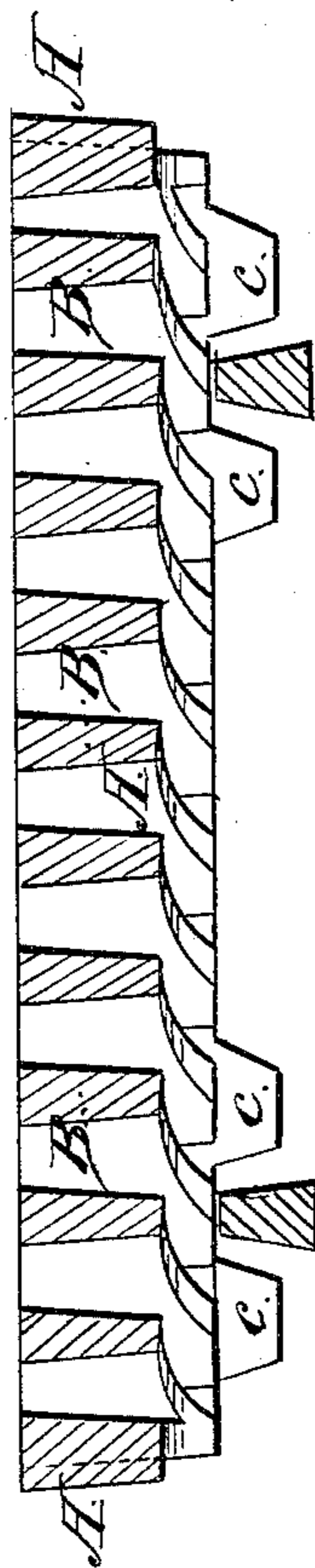
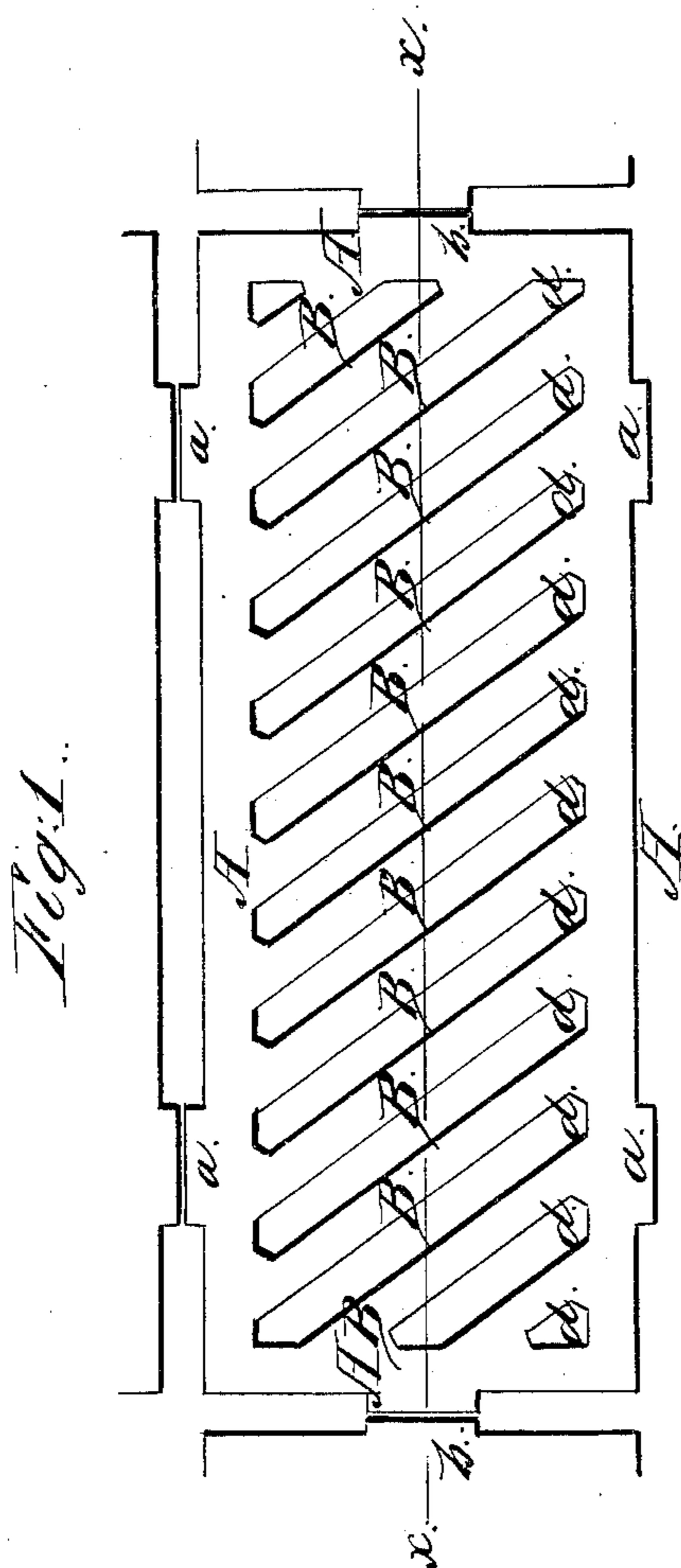


