G. R. MOORE.

Furnace Grate.

No. 113,324. Patented April 4, 1871.

Fig. 4.

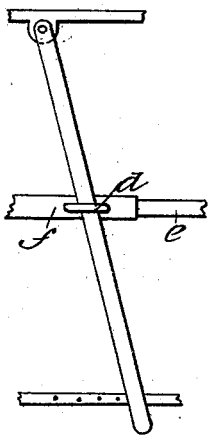


Fig. 1.

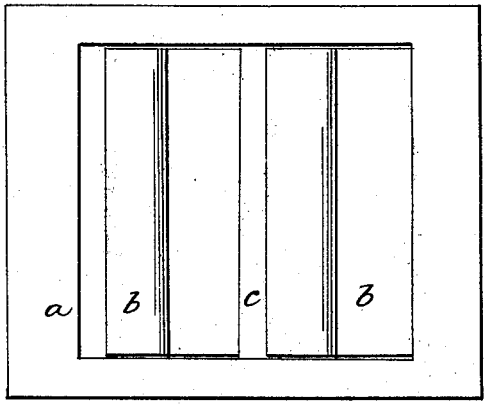


Fig. 2.

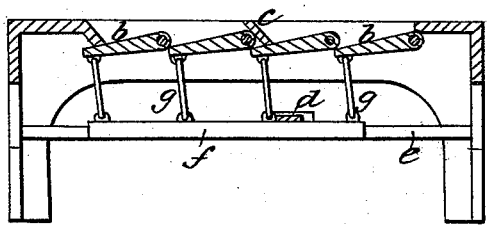
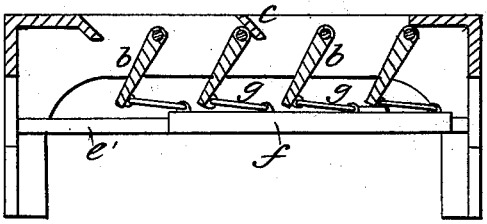


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE R. MOORE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN FURNACE-GRATES.

Specification forming part of Letters Patent No. **113,324**, dated April 4, 1871.

I, GEORGE R. MOORE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Fire-Grates, of which the following is a specification:

It is the object of my invention to provide a grate through which reasonable quantities of ashes and cinder may be discharged at will, and without breaking into the fire through the top above the grate, and without great danger of dumping the whole mass.

Figure 1 is a plan or top view of the grate and frame in which it is hung.

a is the frame; *b b b b*, the swinging grate-bars; *c*, a solid bar, placed at an angle with the top of the frame, for reasons hereafter to be given.

Figs. 2 and 3 are vertical transverse sections. Fig. 2 shows the situation of the bars *b b b b* when shut, and Fig. 3 when wide open. Fig. 4 is a plan view of a lever and its connections coming in place, or which is in place under the bars through the socket *d*, seen in Figs. 2 and 3. The back end is pivoted to the frame. The other is obviously for the hand.

e' is a solid bar, constituting part of the frame, and *f* is a loose rider upon it, into which is jointed one end of the rods *g g g g*, the other end of the same being jointed into the grate-bars. When thus connected any motion of *f* to the left moves the bars nearer to a horizontal position, and vice versa.

Usually ashes and cinder will stick and embank upon an iron plate at an angle of thirty degrees, while at that pitch, and even less, the bars are sufficiently open to give a good draft.

It is well, before starting a fire, to cover the bars with ashes to prevent their becoming too much heated before the new fire produces ashes for itself.

Solid bars may be used in connection with the vibrating ones, and they may be in any desired shape, and put in either flat or inclined, like the bar *c*; also, the vibrating bars may be cut or perforated in whatever way the manufacturer may wish. The vibrating bars are, of course, much thicker at their upper edge, so that anything starting from their upper sides will pass down freely.

By making the grate-bars in the form shown in the drawing, and arranging their journals in respect to their upper ends, as fully shown in Figs. 2 and 3, it will be seen that the bars can be turned down and up without elevating or depressing the upper points of support to the ends of the arches of coal which rest upon the grate-bars just above the journals of the bars.

It has been found in practice that with grate-bars made and journaled so that their upper ends will move or turn in the arcs of circles when the bars are opened and closed, the coal will remain arched from one bar to another, thus enabling the fireman to open the bars, as shown in Fig. 3, to remove the ashes, without danger of the coal falling down during the operation.

It will thus be seen that my grate-bars differ essentially from those in which a portion of the bars elevate or depress or throw forward and backward the coal which may be arched above their journals whenever the bars are opened or closed.

I claim as my invention—

1. A series of grate-bars, *b*, constructed and arranged in relation to each other and their pivots substantially as shown and described, whereby the said grate-bars can be turned or swung upon their pivots or hinges to admit air, and for the removal of ashes without danger or liability of dumping the coal.

2. The combination, with the hinged grate-bars *b*, when constructed and arranged as set forth, of the connecting-rods *g* and operating-lever, substantially as shown and described.

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Witnesses:
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