G. JACKSON.
Grate.

No. 212,010. Patented Feb. 4, 1879.

Fig. 1.

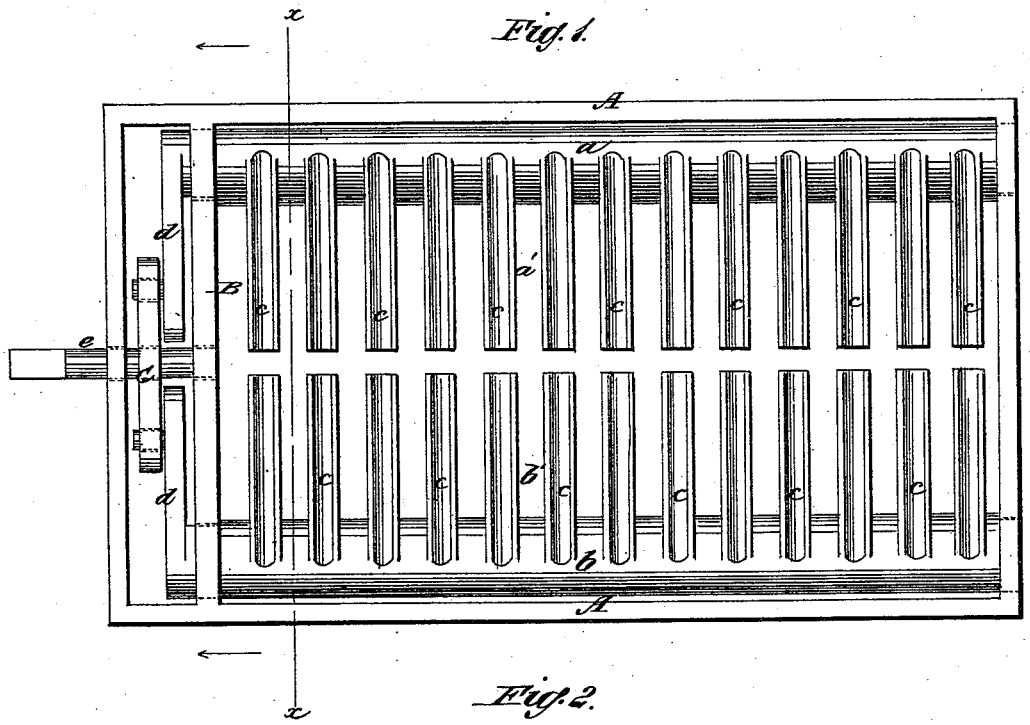
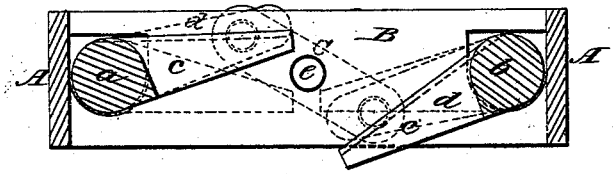



Fig. 2.

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# UNITED STATES PATENT OFFICE.

GEORGE JACKSON, OF HAVRE DE GRACE, MARYLAND.

## IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. **212,010**, dated February 4, 1879; application filed November 15, 1878.

*To all whom it may concern:*

Be it known that I, GEORGE JACKSON, of Havre de Grace, in the county of Harford and State of Maryland, have invented a new and Improved Grate, of which the following is a specification:

The object of this invention is to provide a grate for coal-burning stoves, furnaces, grates, &c., capable of being vibrated vertically for the purpose of freeing the fire of fine ashes and preventing the accumulation of clinker on the bars.

It consists in making the grate in two sections with a longitudinal division, the free ends of the bars being opposite each other, while the other ends are fixed to horizontal shafts journaled in juxtaposition to the sides of the grate-frame or fire-box, said shafts being capable of receiving a rock motion communicated from a rock-lever, by which the free ends of the grate-bars are vibrated alternately in opposite directions.

In the accompanying drawings, Figure 1 is a top view or plan of my improved grate, and Fig. 2 is a transverse section of the same on line *x x*.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the grate-frame, near one end whereof is placed a cross-bar, B. In this cross-bar and the opposite end of the frame, close to the sides, are journaled the shafts *a b*, from which project horizontally and toward each other the grate-bars *c*. These bars terminate short of the central longitudinal dividing-line of the frame and have their upper edges grooved, and their faces are also slightly inclined or convexed from the shaft toward their ends, as clearly indicated in the drawings. Two sets of these bars are provided—one, *a'*, fixed to shaft *a*, the other, *b'*, to shaft *b*.

The ends of shafts *a b*, where they project through the bar B, are provided with right-angular arms *d* extended toward each other, which are pivoted to the rock-lever C, fixed to the short shaft *e*, journaled in bar B, an adjacent end piece of the frame projecting through the latter and adapted to receive a wrench.

By means of a wrench or lever applied to the end of shaft *e* a vibratory motion can be given to the two sets of grate-bars, as indicated by the dotted lines in Fig. 2, whereby the opposite sides of the fire-bed are alternately lifted and depressed, thoroughly shaking the fire up and relieving it of the finer ashes. Further, as the upper surface of the grate-bars is inclined to the central dividing-line of the grate, the clinker that accumulates upon them is gradually worked out down the grooves and deposited in the ash-pit, thus keeping the grate clear and preventing the choking of the same. As there are no interlocking bars there is no possibility of the grate becoming clogged by clinkers or coals.

A few vibrations will be found sufficient to relieve the fire of ashes, and two long vibrations, one for each, will empty the grate of the coals completely, leaving it ready for a new fire; but the extent of the shaking will depend upon the kind of coal used and the amount of slate it contains and the quantity of clinker formed.

Stops can be placed under the arms *d*, or under the rock-lever C, to prevent the grate from being vibrated too far.

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

As an improvement in grates for coal-burning stoves, furnaces, and ranges, a grate consisting of two sets of bars, *a' b'*, each formed of the bars *c*, grooved on the upper surface and inclined from their axes, in combination, respectively, with rock-shafts *a b*, journaled in the frame of the grate, and operated through arms *d* by rock-lever C, whereby a vertical vibratory motion can be given alternately to the two sets of bars in opposite directions, substantially as described.

GEORGE JACKSON.

Witnesses:

JESSE HILLES,

WM. W. HOPKINS.