H. Adams,
Furnace Grate.
N^o 63,354. Patented Apr. 2, 1867.



Witnesses;
Mr. R. Cooper,
Thaddeus B. Bucher.

Inventor;
Hawley Adams,
by M. M. Lynde
Attorney

United States Patent Office.

HAWLEY ADAMS, OF STAMFORD, CONNECTICUT, ASSIGNOR TO HIMSELF,
W. H. COBANKS, AND H. THEALL, OF NEW YORK.

Letters Patent No. 63,354, dated April 2, 1867.

GRATES FOR FURNACES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HAWLEY ADAMS, of Stamford, in the county of Fairfield, and the State of Connecticut, have invented a new and useful Improvement in Furnace Grates; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a plan or top view of my invention.

Figure 2 is a longitudinal vertical section taken on the line *x x*, fig. 1.

The nature of my invention consists in arranging the bars of the grate diagonally across the plane, one end of each bar being on opposite sides of a line drawn transversely and horizontally across the frame, whereby I provide a grate of very simple construction, but possessing great strength and durability, and one which can be made of lighter material than many similar grates now in the market.

A designates the frame of a section of a furnace grate; *a a* and *b b* are guards upon the sides and ends respectively of the frame A, against which guards corresponding guards on adjacent sections abut, and thus leave a good and sufficient air-space between the sections. *c c* are lugs upon the under edge of the longitudinal sides of the frame A, for holding the section securely on the bearers, (shown in red, fig. 2,) the lugs straddling the bearers, as shown in said fig. 2. B B designate the bars of the section. These run diagonally across the frame, the one end being upon one side of an imaginary line drawn horizontally across the frame at right angles to its length, and the other end on the other side of such line; that is, the two ends of the bar do not strike the sides of the frame directly opposite to each other. The air-spaces are lettered *d* in the drawing. Each of the bars B may be arched on their under side; that is to say, they are deeper and thicker where they join the frame A than at their centre; by this construction I economize greatly in material and provide increased air-space under the grate, but at the same time retain as much strength as if the bars were of a uniform thickness or depth from end to end. I will here remark that "long bars," so called, may be constructed, that is, have the bars B B placed in the same way; so, also, may circular furnace grates. In the latter case I propose to carry each section up to a support in the centre of the grate, the bars of each section being arranged diagonally across it as in the quadrilateral section illustrated in the drawing. By this arrangement of the bars of a grate I find that I gain great strength and economize in metal. The strength is due partially to the fact that the frame is not so liable to crack as when the ends of each bar strike directly opposite sides of the frame; for instance, if one side of the frame crack at any particular bar, it will not be so liable to crack on the opposite side as it would if the bar ran directly across the frame, as is obvious to those accustomed to use such grates. I have found by experiment that the bars may be made of less weight than the common and many other grates now in the market.

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

A grate for furnaces, having its bars B extending diagonally across the grate-frame in an unbroken line, in the manner herein set forth.

HAWLEY ADAMS.

Witnesses:

M. M. LIVINGSTON,
T. B. BUCHER.