S. Vansyckel,

Furnace-Grate Bar.

No. 13,669. Patented Oct. 9, 1855.

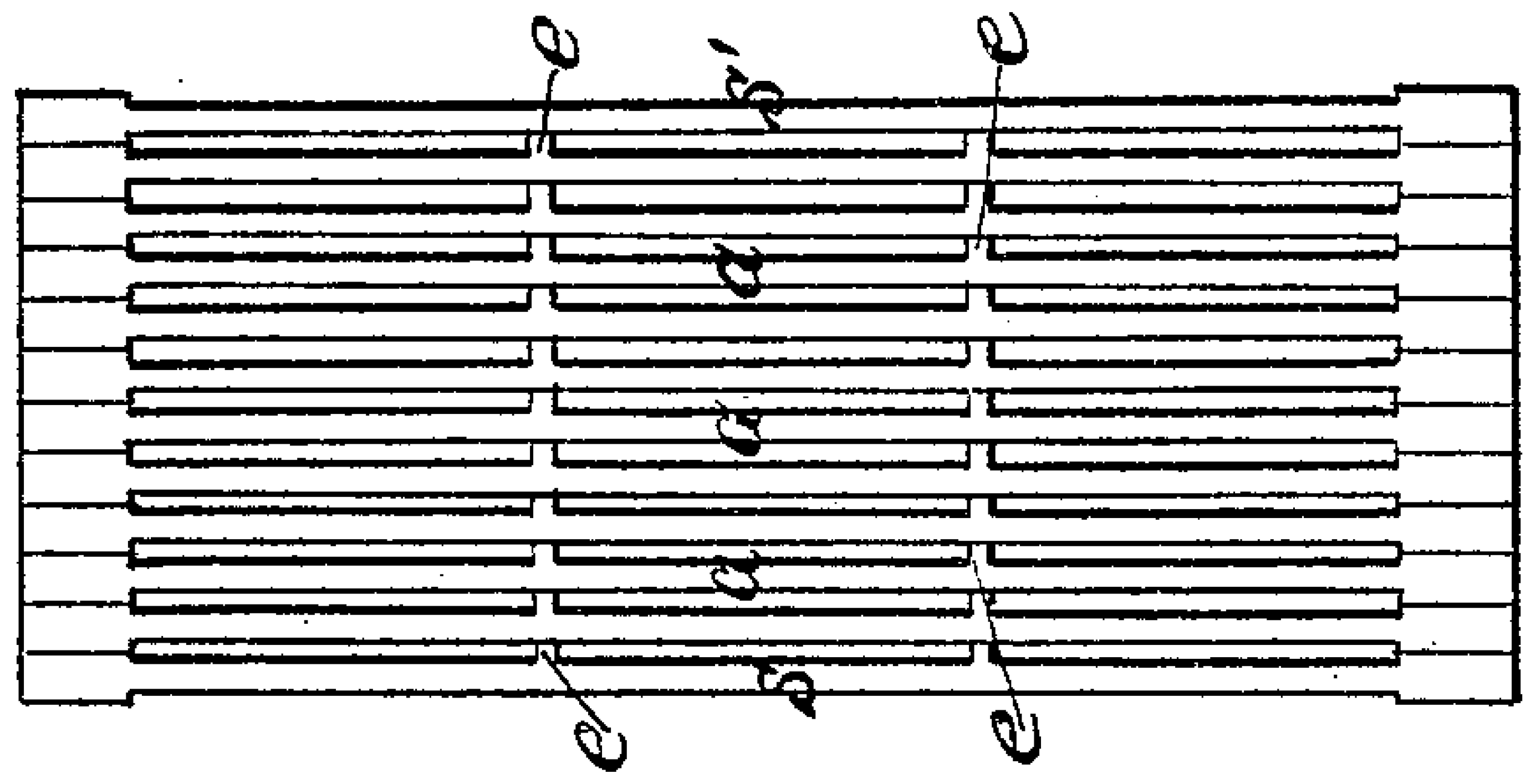

Fig. 3.

