Kirk & Elliot,

Furnace-Grate Bar.

No. 12,597. Patented Mar. 27, 1855.

Fig. 1.

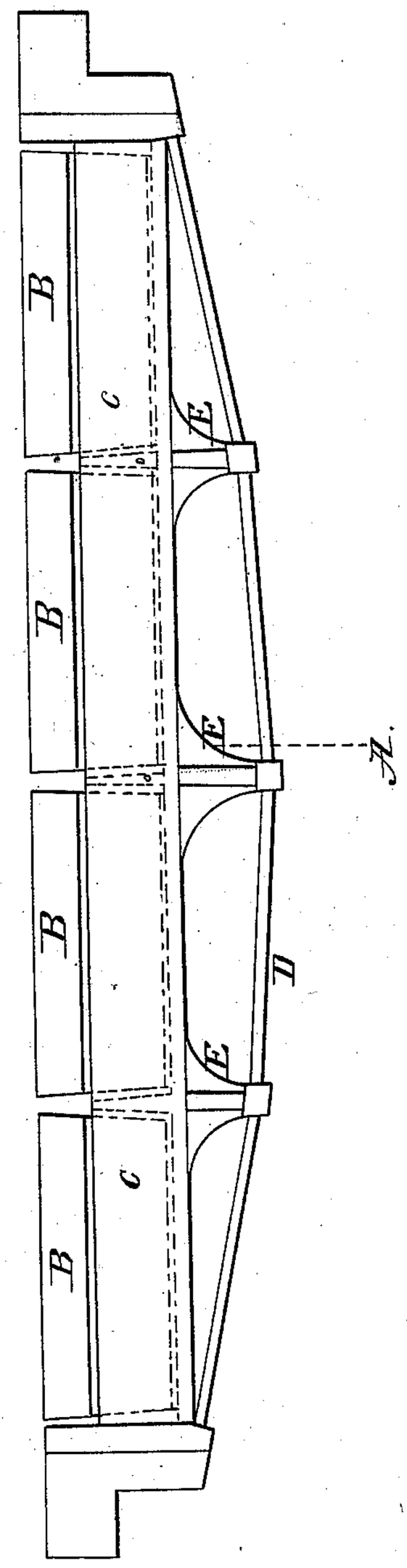


Fig. 2.

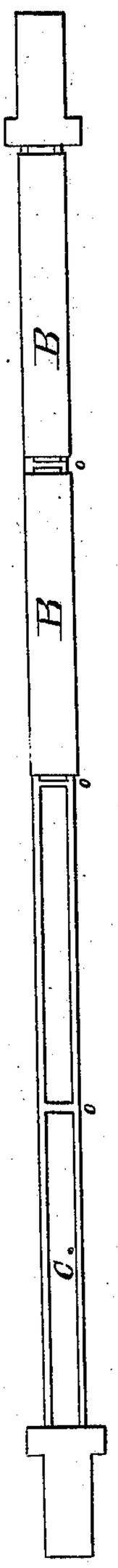


Fig. 3.

Fig. 4

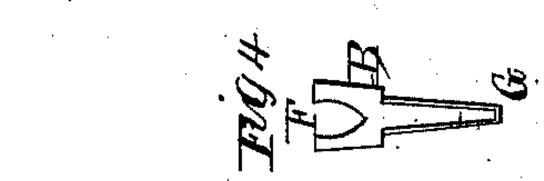
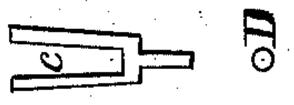


Fig. 5.



UNITED STATES PATENT OFFICE.

JOS. S. KIRK AND WM. H. ELLIOT, OF PLATTSBURG, NEW YORK.

GRATE-BAR.

Specification of Letters Patent No. 12,597, dated March 27, 1855.

To all whom it may concern:

Be it known that we, JOSEPH S. KIRK and WM. H. ELLIOT, of Plattsburg, in the county of Clinton and State of New York, have invented a new and useful Improvement in Grate-Bars; and we do hereby declare that the following is a full and exact description thereof.

The nature of our invention consists in so constructing the bars for furnace grates that those portions of the bar which come in contact with the fire and are consequently worn away and weakened by the heat to which they are exposed, and which are herein termed the wearing parts, are supported in their place by other portions of said bar, herein termed the supporting parts, which are protected from the heat to which the wearing parts are exposed by the nature or form of the connections between said parts. And so further constructing and applying the first mentioned parts of said bar that any temporary or permanent expansion or any warping consequent upon their constant exposure to great heat shall not effect the general straightness of the bar or the utility of the grate.

To enable others skilled in the art to make and use our invention we proceed to describe its construction and operation, reference being had to the annexed drawings forming a part of this specification in which—

Figure 1 is a front elevation of a grate bar, showing the wearing parts made in sections, separate from, and resting in deep sockets in, the supporting parts, the whole being sustained by a suspension rod. Fig. 2 is a plan of the bar with two sections of the wearings parts removed, showing the sockets in the supporting parts in which said sections rest. Fig. 3 is a perspective view of one of said sections. Fig. 4 is a sectional view of one of said sections. Fig. 5 is a sectional view of the supporting parts of said bar at a point indicated by dotted line A Fig. 1.

B B B wearing parts of the grate bar divided into sections and separated a little so that permanent expansion may go on without altering the aggregate length of the bar, and so that the warping which usually takes place will not effect its utility. These sections may be attached to or made separate from the supporting parts of the bar; C C, two plates extending the whole length of the bar united to each other by partitions *o o o o* between the sections of the wearing parts, thus forming sockets into which the sections are placed. These plates assist in sustaining the bar by their resistance to compression; D, a wrought iron suspension rod upon which the whole weight of the bar rests, this rod is secured by being placed in the mold and the iron cast upon it; E E E, flanged supports through the lower end of which the suspension rod passes and upon which the plates C C rest; F F, chambers formed in the upper portions of the wearing parts for the reception of a nonconducting material; G G, small projections upon the sides of the wearing parts which prevent them from touching the sockets, except at the projections, thus leaving a space between the two parts of the bar which, whether filled with a nonconducting material or not, serves as a nonconductor.

It has been found by experiment that when the middle of the upper face of a grate bar is occupied by a nonconducting material, its liability to be heated by the fire above it is very much diminished, because it is through this surface that the heat is transmitted to the body of the bar, all the other surfaces being protected by the draft. It has also been found by experiment, that when the supporting parts of the grate bar have been so protected as not to be altered by the heat of the furnace, that the only parts worn or injured by use, are those parts which have been herein termed the wearing parts, and that some portions of the wearing parts are sooner destroyed than others, it has therefore been deemed expedient for these reasons as well as those first set forth, to construct these parts separate from those parts herein termed the supporting parts, and in sections, so that portions, only, which are actually worn out, may be changed for new.

Similar letters of reference indicate the same parts.

Having fully described our invention we claim—

1. The employment of a suspension rod for the support of the grate bar arranged as described, or its equivalent.

2. The constructing of the wearing and supporting parts, as herein described, separately, so that said wearing parts may readily be removed and replaced for the purposes herein set forth.

JOSEPH S. KIRK.
W. H. ELLIOT.

Witnesses:
F. L. C. SAILLY,
JOHN MORGAN.