J. A. Miller,

Casting Furnace-Grate Bars.

No. 46,127. Fig. 1 Patented Jan. 31, 1865.

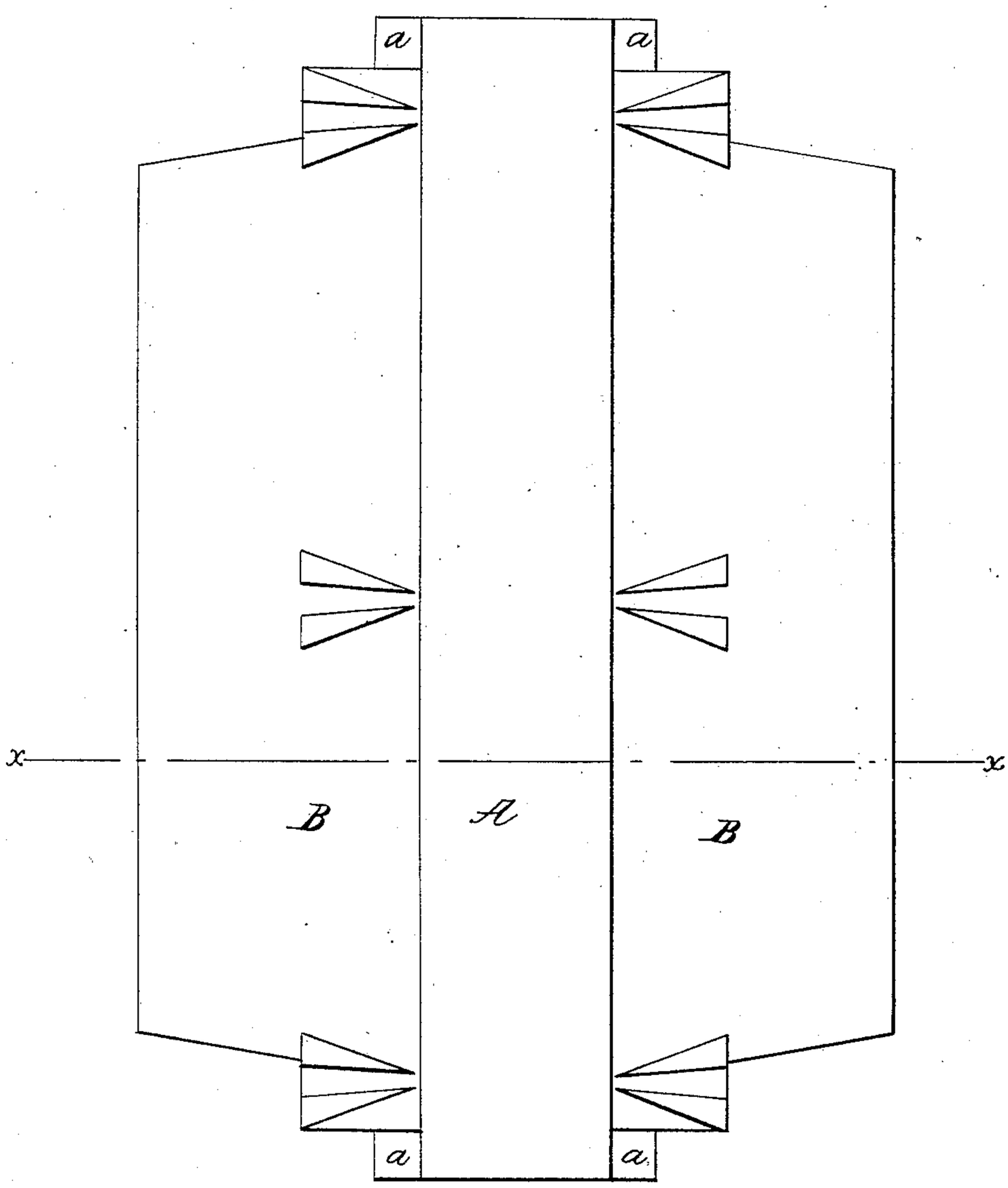
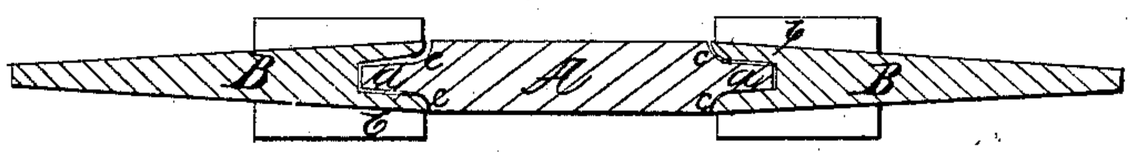


