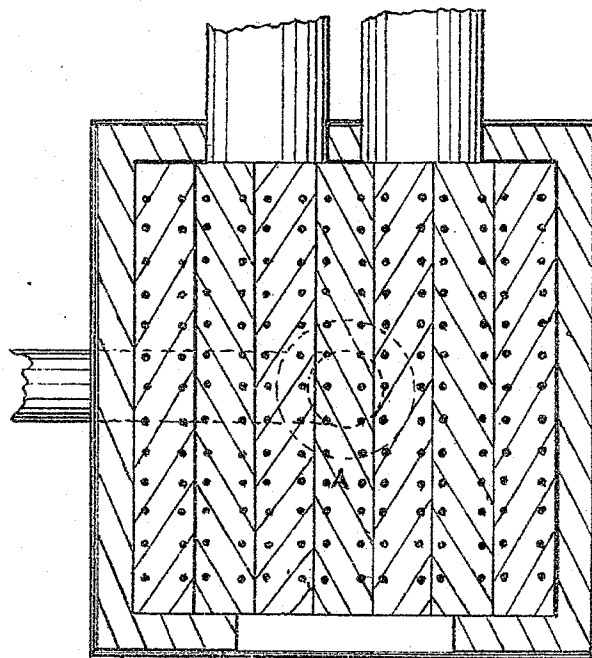
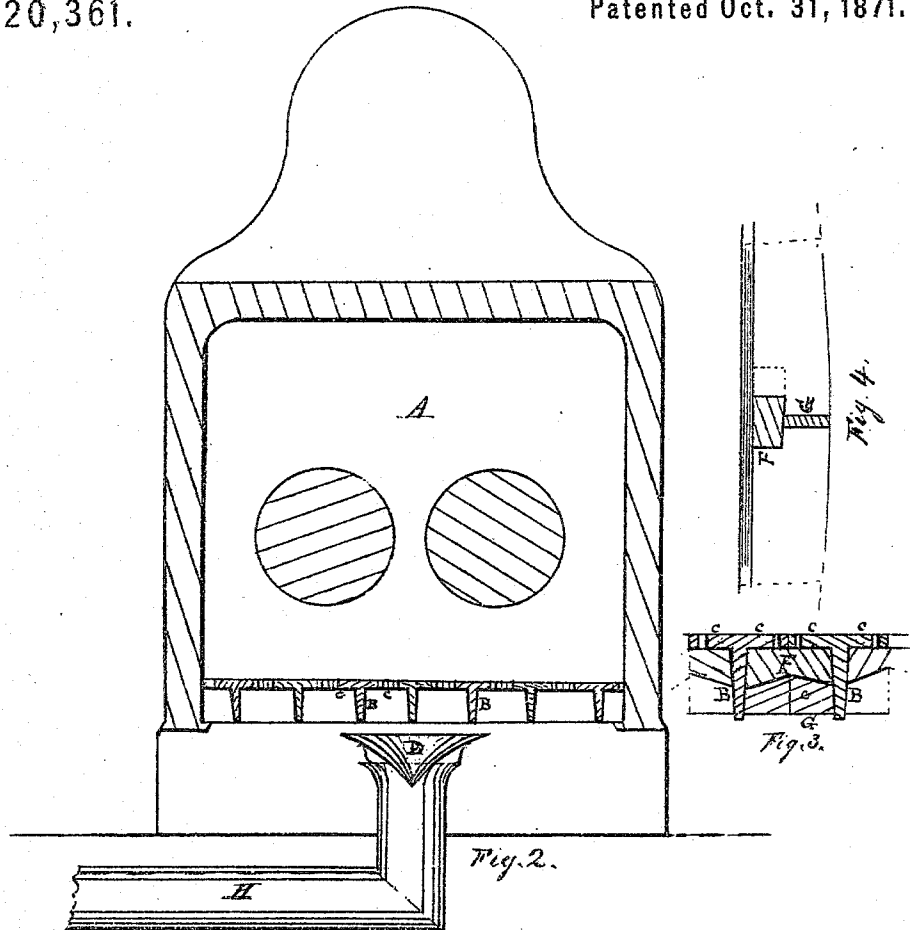


EMMET R. AUSTIN.

