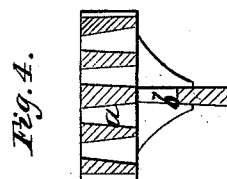
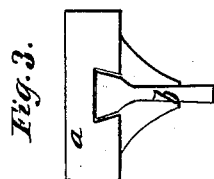
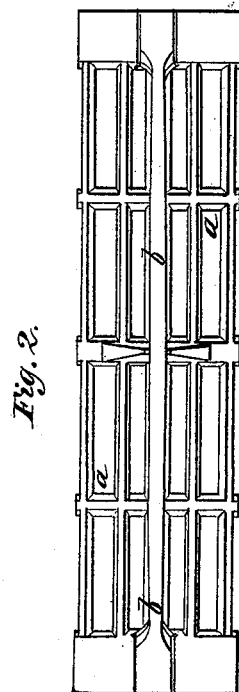
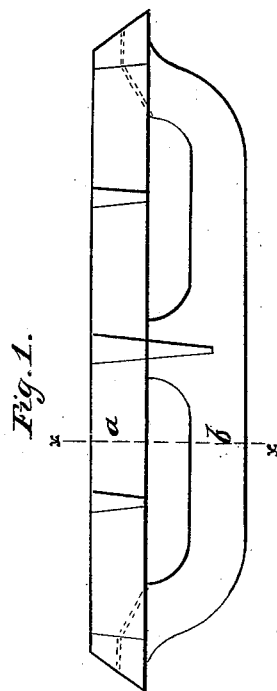


D. Houston,
Furnace-Grate Bar.
N^o 54,349. Patented May 1, 1866.



Witnesses
Chas. Schmidt
Geo. A. Walker

Inventor:
David Houston

UNITED STATES PATENT OFFICE.

DAVID HOUSTEN, OF NEW YORK, N. Y.

GRATE-BAR.

Specification forming part of Letters Patent No. **54,349**, dated May 1, 1866.

To all whom it may concern:

Be it known that I, DAVID HOUSTEN, of the city and State of New York, have invented and made a certain new and useful Improvement in Grate-Bars; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a side elevation of said bar. Fig. 2 is an inverted plan. Fig. 3 is an end view, and Fig. 4 is a cross-section at the line *xx* of Fig. 1.

Similar marks of reference denote the same parts.

Grate-bars for furnaces are liable to warp under the action of the fire and to arch upward in consequence of the top surfaces of the bars being expanded more than the lower portions.

The nature of my said invention consists in a bearing-bar beneath the grate-bar, said bearing-bar being formed in such a manner as to connect with the grate-bar near the middle thereof, and so as to set at its ends upon the same bearers that support the ends of the grate-bar; but the said bearing-bar is not connected at its ends with the grate-bar, so as to allow of the parts expanding independently, but said bearing-bar strengthens the grate-bar and prevents its warping upward in the central portion.

In the drawings, *a* is a grate-bar of any usual character, formed with longitudinal mortises or openings for the passage of the air.

b is the bearer or brace below the bar *a*, and

formed with or attached to said bar *a* at or near the central portion. The ends of said bearer *b* enter dovetail recesses in the ends of the bar *a*, as seen in Fig. 3, so that the ends of the bearer and bar are locked together, but allowed to expand and contract separately. The bearer *b* may have a **T** end instead of a dovetail, so that the respective ends may be locked together as aforesaid, or the end of the bearer *b* may be formed as a plate below and receiving the ends of the bar *a*. The bearer may be cast separately from the bar, and then the two be united by bolts or locking-projections, or the bar may be all cast at one time if a thin dividing-core is inserted where the ends of the bearer and bar lock as aforesaid.

By this construction the bearer *b* prevents the central part of the bar warping upward and adds strength to the bar in carrying the weight of coals upon it.

These bars are to be introduced into the furnace upon the usual supports or bearing-bars.

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

The bearing-bar *b*, connected to the grate-bar *a* at or near its center, and resting at its ends upon the same bearers as the ends of the bar *a*, but disconnected from said bar *a* at its ends, so as to allow the grate-bar to expand independently of the bearing-bar, as set forth.

In witness whereof I have hereunto set my signature this 20th day of February, A. D. 1866.

DAVID HOUSTEN.

Witnesses:

GEO. D. WALKER,
CHAS. H. SMITH.