G. R. MOORE.

Furnace Grate.

No. 113,908. Patented April 18, 1871.

Fig. 1

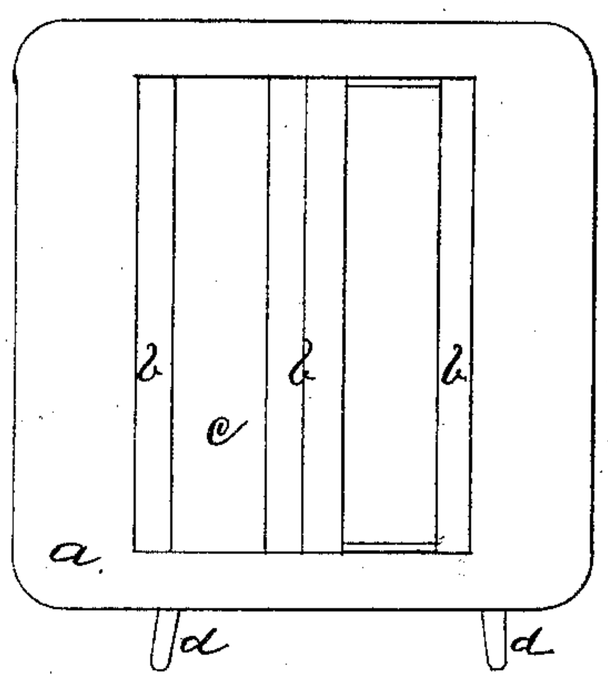
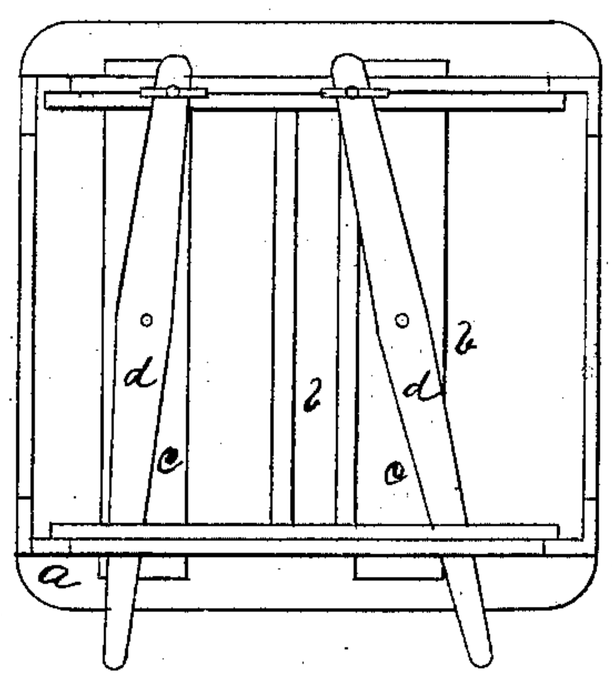


