion of a bar. Fig. 4 is a section on line *xx*, Fig. 3, showing shape of ribs.

Similar letters of reference designate like parts in all the figures.

a designates straight diagonal ribs crossing each other and inclosing air spaces *b*.

c designates a downward extension of zigzag ribs at the side of bar to truss and stiffen the bar and allow of the free expansion of every portion of the bar. The bar may be varied in width and each pair of bars join to form the diamond air-passage the same as within the bar. All the ribs are made as thin as can be cast and have a good taper for free withdrawal from the sand.

Should a straight instead of a zigzag siding be provided, it would injure the capacity for expansion and contraction of the rest of the bar.

An even thickness of metal throughout, a capacity for giving out the heat as fast as received, due to the thinness of the metal and comparatively great heat-giving surface, and the fact that each of the four sides of the air-space re-enforces the others and the rest of the bar makes this a construction meeting all the requirements of an improved grate-bar.

What I claim as new, and desire to secure by Letters Patent, is—

1. A grate-bar composed, as set forth, of a series of shallow diagonal ribs, forming diamond shaped air-spaces, and a pair of extra deep zigzag stiffening-ribs, formed by the downward extension of the outside zigzag portions of the shallow diagonal ribs.

2. A grate-bar composed, as set forth, of the diagonal ribs *a*, forming diamond-shaped air-spaces *b b*, and a pair of extra deep stiffening-ribs, *c c*, formed by the downward extension of the outside zigzag portions of the shallow diagonal ribs extending only along the longitudinal sides of said grate-bars.

JAMES MAHONY.

Witnesses:

WM. H. WEIGHTMAN,
A. M. PIERCE.