

P. MURRAY.

Grate.

No. 85,470.

Patented Dec. 29, 1868.

Fig. 2.

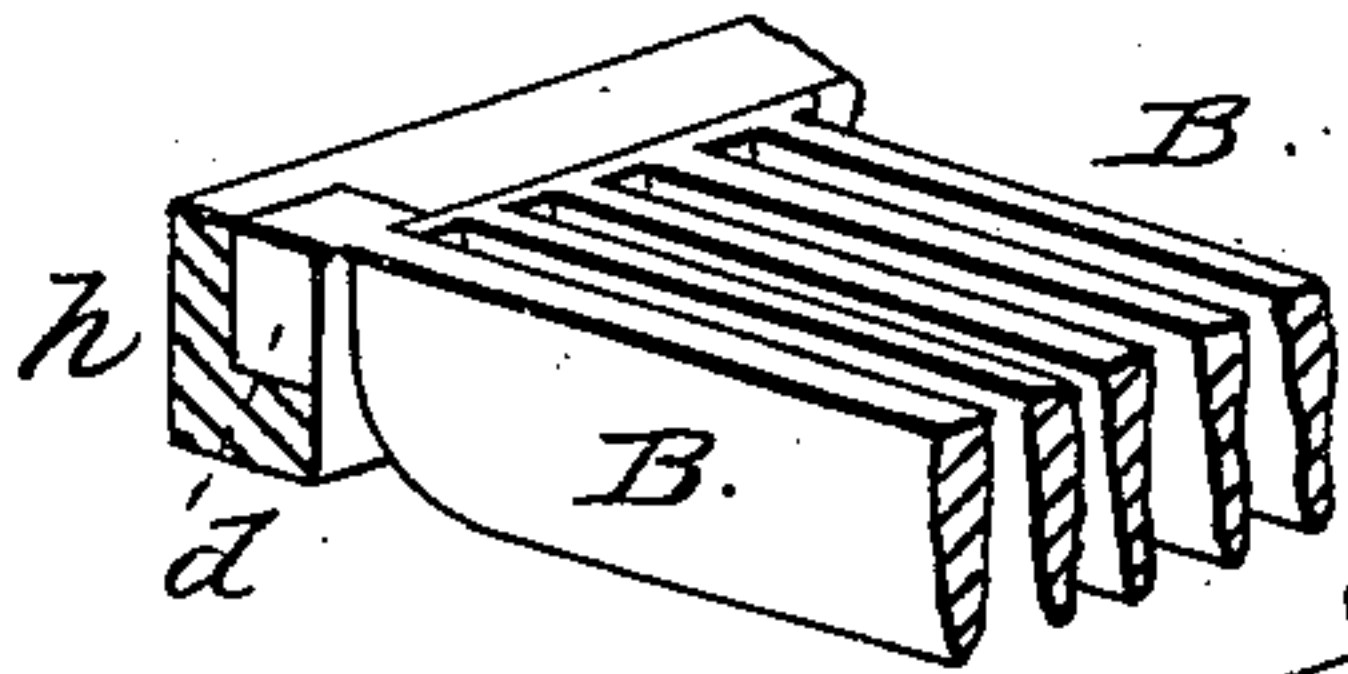


Fig. 1.

