

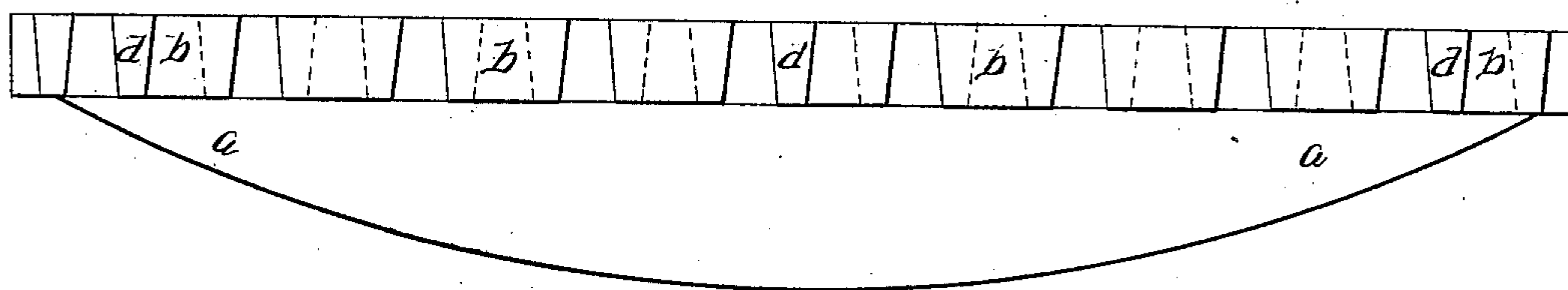
*D. Lasher,*

*Furnace-Grate Bar.*

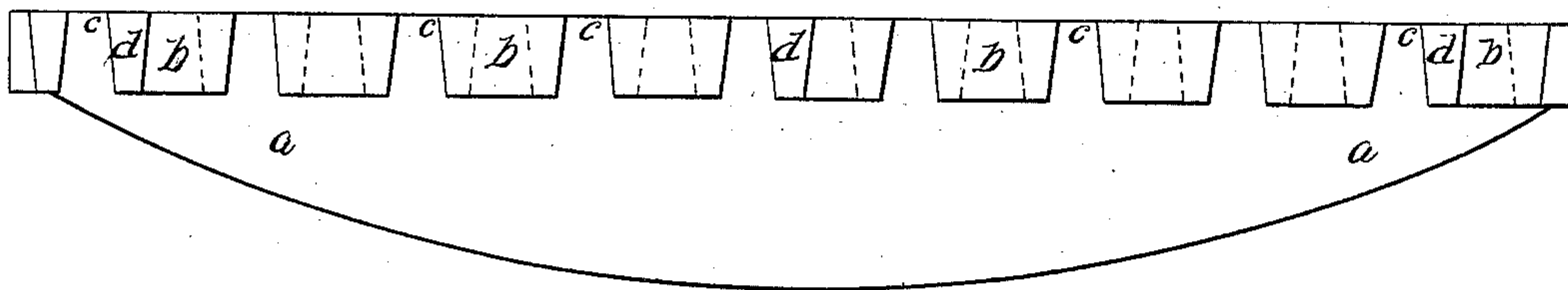
*N<sup>o</sup> 29,977.*

*Patented Sep. 11, 1860.*

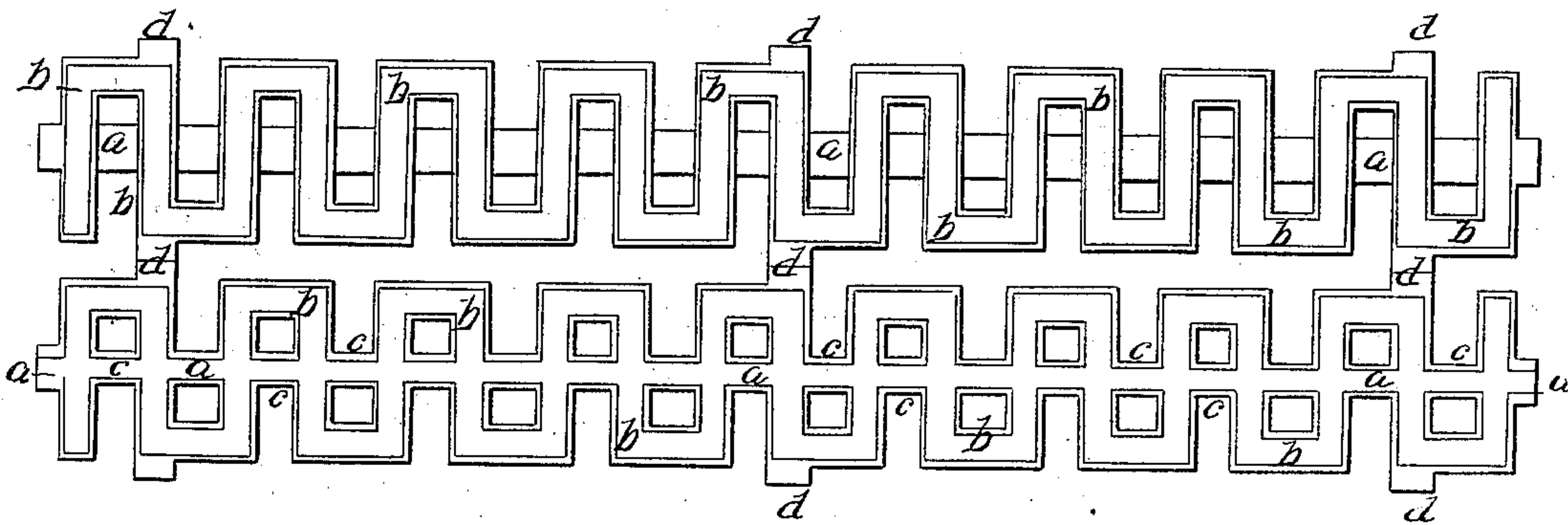
*Fig. 3.*



*Fig. 2.*



*Fig. 1.*



*Witnesses.*  
*Samuel N. Sewell.*  
*Thos. Geo. Harold.*

*Inventor.*  
*Daniel Lasher.*

# UNITED STATES PATENT OFFICE.

DANIEL LASHER, OF BROOKLYN, NEW YORK.

## GRATE-BAR.

Specification forming part of Letters Patent No. 29,977, dated September 11, 1860; Reissued April 23, 1867, No. 2,573.

*To all whom it may concern:*

Be it known that I, DANIEL LASHER, of Brooklyn, in the county of Kings and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Grate-Bars for Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is a plan of two of my grate bars. Fig. 2, is a side elevation of one of said bars and Fig. 3, is a side elevation of the other.

Similar marks of reference denote the same parts.

Grate bars have usually been fitted to run longitudinally of the furnace, in order that the scraper used for drawing out or stirring the fire may pass over the same and not drop into the openings between the bars. These grate bars do not allow as much air space as desired for almost all furnaces, and not only obstruct the draft but are very heavy, and warp and twist under the heat.

The nature of my said invention consists of a series of alternately connected parallelograms upon a cross bar or support, whereby I am enabled to obtain a much larger air space than in the ordinary grate bars, and at the same time the surface is such that the scraper or stirrer will not catch therein and the weight of the grate bars, with a corresponding strength, can be reduced about one third.