Fig. 2



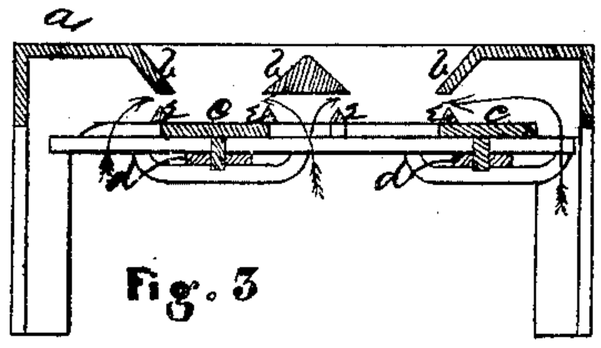


Fig. 3

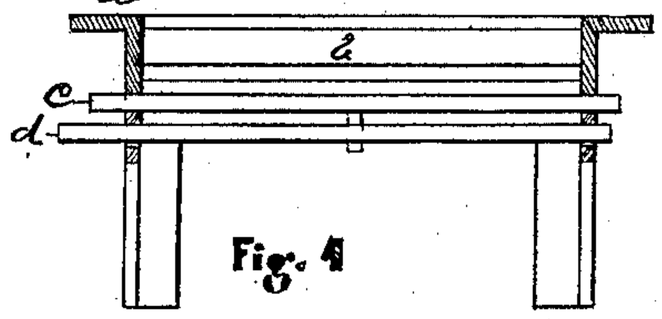


Fig. 4

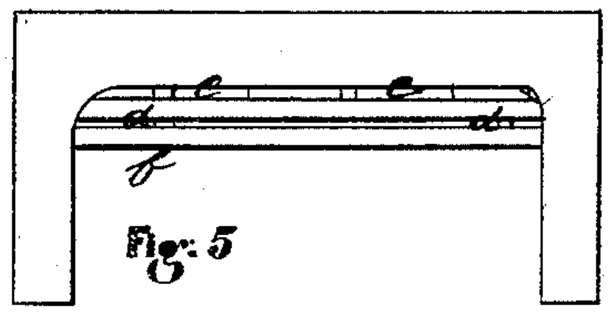


Fig. 5

Witnesses { Wm Dallas
Hamilton Eakens

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GEORGE R. MOORE, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 113,908, dated April 18, 1871.

IMPROVEMENT IN FIRE-GRATES.

The Schedule referred to in these Letters Patent and making part of the same.

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.

The object of my invention is to provide a grate that will save the fine coal from wasting through it in kindling, poking, or cleaning the fire; and this I accomplish by constructing and arranging the grate-bars so as to afford ample spaces for side draughts.

Also, a grate that may be mostly emptied of ashes and cinder from below and without disturbing the fire above; this I accomplish by having one-half the bars fold or slide beneath the other half, and by hanging this lower series of bars sufficiently below the upper series to admit of an ample side or angular draught between them.

I also use quite small bars, so placed as to scrape off the sliding ones when they are opened.

I have also, in some instances, made the bars in the upper series to revolve; and it is quite obvious that all the bars in the upper series may be made hollow and connected with the steam-boiler exactly after the common form of all ordinary water-grates.

The drawing herewith presented shows one complete bar and the sides of two other bars in the upper series of bars, and two sliding bars in the lower series. It is obvious that the bars may be increased to any number.

Figure 1 is a plan view of the bars in an ordinary frame taken from the top.

a, the frame.

b, bars in the upper series.

c, bars in the lower series.

Figure 2 is a plan view of the same taken from the bottom, and shows the levers *d*, and how they are attached for operating the sliding bars *c c*.

Figure 3 is a vertical cross-section. It shows, in addition to the other figures, the small bars *e*, which scrape off the sliding bars *c* when they are thrown open.

Figure 4 is a vertical cross-section taken at right angles with fig. 3.

Figure 5 is a front view, and shows the cross-bars upon which one end of the sliding bars rest; also the cross-bar *f*, which steadies the levers *d*.

The bars *c c* are shown, one of them cutting off the direct draught up between *b b* and the other leaving it entirely open; and these bars *c c* are operated at will by the levers *d d*. It is seen, therefore, that in one position these bars must work with a side draught, while in another they have a wide space and a direct draught.

The arrows show where the spaces are for draught and the direction in which the air passes to the fire.

The operation is obvious. When the sliding bars are directly below the spaces between the bars in the upper series they are considered closed and no fine coal can fall down, and the side draughts supply all the air needed to sustain combustion as rapidly as may be desired.

When ashes and cinders are to be let down the sliding bars are to be operated for that purpose.

I claim—

1. The upper and lower series of grate-bars working in combination, as *b* and *c*, substantially as and for the purpose herein set forth.

2. The little bars *e*, substantially as and for the purpose herein set forth.

GEO. R. MOORE.

Witnesses:

TH. DALLAS,

HAMILTON EAKENS.