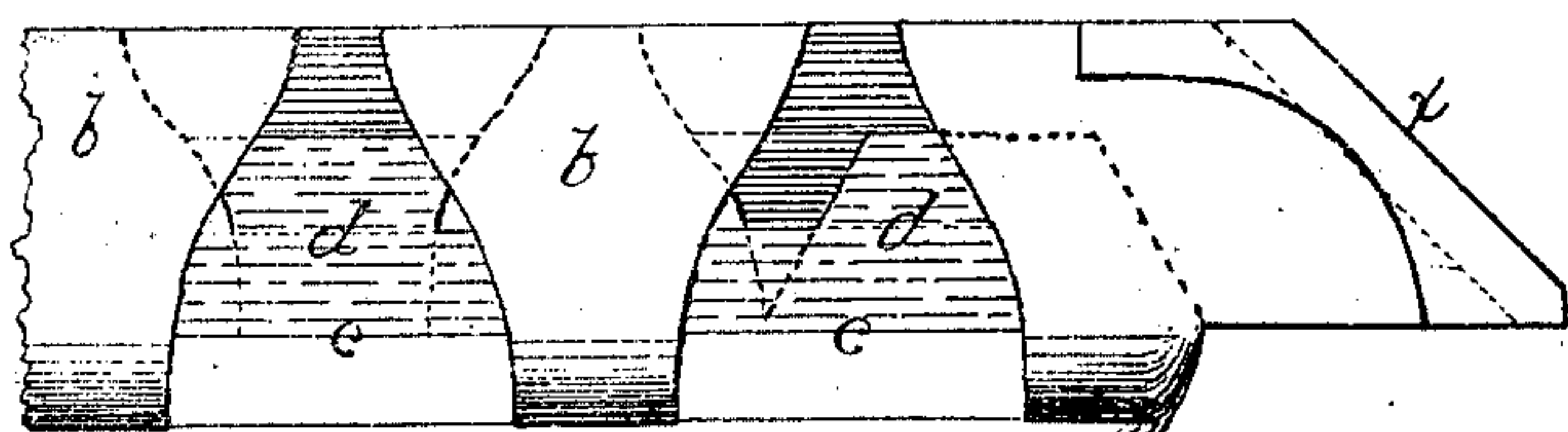


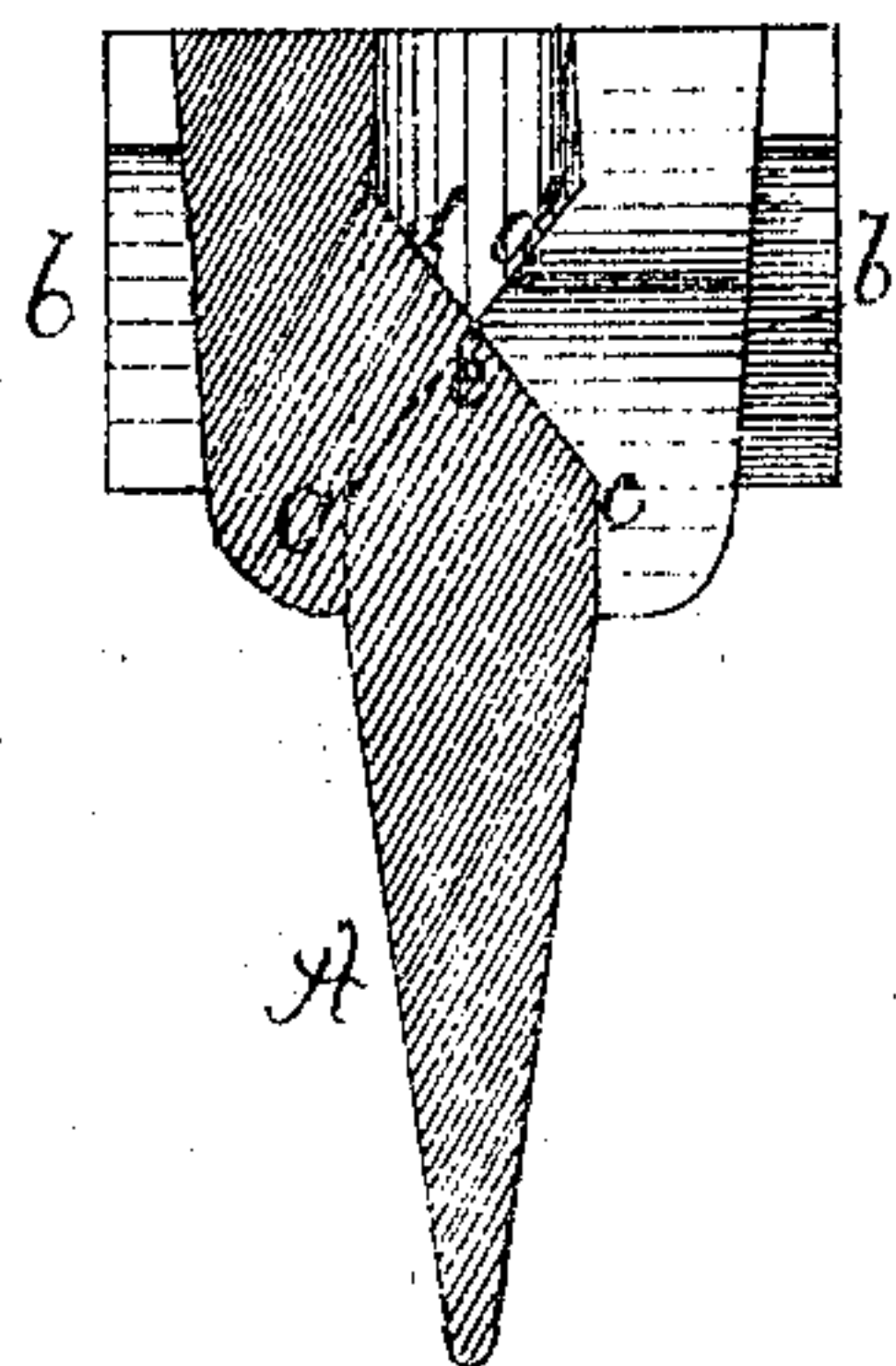
# Henry Collinson's GRATE BAR.

