

J. C. BARTLETT.

GRATE.

APPLICATION FILED DEC. 29, 1908.

946,316.

Patented Jan. 11, 1910.

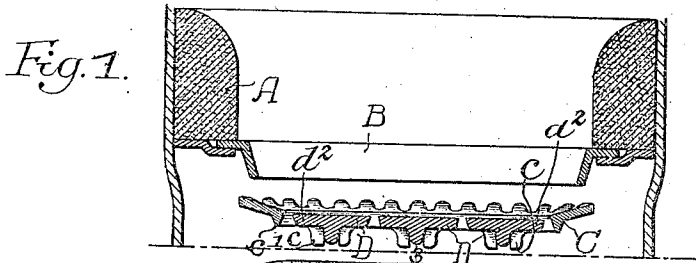


Fig. 2.

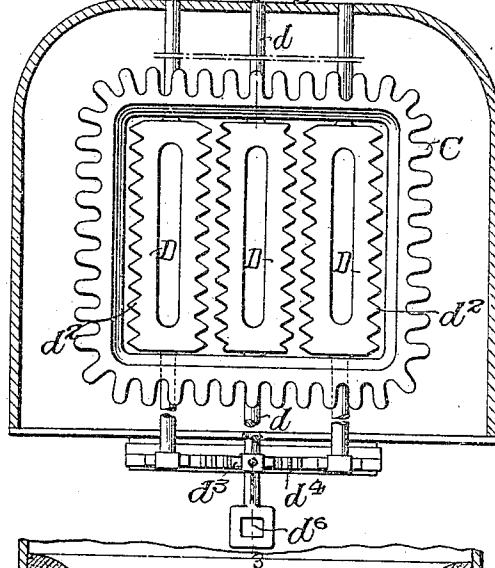


Fig. 3.

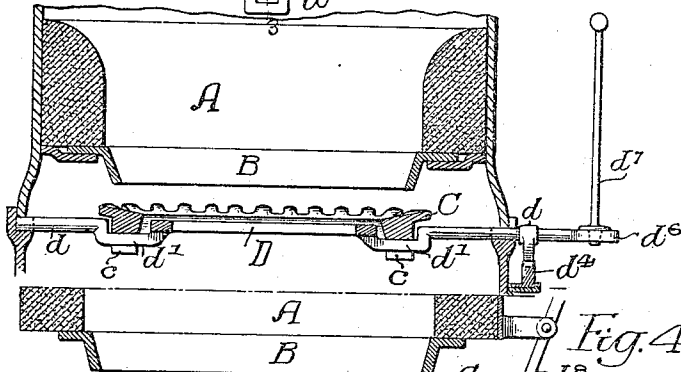


Fig. 4.

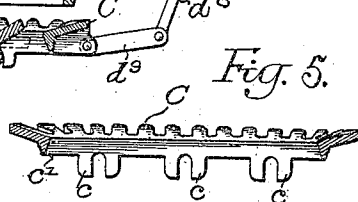


Fig. 5.

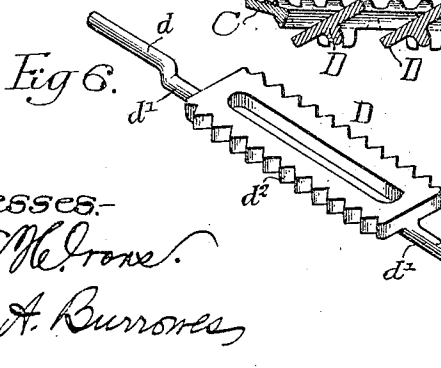


Fig. 6.

Witnesses:
Louis H. Jones.
Wills A. Burrows

Inventor:
 John C. Bartlett.
 by his Attorneys
Wm. & Wm.

UNITED STATES PATENT OFFICE.

JOHN C. BARTLETT, OF PHILADELPHIA, PENNSYLVANIA.

GRATE.

946,316.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed December 29, 1908. Serial No. 469,789.

To all whom it may concern:

Be it known that I, JOHN C. BARTLETT, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Grates, of which the following is a specification.

One object of my invention is to provide a grate of the type ordinarily employed in furnaces of heaters, stoves and the like, which while being simple and substantial in construction may be conveniently operated to shake out or dislodge the ashes accumulated at the lower portion of the fire.

It is further desired to provide a grate made a number of parts so interconnected that one or more of them shall be moved when power is applied to another part; it being especially desired that the parts of the grate shall move in different ways and directions in order that the ashes may be efficiently and quickly removed with a minimum of exertion.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which:—

Figure 1, is a vertical section of a portion of a furnace, illustrating my invention as applied thereto; Fig. 2, is a plan of the grate employed in the furnace shown in Fig. 1; Fig. 3, is a vertical section on the line 3—3, Fig. 2; Fig. 4, is a slightly modified form of my invention in which the power for shaking the grate is applied to the grate frame; Fig. 5, is a vertical section of the grate frame; and Fig. 6, is a perspective view of one of the grate bars.