In the drawing *a*, is a metallic bar supported by a cross bar at each end as now usual.

*b, b*, are a series of alternately connected

parallelograms formed as represented upon the upper surface of the bar *a*, and the bar *a*, may stop at the under side of the cross bars *b*, forming these parallelograms, as seen in Fig. 2, or the same may rise up to the surface as seen in Fig. 3, and at *c, c*, Fig. 1. In this latter instance the grate bar is rather heavier and does not afford quite so much air space.

The bars are kept apart by lugs *d, d*, or interlocking projections, so that there is not only an air space between each bar itself, but also in the openings in each parallelogram, and the grate bar overhanging at its upper part allows the bars *a, a*, to be much farther apart than now usual, each of my bars being equal in width to two or three of those before used. The scraper slides freely over the surface produced by my grate bars, because the length of transverse openings is less than the width of the scrapers or stirrers employed for this purpose.

My bars *a, a*, are kept as cold as possible, and hence are more durable, and the fire is freed from ashes more easily because some of the openings are at right angles to the motion of the scrapers.

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

Forming grate bars with the alternately connected parallelograms *b, b*, in combination with the bar *a*, beneath and connecting the same, as and for the purposes specified.

In witness whereof I have hereunto set my signature this twentieth day of August 1860.

DANIEL LASHER.

Witnesses:

LEMUEL W. SERRELL,  
THOS. GEO. HAROLD.