Improvement in Furnaces and Furnace Bars.

No. 120,361.

Patented Oct. 31, 1871.



Witnessed
J. W. Vane.
J. H. Hoots

Fig. 1.

Inventor
August 3, 1871.
Emmet R. Austin

UNITED STATES PATENT OFFICE.

EMMET R. AUSTIN, OF NORWALK, CONNECTICUT, ASSIGNOR TO N. L. AUSTIN & CO., OF SAME PLACE.

IMPROVEMENT IN FURNACES AND FURNACE-BARS.

Specification forming part of Letters Patent No. 120,361, dated October 31, 1871.

To all whom it may concern:

Be it known that I, EMMET R. AUSTIN, of the town of Norwalk, county of Fairfield and State of Connecticut, have invented certain Improvements and Arrangements for Burning Fine Dust-Coal in Steam-Boiler Furnaces and other places, of which the following is a specification:

The first part of my invention relates to the construction of the furnace and furnace-bars, and the attachments for burning fine coal-dust by itself. The second part relates to the arrangement for giving a strong and uniform blast of air, which shall extend to the whole surface of the bottom of the furnace.

Figure 1 is a plan view of a furnace and perforated bars and other attachments; Fig. 2, a vertical section describing the grate and the trumpet or conical shape of the blast-pipe; Fig. 3, a cross-section of the perforated bar; Fig. 4, a portion of a bar describing the dovetail and toe-shaped lock-piece.

The grate-bars A I make, in the usual manner, of various sizes and lengths, to suit the different-sized furnaces. The thin vertical part B has the customary lugs for keeping it in position; and the top flat part projects on each side like a flange, *c c*, of the necessary width to meet and join each other when placed in position. Through these projecting flanges I make a number of small perforations for air-draughts, of such size that they will admit the blast of air through but will retain the dust-coal on the upper surface for combustion. The perforations can be made half on one edge and half on the other, so that when placed in they will form a perfect hole, same as they were within the projecting flanges. When all the bars are placed in position the whole surface of the bottom will be full of the perforations or air-holes, forming an open free space to receive the dust or waste fine coal, which will burn freely by the action of the extended blast from the funnel-shaped top

to the air-pipe D passing up through all the perforations. The bars are locked together by means of the beveled and dovetail-shaped piece F, Figs. 3 and 4, fitting to the dovetail lug G on the side of the bar at or near the edge, thus preventing the bars from rising or falling singly, and will keep them in position, and are easily removed if any of the bars need repairing or replacing.

One of the main features of my invention is in the manner of introducing a blast of air of uniform strength to the whole surface of the bottom of the furnace, as follows: A main leading air-pipe or flue runs under the ash-pit and turns up at the inner end at the center of the same, (see Fig. 2,) rising to a proper distance from the bottom of the grate-bars and forming a spreading or trumpet end; and over this end I form and fix a wide-spreading funnel-shaped top with the apex downward, and placed over the same within a proper distance, and are supported by studs, allowing room for the blast of air to pass up and strike the under beveled part of the reversed cone D, which will consequently cause the air to spread all over the surface with equal force. The utility of my invention consists in its economy, as it will be the means of consuming all the fine dust of the coal, which at present is entirely wasted.

What I claim is—

1. The arrangement herein described of the furnace A, perforated bars B, pipe H, and cone D, all constructed and operating as and for the purpose set forth.

2. The grate bottom, consisting of the perforated grate-bars B locked in close contact with each other, substantially as shown and described, for the purpose set forth.

EMMET R. AUSTIN.

Witnesses:

WM. VINE,
JOSEPH F. FOOTE.

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