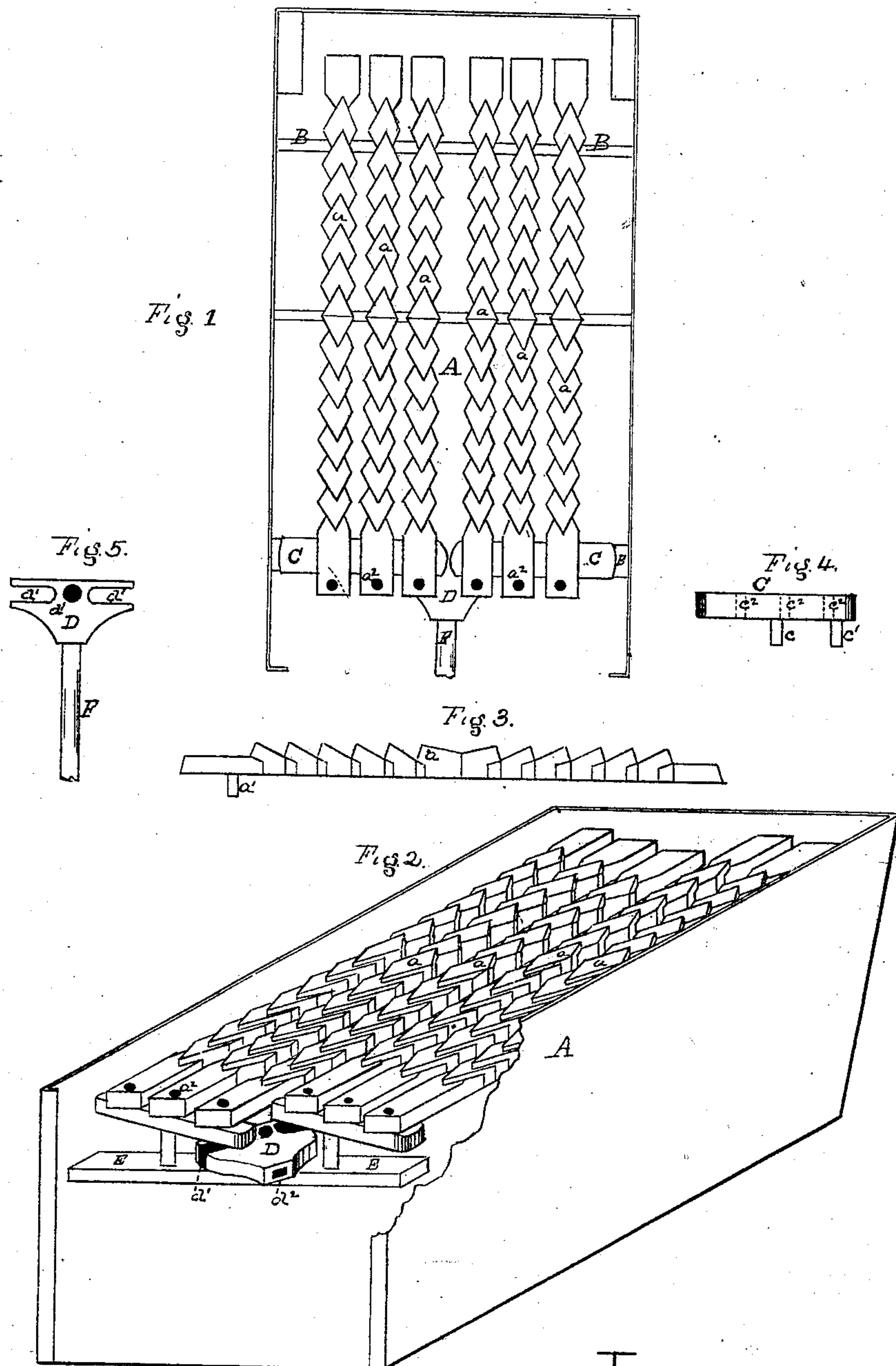


J. B. LARKIN.
Grate-Bars.

No. 151,706.

Patented June 9, 1874.



WITNESSES
James E. Kay
F. W. Rutter

INVENTOR
John B. Larkin
By Bakewell & Kerr
Attys

UNITED STATES PATENT OFFICE.

JOHN B. LARKIN, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **151,706**, dated June 9, 1874; application filed May 6, 1874.

To all whom it may concern:

Be it known that I, JOHN B. LARKIN, of Pittsburg, in the county of Alleghany and State of Pennsylvania, have invented a new and useful Improvement in Grate-Bars; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a plan view of the grate. Fig. 2 is a perspective view, the relative position of the bars having been changed by canting the pivoted agitating-bar. Fig. 3 is a side view of one of the grate-bars. Fig. 4 is a view of one of the agitating-bars detached, and Fig. 5 is a view of the coupling device.

