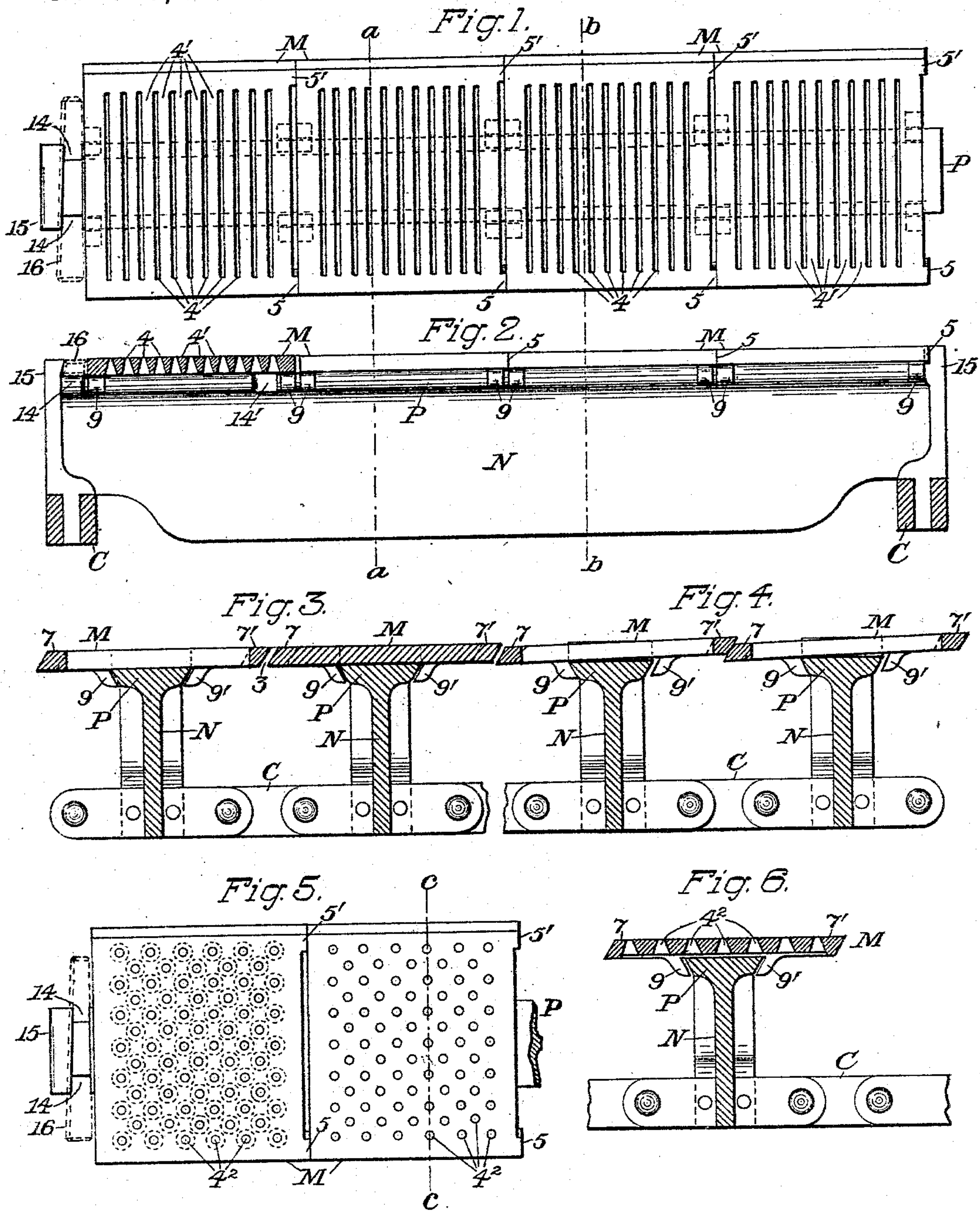


(No Model.)

E. B. COXE.  
TRAVELING GRATE

No. 515,657.

Patented Feb. 27, 1894.



Witnesses:

*N. C. Whitney.*  
*John L. Edwards Jr.*

Inventor:

*Eckley B. Cox.*  
By his Attorney,

*J. W. Richards*



# UNITED STATES PATENT OFFICE.

ECKLEY B. COXE, OF DRIFTON, PENNSYLVANIA.

## TRAVELING GRATE.

SPECIFICATION forming part of Letters Patent No. 515,657, dated February 27, 1894.

Application filed December 26, 1893. Serial No. 494,619. (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 Furnace-Floors for Traveling-Grate Furnaces, of which the following is a specification.