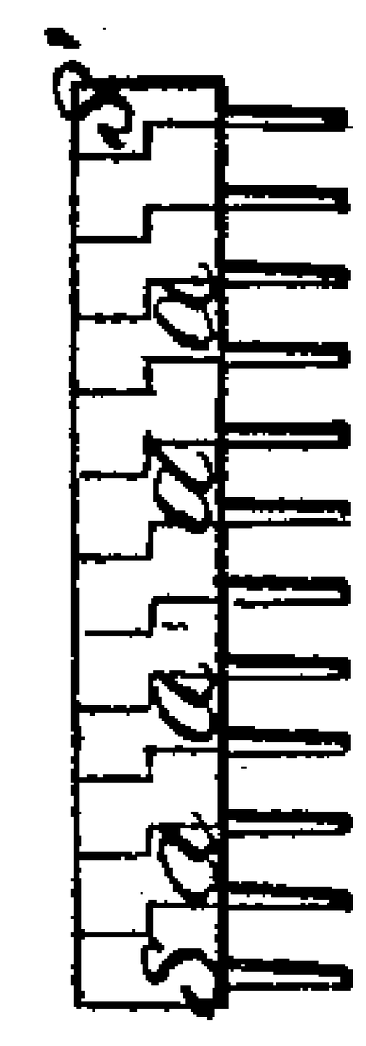

Fig. 4.

