FICKETT & BENTON.

Grate Bar.

No. 111,047. Patented Jan. 17, 1871.

Fig. 1

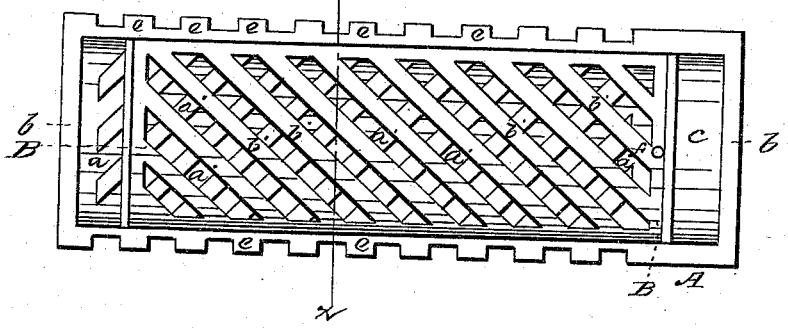
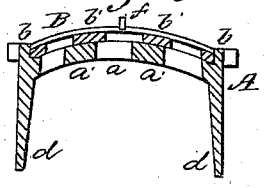


Fig. 2



Witnesses:

Wm. C. Loughborough

H. W. Clement

Inventors:

Albert Fickett

Charles C. Benton

United States Patent Office.

ALBERT FICKETT AND CHARLES C. BENTON, OF ROCHESTER, NEW YORK.

Letters Patent No. 111,047, dated January 17, 1871.

IMPROVEMENT IN GRATE-BARS.

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

To all whom it may concern:

Be it known that we, ALBERT FICKETT and CHARLES C. BENTON, of Rochester, in the county of Monroe and the State of New York, have invented certain new and useful Improvements in Grate-Bars; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is plan view of our invention.

Figure 2 is a transverse section through the dotted line *x*, fig. 1.

The object of our invention, the nature of which will be understood by reference to the specification and drawing, is to provide a simple and effective grate for burning small coal, coal-dust, and other fine fuel; and

To enable others to make and use the same, we will describe its construction and operation.

The grate-bar A is composed of a plate, *a*, figs. 1 and 2, having a convex upper surface, and provided with a rim or flange, *b*, projecting a slight distance above it, as shown in fig. 2.

The plate *a* has a "dead-space," *c*, at the front end, and also a shorter one at the rear, the remaining portion being composed of alternate bars *a'* and openings running diagonally across it, as shown in fig. 1.

The bar A has the usual stiffening-flanges *d*, and also projections *e* upon its sides, at the upper edge, which meet similar projections on the adjacent grate, forming openings for the passage of air to the fuel.

The sliding grate B is curved sufficiently to rest fairly upon the convex face of the plate *a*, and is provided, for its entire length, with alternate bars *b'* and openings also running diagonally across it, but in an opposite direction to the bars *a'* upon the plate *a*.

This slide fits loosely between the flanges *b*, and, being somewhat shorter than the grate-bar, is capable of being agitated longitudinally by means of the spur *f*.

It will be observed that the amount of opening through the grate always remains the same whatever be the position of the grate B. The convex form of the latter and the plate *a* increases the surface of the grate, admits more air to the fuel, and also prevents sagging when hot.

The operation of our invention is as follows:

After starting the fire the fuel, well dampened with water, is evenly distributed over the entire surface of the grates. When it is desired to clean the fire the grate B may be shaken by applying a rod, having a suitable eye at the end, to the spur *f*. This discharges the fine ashes and clinker that may be gathered, and if, any large lumps are formed, they are readily broken up by the peculiar action of the diagonal bars *a' b'*, which is a kind of drawing-cut, forcing the clinker backward and forward along the openings against the edges of the bars till it falls through.

The dead spaces *c* prevent the admission of air to the fuel at the ends of the grate, whereby the intense heat of the fire is kept away from the furnace-doors and bridge-wall, and the grate B allowed sufficient movement.

The ends of the grate B may be chamfered to an edge, whereby ashes that may gather upon the plate *a* are pushed away when the grate is shaken.

The bars *a'* of the plate *a* may be stiffened upon the lower side in any convenient manner.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The grate-bar A, in combination with the sliding grate B, when the diagonal bars *a'* run in an opposite direction to the diagonal bars *b'*, substantially as described.

2. The curved sliding grate B, in combination with the grated plate *a*, having a convex upper surface, as and for the purposes set forth.

3. The dead space *c* at one or both ends of the grate-bar, in combination with the sliding grate B, for the purposes specified.

ALBERT FICKETT.
CHARLES C. BENTON.

Witnesses:
WM. S. LOUGHBOROUGH,
F. H. CLEMENT.