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOSEPH A. MILLER, OF NEW YORK, N. Y.

IMPROVEMENT IN CASTING GRATE-BARS FOR FURNACES.

Specification forming part of Letters Patent No. **46,127**, dated January 31, 1865.

To all whom it may concern:

Be it known that I, J. A. MILLER, of the city, county, and State of New York, have invented a new and Improved Furnace Grate-Bar; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan or top view of this invention. Fig. 2 is a transverse vertical section of the same, taken in the plane indicated by the line *x x*, Fig. 1.

Similar letters of reference indicate like parts.

Furnace grate-bars are usually cast with a groove in their top edges, so that the ashes will lodge therein, and thereby the injurious effect of the heat on said edges is reduced. The ashes protect said edges to some extent from being burned.

The object of this invention is to facilitate the manufacture of such grate-bars by casting them in pairs, or two simultaneously on one and the same core, whereby the labor is considerably reduced and a better article is produced.

The manner in which I cast my grate-bars will be readily understood from the drawings.

A represents the core, and B B two patterns which are connected to the core, as shown in the drawings. The patterns of course represent exact counterparts of the grate-bars to be produced. They are provided with grooves *b* in their top edges, and these grooves fit on corresponding tongues, *a*, on the core. This core is somewhat longer than the grate-bars, so that the same projects beyond both edges of the same, and after the grate-bars, together with the core, have been put in the sand, they are removed from the mold all together, and then the patterns of the grate-bars are removed and the core is replaced into the mold, in which operation the workman is guided by the impressions left in the sand by the ends of the core projecting beyond the patterns. The core can thus be placed in the sand perfectly correct, so that the flanges of the grate-bars which rise on both sides of the groove will be of uniform thickness, or, in other words, that the grooves will be exactly in the middle of the thickness of the bars.

In molding the bars in the ordinary manner one at a time the cores are liable to shift, and the grooves are cast on one side, leaving the flanges of unequal thickness, and bars of this kind are liable to burn out much sooner than if they are cast with flanges of uniform thickness. Furthermore, by molding two bars simultaneously the labor is greatly reduced, and the bars can be made at less cost than in the ordinary way. The durability of my grate-bars is still further increased by casting the grooves on chills. The core, instead of being made of sand, is made of wrought-iron and fitted into the grooves of the patterns, as clearly shown in the drawings. After the patterns, together with the chill, have been molded, the patterns are removed, and the chill is replaced into the mold and takes the place of the core. By these means the grooves are cast perfectly uniform, and their surfaces become glazed and their faculty to conduct heat is considerably reduced, so that they are less liable to burn off than when cast in the ordinary manner.

In order to prevent the cast-iron from adhering to the chill and to produce neat work, the corners *c* of the chill have to be rounded, as shown in Fig. 2.

Grate-bars made according to my invention are cheaper, neater, and more durable than grate-bars cast in the ordinary manner.

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

Casting two bars simultaneously on the same core, substantially in the manner and for the purposes set forth.

JOS. A. MILLER.

Witnesses:
JAMES P. HALL,
THEO. TUSCH.