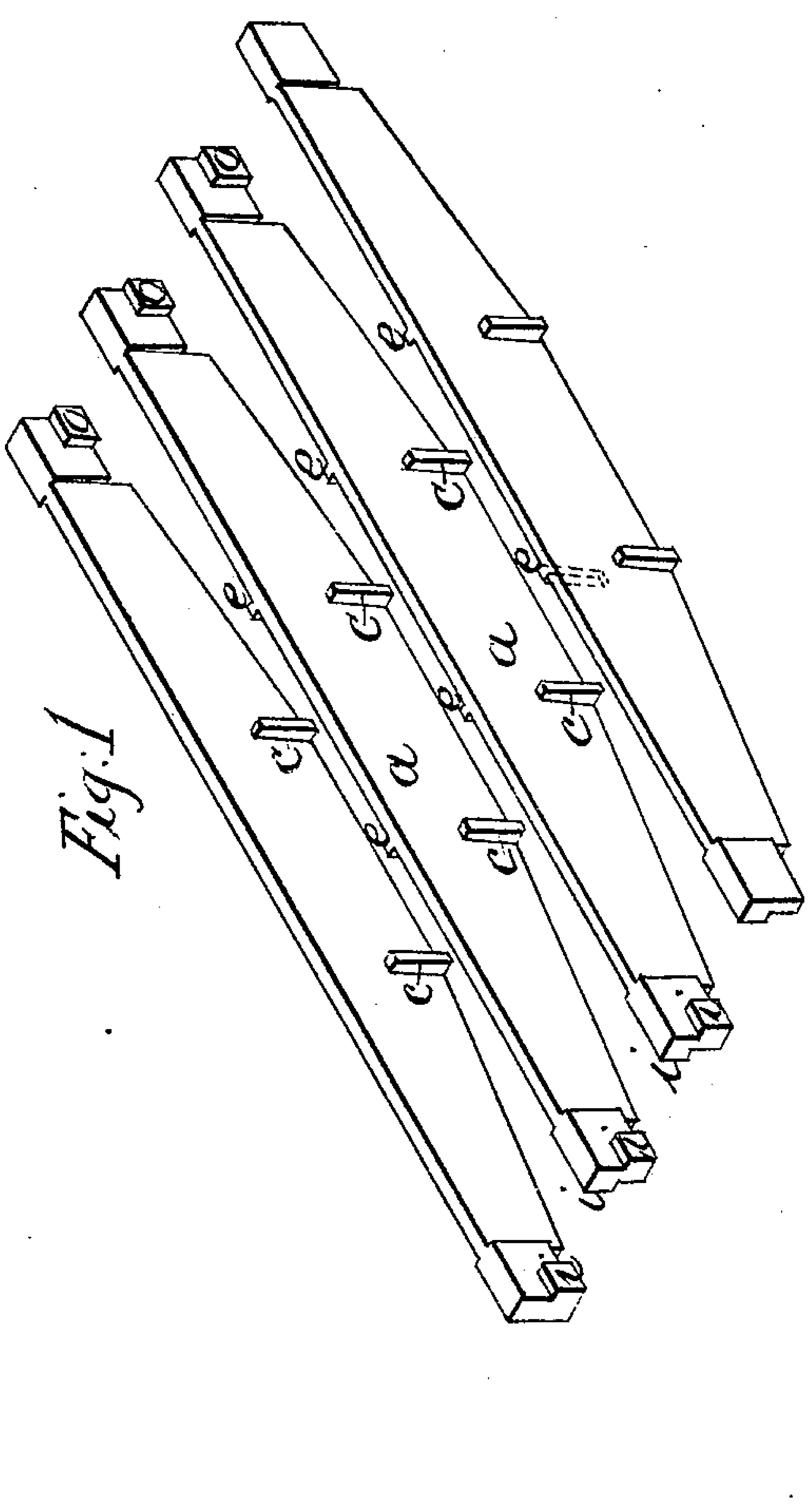

Fig. 1

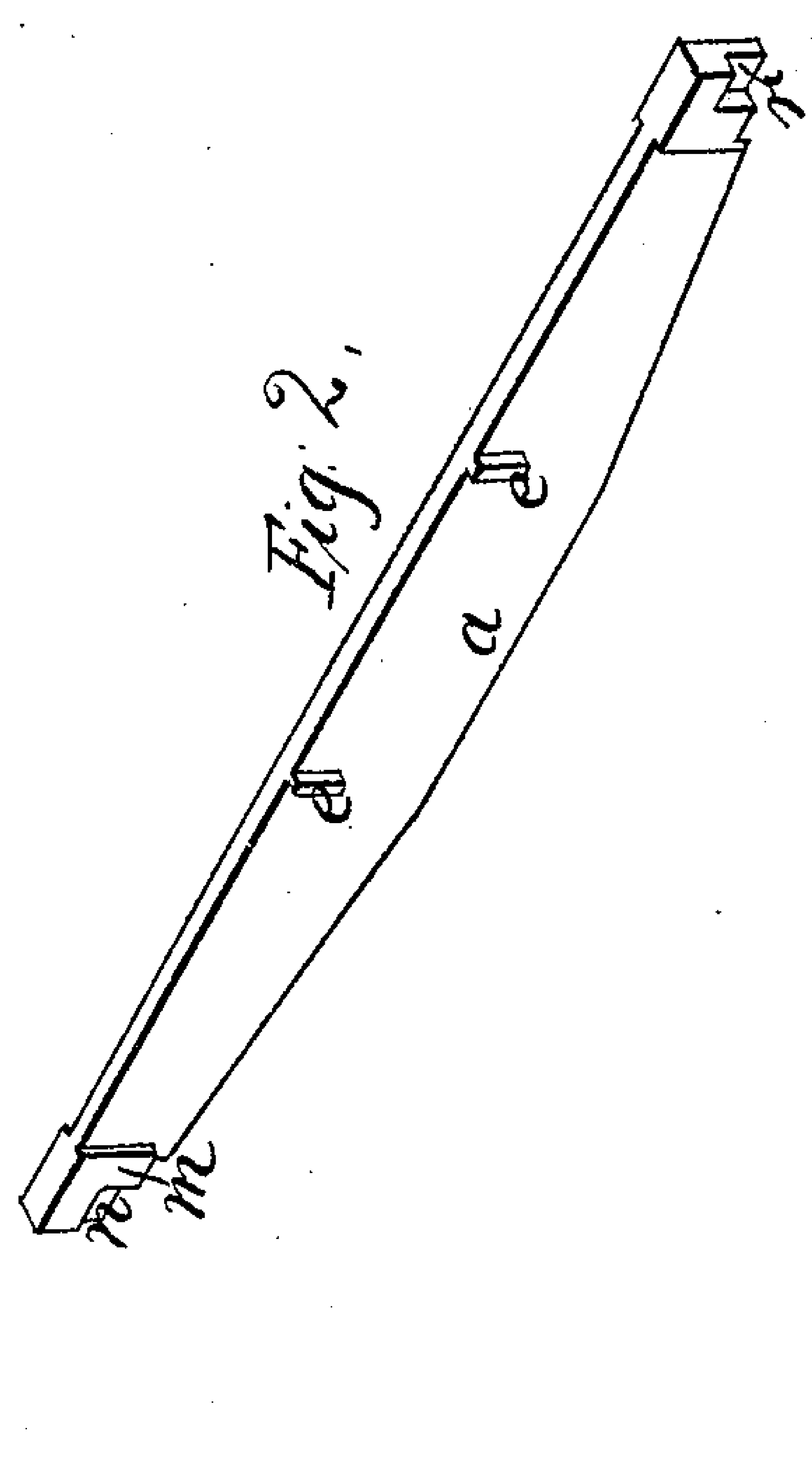

Fig. 2.