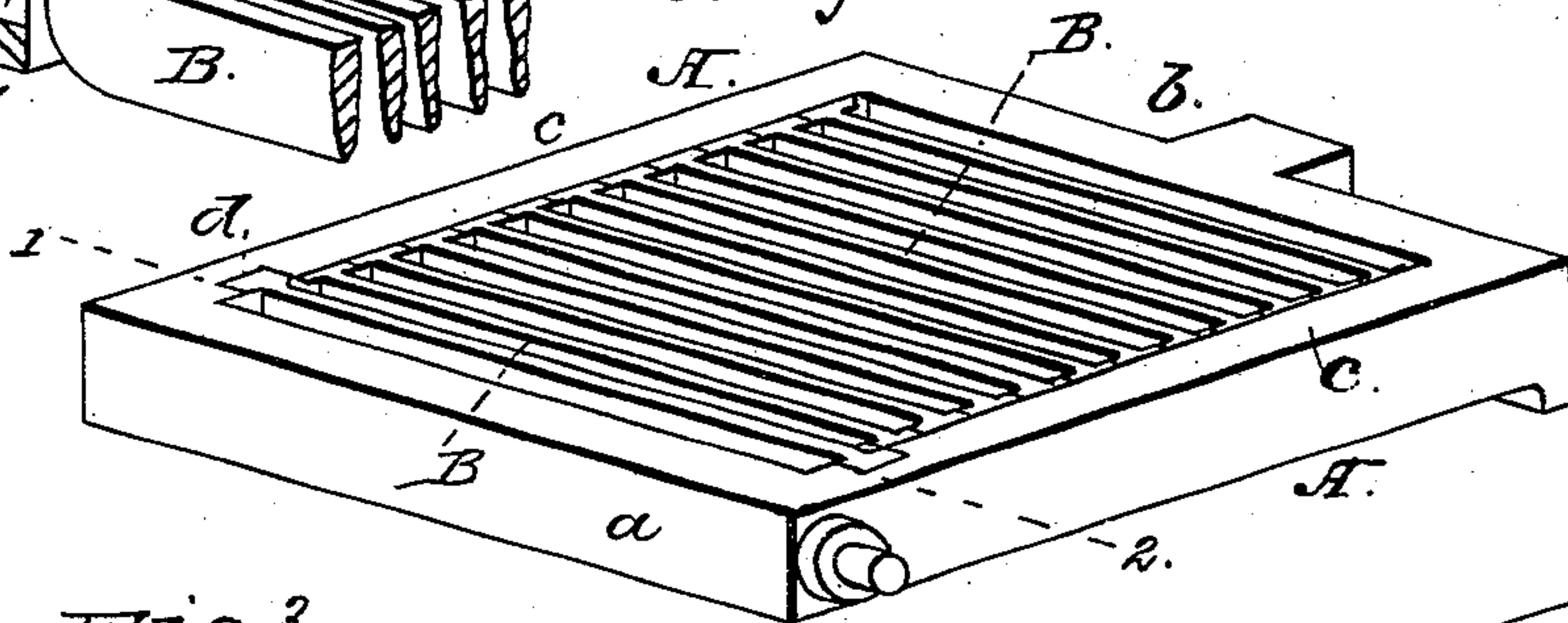


Fig. 3.