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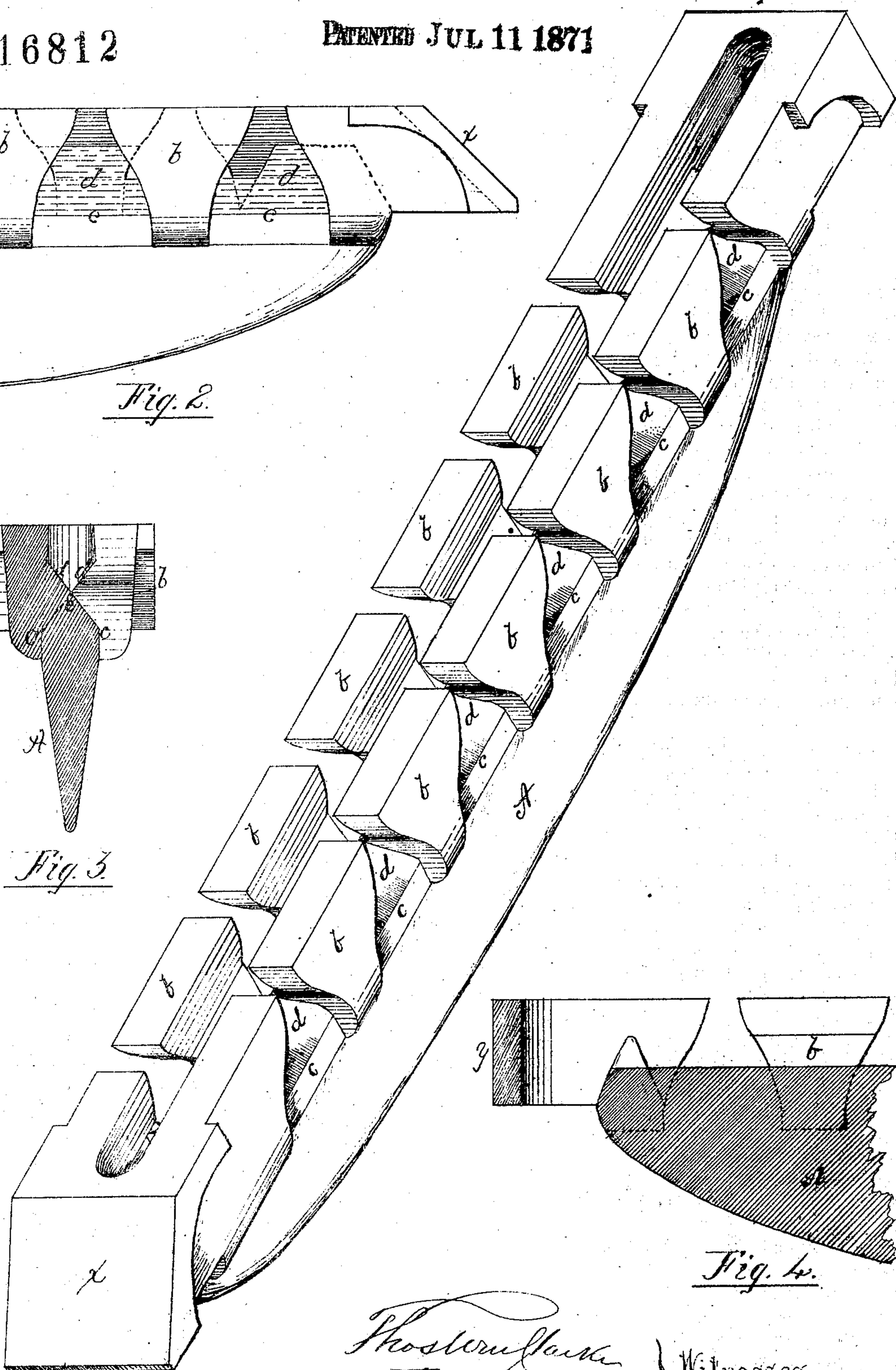
