

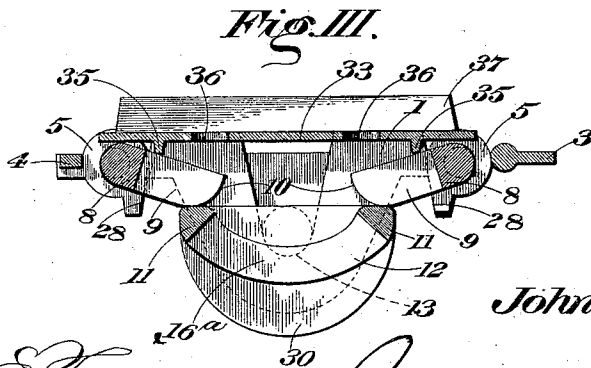
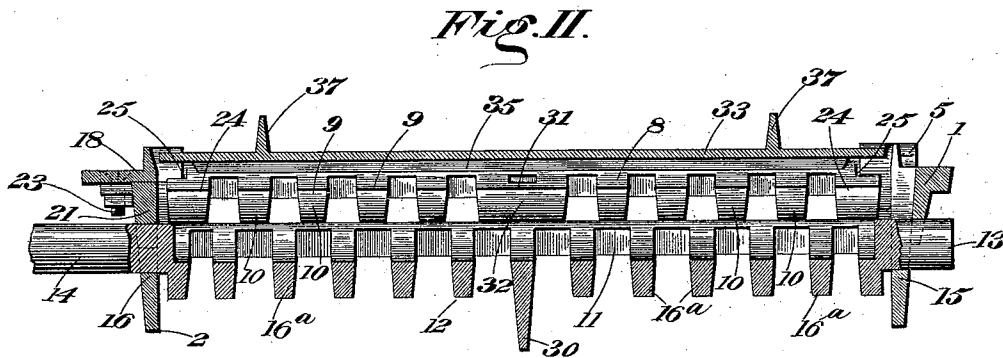
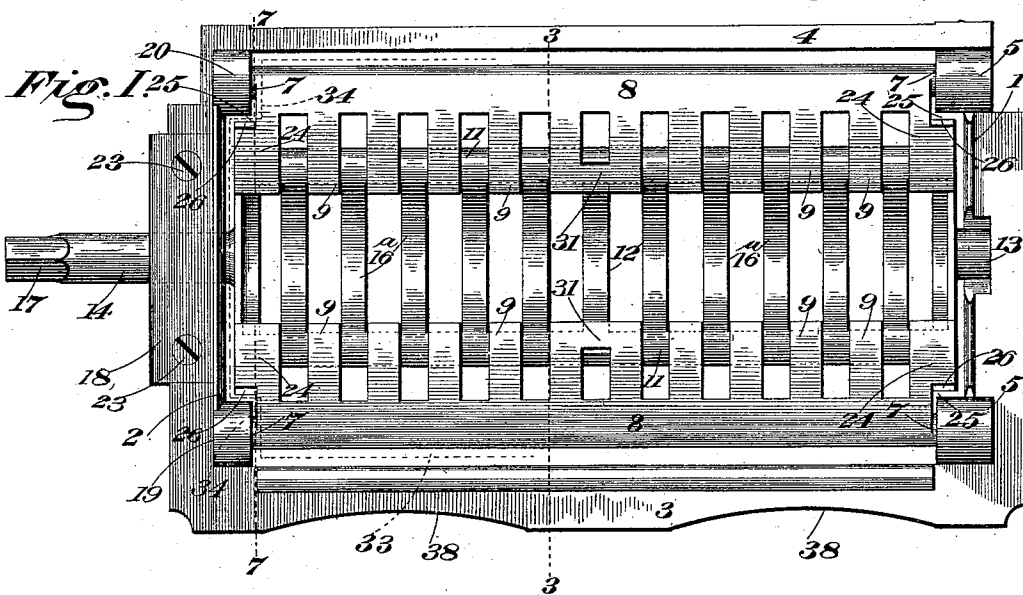
(No Model.)

2 Sheets—Sheet 1.

J. H. BEEBY.
STOVE GRATE.

No. 543,841.

Patented Aug. 6, 1895.



Witnesses

M. C. Fowler
Snack

John H. Beeby
Inventor

By Joseph L. Perkins
Attorney

(No Model.)

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Fig. IV.

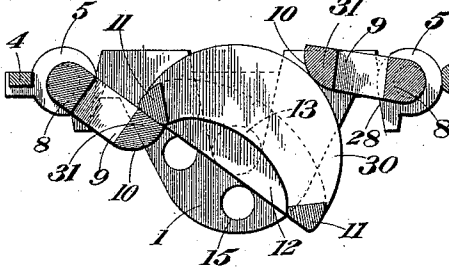


Fig. V.