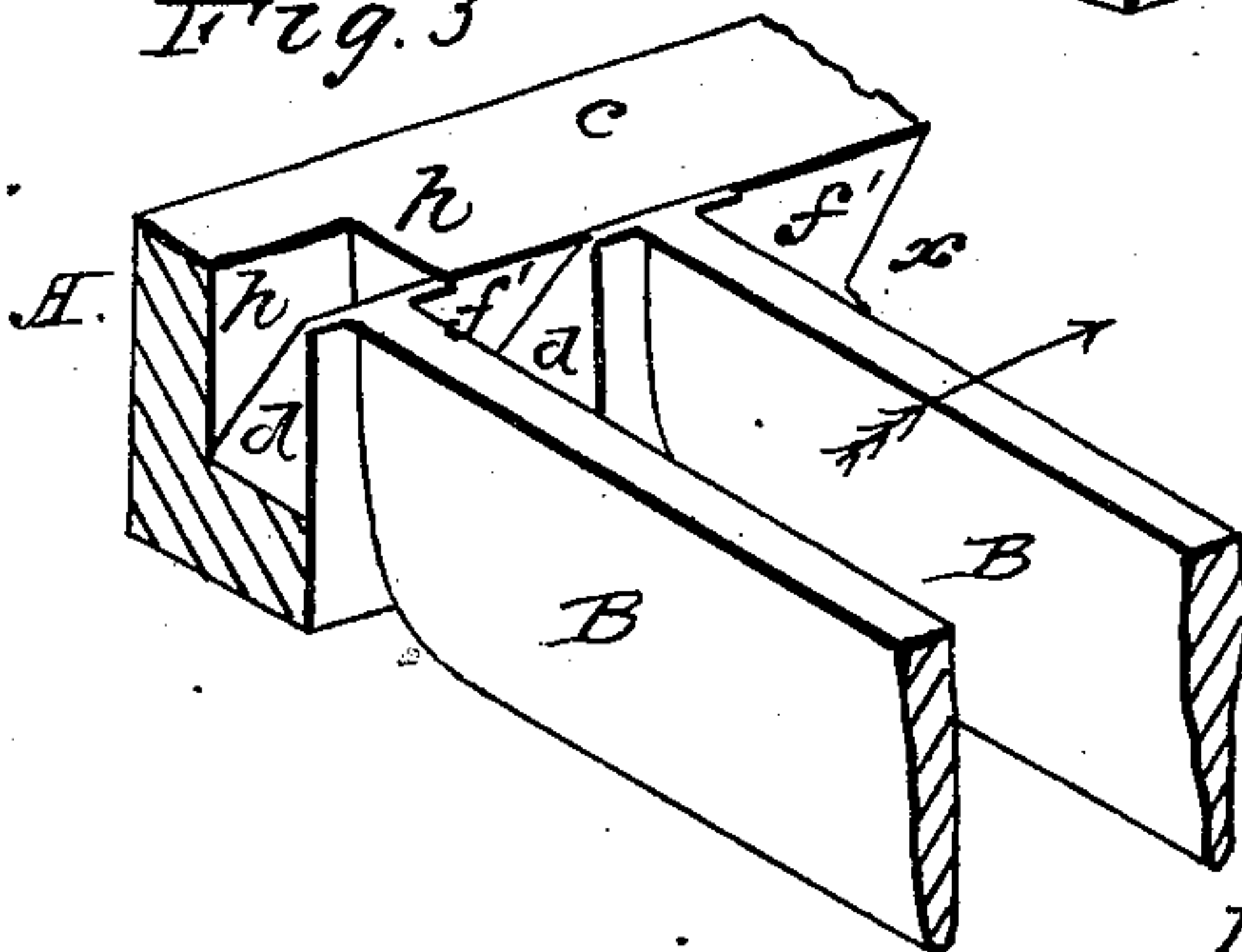


Fig. 4.

