

J. R. Smith,
Furnace-Grate Bar.
N^o 70,638. Patented Nov. 5, 1867.

Fig. 1.

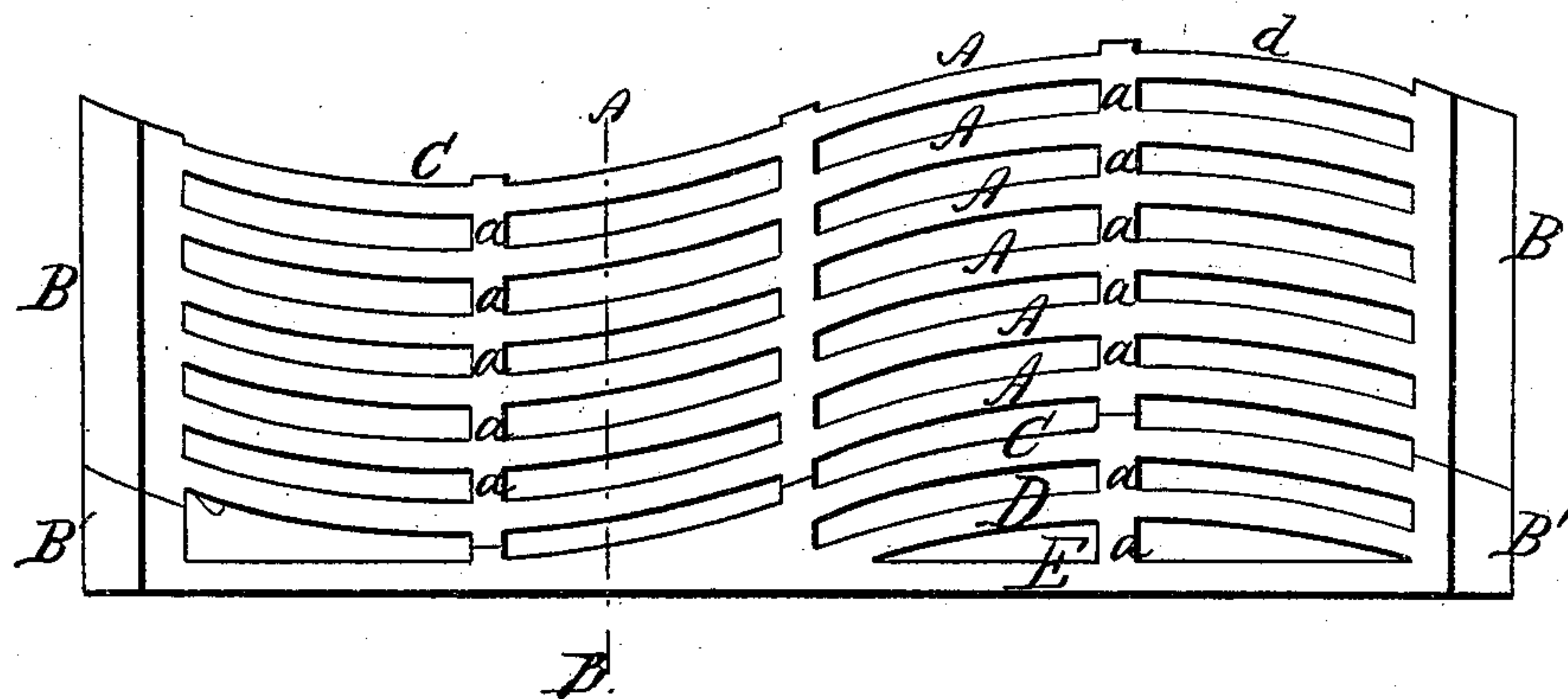


Fig. 2.