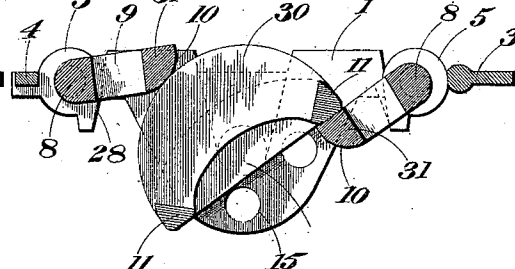


Fig. VI.

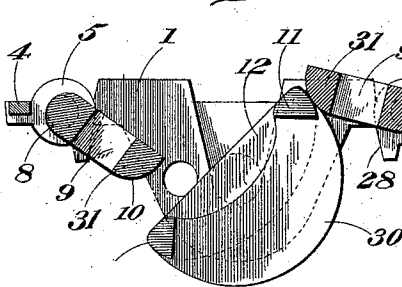
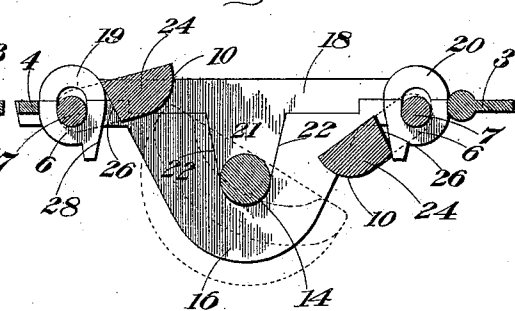


Fig. VII.



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UNITED STATES PATENT OFFICE.

JOHN HENRY BEEBY, OF MILWAUKEE, WISCONSIN.

STOVE-GRATE.

SPECIFICATION forming part of Letters Patent No. 543,841, dated August 6, 1895.

Application filed October 15, 1894. Serial No. 525,938. (No model.)

To all whom it may concern:

Be it known that I, JOHN HENRY BEEBY, of Milwaukee, county of Milwaukee, State of Wisconsin, have invented certain new and useful Improvements in Stove-Grates, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce an improved coal-burning grate, which is especially adapted to facilitate the complete dumping of the contents of the grate or the removal of clinkers without dumping the contents. It is also designed to be readily convertible into a wood-burning grate.

In the accompanying drawings, Figure I is a top plan view of my grate, the parts being shown in the normal position. Fig. II is a longitudinal section thereof. Fig. III is a section on the line 3 3 of Fig. I. Fig. IV is a similar view showing the middle grate at the complete limit of its movement in one direction. Fig. V is a similar view showing the grate at the complete limit of its movement in the opposite direction. Fig. VI is a view showing a partial movement of the middle grate, by which the removal of clinkers is facilitated without dumping the entire contents of the grate. Fig. VII is a view on the line 7 7 of Fig. I, looking toward the key-piece, and designed, also, to exhibit the side-grate limiting mechanism.

Referring to the figures on the drawings, 1 and 2 indicate the end pieces of my grate-frame, that are preferably cast integrally with a reinforced back piece 3 and a front brace 4. The several parts cast in one piece constitute a complete rectangular frame that is adapted to support the movable parts of the grate without depending upon the contiguity of any other part—for example, the ordinary fire-bricks (not illustrated) to hold any of the parts of the grate proper in position.

In dumping-grates in ordinary use an objectionable feature exists that the accumulation of ashes or clinkers tends to altogether interrupt the perfect operation of the machine or to materially impede it.

One of the chief objects of my invention is to prevent the accumulation of resisting material in any part where it tends to interfere with the proper operation of the mechanism. It is with this view that I provide in one of

the end pieces—for example, the end piece 1—completely-cylindrical boxes 5 and in the other end piece semicylindrical boxes 6. These boxes are designed to receive the trunnions 7 of the front and back grate-bars 8.

9 indicates fingers that extend from one side of each of the grate-bars, and are in practice cast integrally with it. They have rounded contours 10 upon their lower projecting ends that ride smoothly upon the side ribs 11 of a center grate 12, whose trunnions 13 and 14 are supported in bearings 15 and 16, that depend from the bottom of the end pieces, and are preferably located so as to bring the center grate 12 low enough to support, by the side ribs 11, the fingers 9 in a slanting position. The ribs 16^a of the center grate are concave or dish-shaped, and consequently the tendency of the entire grate is to precipitate its contents toward the middle of the center grate. The trunnion 14 is prolonged beyond its bearing-support, and terminates in a square end 17, designed to be actuated in the ordinary way by a crank-handle. (Not illustrated.)

18 indicates a key-piece that carries bearing-coverings 19 and 20 for the semicylindrical bearing in the end piece 2 and a medial bearing 21, that covers and restrains the trunnion 14. The key-piece is preferably set into a recess 22 in the upper surface of the end piece 2, so that its surface may come flush with the surface of the end piece and form substantially a part thereof.

23 indicates bolts, by which the key-piece may be united to the end piece.

