A. WHITTEMORE.

Grate-Bars.

No. 148,013. Patented Feb. 24, 1874.

Fig. 1

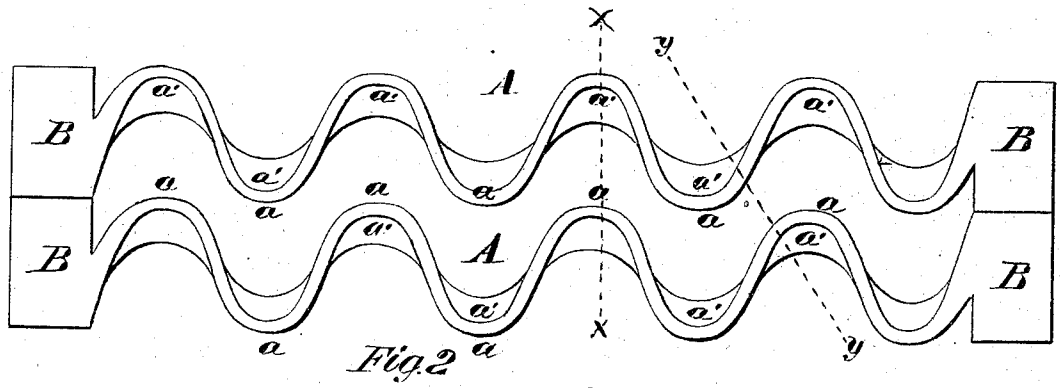


Fig. 2

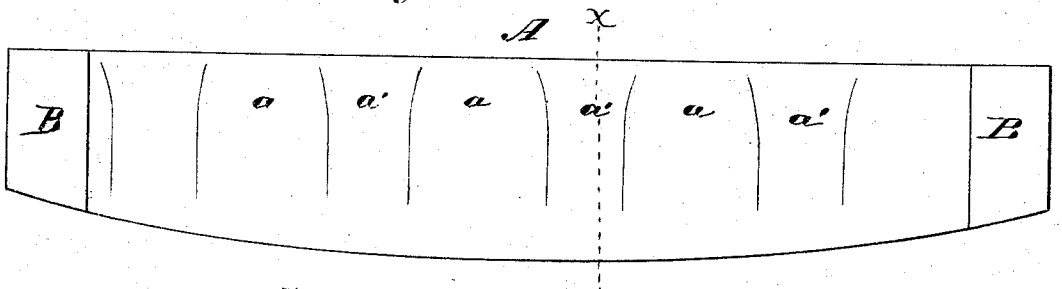
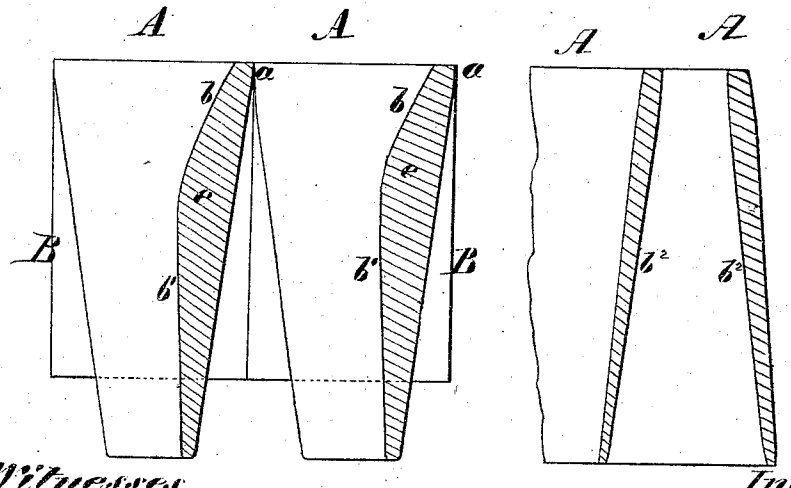


Fig. 3 *Fig. 4.*



Witnesses.

George E. Upham,
Jos. B. Loomis.

Inventor

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UNITED STATES PATENT OFFICE.

AMOS WHITTEMORE, OF CAMBRIDGEPORT, MASSACHUSETTS.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **148,013**, dated February 24, 1874; application filed October 16, 1873.

To all whom it may concern:

Be it known that I, AMOS WHITTEMORE, of Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented a new and valuable Improvement in Grate-Bars; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of my grate-bar. Fig. 2 is a side view of the same. Figs. 3 and 4 are sectional views of the same.

This invention has relation to serpentine grate-bars for steam-boiler furnaces and other purposes; and consists in a vertically-tapered serpentine bar, which presents very thin upper and lower edges, and which is thickened at certain points between these edges for giving the required strength to the bar, and at the same time leaving an upper and a lower flaring surface, as will be hereinafter explained.

The following is a description of my improvement:

For the purpose of more clearly setting forth my improvement, I have represented in the annexed drawings two grate-bars arranged parallel to each other, so that the convex portions of one bar are opposite the concave surfaces or portions of the adjacent bar. These bars A A are regularly corrugated or waved horizontally, so as to present alternate convex surfaces *a* and concave surfaces *a'*, which will allow the bars to expand and contract without sagging in the middle or cracking. My object is to so construct bars of this kind that the greatest amount of air-space is afforded with a due regard to strength; and to this end the bars are made quite thin along their upper and lower edges. The convex surfaces *a* are beveled or sloped downward, and the concave surfaces *a'* are beveled from the thickest parts *e*, both upward and downward, so as to present two obtuse surfaces, $b\ b^1$, as shown by the sectional view, Fig. 3. By making a vertical section obliquely through the two bars in the plane indicated by dotted line *y y*, Fig. 1, the opposite inner surfaces $b^2\ b^2$ are seen to flare downwardly, as in Fig. 4.

It will be observed that the spaces which are left between the bars flare both upward and downward, thus allowing currents of air to ascend freely through them. At the same time the downward flare given to the bars prevents the lodgment of ashes between them, and thus keeps the spaces open for the admission of air to the bed of coals.

It will be seen, from the above description, that I improve corrugated grates by beveling their sides in such manner that a much larger amount of air-space is left between the bars than in grates of this kind hitherto made. This I do, without weakening the bars, by thickening them between their upper and lower edges, which allows me to bevel them above such thickened portions, and thereby reduce their edges very thin. It will also be observed that the corrugations extend from the upper to the lower edges of the bars; and hence I obtain the advantage of free expansion and contraction due to the waved shape of the bars throughout.

I do not claim, broadly, a corrugated grate-bar, as such a bar is shown in the schedule annexed to Letters Patent numbered 23,456.

What I claim as new, and desire to secure by Letters Patent, is—

A corrugated or serpentine grate-bar, as herein described, constructed with beveled surfaces $b\ b^1\ b^2$, terminating in very thin upper and lower corrugated edges, and thickened at *e*, substantially as and for the purposes described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

AMOS WHITTEMORE.

Witnesses:

GEORGE E. UPHAM,

J. B. LOOMIS.