(No Model.) 2 Sheets—Sheet 1.

J. B. CRAWLEY.

GRATE BAR.

No. 312,614. Patented Feb. 24, 1885.

Fig. 1.

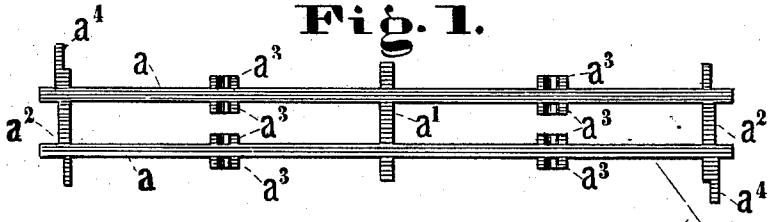


Fig. 2.

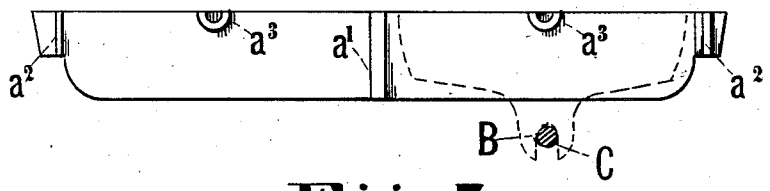


Fig. 3.

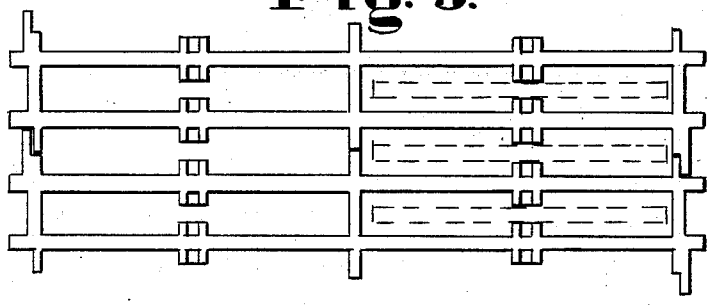


Fig. 4.

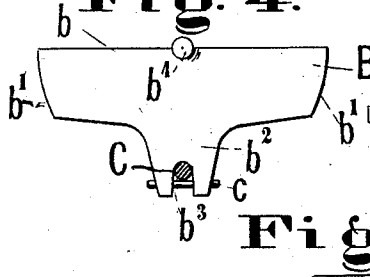


Fig. 5.

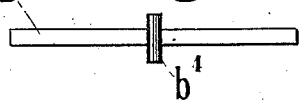
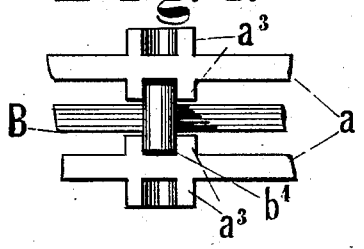


Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

J. B. CRAWLEY.

GRATE BAR.

No. 312,614. Patented Feb. 24, 1885.

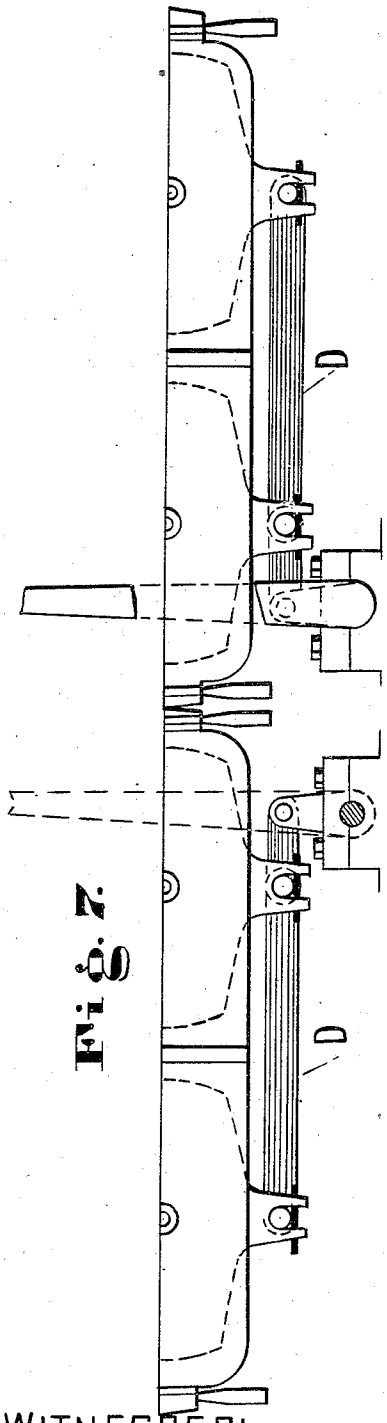


Fig. 7.

