(No Model.) 2 Sheets—Sheet 1.

J. T. FULLER.

GRATE BAR.

No. 569,375. Patented Oct. 13, 1896.

Fig. 1.

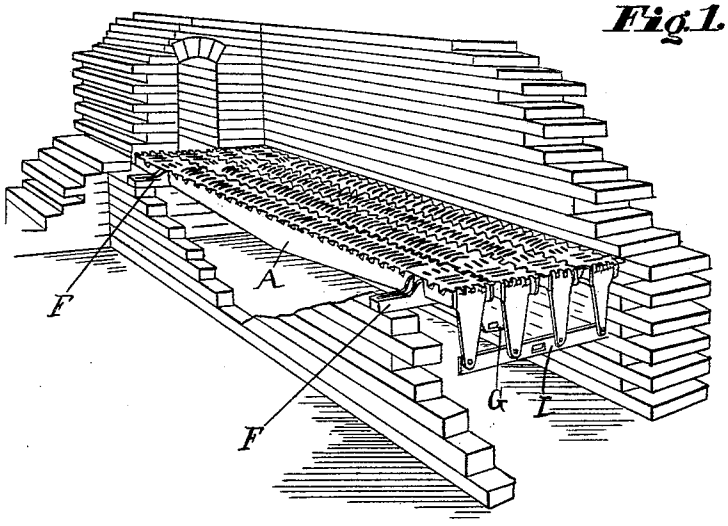


Fig. 2.

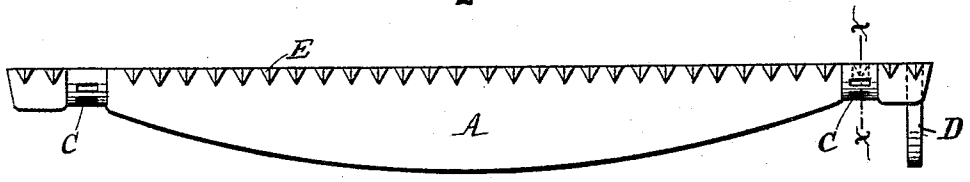
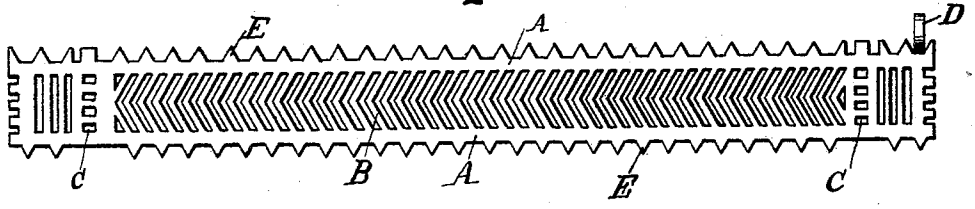


Fig. 3.



Attest:-
Edw. L. Dillon
P. F. Tripp

Inventor:-
James T. Fuller
By H. M. Hawley
his Atty.

(No Model.) 2 Sheets—Sheet 2.

J. T. FULLER.

GRATE BAR.

No. 569,375. Patented Oct. 13, 1896.

Fig. 4.

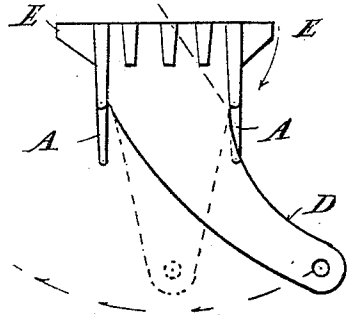


Fig. 4a.

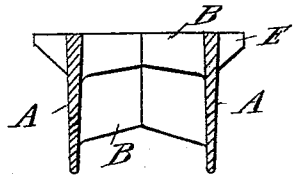


Fig. 5.

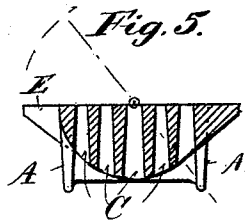


Fig. 6.

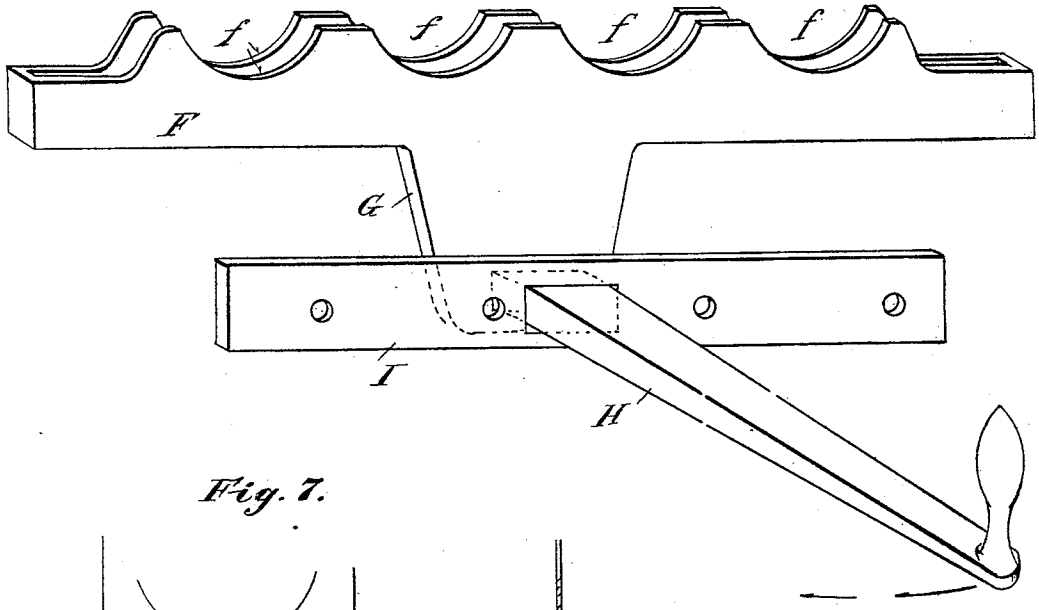
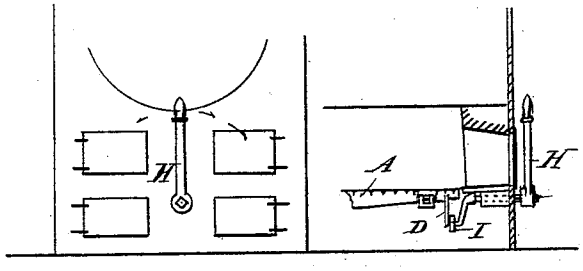