In the above drawings, A represents the fire brick lining of a typical furnace, at the bottom of which is supported a basket B having inwardly sloping sides preferably notched to form teeth. Immediately below the basket are mounted a grate frame C and any suitable number of grate bars D; these latter being preferably of the construction shown in Fig. 6 and having extending from each end a bar d . These bars enter suitable bearings formed in the frame of the stove or furnace so as to permit the grate bars to rotate upon them as axes. Each of the extensions d is provided with an eccentric or crank portion d' of any desired or suitable eccentricity and from Figs. 1, 3 and 5, it will be noted that the grate frame C, which is of a rectangular and annular form, has at its opposite ends a number of pairs of downwardly

extending lugs c , each pair of which extends around one of the crank portions; that is to say, the said frame C rests upon and is supported by the crank portions of the grate bars, and it will be seen to consist of a substantially flat and in the present instance generally rectangular, open frame, in the central space of which are arranged the three grate bars D. The inner edges of the frame C are preferably provided with a downwardly extending flange c' which is adjacent to the ends of the teeth d^2 of the grate bars, and if desired, I may also form teeth in the outer edges of said grate frame. Each of the grate bars has fixed to its rod d a gear d^3 and all of said gears are placed in the same plane so as to be capable of engagement with a toothed rack d^4 supported in any suitable manner upon the framework of the furnace so as to be longitudinally movable.

The central one of the grate bars D in that form of the invention shown in Figs. 1 to 3 inclusive, has its rod d provided with an eye d^5 for the reception of an operating lever d^6 whereby it is possible to impart an oscillatory movement to said grate bar.

It will be noted that the grate frame C extends immediately below but some distance from the lower edge of the basket B and when one of the grate bars D is oscillated as above noted, not only are the remaining grate bars simultaneously oscillated by power transmitted from the gear d^3 on the first bar through the rack d^4 and thence to the other gears, but the grate frame C is itself given a reciprocatory motion, and is, at the same time, slightly raised and lowered owing to the fact that it rests upon the eccentric or crank portions d' of the various grate bars. The grate frame thus advances toward and recedes from the bottom of the basket B at the same time that it is moved to and fro under the same, while in addition the oscillation of the grate bars causes them to be alternately tilted in opposite directions, so that the fire supported on the grate is very thoroughly stoked and the ashes quickly separated.

Instead of applying to the grate bars the power for shaking the grate, it may be, if desired, applied as shown in Fig. 4, where a suitable operating lever d^8 is connected by a link d^9 to the grate frame C which is not only reciprocated by it, but through the cranks d' , imparts an oscillatory movement

to the grate bars so that the operation is similar to that above described.

From the description and illustration it will be obvious that the fire may be cleaned
5 with the greatest convenience by the use of a poker inserted between the lower edge of the basket B and the upper surface of the grate frame, and in addition the fire may
10 be easily dumped by a sufficient rotation of the grate bars.

I claim.

1. A grate for a furnace consisting of a grate bar having crank structures and rotatable about its longitudinal axis; with a
15 grate frame carried on said crank structure; and means for rotating the grate bar and thereby causing a bodily up and down movement of the grate frame.

2. The combination in a grate of a grate bar rotatable about its longitudinal axis; and a grate frame mounted on said bar; said grate frame and bar being so connected that the grate frame is bodily raised or
25 lowered when the grate bar is rotated about its longitudinal axis.

3. The combination of an annular grate frame; a grate bar supporting said frame; with means for causing a simultaneous oscillation of said bar and a bodily up and
30 down movement of the frame.

4. The combination in a grate of a supporting structure; a grate bar carried thereby and having crank portions; with a grate frame carried on said crank portions and
35 free to move bodily up and down; with means for causing longitudinal turning of the grate bar and thereby simultaneously oscillating said frame.

5. The combination in a furnace of a
40 basket; a plurality of grate bars having cranks; an annular grate frame carried

solely by said cranks adjacent to the basket; and means for longitudinally turning the grate bars to bodily raise or lower the grate frame.

6. The combination in a furnace of a basket; a movable grate frame supported below said basket; grate bars mounted to turn on their longitudinal axes; and means for simultaneously moving the grate frame
50 and the bars; said means including connections between the frame and the bars capable of causing an up and down movement of said frame when said bars are turned on their axes.

7. The combination in a grate of a series of grate bars each having a crank at each end and mounted to be free to turn on longitudinal axes; with a grate frame extending around the fuel supporting portions of said
60 bars and supported on the crank portions thereof so as to be bodily raised or lowered when said grate bars are turned.

8. The combination in a furnace of a basket; a series of grate bars mounted below the same and free to turn on their longitudinal axes; an annular grate frame supported on said grate bars under the basket and surrounding the fuel supporting
70 portion thereof; with connecting means between the frame and the bars arranged to cause an up and down movement of said frame relatively to the bars when the latter are axially turned.

In testimony whereof, I have signed my
75 name to this specification, in the presence of two subscribing witnesses.

JOHN C. BARTLETT.

Witnesses:

WM. E. SHUPE,
WM. A. BARR.