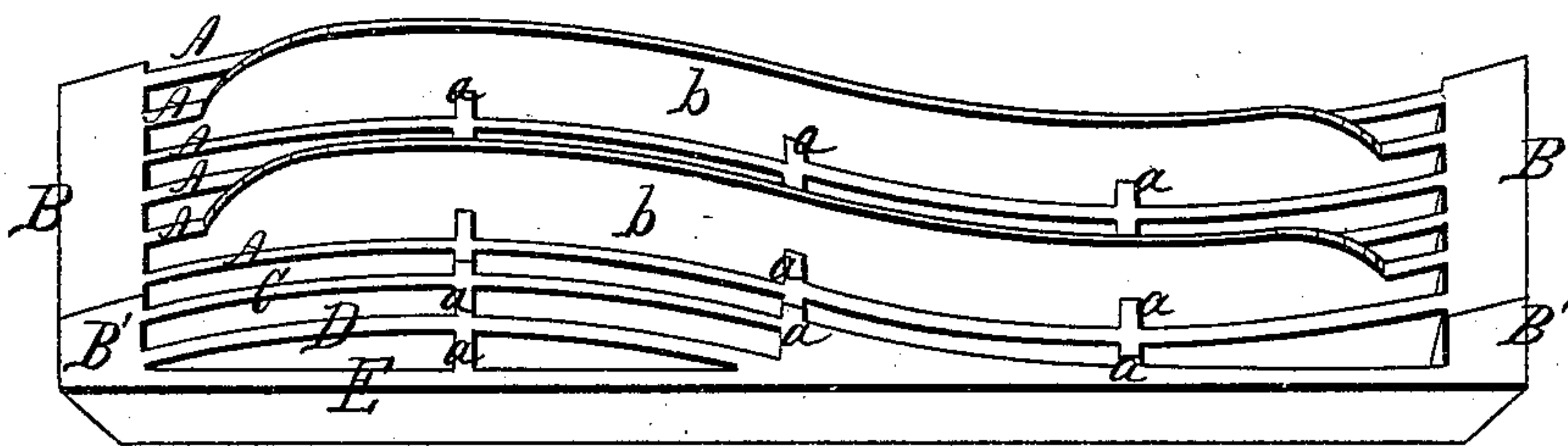
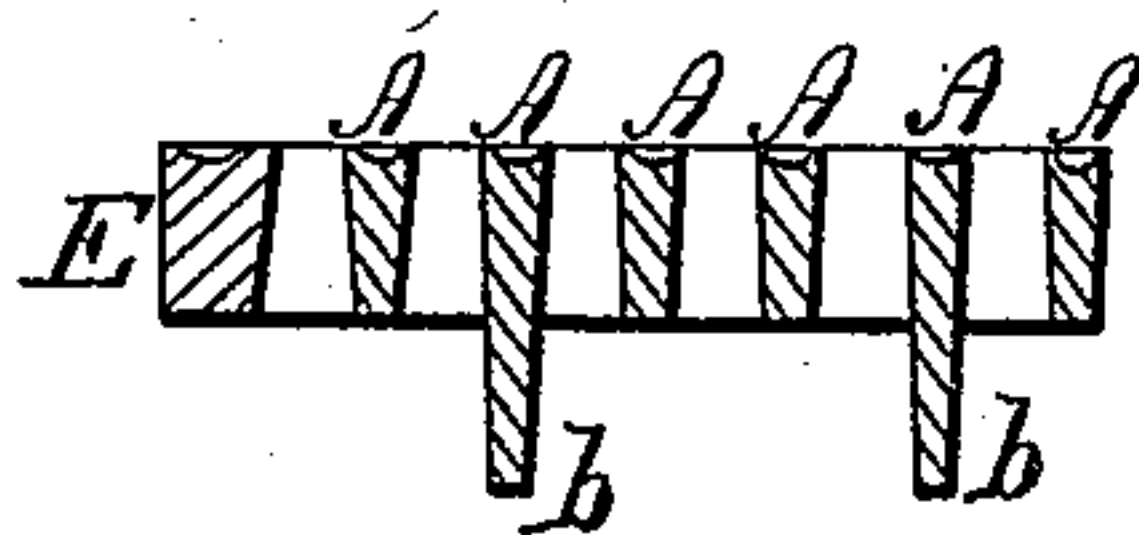


Fig. 3.



Witnesses;

*Charles Furling
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Inventor;

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Thos H. Dodge*

United States Patent Office.

J. R. SMITH, OF SALEM, MASSACHUSETTS.

Letters Patent No. 70,638, dated November 5, 1867.

GRATE-BAR.

The Schedule referred to in these Letters Patent and making part of the same.

KNOW ALL MEN BY THESE PRESENTS:

That I, J. R. SMITH, of Salem, in the county of Essex, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Grate-Bars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a top or plan view of one of my improved grate-bars.

Figure 2 represents a perspective view of the bar when turned bottom side up, and

Figure 3 represents a cross-section on line A B, fig. 1.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, a series of double-curved ribs, A, united at each end by the flanges B B, and at intermediate points by the lugs *a*, are shown as constituting, in this instance, one bar; but a greater or less number of double-curved ribs A may be used in a single bar. To give greater strength to the bar, one or more of the ribs A in each bar are made to project down below the ribs A, as seen at *b*, fig. 2. To fill up and make the side of the bar straight, a side piece is made, with a straight rib, E, and end plunger, B' B', and two short, curved ribs, C D, which, when applied as shown in the drawings, fit the side of the grate-bar perfectly and make the side straight, as clearly indicated in the drawings. The side piece will fit either side of the bar, so that only one pattern is necessary for side piece and one for grate-bar. By making the ribs A with a double curve, *c d*, the bar is not so liable to be strained and injured by unequal heating as it would be if the ribs were straight or even of a single curve. For instance, if one side of the bar becomes heated first, the bar yields on the opposite side, and thus prevents the injury to the bar which would result from the sudden expansion of one side without suitable provision for a corresponding bending of the bar on the other side. By the use of one or more projections, *b*, which are also double curved, and the connecting-piece *a* in combination with the double-curved ribs A, a grate-bar is produced of great strength and durability, and yet one which is comparatively light.

Having described my improvements in grate-bars for furnaces, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The double-curved ribs A, in combination with the flanges B B and connections *a*, substantially as and for the purposes set forth.

2. The combination, with the double-curved ribs A, of one or more projections, *b*, flanges B B, and connections *a*, as and for the purposes set forth.

3. The combination, with the side of the bar, of the peculiarly-constructed filling-piece, composed of the parts lettered B' B', C D, and E, for the purposes stated.

J. R. SMITH.

Witnesses:

C. SEWALL,

HENRY HALE.