

E. M. ERDMAN.

Furnace Grate-Bars.

No. 167,230.

Patented Aug. 31, 1875.

Fig. 1

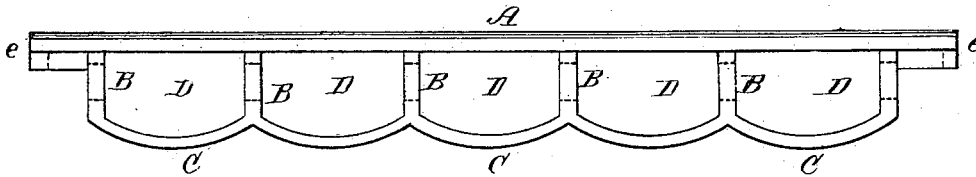


Fig. 2.



Fig. 3.

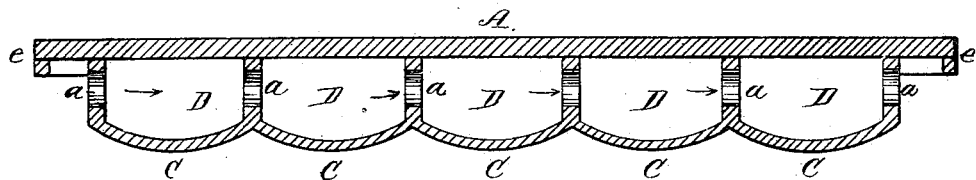
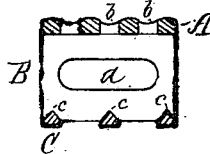


Fig. 4.



WITNESSES:

T. D. J. Curran  
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INVENTOR.

Edward M. Erdman,  
per Charles C. Fowler,  
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# UNITED STATES PATENT OFFICE.

EDWARD MARION ERDMAN, OF LYKENS, PENNSYLVANIA.

## IMPROVEMENT IN FURNACE GRATE-BARS.

Specification forming part of Letters Patent No. **167,230**, dated August 31, 1875; application filed August 6, 1875.

*To all whom it may concern:*

Be it known that I, EDWARD M. ERDMAN, of Lykens, in the county of Dauphin and State of Pennsylvania, 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 drawing is a representation of a side elevation of my improved grate-bar. Fig. 2 is a top-plan view of the same, and Fig. 3 is a longitudinal section. Fig. 4 is a vertical cross-section.

This invention has relation to grate-bars, in which lightness and durability are obtained, and has for its object to produce a grate-bar simple in construction, and at the same time durable and effective in its purpose.

My invention, therefore, consists in an upper frame for holding the coal, composed of a series of three or more parallel bars, and a lower series of scalloped knife-edged bars, held together and sustained by a series of transverse supports, the same having openings therein for the circulation of air, as will be hereinafter more fully set forth.

In the drawing, A represents the long parallel bars, which may be formed slightly convex upon their upper face, to insure a greater circulation of air around them when the coal is placed thereon. These bars are arranged in groups of three, four, or more, side by side, and are firmly held in place by a series of transverse supports, B, each of which is provided with an opening, *a*, to allow the free circulation of air from one to the other, as illustrated by the arrows, Fig. 4, and may be formed, if desired, with recesses *b*, in number equal to the spaces between the bars A, and at such distances apart as to come in line between such spaces, and thereby secure additional circulation of air around the bars. C

represents the scalloped bars, arranged far below the fire-surface, and connecting with the transverse supports B. These bars C are arranged in series similar to the bars A, and parallel therewith, and are formed with knife-edges *c*, for the purpose of preventing the accumulation of ashes thereon. The grate-bar is supported at its ends by the projecting flanges *e*, which rest upon the ordinary wall of the furnace.

It will be observed that a grate-bar constructed as above described possesses many advantages over those now in use, as it can be manufactured at a much less cost, requiring about one-half the amount of metal that is required for ordinary grate-bars, still retaining a sufficient amount of strength for the purpose intended, and will not warp, twist, or crack by the heat, as the arrangement of the two series of parallel bars A C and the supports B, disposed transversely with said bars, present a greater cold-air surface, the supports also securely holding and strengthening each bar of the series, and preventing them from becoming injured by the heat.

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

A grate-bar consisting of the series of parallel bars A and scalloped knife-edge bars C, forming together inverted arches, whereby a greater support is given to the bar at each section, in combination with the supports B, having air-openings *a*, said supports being at right angles with the series of bars A C, by which a greater cold-air surface is exposed, substantially as set forth.

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

EDWARD MARION ERDMAN.

Witnesses:

W. J. SMITH,  
W. H. KENDALL, J. P.