(No Model.) 2 Sheets—Sheet 1.

W. G. FISCHER.

GRATE BAR AND LOCK FOR THE SAME.

No. 301,705. Patented July 8, 1884.

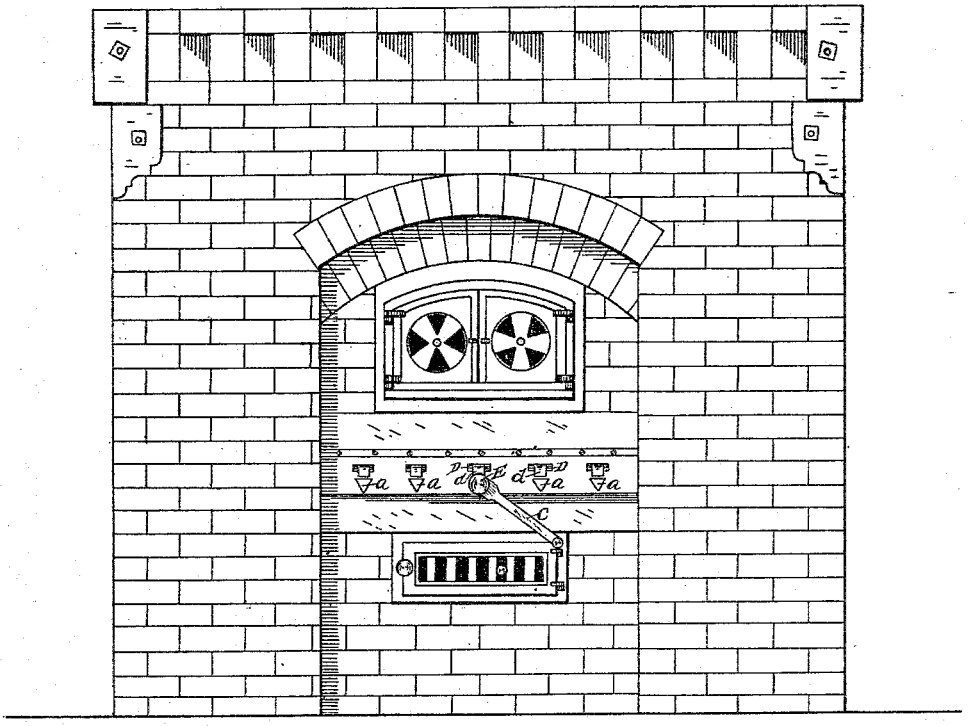

Fig. 1.

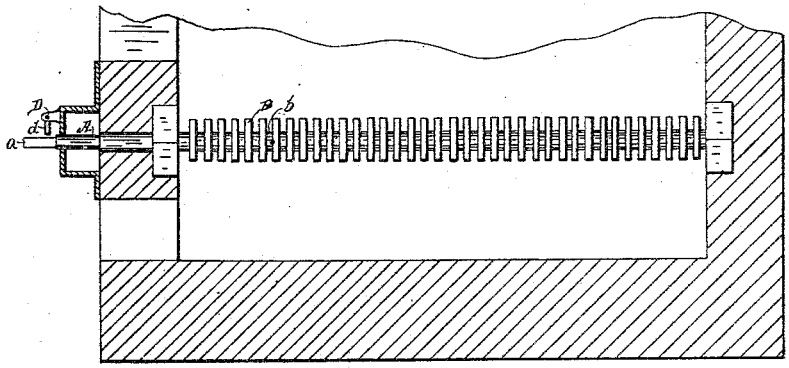

Fig. 2.

ATTEST— INVENTOR—

E. K. Hill.

Walter L. Chamberlin. William G. Fischer.

(No Model.) 2 Sheets—Sheet 2.

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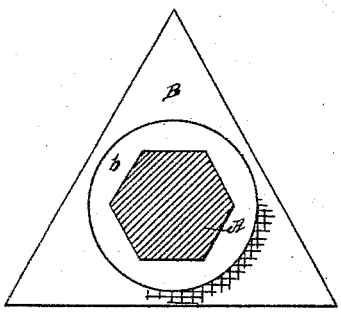

Fig. 4.