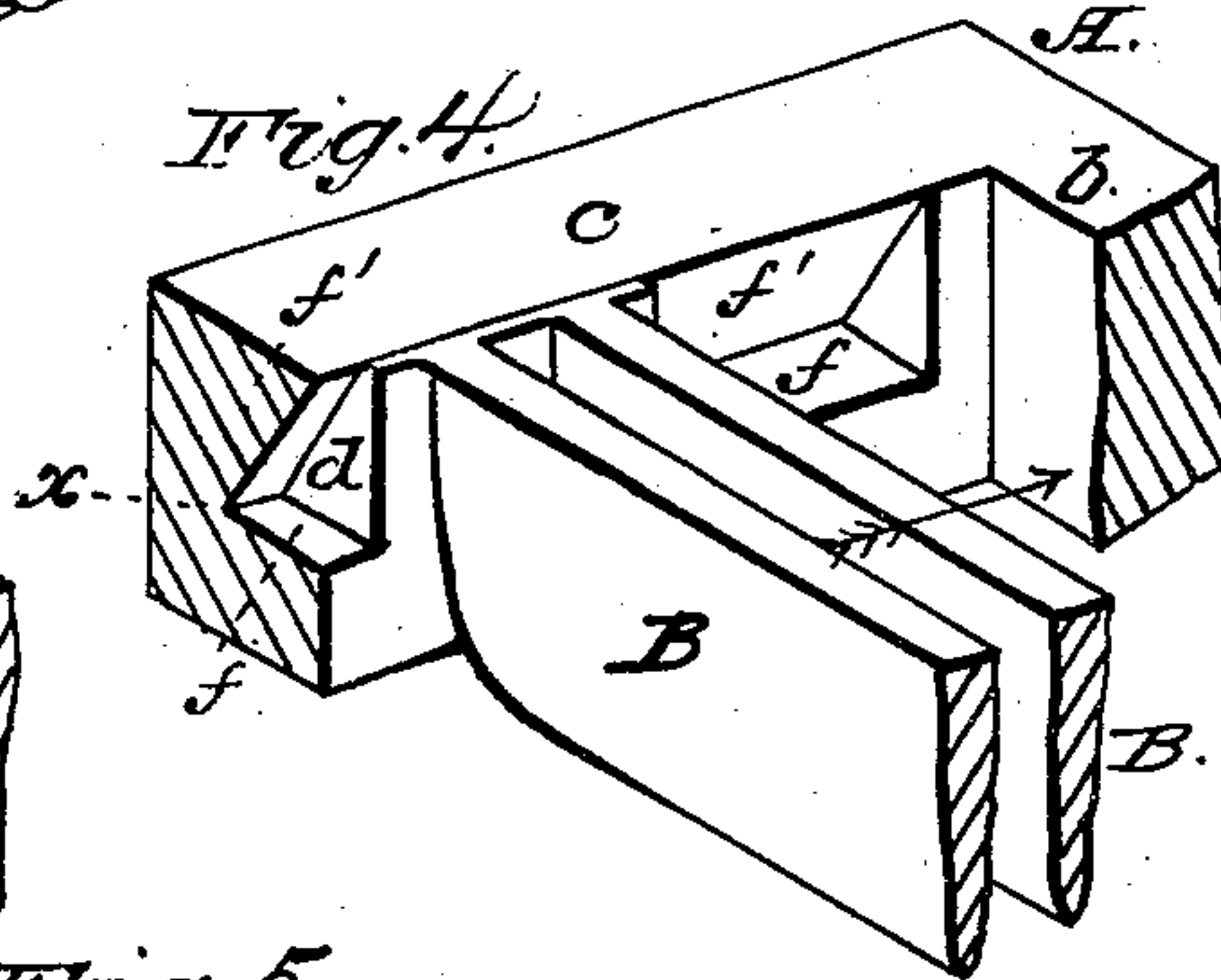


Fig. 5.

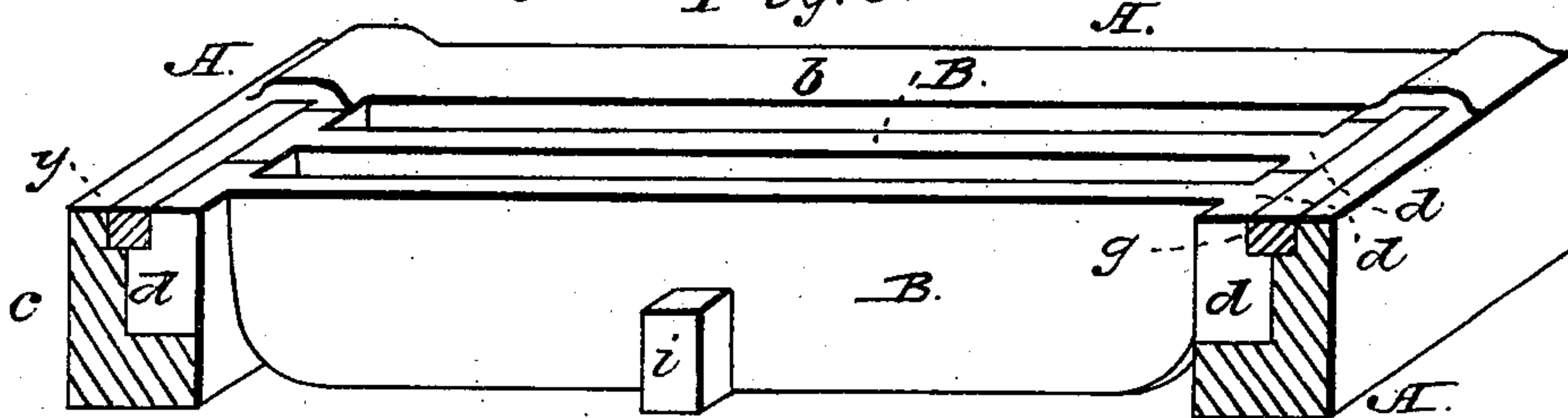
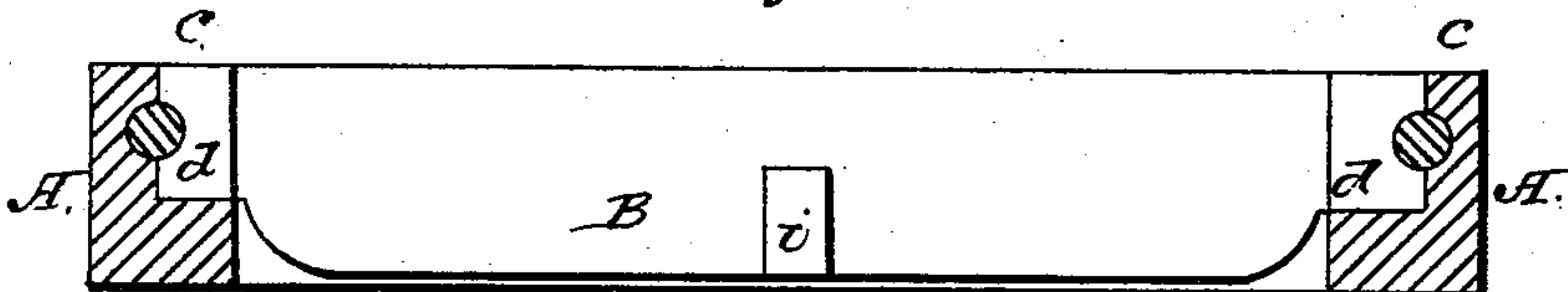


Fig. 6.