This invention relates to that class of furnace-floors which are used in furnaces for burning the smaller sizes of anthracite coal, and relates more particularly to the kind of traveling furnace-floors described in Letters Patent of the United States Nos. 510,580 and 510,569, granted to me December 12, 1893, to which reference may be had.

The object of the present invention is to provide a simple and efficient furnace-floor, of the traveling-floor type, comprising a series of floor-plate-supporting beams and fuel-supporting floor-plates, and to so construct and organize the same that the furnace-floor plates may, when defective or broken, be quickly and readily removed from the beams and new ones substituted.

In the drawings accompanying and forming a part of this specification, Figure 1 is plan view of a section of a furnace-floor made in accordance with my invention, said view showing a floor-supporting beam provided with a series of furnace-floor plates slotted transversely of the beam to form a series of alternate bars and air-spaces. Fig. 2 is an elevation, shown partly broken away, of the furnace-floor section shown in Fig. 1. Fig. 3 is a sectional view corresponding to lines *a, a*, and *b, b*, Figs. 1 and 2, taken through two adjacent floor-beams with furnace-floor plates attached thereto, said beams being herein shown and supported by a portion of the endless chain of a traveling floor such as shown in Patent No. 510,569 hereinbefore referred to. Fig. 4 is a sectional view similar to Fig. 3, showing the furnace-floor plates of the two adjacent beams in contact and tilted slightly out of their normal position. Fig. 5 is a plan view of a portion of a furnace-floor beam, with furnace-floor plates of modified form secured thereto. Fig. 6 is a vertical sectional view, taken in dotted line *c, c*, Fig. 5, of the floor-section shown in said figure.

The furnace-floor, considered as a whole,

consists essentially of a series of floor-beams *N* supported at their ends upon, and carried by, endless chains *C*, (portions only of which chains are herein shown,) and a series of furnace-floor plates *M*, shiftably or loosely secured to said beams, as hereinafter more fully described. This mechanism is in the nature of a modification of the furnace-floor described in my application, Serial No. 494,618, filed December 26, 1893, to which reference may be had.

The endless chains which support the floor-beam are, as in the Patent No. 510,569 before referred to, intended to travel in a circuit and to pass around suitable driving-wheels for actuating the grate. By the term "floor-section," as herein used, I designate one of the floor-beams with the floor-plates secured thereto. When several floor-beams are secured to the chains *C*, and the furnace-floor plates *M* are secured in proper position thereon, as shown in Figs. 1, 2, 3 and 4, to make up the different floor-sections, the ends of the floor-plates of one section lie in close proximity to, but not in normal contact with, the adjacent ends of the floor-plates of the next succeeding floor-section; this leaves a narrow air-space, 3, between the ends of the plates of adjoining sections. The floor-beams are herein shown as of a substantially T-shaped cross-sectional form, each beam consisting essentially of a vertical longitudinal web or body, *N*, having its upper end flanged transversely to form a furnace-plate-supporting bar, *P*, whose edges project slightly at either side of the web *N*, and are preferably under cut or inclined at its side edges, from its upper face inward, as shown, to provide for the interlocking therewith of lugs or hook-shaped projections 9, 9' upon the under sides of the furnace-floor plates.

In the drawings I have shown two forms of the furnace-floor-plates. Those shown in Figs. 1 and 2 are vertically slotted in parallel lines transverse to the floor-beams, as shown at 4, which slots extend from a point slightly remote from one end of the plate to a point slightly remote from the opposite end thereof, thereby forming the plate into a series of parallel bars, 4', with air-spaces, 4, intermediate thereto. Upon the under side of the two end bars of the series of bars of each



floor-plate are formed the oppositely-disposed hook-shaped lugs or projections 9, 9', which lugs are adapted to engage the dovetailed or under-cut bar P of the floor-beam, as most clearly shown in Figs. 3, 4 and 6. The floor-plates shown in Figs. 5 and 6 have a series of conical perforations, 4<sup>2</sup>, formed therethrough as shown; the hook-shaped lugs 9—9' being formed upon the under side of the plate (as shown in dotted lines) at the extreme side edges of said plates. Said hook-shaped projections are shown relatively narrow as compared with the width of the plate, and are so constructed as to enable them to be easily broken-off by a blow upon the end of the floor-plate when it is desired to remove a defective floor-plate. It will be seen that the slots and perforations in the floor-plates extend some distance beyond the side-edges of the bars P upon which said plates are supported, which insures a free circulation and sufficiently uniform distribution of air to the fuel supported upon the plates. When the form of floor-plate shown in Figs. 5 and 6 is used, the middle portion of said plate intermediate to the lugs 9—9' will be slightly reduced in thickness, to leave an air-space between the middle portion of said plate and the supporting bar P. The air-spaces in the plates will be made very narrow at one end, to preclude the passage of fuel through them.

