J. Williams, J. Forgie, and J. Edwards, Furnace Grate Bar.

No. 76,023. Patented Mar. 24. 1868.

Fig. 1.

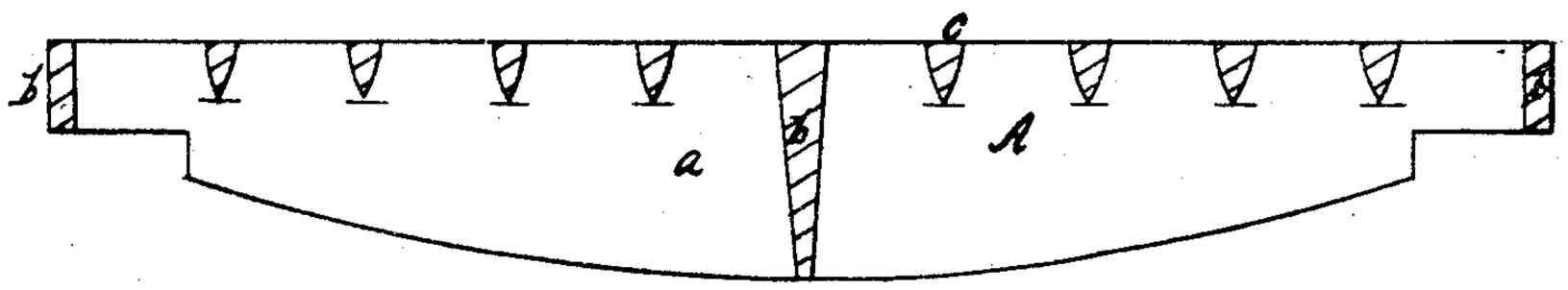


Fig. 2.

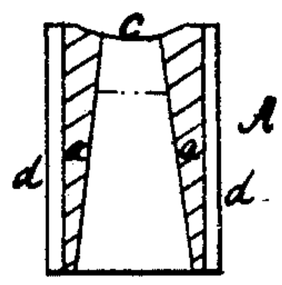
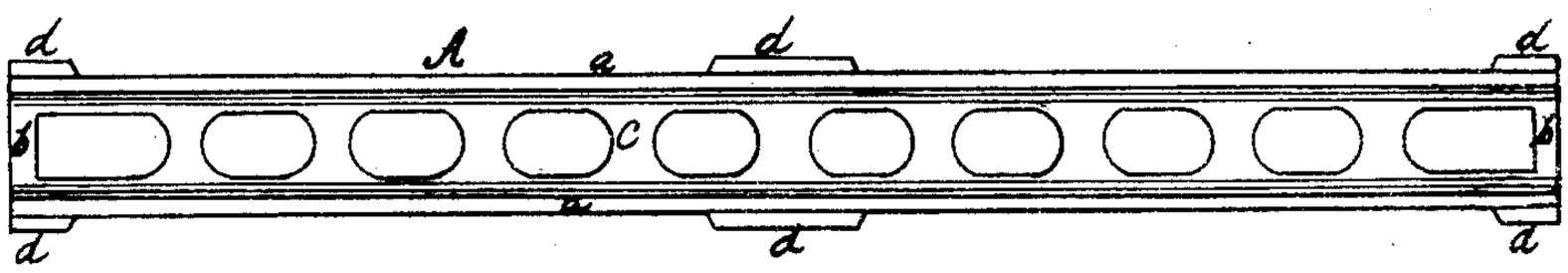


Fig. 3.



Witnesses.
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Letters Patent No. 76,023, *dated March* 24, 1868.

IMPROVEMENT IN FURNACE-GRATE BARS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, JESSE WILLIAMS, JOHN FORGIE, and JAMES EDWARDS, of New York, 133 Centre street, in the county and State of New York, have invented a new and useful Improvement in Furnace-Grate Bars; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of this invention.

Figure 2 is a transverse section thereof.

Figure 3 is a plan or top view of the same.

Similar letters indicate corresponding parts.

This invention consists in a skeleton bar, composed of two webs, which are connected by three or more transverse partitions, and by a perforated concave top, in such a manner that the air has free access to all parts of the bar, and through the perforations of its top to the fuel resting thereon, and that by the current of air passing through it said bar is preserved from being burned, and a perfect and economical combustion of the fuel is effected.

A represents our grate-bar, which is composed of two webs, *a a*, that are connected by three or more transverse partitions, *b*, two at their ends and one or more between, and also by a perforated concave top bar, *c*, as clearly shown in the drawing.

The webs themselves are thin, wide plates, with two flat bearing-surfaces at their ends, and an arched bottom edge, as clearly shown in fig. 1 of the drawing, and they are cast solid with the transverse partitions and with the perforated top bar. The transverse partitions are as thin as safety and strength will permit, and the intermediate partitions may be tapering from the top down, as shown in fig. 1. The top bar, which connects the webs, is one and a half inch (more or less) thick, and the perforations are tapered off towards their bottom edges, so that ashes and cinders will readily pass through them, and that said perforations are not liable to choke up. The top edge of our grate-bar is concave, so that when a piece of coal lies on it, the air passing up through the perforations has free access to the same, and a perfect combustion is effected. On the outsides of the webs are the ordinary filling-strips, *d*, which serve to keep the several grate-bars at the requisite distances apart.

By these means a grate-bar is obtained which is not liable to burn out, since the air passing up between the webs, as well as between the several bars, serves to lower the temperature of the bars, and, furthermore, the air has free access to the fuel, and the ashes drop through the bars without difficulty, so that the formation of clinkers is avoided.

Our grate-bar is light, easily cast, and more durable and economical, both in regard to repairs and in regard to the perfect consumption of the fuel, than any grate-bar known to us. The top bar *c* presents a continuous surface, upon which the hoe used in clearing the fire may be freely moved.

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

The combination, in a furnace-grate bar, of two thin arched webs, *a a*, transverse partitions *b*, and concave perforated top bar *c*, all constructed in the manner and for the purpose herein described and represented.

JESSE WILLIAMS,
JOHN FORGIE,
JAMES EDWARDS.

Witnesses:
GUSTAV BERG,
W. HAUFF.