

(No Model.)

W. J. SIBLEY.
GRATE BAR.

No. 312,027.

Patented Feb. 10, 1885.

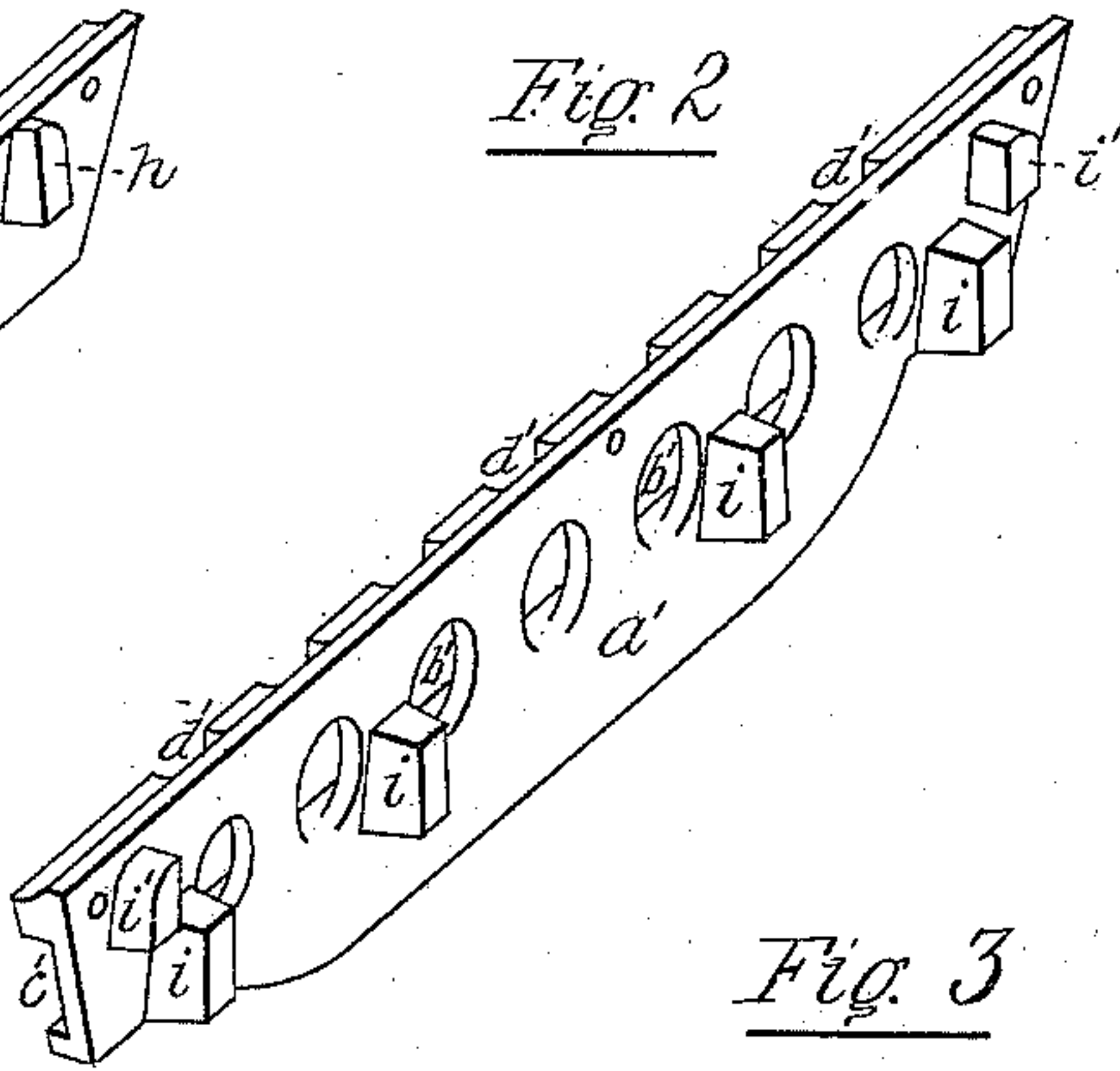
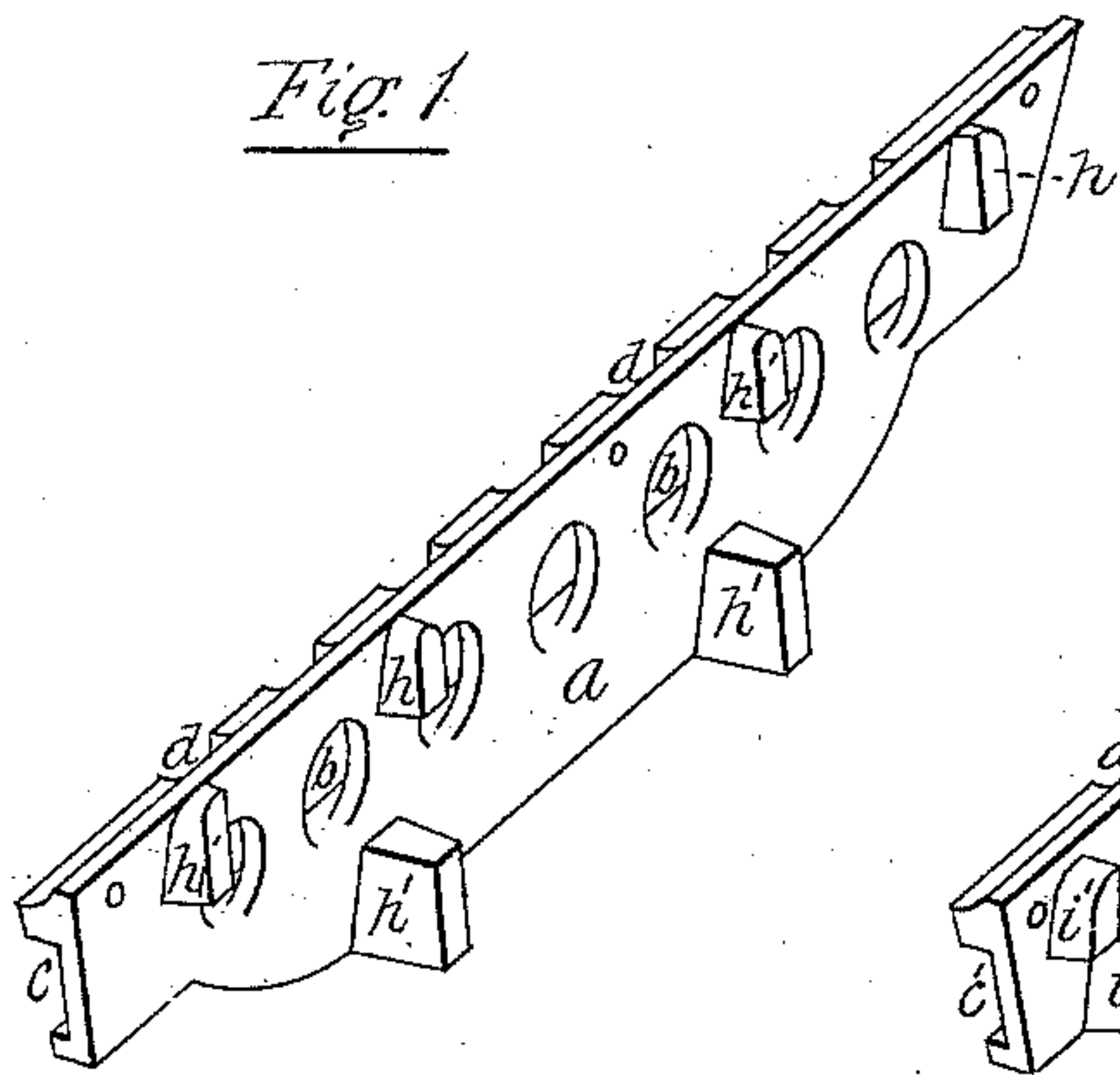