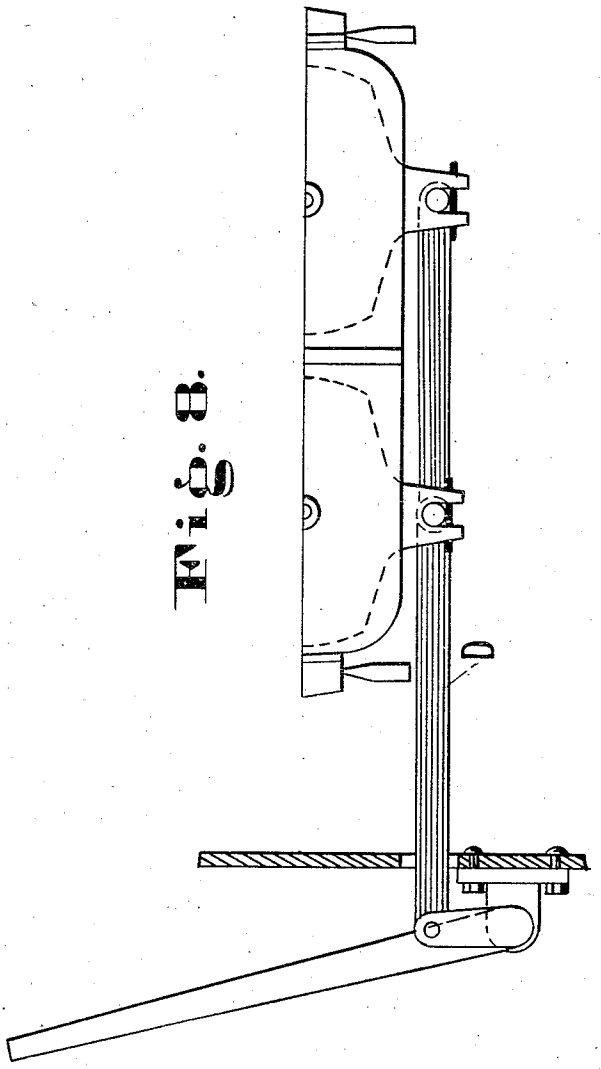


Fig. 8.

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UNITED STATES PATENT OFFICE.

JOHN B. CRAWLEY, OF BROOKLYN, NEW YORK.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 312,614, dated February 24, 1885.

Application filed February 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CRAWLEY, of Brooklyn, county of Kings, and State of New York, have invented new and useful Improvements in Grate-Bars; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

This invention relates to that class of grate-bars in which a series of fixed bars is combined with an intermediate series of rocking bars; and it consists in certain peculiarities of construction by means of which certain marked advantages are obtained, as will be fully described hereinafter.

In the drawings, Figure 1 represents a plan view of a single grate-section; Fig. 2, a side view of the same; Fig. 3, a plan view of two grate-sections united; Fig. 4, a side view of the rocking bars; Fig. 5, a top view of the same; Fig. 6, an enlarged view of the trunnion of the rocking bar and the open bosses in which it rests; Fig. 7, a view of a pair of grates with the actuating mechanism on the side; Fig. 8, a similar view with the actuating mechanism in front.

To enable others skilled in the art to make and use my invention, I will proceed to describe the construction of the same fully and its manner of operation.

A, Figs. 1 and 2, represents a grate-section consisting of two parallel bars, *a a*, united in the center and near each end by the transverse bars $a' a^2 a^2$, as shown. By means of this central bar the space inclosed by the grate-section is divided into two equal parts, as shown.

a^3 a^3 represent bosses formed upon each side of each half of the longitudinal bars *a a* at the center of the same, which bosses have a semicircular recess open above, as shown.

a^4 a^4 represent rabbets formed at one end of each of the transverse bars a^2 a^2 at the end of the grate-section, on opposite sides, which rabbets are adapted to engage with proper tongues upon the adjacent section, as shown in Fig. 3.

A series of sections united together and supported at the ends in any proper manner form the fixed portion of the complete grate, in the manner well understood.

B, Figs. 4, 5, and 6, represents a grate-bar consisting of a plate having a horizontal portion, *b*, with curved ends *b'*, and a vertical portion, b^2, having the open slot b^3, as shown. b^4 represents a trunnion formed upon each side of the horizontal portion *b*, at the center and top of the same, as shown. When the grate-bar B is in its proper position, its trunnions b^4 lie in the recesses of the bosses of one of the divisions of the grate-sections, as shown in Fig. 6. A series of grate-bars B located in the divisions of the grate-sections constitute the rocking portion of the grate.

C represents a bar adapted to rest in the open slots b^3 b^3 of a series of grate-bars B B, Fig. 2, which bar is held up in the slots by means of a securing-pin, *c*, at each end, as shown in Fig. 4.

D represents a rod by means of which the bar uniting the series of grates is carried out through the furnace-wall to any proper crank mechanism for actuating the same, located either on the side, as shown in Fig. 7, or on the front, as shown in Fig. 8. By actuating the crank the entire series of bars B is rocked in the manner well understood.

The curved ends *b'* of the bars B constitute the arc of a circle described from the pivot-point, and hence the openings between the fixed bars and the adjacent edge of the rocking bar remain the same in any position into which the bar may be moved.

By the employment of the trunnions and open bosses it is possible to insert or remove any single rocking bar without affecting any other, and this may be done even when the furnace is hot by using a proper implement.

By means of the rabbets the relative position of the grate-sections is exactly determined, so that the bosses are always exactly in line.

I am aware that it is old to support in end bearings a removable shaft having a number of grate-bars formed thereon, but am not aware that it is old to provide independent grate-bars, each of which has trunnions adapted to rest in open bearings, whereby if one bar becomes useless it can be removed without changing the others.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the grate-sections

having the open bearings, the independent grate-bars B, having the trunnions, as described.

2. In combination with the grate-sections having the open bosses and the rabbets, the rocking grate-bars B, having the trunnions, as described.

3. In combination with the removable grate-bars B, having the open slots b^3, the bar C, as described, secured at the ends only.

This specification signed and witnessed this 12th day of January, 1884.

JOHN B. CRAWLEY.

Witnesses:

IRA A. KIMBALL,

LINUS J. FOSTER.