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

SAML. VANSYCKEL, OF JERSEY CITY, NEW JERSEY.

INTERLOCKING GRATE-BAR.

Specification of Letters Patent No. 13,669, dated October 9, 1855.

To all whom it may concern:

Be it known that I, SAMUEL VANSYCKEL, of Jersey City, Hudson county, State of New Jersey, have invented certain new and useful Improvements in Self Locking or Fastening Grate-Bars for Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1, represents a perspective view of several of the bars separated, to show the projections and depressions by which they catch and hold one with the other. Fig. 2 represents the reverse side of the bars as represented in Fig. 1. Fig. 3, represents a top view of a nest of bars as laid in the furnace, and Fig. 4, represents an end view of the same.

Similar letters where they occur in the several figures denote like parts.

The object of my invention is to so cast grate bars, as that they may be free to yield to the consequent expansion and contraction they are subjected to, but so that they shall not warp or twist by the heat, or get out of their proper places, from any cause, and consists in casting suitable projections and depressions on each bar under and against which they shall catch one on the other, so that the whole series, will firmly hold themselves in place, while a single bar may be readily removed and replaced by another in case it should give way.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

a, *a*, represent any suitable number of bars all cast exactly alike, and having upon one of each of their sides, projections *c*, *c*, which begin at or near the lower edge of the bar, and extend upward to about one half the height or depth of said bar; and on their opposite sides other projections *e*, *e*, which begin at or near the top of the bar and extend downward far enough to meet and rest on or against those *c*, on the adjacent bar. These projections, are slightly tapering on their outer sides so as to fit closely against the adjacent bars to keep them in place laterally, while those on one side of the bar are underneath, the set, on the adjacent bar, and thus prevent them from rising vertically.

The ends of all the bars (except the two extreme outside ones) are of a Z shaped form having projections *i*, *i*, on their opposite corners, under and over which similar projections on the next bar catch or interlock, (as seen in Fig. 4) to keep the ends of the bars from rising one above the other.

It will be perceived that, so far as described, the bars which are all alike, so fit or interlock with each other as to prevent them from rising vertically; and it only remains to be shown how they are similarly interlocked in a transverse direction, to prevent them sliding horizontally, farther than is necessary to allow for the natural expansion and contraction of the metal under the high degree of heat which they are to be subjected to.

By reference to Fig. 2, *m* represents a projection in rear of the recess *n*, which catches behind the projection *i*, on the next bar to it; and at the other end of the bar, is a projection *o* Fig. 1 which fits into a recess *r* (Fig. 2) in the adjacent bar, which prevents either bar from sliding horizontally. They are thus perfectly interlocked in a vertical and horizontal direction both, each bar being molded from the same pattern, and consequently perfectly matching, one with the other.

I have spoken only of the bars which lie within the two outside bars. These outside bars resemble at their ends an upright, and inverted L shaped appearance, and serve as keys to hold the nest of bars within them together, and are fully shown in Figs. 1 and 4, marked *s s′*. They have on their faces toward the center of the nest projections and recesses, over, under, and against which the projections and recesses on the bars *a*, *a*, catch and hold, as heretofore described.

To fill a furnace with the bars herein described the end bar *s* (Fig. 4), is first laid down, and then the bars *a*, *a*, *a*, one after the other, each being pushed up against the preceding one, until the furnace is filled just near enough, to drop in the end bar *s′*, which last named bar, may, as a better security, be keyed or otherwise fastened into the set, but as the heat is much less at the extreme sides of the furnace than at the

center, and the tendency of the bars to warp or twist correspondingly less, it will be found that the bars will furnish their own interlockings and fastenings without other appliances.

Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by Letters Patent, is—

The so casting of grate bars, with projections and recesses on their sides and ends, as that when laid together they shall interlock one over, under, or behind the other, in such manner as to prevent them moving vertically and horizontally, or from warping or twisting, while they may be readily removed or replaced, as herein set forth.

SAML. VANSYCKEL.

Witnesses:
M. MacGregor, Jr.,
N. P. Todd.