Formed upon one side of each floor-plate are remotely-disposed space-forming projections 5—5', which are shown located at opposite ends of said plate.

As a means for assembling the floor-plates upon their respective floor-beams, the side edges of the bar P of the said beam are notched or cut away at suitable distances, as shown at 14—14', Fig. 2, the distance between said notches being substantially equal to the distance between the two sets of lugs at the sides of the floor-plate; and the bar P of the floor-beam, at the notched portion, is reduced sufficiently in width to permit its passage vertically between the lugs 9—9' of each set, as will be readily understood by reference to the drawings. The floor-beam will preferably have a transverse flange, 15, or floor-plate abutment, at each end thereof, between one of which abutments and the adjacent floor-plate a key or wedge, 16, is inserted to prevent movement of the floor-plates longitudinally of the beam.

Having thus described my invention, I claim—

1. The herein-described floor-section for furnace-floors of the class specified, it consisting of a floor-beam flanged transversely at its upper end to form a floor-plate-supporting bar, and perforated floor-plates supported midway of their length upon said bar and having hook-like projections upon its under face at opposite sides thereof adapted for engagement with the said bar, substantially as described and for the purpose set forth.

2. In a furnace-floor of the class specified,

the combination of a floor-plate-supporting beam flanged transversely at its upper edge to form a floor-plate-supporting bar and having notches formed in one or both side-edges of said flange and a perforated floor-plate having at each side-edge thereof a set of hook-like projections adapted for entering the notches and engaging the flange of the beam, substantially as described and for the purpose set forth.

3. In a furnace-floor of the class specified, the herein-described floor-section, it consisting of a floor-beam flanged transversely at its upper edge to form a floor-plate-supporting bar, and a floor-plate comprising a series of parallel connected bars arranged side by side with spaces intermediate thereto and having upon the under side of each of the two most remote bars of the series a set of hook-like lugs or projections adapted for engagement with the floor-beam flange, substantially as described.

4. In a furnace-floor of the class specified, the herein-described floor-section, it consisting of a floor-beam flanged transversely at its upper edge to form a floor-plate-supporting bar notched at one or more of its side-edges, substantially as described, and a floor-plate having a series of parallel vertical slots formed therethrough intermediate to and terminating remote from the end-edges of said plate to form a series of bars connected at their extreme ends and separated at their middle portions by air-spaces, the two remote bars of the series having breakable hook-like projections upon their under side adapted to enter the notches in and engage the floor-plate bar or beam flange, substantially as described.

5. In a furnace-floor of the class specified, the combination of a series of remotely-disposed parallel floor-beams supported upon and carried by an endless chain at each end thereof and having their upper edges flanged transversely to form relatively narrow floor-plate-supporting bars, perforated floor-plates supported upon said bars midway of their length and projecting at their ends both sides of said bars, with the ends of the plates of one beam in close proximity, but not in contact, with the ends of the plates of the next adjacent beam, substantially as described, each plate having a set of hook-like projections or lugs at each side-edge thereof, underlying the side-edges of the flange of its respective beam, whereby said plate is shiftably connected to said beam, substantially as described and for the purpose set forth.

6. In a furnace-floor of the class specified, the combination of a floor-beam flanged transversely at its upper edge to form a floor-plate-supporting bar having two remotely-disposed notches in one or both side-edges and having an upwardly-extended floor-plate abutment at the end thereof, a series of floor-plates supported upon said bar at one side of said abutment, each plate of which has at each side-



edge thereof a set of hook-like projections in engagement with the supporting bar and so located thereon as to register with the notches of said bar when moved longitudinally of said bar, whereby the said plates may be success-  
5 ively removed or replaced, and means for holding the terminal plate of the series out of register with said notches, substantially as described and for the purpose set forth.  
10 7. In a furnace-floor of the class specified, the combination of a floor-beam provided with a floor-plate-supporting bar at its upper edge having two remotely-disposed notches in one or both side-edges, and having floor-plate-  
15 abutments one at each end thereof, a series of

perforated floor-plates supported upon said bar intermediate to the end abutments and each plate having at each side-edge thereof a set of hook-like bar-engaging projections adapted in certain positions of said plate to  
20 register with the notches in the supporting bar, and a key or wedge interposed between one abutment and the terminal floor-plate of the series to hold the bar-engaging projec-  
25 tions thereon out of register with the notches in said bar, substantially as described.

ECKLEY B. COXE.

Witnesses:

STEWART F. MACFARLANE,  
ELLIOTT A. OBERRENDER.