Fig. 7.



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C. F. Tripple

Inventor:—
James T. Fuller
By Alfred Halsted,
his Atty.

UNITED STATES PATENT OFFICE.

JAMES T. FULLER, OF CALVERT, TEXAS.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 569,375, dated October 13, 1896.

Application filed October 26, 1895. Serial No. 566,986. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. FULLER, a citizen of the United States, residing at Calvert, in the county of Robertson and State of Texas, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in grate-bars, the peculiarities of which will be hereinafter described and claimed.

In the accompanying drawings, on which like reference-letters indicate corresponding parts, Figure 1 represents a perspective view of a grate composed of a plurality of bars of my construction; Fig. 2, a side view of a single bar; Fig. 3, a plan view of the same; Fig. 4, an end view showing the rocker-arm; Fig. 4ª, a transverse section at the center of the bar; Fig. 5, a vertical transverse section through the bearing on the line *x x*, Fig. 2; Fig. 6, a perspective view of the front bearing-bar that supports a plurality of grate-bars, with the connecting rocker-bar and shaker-bar; and Fig. 7 another form of shaker-bar acting in a vertical plane instead of horizontally.

This grate-bar is especially adapted to the burning of lignite coal. I provide free ventilation in all its parts to prevent overheating, and so strengthen it and support it in suitable bearings that it may be readily operated, will not easily clog, and combines durability with simplicity and cheapness.

Referring to the drawings, each bar consists of a pair of girder-plates A A, located in parallel vertical planes and connected at the ends and at intermediate points by spanning-ribs B, as shown in Fig. 3. These girders are straight along their top edge and curved downward to a greater depth in the middle than near the ends. The spanning-ribs are also vertical and V-shaped in plan view to allow lateral expansion and contraction of the girders A A. Any irregular or non-direct form of transverse rib other than the V-shaped may be used for the same purpose, but this is the preferred form from its simplicity. The girder and spanning-ribs are preferably diminished in thickness from the top downward, which assists in sifting the burned fuel and prevents clogging. In the center the spanning-ribs B are deeper than at the ends of the girders to prevent the latter from curving or warping in use.

The bar is supported on bearings near the ends of the girders A A, but the bar extends beyond the bearing at each end.

The journal of the grate-bar is rounded or semicircular, as shown by Fig. 5. A series of perforations C extend upward through it near the middle, leaving bearing-surfaces at each side, as shown in Fig. 2. The journal is thus ventilated, and the ashes will drop through without clogging the bearing.

The overhanging ends of the grate-bar are likewise divided into openings and spanning-ribs, and one end has a downwardly-projecting lever-arm D, which may be straight, as in Fig. 1, or preferably curved, Fig. 4, whereby the bar may be tilted or rocked. Along the outside of the bar and projecting laterally from the upper edge of the girders A A are a series of angular teeth E, flat on top and sharply angular below. These teeth are so disposed along the girders that when two or more grate-bars are arranged side by side, as shown in Fig. 1, the teeth will intermesh, but leave a draft-space, as indicated. The rocking or tilting motion of each bar will take place along an axis substantially at its upper surface, as indicated in Fig. 5. The intermeshing teeth will be forced upward into the mass of fuel above, first at one side of the bar and then at the other, and the sharpened angular lower edge will sift and crush the half-burned fuel down between them into the ash-box below. The curved lever-arm will tilt to about eighty degrees to the horizontal.

The grate-bars are journaled in supporting-bars F, which are composed of two parallel plates with an intervening air-space, and provided with a series of semicircular bearings *f*, fitting the journals of the grate-bars at each side of the opening C C. The ends of the bearing-bars are suitably supported by being let into the wall of the furnace or otherwise. The front bar F has a downward leg G with a hole therein adapted to receive a shaker-bar H, that passes loosely through an opening in a connecting rocker-bar I, pivoted to the arms D of the grate-bars. The

shaker-bar H will thus rock the grate-bars simultaneously when the outer end of the shaker is moved back and forth horizontally.

If desired, a vertically-operating shaker-bar may be coupled to the grate-bars, as shown in Fig. 7.

I do not limit myself to the exact construction herein shown and described.

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

1. An improved grate-bar provided with a semicylindrical journal rounded below, and its upper surface forming part of the grate-surface, with draft-spaces between the cross-walls forming the bearing portions, in combination with a supporting-bar matching with said cross-walls and open under said draft-spaces, substantially as described.

2. An improved grate-bar having a perforated journal located away from the end, and forming part of the upper face of the grate-bar, consisting of transverse cross-walls and intermediate downward spaces, for sifting ashes therethrough and the ventilation of said journal, in combination with an open supporting-bar.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES T. FULLER.

Witnesses:
J. G. MARS,
J. A. DORSEY.