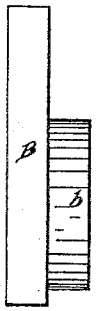

Fig. 5.

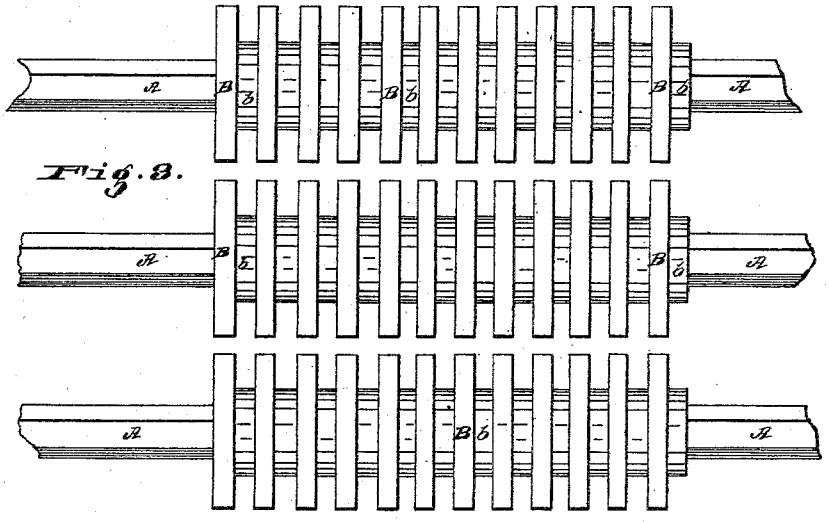

Fig. 3.

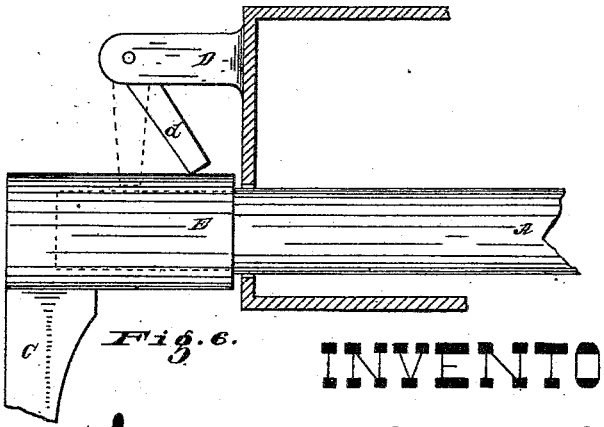

Fig. 6.

ATTEST.

E. K. Hill.

Walter L. Chamberlin.

INVENTOR.

William G. Fischer

UNITED STATES PATENT OFFICE.

WILLIAM G. FISCHER, OF CINCINNATI, OHIO.

GRATE-BAR AND LOCK FOR THE SAME.

SPECIFICATION forming part of Letters Patent No. 301,705, dated July 8, 1884.

Application filed October 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, WM. G. FISCHER, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Grate-Bars and Locks for the Same, of which the following is a specification.

The object of my invention is to provide a grate-bar for use in stoves, ranges, furnaces, and the like, which bar may be easily shaken or locked, and to so construct the bar that portions of it may be replaced when burned out without the necessity of putting in an entire new bar.

The various features of my invention and the advantages of each will be fully apparent from the following description and the drawings, in which—

Figure 1 represents the front of a furnace employing my grate-bars. Fig. 2 is a vertical longitudinal section through the fire-chamber and ash-pit, showing the side of one of the bars in position. Fig. 3 is a plan view of a portion of three grate-bars, showing the position they occupy with relation to each other. Fig. 4 is a side view, and Fig. 5 an edge view, of one of the triangular disks, which in connection with the central bar, make up the completed grate-bar. Fig. 6 is an enlarged view representing the locking and shaking device.

