(No Model.)

R. THOMPSON.

GRATE BAR.

No. 384,729. Patented June 19, 1888.

Fig. 1

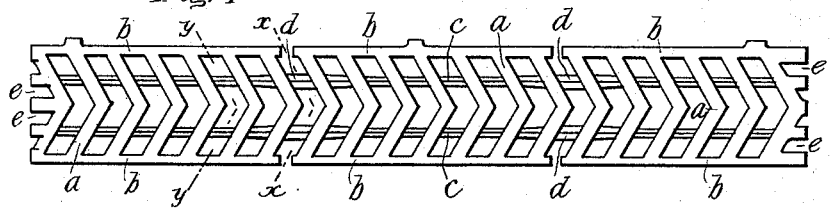


Fig. 3

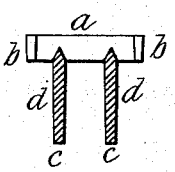


Fig. 2

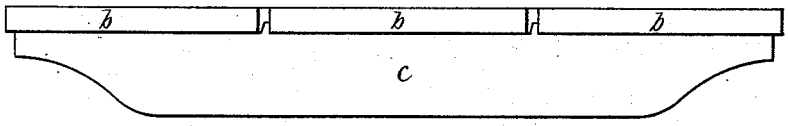


Fig. 4

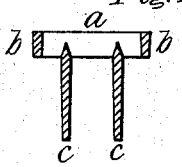


Fig. 5

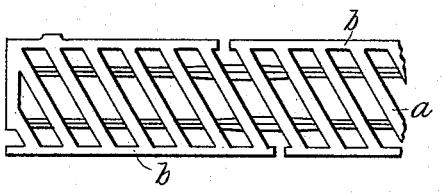


Fig. 6

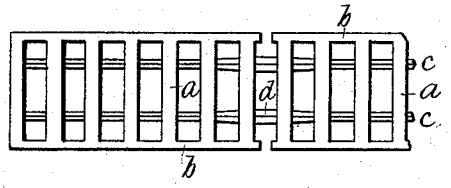


Fig. 7

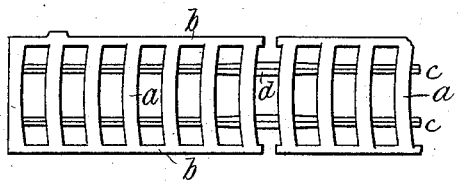
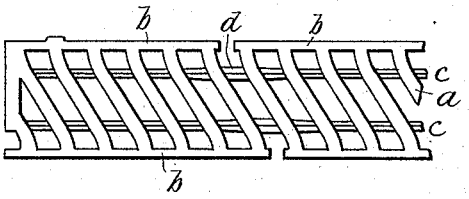


Fig. 8



Witnesses.

H. D. Williams

Wm. H. Mercereau.

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Inventor
per Alfred Shewbrook
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UNITED STATES PATENT OFFICE.

RICHARD THOMPSON, OF NEW YORK, ASSIGNOR OF ONE-HALF TO JOHN S. BUSHNELL, OF BROOKLYN, NEW YORK.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 384,729, dated June 19, 1888.

Application filed September 29, 1887. Serial No. 251,015. (No model.)

To all whom it may concern:

Be it known that I, RICHARD THOMPSON, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification.

This invention relates to that class of grate-bars in which an apertured top or grating is combined with longitudinal supporting-ribs on the under side of the same and integral therewith; and it has for its object to prevent the warping and distortion which occur in bars of this pattern as now made, because of the unequal expansion of the apertured top and longitudinal ribs. This I accomplish by transversely dividing the top or grating into sections, with sufficient space between to allow for their independent expansion, and by thickening the metal of the supporting-ribs at the junctures of these sections I am enabled to thus divide the top without in any way weakening the bar; but to describe my invention more particularly I will now refer to the accompanying drawings, in which—

Figure 1 is a plan view of my improved grate-bar. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse section cut on the line *x x*, Fig. 1. Fig. 4 is a transverse section cut on the line *y y*, Fig. 1, and Figs. 5, 6, 7, and 8 are partial plan views of modifications in the construction of the apertured top or grating.

The bar is made of suitable metal, cast in one piece. The top or grating, upon the upper surface of which the fuel is placed, is composed of the cross-bars *a a* and the longitudinal ties *b b* at the ends of the cross-bars, connecting them together in sections. The number of sections into which the apertured top is to be divided will depend upon the length of the bar. In the drawings three of these sections are shown. Sufficient space is left between the ends of the longitudinal ties *b b* to permit these sections to expand independently.

The longitudinal supporting-ribs *c c* connect the lower parts of the cross-bars *a a*, and at the junctures of the sections of the apertured top these longitudinal ribs *c c* are considerably thickened, as shown at *d d*, thus compensating for the absence of connecting-ties in the apertured top at these places and making the bar of uniform strength through its length.

As the apertured top *a b* of the grate-bar is in direct contact with the fuel undergoing combustion, while the longitudinal ribs *c c* are considerably below the same, and are kept quite cool by the circulation of air, this top attains a much higher temperature than the longitudinal ribs. In grate-bars of this pattern as now made, in which each side of the apertured top is provided with a longitudinal tie running the full length of the bar, the expansion of these ties, which is considerably in excess of that of the longitudinal supporting-ribs, causes warping and distortion of the bar. On the other hand, the use of longitudinal ties integral with the apertured top greatly braces and strengthens the bar. Now, as by improved construction the bar is made fully as strong as one having a continuous top, it is evident that I obtain all the advantages of and overcome all objections to bars of this class. At the ends of the bar, in the parts generally left solid, the grooves *e e* are cut, thus providing for free circulation of air at these places.

The number of longitudinal ribs and the shape of the cross-ribs may be varied at pleasure without departing from my invention. In the main views the cross-bars are of the herring-bone pattern.

In Fig. 5 straight cross-bars arranged obliquely and in Fig. 6 straight cross-bars at right angles to the longitudinal ribs are shown.

In Fig. 7 the cross-bars are curved in one direction, and in Fig. 8 each cross-rib comprises two reversed curves arranged obliquely.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A grate-bar consisting of an apertured top transversely divided into sections, and longitudinal supporting-ribs connected to the under side of said sectional top and increased in thickness or strengthened adjacent to the open spaces between the sections of the top, substantially as set forth.

2. In a grate-bar, in combination, an apertured top composed of sections, each com-

prising the cross-bars *a a* and longitudinal ties *b b*, and having slots *e e* at its ends, and the longitudinal supporting-ribs *c c*, secured to the under side of the apertured top, and having thickened parts *d d* adjacent to the open spaces between the sections of the top, substantially as set forth.

Signed at New York, county and State of New York, this 26th day of September, 1887.

RICHARD THOMPSON.

Witnesses:
H. D. WILLIAMS,
WM. H. MERSEREAU.