

I. PICKARD.

Coal Grate.

No. 110,157.

Patented Dec. 13, 1870.

Fig. 1.

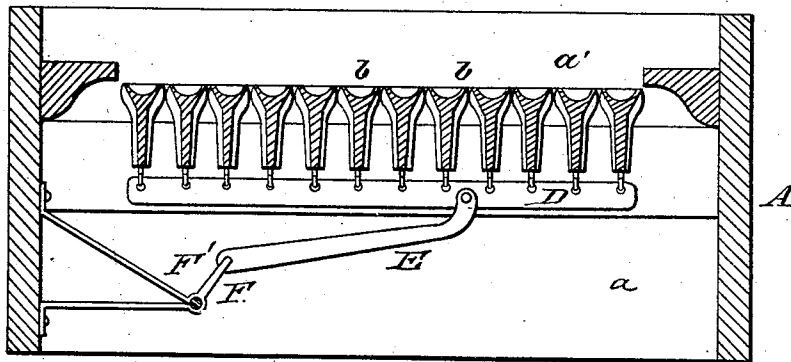


Fig. 2.

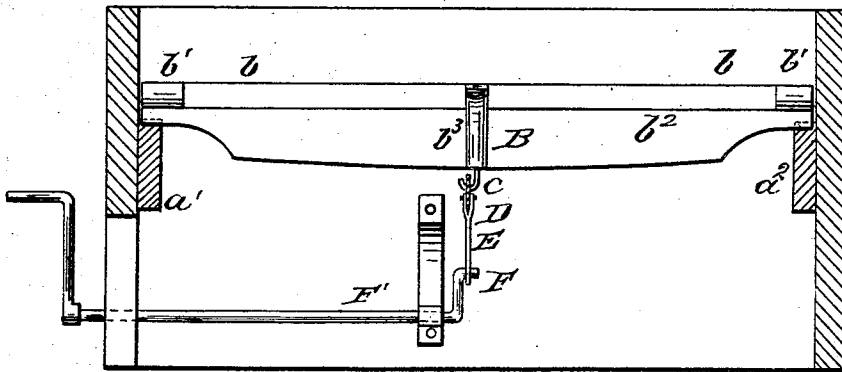
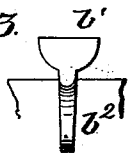


Fig. 3.



Witnesses  
E. A. Clarkson  
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# United States Patent Office.

IRA PICKARD, OF LENA, ILLINOIS, ASSIGNOR TO HIMSELF AND JAMES W. SLAGHT, OF SAME PLACE.

Letters Patent No. 110,157, dated December 13, 1870.

## IMPROVEMENT IN COAL-GRATES

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

### To all whom it may concern:

Be it known that I, IRA PICKARD, of Lena, in the county of Stephenson and State of Illinois, have invented a new and useful Improvement in Coal-Grate; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention consists in the peculiar construction of rocking-grate bars and in the means of operating the same, as will be hereinafter more fully set forth.

In the drawing—

Figure 1 represents a transverse vertical section of my improved grate;

Figure 2, a longitudinal section of the same; and

Figure 3, a cross-section of one of the bars.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and method of operation.

A represents the fire-box, which is provided with the usual ash-pit, *a*, and combustion-chamber *a'*.

It has also ledges or cross-bars, *a''*, upon which rest the ends of the grate-bars, as shown.

B represents a grate-bar, which consists of the fluted top *b*, solid ends *b'* *b'*, web *b''*, and middle projection *b'''*.

It will be observed that the lower edges of the ends *b'* *b'* are made rounding, as are also the sides of the same, by means of which construction the bar is enabled to rock upon its base when properly operated.

The top *b* of the bar is made narrower, of course, than the ends, in order to permit suitable draught through them.

For the purpose of operating these bars, I provide the following:

*c* represents a hook, which is cast into the grate-bar B, as shown, or otherwise suitably attached thereto.

D represents a bar, which is provided with holes into which are caught the hooks *c* *c*.

E represents a connecting-rod, by means of which the bar D is attached to the crank-arm F of the rod F'.

This latter is operated by means of a crank, lever, or other suitable means.

For the purpose of holding the grate-bars more se-

curely in place, I provide grooves upon the ledges, in which they rest, as shown.

The operation is as follows:

When it is desired to shake the fire, the crank or lever is placed upon the end of the rod F' and given an oscillating movement. This causes the grate-bars to rock upon their bases and break up the cinders, thus causing them to fall through, the ashes, of course, being delivered at the same time. It will readily be perceived that this movement differs widely from a sliding one, as the latter has no tendency to break the cinders, but simply to move them from place to place.

I am aware that a grate composed of three parallel bars, fluted at their tops, and with a projection at one end by which they are connected together by a rod, which causes the grates to rock to and fro, is not new.

My grate is made of a single piece of metal, and is connected to the fire-box by means of two ledges, *a''* *a''*, which have a series of notches made on their tops within which the ends of the grate rest.

My grate is strengthened above these ends, as shown at *b'*, and is flat instead of being fluted at these points.

The center of each grate is also strengthened, as shown at *b'''*, and under this enlarged piece is a hook, so that the grate is operated from the center, which causes the ashes and cinders to be shaken regularly, and prevents the bars from being clogged. This enlargement *b'''* serves to brace the edges of the groove in the top of the bar, and to act as a guide for keeping the bars suitably apart, and also to give sufficient strength to the hooks by which the grate is operated.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The rocking-grate bar B, having the groove *b*, solid ends *b'*, web *b''*, central ribs *b'''*, and hook *c*, combined with the notched supporting-ledges *a''* and rocking mechanism D E F, substantially as shown and described.

This specification signed and witnessed this 22d day of February, 1870.

Witnesses:

WM. WINTER,  
SAML. J. DODDS.

IRA PICKARD.