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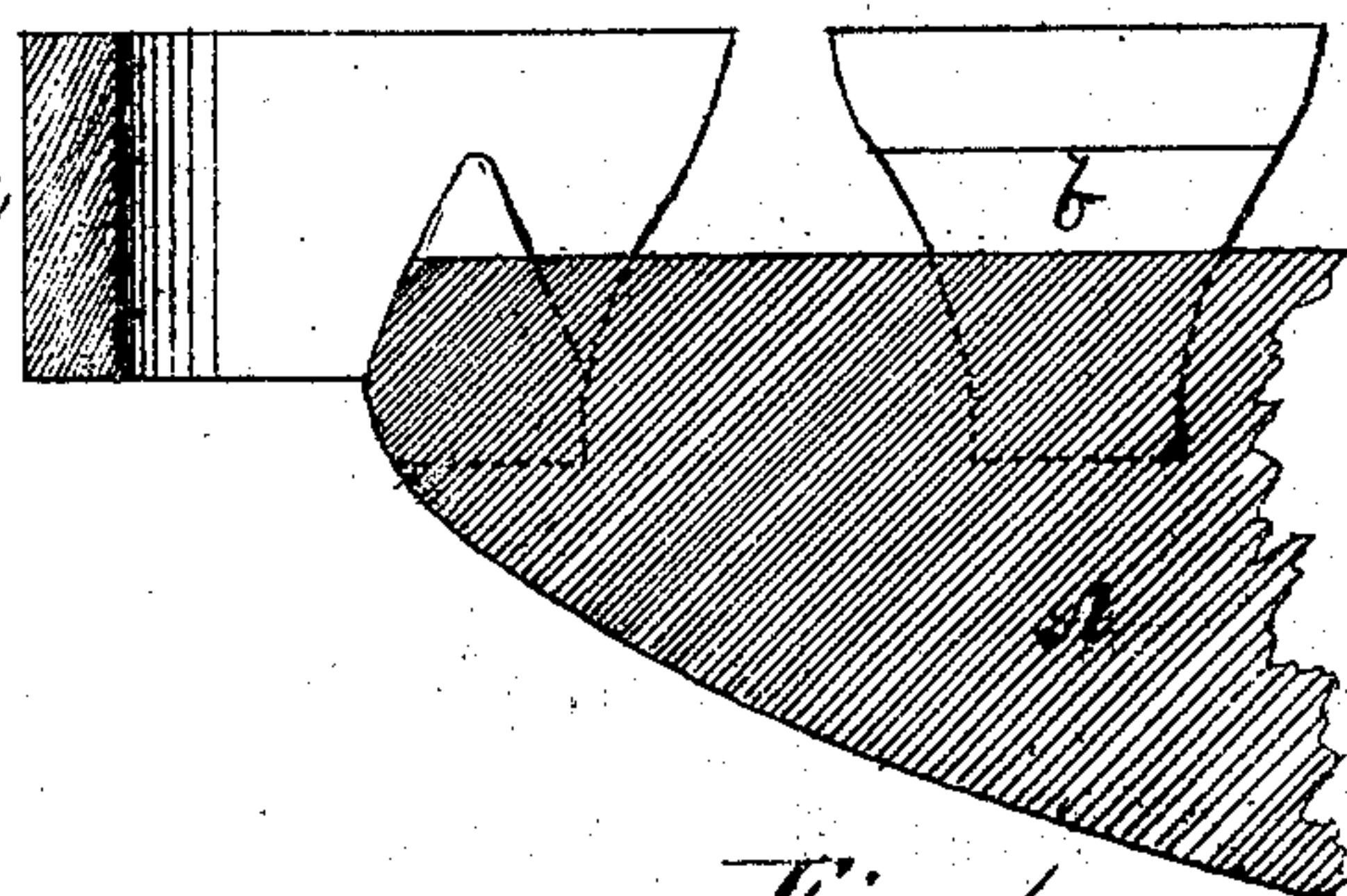
*Fig. 2.*