Fig. 3

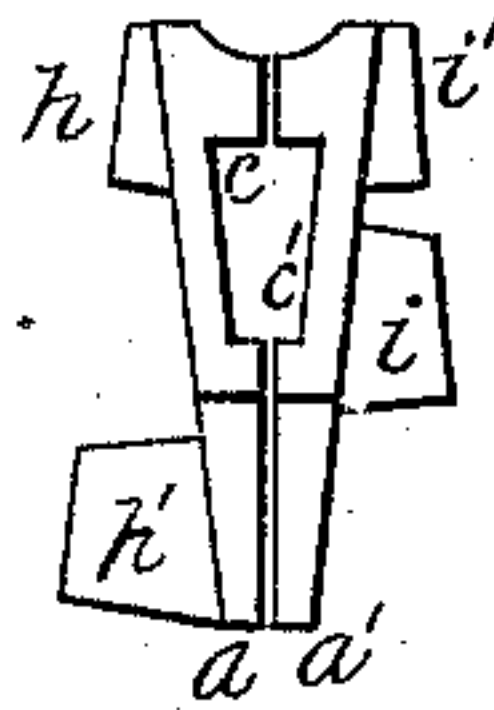


Fig. 4

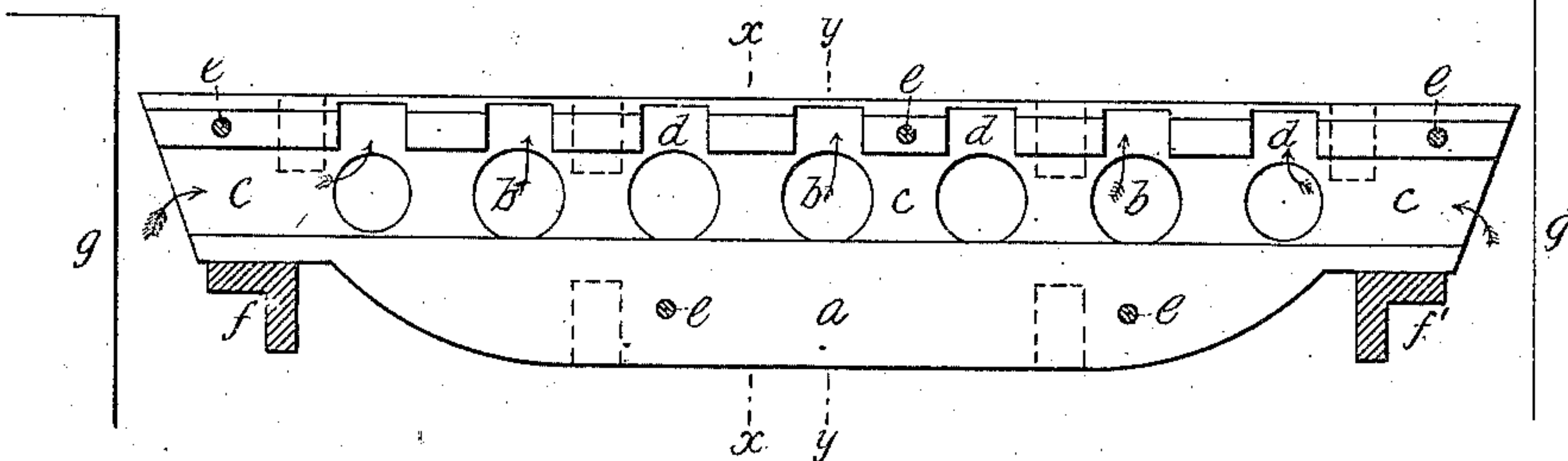


Fig. 5

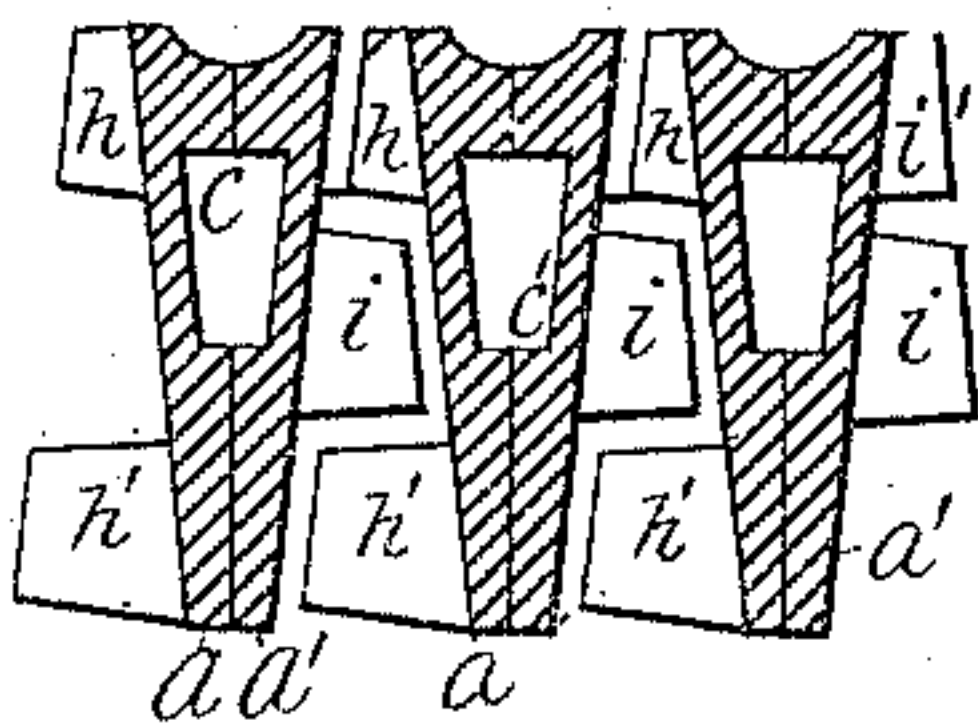
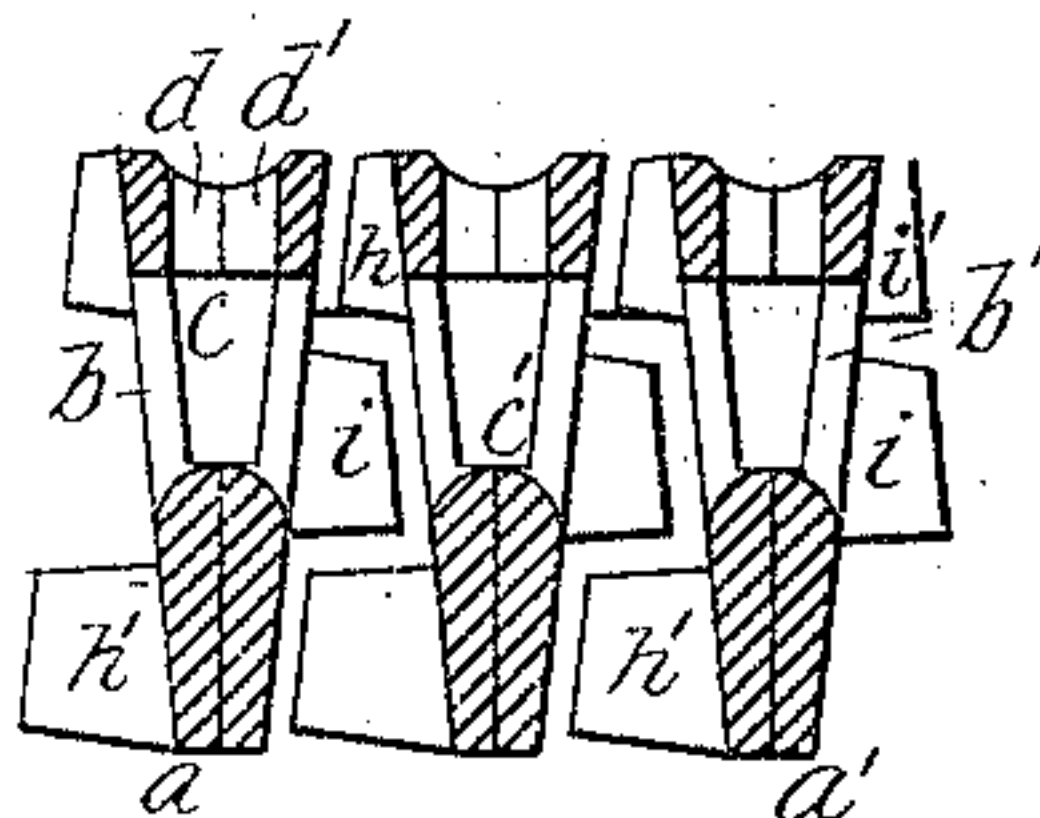


Fig. 6



Witnesses.

H. D. Williams

Chas. Watson

William J. Sibley

Inventor

per

Alfred Hedlock
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM J. SIBLEY, OF BROOKLYN, NEW YORK, ASSIGNOR TO GEORGE H. CLARKE, OF SAME PLACE.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 312,027, dated February 10, 1885.

