

(No Model.)

E. B. COXE.
GRATE BAR.

No. 510,579.

Patented Dec. 12, 1893.

Fig. 1

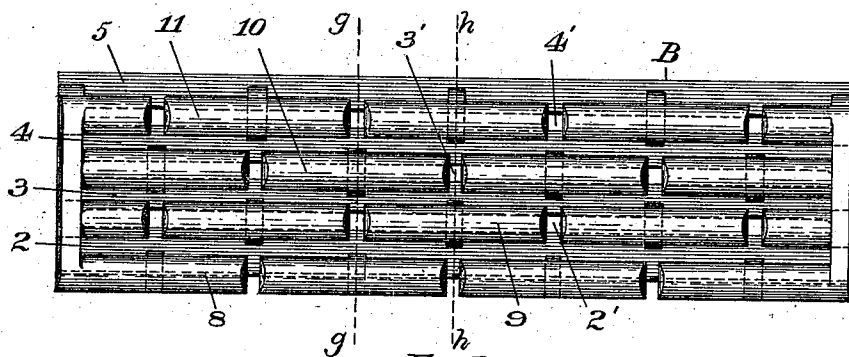


Fig. 2

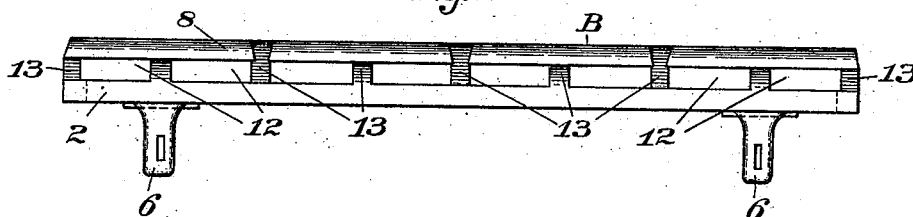


Fig. 3

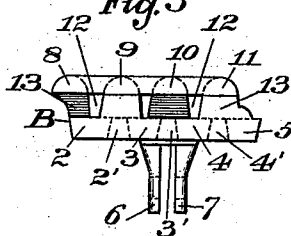


Fig. 4

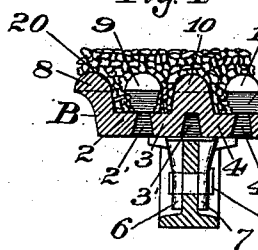


Fig. 6

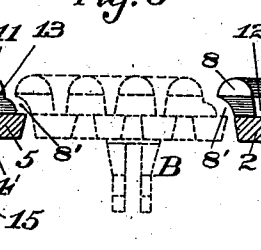
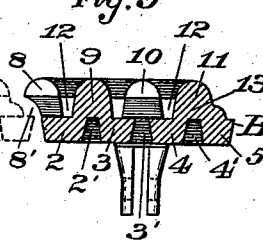


Fig. 5



Witnesses:

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UNITED STATES PATENT OFFICE.

ECKLEY B. COXE, OF DRIFTON, PENNSYLVANIA.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 510,579, dated December 12, 1893.

Application filed July 26, 1893. Serial No. 481,527. (No model.)

To all whom it may concern:

Be it known that I, ECKLEY B. COXE, a citizen of the United States, residing at Drifton, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification.

This invention relates to grate-bars of the floor-plate class; the object being to furnish an improved grate-bar, or floor-plate, adapted for carrying a mass of fuel, especially the finer sizes of anthracite coal, without waste, while providing ample space for the air-blast.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view of a grate-bar or furnace-floor plate, embodying my present improvements. Fig. 2 is a side elevation of the floor-plate shown in Fig. 1. Fig. 3 is an end elevation of the same, as seen from the right-hand in Figs. 1 and 2. Fig. 4 is a cross-sectional view, in line *g—g* of Fig. 1; this view also shows the preferred mode of securing the floor-plate, when this is made removable, to the beam of a traveling grate. Fig. 5 is a cross-sectional view, in line *h—h* of Fig. 1. Fig. 6 is a diagrammatic view located between and connecting Figs. 4 and 5, for the purpose of illustrating the manner of arranging several of the furnace-floor plates to form a continuous furnace-floor or grate.

Similar characters designate like parts in all the figures.

The improved grate-bar, or furnace-floor plate, herein shown and described, is especially adapted for use in connection with the traveling grate which constitutes in part the subject-matter of a separate application, Serial No. 477,264, filed June 12, 1893.

The fuel-supporting portions of my improved floor-plate comprise two series of ribs, or bars, set the one at some distance over the other and laterally separated, the upper set being placed over the spaces between the lower set. In the drawings, the floor-plate, designated in a general way by B, is shown having a series of longitudinal bars, 2, 3, 4 and 5, which are rigidly connected together (being usually cast integral) at the ends and rigidly held by connecting pieces, 13, as hereinafter described. Said plate B is shown provided

with means, as for instance, the projecting perforated arms 6 and 7, for attaching the same to the beam of the grate, this being done by a lug 15, or like device. Between the aforesaid lower bars 2, 3, 4 and 5, are the spaces 2', 3' and 4', through which the air passes to the fuel carried on the grate, as shown in section in Fig. 4. Said spaces are protected from stoppage by the fuel by means of the series of upper bars, 8, 9, 10 and 11, set over said air-spaces 2', 3' and 4', respectively. Between the two sets of bars there is a space, 12, for the passage of air laterally in either direction from the aforesaid lower spaces under said upper bars, and between these up through the fuel. The aforesaid lower bars, 2, 3, 4 and 5, of each grate-section are formed continuous throughout their length; but the corresponding upper bars are formed in sections set end to end, each connected at a point midway of the length thereof with one or more of the lower bars, this being done by means of the posts, or uprights, 13, shown in edge view in Fig. 2 and in end view in Fig. 3. The upper bars being formed of comparatively short sections, these are not so much distorted by the action of the heat, and when distorted and bent out of shape by continued use, the strains thereon are not transmitted to the lower bars. Consequently, the grate-section, as a whole, is very slightly distorted by the heat to which the upper bars thereof are subjected, and will maintain its proper shape, in practice, for a relatively long time.

In constructing the grate-section, I make the lower bars of such a width, and the upper bars of such a width and distance apart and also at such a height above the lower bars, as will prevent the fuel used (shown at 20, Fig. 4) from running under the upper bars to the spaces between the lower bars. By means of this construction and arrangement, the fuel, especially the fine "buckwheat" coal for the burning of which this grate is more especially adapted, is safely carried along without material loss by leakage through the grate into the ash-pit.

In order that the several floor-plates comprised in the traveling grate may be properly continuous, the series of upper bars and lower

bars are set out of vertical alignment as shown in end elevation in Fig. 4, so that the terminal upper bar 8 of the series will overlap a space, 8', between the opposite terminal lower bars of two adjacent floor-plates, as shown in the combined views, Figs. 4, 5 and 6.

Having thus described my invention, I claim—

1. In a grate-bar of the class specified, the combination with a series of connected bars set side by side, with air-spaces between them, of a series of relatively short bars set end to end over said spaces, and each supported midway of its length by a column connecting the

same with said lower bars, substantially as set forth.

2. In a grate-bar of the class specified, the combination with a series of separated lower bars, of a series of upper-bars set at a distance above the lower bars and over spaces between the same, and consisting of relatively short portions separately supported, substantially as set forth.

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Witnesses:

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