J. MORRISON.

Reverberating Furnace.

No. 198,661. Patented Dec. 25, 1877.

Fig. 1

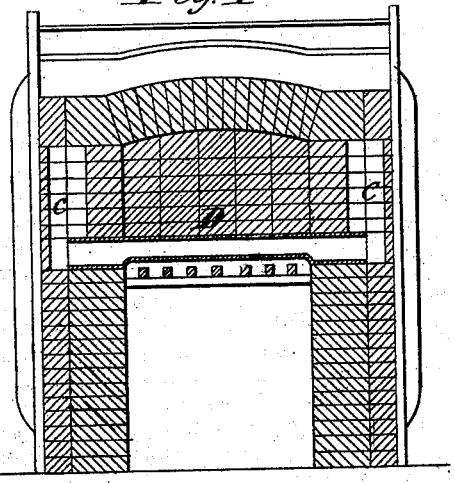


Fig. 2

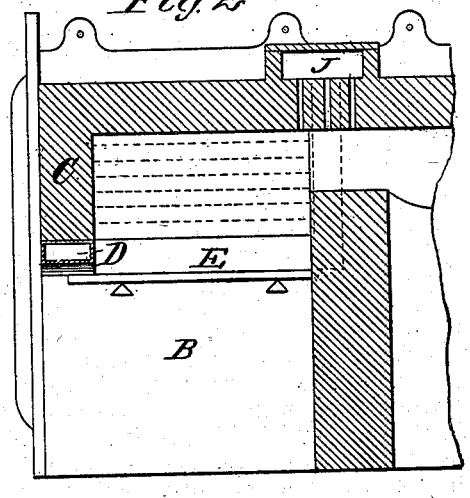


Fig. 4

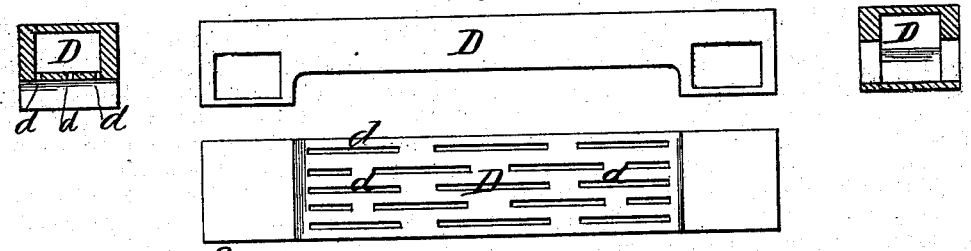


Fig. 3

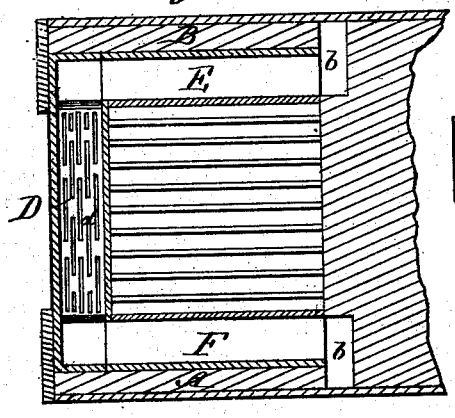
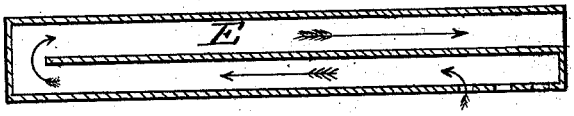


Fig. 5



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN MORRISON, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN REVERBERATING FURNACES.

Specification forming part of Letters Patent No. **198,661**, dated December 25, 1877; application filed June 18, 1877.

To all whom it may concern:

Be it known that I, JOHN MORRISON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Reverberatory Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical transverse section of a furnace provided with my improvement. Fig. 2 is a vertical longitudinal section of same. Fig. 3 is a horizontal section of same. Fig. 4 represents the lintel detached in elevation, cross-section, and plan. Fig. 5 is a longitudinal section of the chill.

This invention relates to the construction of metallurgic reverberating furnaces; and consists, first, in building the fire-end wall upon a hollow metallic lintel, supported at its ends by the front and back walls, forming in itself a support or arch for the fire-end wall for the purposes hereinafter described; and, secondly, in inserting in the back and front walls hollow metallic chills or boxes directly facing the fire-chamber at the fire-level, and combining them with air-passages leading to the interior of the furnaces, whereby the passage of air through the chills keeps the metal of which they are constructed at a lower heat than the coals or ashes with which they are in direct contact, thereby preventing the adherence of clinkers.

Referring to the drawings, D is the hollow metallic lintel, supported at its respective ends by the front wall A and back wall B, and on this, as a support, I build the fire-end wall C. The lintel D has an opening or openings, *d*, underneath for the admission of cool air. It may be straight, with open ends, as in Fig. 1, and deliver the air which it receives into flues *c*, leading to the interior of furnace, so that the air acts to cool the lintel, and, receiving its heat, is made to feed the furnace; or it may have openings at the sides of the ends, as in Figs. 3 and 4, for the same purpose. In this way the lintel, being the conductor of a constant stream of cool air, does not soon burn out, and therefore lasts much longer than a solid one, consequently rendering the stability of its wall much greater.

If not used with the flues *c*, as above, it may be connected by the side openings with the front and back hollow metallic chills E F, either or both, which then deliver the heated air into gathering-flues *b*, leading to the chamber J on the roof. Both lintel and chills directly face the fire at about the level of "dead ashes" in the fire-chamber, where clinkers always mass; but by losing their heat to the incoming air the lintel and chills are kept comparatively cool, and no clinkers can adhere to them, and thus a great annoyance prevented. These clinkers, if permitted, would melt into a brick wall, and their dislodgement cause damage to the walls.

Both sides of lintel and chills may be made similar, so that when finally burned out on one side they may be reversed.

The chills may be made with one or more longitudinal partitions, as in Fig. 5, so as to give the air a sinuous path.

I claim as my invention—

1. In a reverberating furnace, the hollow metallic lintel, supported at its respective ends by the front and back wall, and sustaining the fire-end wall, substantially as described, whereby the said lintel serves the purpose of an arch.

2. The combination of the hollow lintel D, having air inlet or inlets and the hollow chills E F, with chamber J and ascending flues thereto, said lintel being arranged in the fire-end wall C, and the chills E F in the front and back walls of the fire-chamber, and exposed to the direct action of the fire, whereby the air is more intensely heated and the formation of clinkers prevented, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of June, 1877.

JOHN MORRISON.

Witnesses:

A. V. D. WATTERSON,

JOHN FERGUSON.