The extreme end fingers 24 of the front and back grates are made wider than the ordinary fingers 9, so that they may nearly fill the spaces between them and the end pieces 1 and 2 and prevent the access and interference of ashes or clinkers. A recess 25 in each of the end fingers affords accommodation to the adjacent bearing-piece and provides a stop-ledge 26 on each side grate, which in the upward movement thereof strikes against one of the caps 19 and 20 and limits its upward movement, so as to prevent the grate from passing out of reach of the operative function of the middle grate. The same ledges 26, when the support of the side ribs 11 is withdrawn from either of the side grates, strikes the stop-lugs

28, that project from the bottom of the end pieces and prevent the side grates from dropping lower than about an angle of forty-five degrees.

5 The design of this construction will be apparent from a consideration of Fig. VI of the drawings. By partially turning the trunnion 14, so that the rib 11 of the middle grate is separated some distance from the ends of the
10 fingers 9, a space will be afforded between the fingers and the middle grate, through which, by the aid of an ordinary poker, the clinkers can be ejected. The dished shape of the middle grate cross-pieces prevents the dumping of
15 the grate while in this position or the inadvertent loss of fuel, while at the same time the engagement of the ledges 26 with the stop-lugs 28 prevents the appearance of any vertical disalignment between the ends of the
20 fingers and their rib 11.

Attention may be directed at this juncture to the fact that the side grates are operated exclusively by the oscillation of the middle grate, and that while the operation of each
25 side grate is precisely similar, yet, in practice, the back grate would be the one which would generally be set in the position just described for the removal of the clinkers, that one being more easily accessible to the manipulation
30 required.

If instead of cleaning the grate it is desired to dump the entire contents, a complete oscillation of the center grate first in one direction and then in the other will accomplish
35 this result. A not unusual objection to dumping-grates usually is that when they are moved in one direction it is difficult to oscillate them in the opposite direction on account of the accumulation between the bearing parts of
40 the contents of fire-pot. I insure facility of operation of my grate at all times by employing upon the bottom thereof a semielliptical flange or web 30, which may consist of a mere
45 16°. It is designed to ride against bridge-pieces 31, which span the spaces between the extremities of the central adjacent fingers 9 on the side grates, and which having curved
50 surfaces 32 to conform with the bearing-faces 10 of the fingers 9 ride easily upon the flange 30 and support the side grates in the horizontal position as long as the bottom of the center grate is upturned.

33 indicates a false bottom provided with
55 corner notches 34, that are designed to fit around the upwardly-projecting bearing-pieces of the side grates and to hold the false bottom firmly in position above the coal-grate. The false bottom is designed to convert the
60 coal-grate into a wood-grate, and may be provided with strengthening and supporting flanges 35, placed lengthwise upon its lower under surface. It is also provided with ap-

ertures 36 and transverse wood-supporting ribs 37 for insuring circulation of air to sup- 55
port combustion above the false bottom. When the false bottom is to be used, all that is necessary to do is to dump the coal-grate of its entire contents, set the bottom in position, and kindle the fire. It may be well to 70
add that the employment of an independent rectangular grate-frame affords means for avoiding the use of the fire-bricks to retain the movable parts in the frame, an arrangement frequently resorted to in dumping- 75
grates. The objection to this is when the bricks crack while in use they are apt to be prematurely dislocated by the jar against them of the moving parts. The back piece 3 of the grate-frame may be provided with recesses 38 for the admission of currents of air 80
that tend to prevent unnecessary heating of the frame at that part and to prevent accumulation of dust above the frame.

What I claim is— 85

1. The combination with a grate frame, side grates pivoted therein and bridge pieces on the side grates, of a center grate carried by the frame underneath the side grates, and a flange on the bottom of the center grate adapted to support the bridge pieces, substantially 90
in the manner and for the purpose specified.

2. The combination with a grate frame and side grates pivoted therein and bridge pieces on the side grates, of a center grate carried 95
by the frame underneath the side grates and provided upon its bottom with a lateral flange adapted to support the bridge piece of one side grate to sustain the same at a suitable distance from the center grate, and means for 100
limiting the movement of the other side grate whereby either of the side grates may be sustained out of close proximity with the center grate, substantially as specified.

3. The combination with a grate frame having semi-cylindrical bearings provided with depending stop lugs, of caps for said bearings, side grates journaled in the bearings, recessed terminal fingers upon the side grates adapted to strike against the caps and stop lugs, to 105
limit the movement of the side grates in either direction, substantially as specified. 110

4. The combination with a grate frame having bearings protruding above its surface, dumping grates therein, and a removable 115
ribbed and perforated false bottom provided with recesses to accommodate the protruding bearings whereby the false bottom may be retained upon the grate without special fastening mechanism, substantially as specified. 120

In testimony of all which I have hereunto subscribed my name.

JOHN HENRY BEEBY.

Witnesses:

WILLIAM ZEIDLER,
THEO. M. GLAESSNER.