J. MOORE, Jr.

Grate for Fire Places, &c.

No. 201,549. Patented March 19, 1878.

Fig. 2.

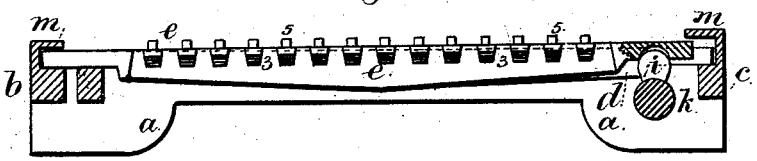


Fig. 1.

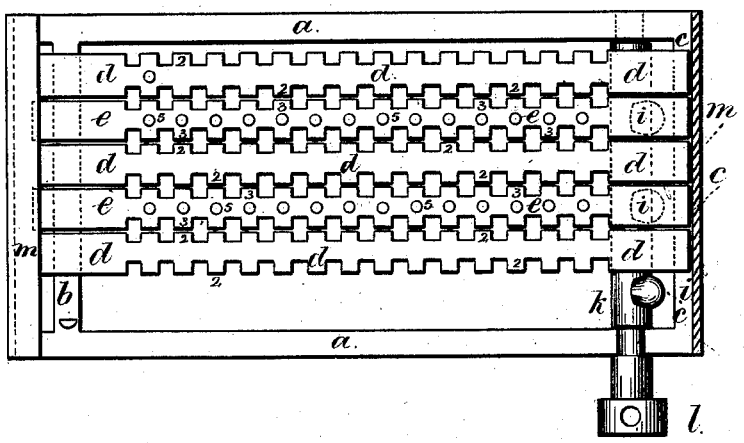
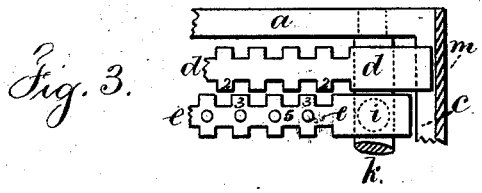


Fig. 3.



Witnesses

Chas. H. Smith

Geo. T. Pinckney

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UNITED STATES PATENT OFFICE.

JONATHAN MOORE, JR., OF BROOKLYN, NEW YORK.

IMPROVEMENT IN GRATES FOR FIRE-PLACES, &c.

Specification forming part of Letters Patent No. **201,549**, dated March 19, 1878; application filed February 1, 1878.

To all whom it may concern:

Be it known that I, JONATHAN MOORE, Jr., of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Grates for Fire-Places, Furnaces, &c., of which the following is a specification:

Grates have been made in which there is an endwise movement to the entire grate, and others in which some of the bars rise as the intermediate ones are drawn down, and still others in which one set of bars are stationary and the intermediate bars are raised and lowered. Grates have also been made in which projections at one side of a rock-shaft are made use of for giving end motion to the intermediate grate-bars.

My invention relates to the combination, with the rock-shaft and grate-bars, of pins with rounded or dome-shaped ends upon the rock-shaft, entering cavities in the under surfaces of the grate-bars, whereby the said grate-bars are moved endwise when the shaft is rocked, and the moving bars are brought into a central position between the intermediate stationary bars by the action of the dome-shaped projections, and in case of any rigid obstruction to either of the moving grate-bars, the dome-shaped projection will slip out of and into its cavity, and raise and lower the bar to loosen the obstruction without giving end motion to the bars or injuring the same.

In the drawing, Figure 1 is a plan of a portion of the grate and of the shaking apparatus. Fig. 2 is a vertical section of the same, and Fig. 3 represents the relative positions of the grate-bar teeth when some of the bars have been moved endwise.

The present improvement is especially intended for the bottom of fire-place grates; but it may be used in stoves, ranges, and furnaces.

The frame that supports the grate-bars is made of the side pieces *a a* and cross end pieces or bearers *b c*. The grate-bars *d d* rest at their ends upon the bearers *b c*, and are connected thereto firmly by casting, bolting, or otherwise. The bars *e e* are between the bars *d*, and are sufficiently free or loose to allow of end motion, even if slightly warped by heat. The ends of these bars *e e* are flat, so that they may rest upon and slide across the bearing-bars *b c;* and in the bar *e* at the under side, near the end, there is a cavity adapted to receive the rounded end of the pin *i*, that projects from one side of the cross-shaft *k*. This shaft *k* is in bearings in the frame *a a*, and it is provided with a head, *l*, outside the frame, or the stove or furnace, that can be acted upon by the poker or otherwise, to give to such shaft a rocking motion.

It will now be evident that the rock-shaft *k* and its pins *i* will give an end movement to the grate-bars *e* at the same time that the bar is slightly lifted at the end adjacent to the shaft *k*, and that, if the movement of the bar is obstructed, the rounding end of the pin will slip out of the rounding cavity of the bar, allowing the bar to remain in position; but it will be raised and lowered by the rounded end of the pin as the rock-shaft is moved. This prevents the bar being broken if it is obstructed, and tends to shake out any obstruction, and as soon as the bar is sufficiently unobstructed to be moved the rounded end of the pin again effects that object. It will be apparent that the under part of the bar near the cavity is to be flat, or nearly so.

The end plates *m m* are made use of to prevent clinker passing down at the ends of the bars, and the edges of the stationary bars are provided with teeth 2, and the edges of the moving bars have similar teeth 3, so that clinkers are broken up by the teeth 3 as they move toward the teeth 2, as seen in Fig. 3, and when the movement is in the other direction the openings between the teeth come opposite to each other, and allow the clinkers to pass in or fall through.

The projections 5 upon the surfaces of the bars *e* agitate the clinkers and fuel. If desired, this same grate and agitating apparatus may be used as the bottom of an ash-sifter, the bars being lighter, and the teeth dispensed with partially or wholly.

I claim as my invention—

1. The rock-shaft *k*, having pins *i*, with rounded ends, in combination with the movable grate-bars, having cavities in the under

surfaces near the ends, substantially as set forth.

2. The combination, with the rock-shaft *k* and projecting round-headed pins *i*, of the movable grate-bars *e*, having cavities in their under surfaces near the ends, and projecting teeth 3 at their edges, and the stationary intermediate grate-bars *d*, also provided with teeth 2 on their edges, substantially as set forth.

Signed by me this 30th day of January, A. D. 1878.

JONATHAN MOORE, JR.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.