*Fig. 3.*



*Fig. 1.*



*Fig. 4.*

*Thos. W. Clark  
John Stevens*

*Witnesses.*

*Henry Collinson* Inventor.



# UNITED STATES PATENT OFFICE.

HENRY COLLINSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND  
NATHAN W. HAZEN, OF SAME PLACE.

## IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. 116,812, dated July 11, 1871.

*To all whom it may concern:*

Be it known that I, HENRY COLLINSON, of Boston, in the State of Massachusetts, have invented a new and useful Improvement in Grate-Bars, whereof the following description and claim are sufficient to enable others to make, use, and ascertain my invention.

The nature of my invention consists in combining, with a central web and on either side of the same, a series of props or supports for the fuel, somewhat larger at the top than at the bottom, and corbelled out from the web, the spaces on one side being opposite the props on the other, and the space above the web, between the two lines of props or supports, being partially filled by inclined planes alternately sloping to the two sides of the web, the intermediate upper surface of the web presenting a sharp ridge upward. This is practically a device for supporting the fuel on the ends of the post with air-spaces between, and the details of the invention are as follows.

In the drawing which accompanies and forms part of this specification, Figure 1 is a perspective view of the bar. Fig. 2 is a side elevation of the end marked *x*, Fig. 1. Fig. 3 is a transverse section through a block, *b*, and inclined plane, *d*; and Fig. 4 is a longitudinal section at end *y*.

*A* is the web. On either side thereof is formed, in casting, a series of props or fuel-supports, longer at the top than at the bottom, and preferably having their ends shaped with an ogee-curve, as shown. It is slightly corbelled out from the sides of the web *A*, and is lettered *b b*. The fuel is to rest upon that surface of these props which is presented upward, and through the spaces between these props air passes to aid combustion. To prevent clogging with ashes and strengthen the attachment of these props *b b* to the web *A*, an inclined plane, *d*, is formed in casting from the inner vertical surface of each prop, *b*, downward and outward through the opposite space to the exterior surface of the web at the line *c c*. These inclined planes, from opposite sides, are not allowed to come together so as to form a valley at any point in the center over the web; but the fuel-supports or props *b b* are so proportioned and arranged that the point at which an arris of any incline crosses the median line of the web is always at a small distance from the point at which the next adjacent opposite incline crosses it, and the web, being beveled both ways in continuation of each adjacent incline, presents upward a sharp angle, *e*. I find that if the arrises of two opposite inclines

meet, a place of lodgment for ashes is there made; but if the inclines run directly from each prop out through the opposite space, and no valley of surface, or even of line, is made, the bar readily and constantly clears itself of ashes.

May 5, 1868, by Letters Patent No. 77,458, I patented a bar called the paragon bar, which has been very popular. The present bar admits to the fuel more than twice as much air as the paragon. That required very many cores to each bar, all directly across the bar or diagonally across it. This bar can be cast in green sand, having a single longitudinal core down to the top of the web only. The paragon bar could not be cast in frames, because of the laterally-projecting core-points. This, if desired, can be. I am advised these advantages will save nearly twenty per cent. in the cost of manufacture, and, as the present bar is lighter, I can afford a superior bar at less price than formerly.

The fire can be sliced as with an ordinary grate-bar, by reason of the alternation of the props or fuel-supports on opposite sides; and, since the props or fuel-supports are each of them independent of the others they will each have an independent expansion, while the position of the web in the cooler air of the ash-pit secures from warping or twisting, the expansion in length of the bar being only that due to the temperature of the web, the action of heat on the fuel-supports *b b* not extending to the web *A* at all.

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

1. The arrangement of the props or fuel-supports *b b* alternately on either side of web *A*, and projecting upward from it, substantially as and for the purpose described.

2. The arrangement of said fuel-supports *b b* with web *A*, having inclined planes *d d* from the interior vertical surface of said fuel-supports to the opposite exterior of web *A*, substantially as and for the purpose described.

3. The web *A*, formed on its top by the extension and continuation of said inclined planes *d d* from the lines *c c* on either side of web *A*, so as to form a sharp ridge between the alternate opposite arrises of the adjacent inclined planes, substantially as and for the purpose described.

Witness my hand this 20th day of March, A. D. 1871.

Witnesses: HENRY COLLINSON.  
THOS. WM. CLARKE,  
JOHN STEVENS.