(No Model.)

T. MAITLAND.

Grate Bar.

No. 234,047. **Patented Nov. 2, 1880.**

Fig. 1.

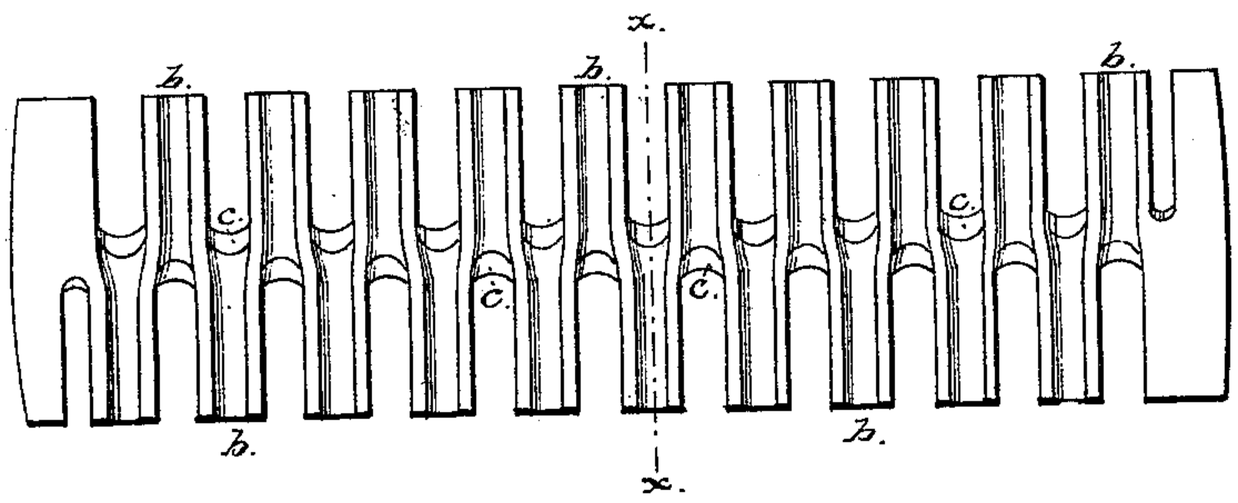


Fig. 2.

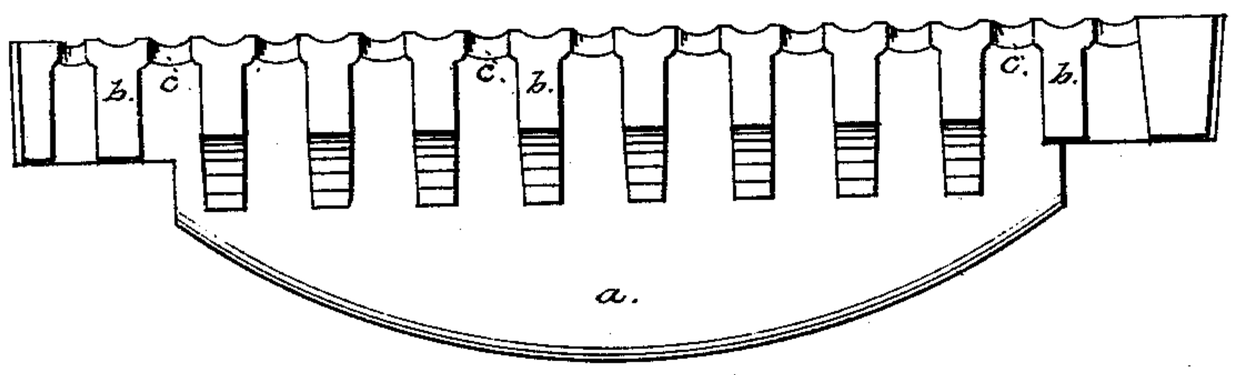
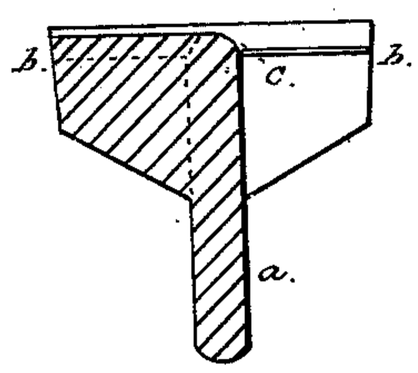


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS MAITLAND, OF WILLIAMSPORT, PENNSYLVANIA.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 234,047, dated November 2, 1880.

Application filed September 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MAITLAND, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Grate-Bars; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention is intended as an improvement upon the grate-bar for which Lucian H. Allen and William Bartow have obtained a patent, numbered 181,892, and dated September 5, 1876; and it consists in the peculiar construction and arrangement of the various parts composing such grate-bar, all of which will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 represents a top view; Fig. 2 a side view, and Fig. 3 a transverse vertical section on the line *x x*, Fig. 1, of my improved grate-bar.

In the drawings, *a* represents the longitudinal bearing-bar, and *b* the cross bars or ribs which extend at right angles from both sides of the bar *a*. The cross-bars *b* at one side of the bearing-bar break joints with the bars at the other side, and are of straight-lined shape from the bearing-bar to their outer ends, grooved at the top, which is flanged, and extending downward with slightly tapering sides about half the depth of the bearing-bar. The cold air passes around the lower part of the cross-bars and thereby keeps them cold, and thus prevents their warping and twisting from the intense heat of the fire. The cross-bars are disconnected from each other at the ends, so as to enable their separate expansion and contraction.

The bar *a* has the same width throughout its entire depth, such width being equal to that of the flanged top of the side bars, *b*. On the upper surface of the bearing-bar are grooved spaces *c* between the cross-bars *b*. These spaces *c* connect directly with the grooves on the top of the cross-bars, which are arranged on the side of the bearing-bar opposite to such grooved recesses. The object of these grooved recesses *c*, in connection with the grooves on top of the flanged cross-bars, is to provide an easy and effective way for removing the ashes, sand, &c., which in the use of sawdust fuel and the like chokes up the air-spaces by baking fast to the bearing-bar. The object of the flanged-top cross-bars with slightly tapering sides is to afford an easier and better means for removing clinkers, &c.

By constructing the cross-ribs at right angles to the bearing-bar I am enabled to cast the whole grate in one piece, and thus make a grate-bar with less labor and expense than would be the case if the cross-ribs were curved, when it becomes necessary to form the grate in segments, from the fact that the curvature of the cross-ribs renders coring difficult and tedious.

When it is desired to place two or more bars side by side, the ends of the cross-bars of one grate-bar come opposite the spaces of the adjoining grate-bar, so as to break joints therewith, and thus permit the air to pass freely between the ends of the cross-bars, thereby keeping them cool.

Having thus described my invention and set forth its peculiar advantages, what I claim is—

A grate-bar consisting of a longitudinal bearing-bar, *a*, with recesses *c*, and straight-lined cross-bars *b*, with grooved and flanged top and slightly downwardly tapering sides extending at right angles from both sides of the bearing-bar and disconnected at their outer ends, the cross-bars at one side breaking joints with those at the other side, and the grooves thereon connecting with the recesses in the bearing-bar, substantially as described, and for the purpose specified.

This specification signed and witnessed this 16th day of September, 1880.

THOMAS MAITLAND.

Witnesses:
JAS. M. WOOD,
JOHN M. HAYES.