Application filed April 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. SIBLEY, a citizen of the United States, and a resident of Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification.

The desideratum in the manufacture of furnace-grate bars made of cast-iron as now carried out is to produce the requisite strength with the minimum of metal, and simplify the molding process, to reduce the prime cost as much as possible, and to so construct the bar as to provide for a perfect supply of air to the fuel.

In the grate-bar forming the subject of this invention perforations are made through the sides, connected with openings on the top and a longitudinal passage which extends entirely through the ends of the bar, thus providing means for the perfect circulation of the air through the bar to the fuel, and removing from the interior a quantity of dead metal which adds little, if any, to the strength of the bar. To facilitate molding such a bar I avoid the use of all core work by making it in two halves, the line of junction of which is in a longitudinal vertical plane, and rivet the said halves together to constitute a hollow perforated grate-bar.

To insure against the twisting or warping of the bars, I form on the outer sides of the two halves a series of lugs so arranged as to interlock with the adjacent bars on the old interlocking plan when they are assembled in a furnace.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of one of the castings forming one half of a bar made according to my invention. Fig. 2 is a similar view of the other half. Fig. 3 is an end view of the two halves in position to be riveted together. Fig. 4 is a longitudinal section of a bar in a furnace. Fig. 5 is a transverse section of three bars on the line *x x*, and Fig. 6 is a transverse section on the line *y y* of Fig. 4.

The half *a*, Fig. 1, of the bar is shown in all the views as being to the left side of the completed bar, and will be so designated in this description, and the other half, *a'*, Fig. 2, as

the right-side half. Both halves *a* and *a'* have similar holes, *b* and *b'*, cast through them, which connect with the longitudinal grooves *c* and *c'* formed in their inner sides, extending from end to end, and vertical grooves *d* and *d'*, extending through their upper surfaces, so that when the two halves *a* and *a'* are secured together by means of the rivets *e e*, these grooves form passages connected with the side holes, *b* and *b'*. The lower parts of the two halves *a* and *a'* are solid, thus forming a closed bottom to the longitudinal groove *c c'*, and adding strength to the completed bar when the two halves are secured together.

The grate-bars, when set up in the furnace, rest at their ends on the bearers *f f'*, which are a short distance from the walls *g g* of the furnace, so that air can pass freely through the ends of the bars as well as through the side holes, *b b'*, to the apertures *d d'* in the tops of the bars, as indicated by the arrows in Fig. 4, thus providing means for an abundant supply of air to the fuel, the passage of the same through all parts of the bar, as indicated, tending to keep the bar uniformly cool throughout its length. The longitudinal passage *c c'* also insures a better distribution of the air from the side holes, *b b'*, to the apertures *d d'*.

The tops of the bars may be longitudinally grooved, as shown, to allow the air to be distributed more evenly through the fuel.

The ends of the bars are beveled or inclined from the bottom to the top side to prevent dust, &c., from the fire lodging in the ends of the longitudinal grooves *c c'*. The outer side of the left-side half, *a*, has a series of lugs or projections, *h h*, along its upper edge, and a series of lugs or projections, *h' h'*, along its lower edge; and the outer side of the right-side half, *a'*, is provided with lugs *i i* along its central part, arranged so as to fit between the lugs *h h'* on the half *a* when the bars composed of the two halves riveted together are placed side by side, thus locking the bars together and preventing the two halves from warping. The lugs *i' i'* at the ends of the right-side half, *a'*, control the longitudinal movement of the bars by contact with the end lugs or projections of the upper series, *h h*, on the left-side half, *a*.

The grate-bar may be made integral, with

the holes and air-passages, as shown, cast in it, with or without the side interlocking lugs; but I prefer to make it of two halves riveted together.

5 Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

10 In combination, the left-side half, *a*, having holes *b* and grooves *c* and *d* formed in its inner surface, with the right-side half, *a'*, having holes *b'* and grooves *c'* and *d'* formed in its inner side, and rivets *e e*, by which they are se-

cured together, thereby constituting a hollow grate-bar with longitudinal and vertical air-passages and side holes connected together, 15 substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand, at New York, county and State of New York, this 25th day of April, A. D. 1884.

WILLIAM J. SIBLEY.

Witnesses:

ALFRED SHEDLOCK,
H. D. WILLIAMS.