My invention relates to the construction of grate-bars, and to the devices for shaking grates, composed of a series of separate bars; and it consists, first, in so constructing bars, with notched or serrated sides and faces, that the draft or air space between the bars may be increased or decreased in size at pleasure by altering the position of the bars, and so that the superimposed coals or clinkers will form no obstruction to the movement of said bars; secondly, in a pivoted agitating-bar for operating a series of grate-bars, whereby the alternate grate-bars of a series may be caused to slide laterally in opposite directions, thus altering the relative position of the bars in shaking the grate, and for increasing and decreasing the size of the draft or air spaces between the bars; and, thirdly, in a coupling device for imparting vibratory motion to two or more agitating-bars.

I will now proceed to describe my invention, so that others skilled in the art can make and use the same.

In the drawings referred to, A represents the grate, composed of a series of bars, *a*. These bars are of a peculiar construction, and have the appearance, upon their upper surface, of a series of overlapping diamond-shaped pieces, the angles pointing in opposite directions—from or toward the center of the bar, as may be desired. Each side of the bar, therefore, has a serrated or notched appearance, and the upper surface is made up of a series of inclines. The object of this construction is, that the bars when parallel, their ends

being in line, shall form diamond or other shaped openings to allow a free passage of air to the bed of coals; but when the relative position of the bars is changed, so as to bring the projections upon the side of one bar opposite to the notches on the side of another bar, then the air spaces shall be decreased. The overlapping diamond-shaped inclines form pointed or cutting edges upon the upper face of the grate, which enables it to readily free itself, or displace any clinkers or coals that may clog its movement. The rear end of these bars *a* is supported by bar or brace B. The front ends of the bars are attached by means of a pivot or peg, *a*¹, dependent from the end of each bar, and are also provided with a slot, *a*², to enable the bar *a* to be lifted off of the agitating-bar, and pulled out when it is desired to dump the grate. This agitating-bar C is provided with a dependent peg, *c*, or pivot, which enters a socket in a supporting-bar, E, and has a second dependent peg or pivot, *c*¹, which works in a slot in the coupling-bar D. The upper face of the agitating-bar is provided with a series of openings, *c*², corresponding in number to the number of grate-bars which are to be attached, and said openings receive the dependent pegs or pivots of the grate-bars *a*. D represents a device, which I term a coupling-bar, intended for operating two or more of the agitating-bars. This coupling may consist of a single bar of such length as will work between the pivots of the agitating-bars, and has a central opening, *d*, into which enters a pin on the bar *e*, and upon which it rotates, and to either side of the central opening lateral slots *d*¹, which receive the dependent pegs *c*² of the agitating-bar. It is also provided with a socket, *d*², for receiving the end of the shaking bar or lever F.

It will thus be seen that my improved grate, as a whole, is composed of a series of separate grate-bars, *a*, one or more pivoted agitating-bars, C, by means of which the alternate grate-bars of the series are caused to slide laterally in opposite directions, to alter the relative position of the bar, and, when two or more series of grate-bars and their agitating-bars are used, a coupling-bar for imparting vibratory motion simultaneously to the agitating-bars of the series.

The operation of my devices is as follows: A shaking motion is imparted to the coupling-bar D by means of the lever F, and is in turn communicated, through the pivots c^1 c^1 moving in the slots of the coupling-bar, to the agitating-bars, which, in turn, cause a lateral movement in opposite directions to the alternate bars of the series forming the grate. By my improved form of bar having the side notches, I am enabled, by changing the relative position of the bars, to increase or diminish the size of the draft or air space between the bars. By canting or moving the agitating-bars, the projections upon one bar are brought opposite to the notches or depressions upon the bars on each side, and the bars caused to approach each other. When the bars are parallel, their ends resting upon the same line, then the air or draft spaces between the bars will be diamond-shaped, and, of course, give an increased air-space. The upper surface of the bars being inclined and terminating in points, or, in other words, being diamond-shaped, will have the effect of cutting and loosening any lumps of coal or clinkers which may rest upon them, enabling the grate to be more easily moved or shaken.

Heretofore agitating-grates have had square surfaces, which forced along the superimposed

coal, or crushed it between the bars, requiring great force to free the bars when they become clogged. This is avoided by my construction. By means of the coupling devices I am enabled to use any required number of agitating-bars to obtain any grate-surface required.

Having thus described my invention, I claim—

1. A grate-bar, the upper face of which is composed of a series of overlapping diamond-shaped surfaces, and the sides of which are notched or serrated, substantially as and for the purpose specified.

2. A pivoted agitating-bar, in combination with a series of grate-bars having notched or serrated edges, constructed so that the alternate grate-bars of a series may be caused to slide laterally in opposite directions, substantially as and for the purposes specified.

3. In combination with a series of grate-bars and pivoted agitating-bars, a coupling device, substantially as and for the purpose specified.

In testimony whereof I, the said JOHN B. LARKIN, have hereunto set my hand.

JOHN B. LARKIN.

Witnesses:

T. B. KERR,

F. W. RITTER, Jr.