E. M. ERDMAN.

GRATE-BARS.

No. 194,344. Patented Aug. 21, 1877.

Fig. 1.

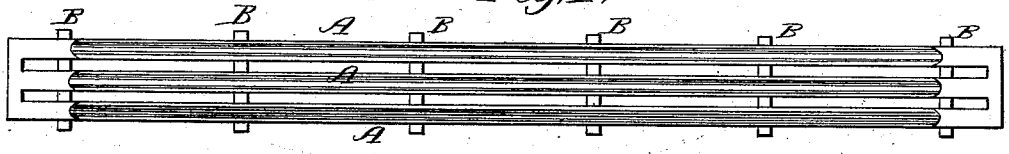


Fig. 2.

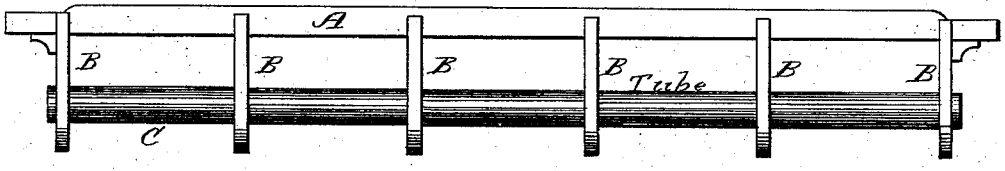
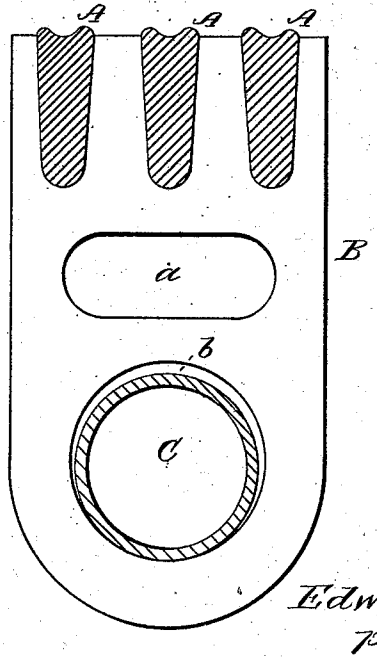


Fig. 3.



WITNESSES

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EDWARD M. ERDMAN, OF LYKENS, PENNSYLVANIA.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **194,344**, dated August 21, 1877; application filed July 2, 1877.

To all whom it may concern:

Be it known that I, EDWARD MARION 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 drawings is a representation of a plan view of my invention. Fig. 2 is a side elevation, and Fig. 3 is an end view upon an enlarged scale.

This invention has for its object to construct a furnace-grate bar that will be light, and at the same time strong and durable; and consists in providing the grate-bar with a hollow cylinder, placed underneath the same, so that it will resist the warping and twisting from the heat much better than the ordinary form, as it allows the free circulation of air through the opening in the cylinder, said cylinder being made removable, so that it can be used for another grate, as will be hereinafter described, and subsequently pointed out in the claim.

In the accompanying drawings, A represents the long parallel bars, which, if desired, may be formed concave upon their upper surface. These bars have the usual transverse supports B to hold them in place, said supports having suitably-formed openings *a* to allow the free circulation of the air from one to the other. The supports B are also formed with annular openings *b*, to receive a horizontal metal tube or hollow cylinder, C, placed loosely therein, so that the cast-iron portion of the bar is free to expand and contract. The openings *b* in the supports B are slightly larger than the circumference of the tube, to allow the bar to slide on the pipe, whatever the expansion and contraction may be. This metal tube renders the grate-bar very light, and more air-surface is obtained, in addition to getting a direct line for expansion and contraction, thereby overcoming warping and twisting, as the air is allowed to freely circulate through the tube, which is not the case where a solid cylinder or bar is used.

The tube can be removed and used for another grate-bar when the fire-surface of said bar is burned off.

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

The combination, with a furnace-grate bar, of a removable tube or hollow cylinder, whereby the grate-bar is stiffened, and at the same time allowing a free circulation of air through said tube or hollow cylinder, substantially as and for the purpose 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:

J. C. DURBIN,

F. C. CUNZ.