JOHN ASHCROFT.

Furnace-Grate

No. 202,323. Patented April 16, 1878.

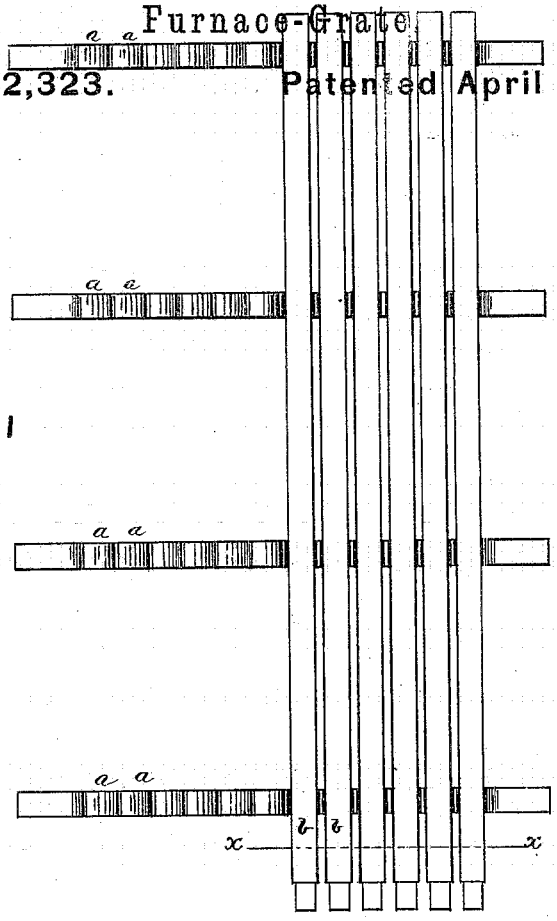

Fig 1

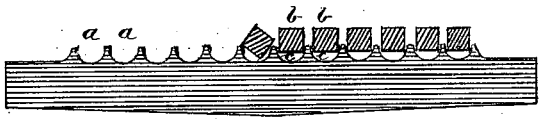

Fig 2

Witnesses

Fred W Northam

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JOHN ASHCROFT, OF BROOKLYN, NEW YORK, ASSIGNOR TO SARAH JANE ASHCROFT, OF SAME PLACE.

IMPROVEMENT IN FURNACE-GRATES.

Specification forming part of Letters Patent No. **202,323**, dated April 16, 1878; application filed April 18, 1876.

To all whom it may concern:

Be it known that I, JOHN ASHCROFT, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Furnace-Grates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to a grate-bar rest, support, or bearing-bar, designed particularly for square grate-bars, constructed in such a manner that when the bars are revolved or shaken they will always remain in their fixed position; and it consists in making a bearing-bar, rest, or support for square grate-bars, by means of which they may be revolved or shaken without displacement either when all are simultaneously or independently revolved or shaken, as may be desired, and also by which provision is made for the admission of air between the sides of the square grate-bar and its bearing-bar, by which the bar is kept cool, thereby preventing it from fusing or warping, and at the same time allowing air to pass freely through the orifices formed by the difference in the curvature of the bearer as contrasted with the square of the grate-bar, as will be hereinafter more fully pointed out.

I am aware that square grate-bars resting upon knife-edge bearings have been used, and, as will be readily seen, when they are revolved or shaken the coals or clinkers get between them and force them apart, thus dropping the coals into the ash-pit, producing a great waste; or they will lock one with the other, and cannot be turned at all until the fire is removed.

I am also aware that round or semicircular bearing-bars have been used with round or tubular grate-bars; but in this case no provision is made for allowing air to pass between the bearer and the grate-bar. These only show ordinary construction, none of which I claim.

I will now describe more in detail the method of my improved construction.

Referring to the drawings, Figure 1 represents a plan view of the bearing-bars with a series of the grate-bars in position. I prefer, as shown in this figure, to use as many bearing-bars as may be consistent with the length of the grate-bar used, so that the grate-bar will not warp or sag with the intense heat to which it is exposed, so that as many bearers as may be desired may be used without trouble, as they are all alike, and may be readily put in place or removed, and may also rest upon any side projection arranged on the walls of the furnace.

It will also be very readily seen that when the center bars are considerably burned (but too good to cast aside) they may be used near the sides of the furnace, where the heat is not so great, and this may be done, owing to the fact that all the bearers and bars are alike.

Fig. 2 represents an end sectional elevation of the bearing-bar and a cross-section of the grate-bars at the line *x x*, Fig. 1.

a a show the semi-cylindrical grooves in the bearing-bar; but, if preferred, they may be made of any other shape that will form an orifice between the bearer and the grate-bar; or a round grate-bar and a square or right-angled grooved bearing-bar could be used with good results; but I prefer the round grooved bearing and the square bar.

In the figures, *a a* are the grooves, and *b b* the bars, all of which may be made of cast-iron.

In Fig. 2, *c* shows the air-orifices between the grate-bar and the bottom of the groove. This orifice I regard as an essential feature of my invention, the results of which have been before described—viz., for the ready admission of air under the grate-bar, for the double purpose of keeping the grate-bar cool and supplying the furnace with air when the ash-pit door is closed and when a large volume of air would be very injurious, both as to its effect upon the combustion of fuel and to cooling the boiler, particularly when the fuel is uneven upon the grates, which very frequently is the case. In this figure also is shown one of the bars in the position of being turned, having a knife-edge bearing.

When the bars are warped they may rest in this position until the fire again straightens them. In this position, also, the air-orifices are

still retained, as well as keeping the grate-bar in its proper position.

It is obvious that when the grate-bar is revolved the sharp edges cut or grind the clinkers, which fall through the interstices between the grates, while at the same time, as before stated, the grooves hold the bars in their proper position.

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

1. The combination, in furnace-grates, of the semicircular grooved bearing-bars *a a* and the square grate-bars *b b*, whereby said square bars are held in position when revolved or shaken, constructed and arranged to operate as set forth.

2. The combination of the semicircular grooved bearing-bar and the square grate-bars, fixed in position so as to form the air-space *e* regardless of the position of the bar, for the admission of air to the furnace, and to keep the bearing-bars cool and prevent them from fusing, constructed and operating substantially as described.

JOHN ASHCROFT.

Witnesses:
FRED. W. REBHANN,
E. B. BARNUM.