The grate-bar consists of a bar, A, preferably hexagonal in cross-section, on which bar are loosely slipped a number of triangular disks, B. The bar A is preferably made of wrought-steel, but may, if desired, be made of iron, and the disks B may be made of cast-iron. On one side of each disk B is a circular projection, *b*, the periphery of which does not extend quite to the sides of the triangular disk, so that when the disks are placed on the bar A, the face of the projection *b* will come in contact with the face of the disk next to it, and spaces will thus be left between the various disks, as shown in Fig. 3, through which spaces air can circulate. These disks B, as before stated, are slipped loosely on the bar A, and thus when any disk becomes burned out of shape it may be readily replaced. The triangular shape of the disks always forms a straight even surface, whether one, two, or more bars be employed, and the apex of the triangle being down, abundant air-circulating space is left around the grate-bars, and the grate-bars cannot therefore be warped or twisted. Each of the bars A is journaled at each end, independently of the others, in the walls of the stove or furnace, the ends of the bars A at their points of support being rounded to permit them to turn freely. The extreme front end, *a*, of each bar A is forged to an angular shape, preferably triangular, as shown in Figs. 1 and 2, the plane of the sides of the triangle coinciding with the edges of the triangular disks B when the latter are on the bars A. Above this triangular end *a* of each bar is a bracket, D, at the end of which is pivoted the upper end of a pawl, *d*, the lower end of which is thus suspended above the end *a* of the bar, a slight space being left between this lower end and the upper face of the end *a*. The purpose of this space is to permit a slight rocking motion to be imparted to the grate without unlocking it to such an extent as to allow it to turn entirely around, as when it is desired to slightly stir the coals.

For the purposes of shaking or turning the grates, I employ a crank, C, having a head, E, in which is formed an opening which fits onto the end *a* of the grate-bar. When it is desired to shake the grate only to a slight extent, the crank is placed on the end *a* a short distance only—that is, to such an extent that it will not interfere with the pawl *d*—and the grate may then be shaken as much as will be permitted by the space between the end of the pawl and the upper face of the end *a*. If it is desired to shake the bar to a greater extent than this, or to turn it entirely over, the crank is pushed farther onto the end *a*, and the head E will then lift the pawl *d*, as shown in Fig. 6, and this head being round, the crank may be turned entirely around, and thus the grate will be turned, and when the crank is removed from the bar the pawl *d* drops down, as indicated by dotted lines in Fig. 6, thus automatically locking the grate. In this manner any grate may be shaken to the desired extent, and when the grates are not to be shaken they are always locked to prevent them from turning. Either edge of the triangular disks B may form the upper face of the grate and by thus employing the different portions of the disks as the upper surface of the grate, they are less liable to burn out, and will therefore last

longer than grates in which only one surface is provided upon which the fire lies.

As before stated, the bar A is preferably hexagonal in cross-section; but, if desired, it may be of other angular shapes which will prevent the disks B from turning thereon.

The various features of my invention are preferably employed together; but one or more of said features may be employed without the remainder, and one or more of said features may, so far as applicable, be employed in connection with grate-bars other than those herein particularly specified.

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

1. The revolving grate-bar A B, provided with an end, *a*, angular in cross-section, in combination with the pawl *d*, suspended from a bracket or support above the end *a*, the lower portion of said pawl preventing the grate-bar from turning, substantially as and for the purposes specified.

2. The revolving grate-bar A B, provided with a triangular end, *a*, in combination with a crank, C, having a head, E, adapted to fit onto the end *a*, and a pawl, *d*, suspended from a bracket, D, above the end *a*, substantially as and for the purposes specified.

3. The revolving grate-bar A B, provided with end *a*, angular in cross-section, in combination with a crank, C, having a head, E, adapted to fit onto the end *a*, and a pawl, *d*, suspended from a bracket above the end *a*, substantially as and for the purposes specified.

4. The combination of two or more revolving grate-bars and locking devices, substantially as herein described, whereby each bar is automatically locked independently of the others, and which will permit each bar to be shaken or revolved independently of the others, substantially as and for the purposes specified.

5. The revolving grate-bar A B, provided with an end, *a*, angular in cross-section, in combination with the pawl *d*, suspended above the end *a*, the lower edge of the said pawl being a slight distance from the adjacent portion of the grate-bar, substantially as and for the purposes specified.

WILLIAM G. FISCHER.

Witnesses:
ED. R. HILL,
WALTER CHAMBERLIN.