Witnesses

Wm. Steel  
John Parker

Inventor

Peter Murray  
by Henry Howson Atty





PETER MURRAY, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 85,470, dated December 29, 1868.

IMPROVEMENT IN GRATES.

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, PETER MURRAY, of Philadelphia, Pennsylvania, have invented an Improvement in Falling Grates; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists, first, in the combination, with the frame of a falling or hinged grate, of detachable grate-bars; and, secondly, of a frame adapted for the reception and retention of the said detachable grate-bars, as fully described hereafter.

The objects of the invention are, first, to prevent the losses which frequently occur from cracking of the castings, by unequal shrinkage and warping, when the frame and grate-bars are cast, as heretofore, in one piece; and, secondly, to enable burnt-out bars to be replaced by new ones when the frame is still perfect.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a perspective view of a falling grate with my improvement;

Figure 2, a sectional view of part of the same, on the line 1-2, fig. 1.

Figures 3 and 4, detached perspective views, drawn to an enlarged scale, showing the manner of inserting the detachable grate-bars; and

Figures 5 and 6, views representing modifications of my invention.

The falling or hinged grate represented in fig. 1, consists of a cast-iron frame, A, of which *a* is the back, *b*, the front, and *c c*, the opposite sides, the grate-bars B being made separate from this frame, and attached to it in a manner which I will hereafter describe.

Hitherto, it has been customary to cast the frame and grate-bars of a falling grate in one piece, the objections to which plan are as follows:

In the first place, in the manufacture of the grates, from thirty to forty per cent. of the castings are cracked and rendered useless, owing to the unequal shrinkage and warping of the frame and bars.

Another objection found on using these grates is, that when two or three of the bars become burnt out, although the frame and majority of the bars may be in good condition, the entire grate must be removed and replaced by a new one.

By casting the frame and bars separately, however, both of these objections are overcome, but few of the frames warping sufficiently to become cracked, while those bars which are burnt through can be readily withdrawn from the frame and replaced by others.

For attaching these separate grate-bars to the frame, I prefer the method shown in the first four figures of

the drawing, the frame and ends of the bars being prepared as follows:

On the inner edge of each of the side-pieces *c c* of the frame is a longitudinal wedge-shaped groove or recess, *x*, fig. 4, adapted for the reception of the ends *d* of the grate-bars, which are similarly shaped.

These ends *d* rest upon and are supported by the horizontal ledge *f*, within the groove, and they are prevented from rising vertically from the said groove by the inclined shoulders *f'* of the same, with which they are in contact.

At the rear end of each of the grooves *x* is a vertical passage, *h*, through which the ends of the bars are lowered in introducing them into the grooves, the bars, when thus inserted, being moved laterally towards the front of the grate, as indicated by the arrows, figs. 3 and 4, until a sufficient number has been introduced, the final bar being squared at the ends, instead of wedge-shaped, so that it may completely fill the passages *h*, and preserve the uniformity of the grate. (See fig. 2.) The squared ends of this final bar may also, if desired, be made to fit tightly into these passages, so that when the grate is tilted the bar may have no tendency to fall from its place.

It will be understood that these inserted bars are maintained at a proper distance apart from each other by their widened ends and the usual projections *i*, and that these widened ends and projections are in close contact with each other, and prevent any movement or rattling of the bars in the frame.

In the modification of my invention shown in fig. 5, the ends of the bars do not enter grooves, but rest upon ledges of the frame, and are retained in their places vertically by a square rod, *y*, (secured at either end to the frame,) which bears upon their recessed upper edges.

Another modification, somewhat resembling the above, is shown in fig. 6, a round rod being in this case employed, which enters a semicircular recess formed in the ends of the grate-bars.

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

1. The combination, with a falling or hinged grate, of detachable bars B, for the purpose specified.

2. The frame A of a falling grate, adapted for the reception and retention of detachable grate-bars B, substantially as herein set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

PETER MURRAY.

Witnesses:

JOHN WHITE,  
HARRY SMITH.