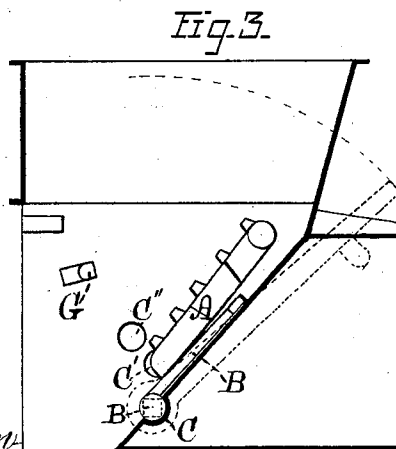
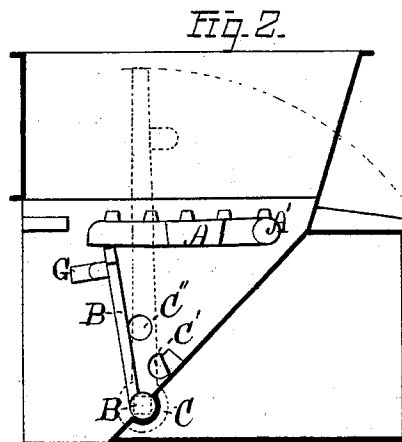
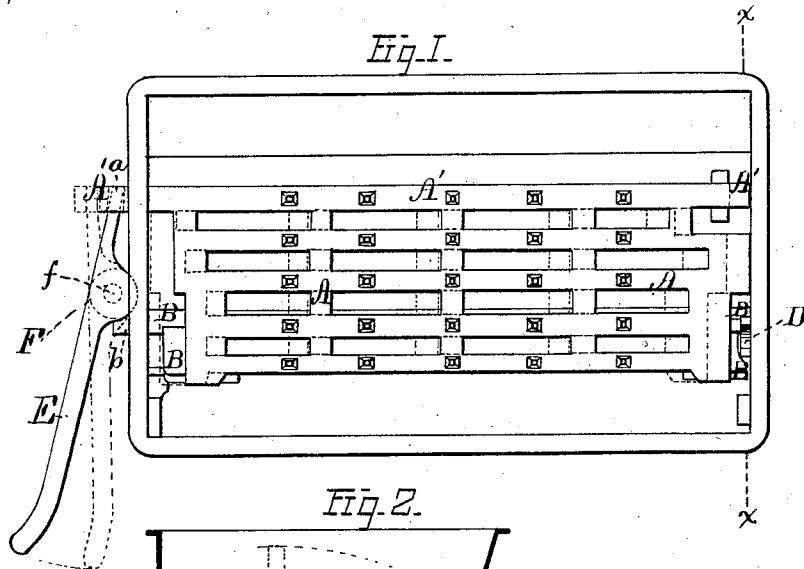


G. W. GARDNER.
Grates.

No. 150,020.

Patented April 21, 1874.



WITNESSES-

Geo. E. Hutchinson
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INVENTOR.

Geo. W. Gardner, by
Orindle & Beane, his Attys

UNITED STATES PATENT OFFICE.

GEORGE W. GARDNER, OF TROY, NEW YORK.

IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. **150,020**, dated April 21, 1874; application filed August 6, 1872.

To all whom it may concern:

Be it known that I, GEORGE W. GARDNER, of the city of Troy, Rensselaer county, New York, have invented a new and Improved Mode of Operating Dumping-Grates for Stoves, Furnaces, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form and make a part of the specification, and in which like letters of reference refer to like or corresponding parts.

Figure 1 is a plan view of the fire-chamber and grate, the bricks being removed. Fig. 2 is a vertical section from front to rear on line *x x*, showing the grate in horizontal position. Fig. 3 is a like view on line *x x*, showing grate dumped.

The object of my invention is to provide a fire-grate capable of a horizontal vibratory or sliding motion, and of being dumped and returned to position; and it consists of a fire-grate, sustained at its rear side or ends by pivots or journals, on which it can be dumped or returned to position, said pivots or journals constituting a part of the bearing, upon which it can be vibrated or slid horizontally, and also sustained at its front or rear ends by a pivoted or hinged support, the upper surfaces of which constitute a portion of the bearing on which said vibratory or sliding motion is had; and it further consists in a fire-grate having its ends or sides extended under the end or side casing or bed-plate of the fire-chamber, and sustained at its rear by pivots or journals, on which, in part, it can be moved or slid to and fro horizontally, or dumped and returned to position, in combination with a rocking support under its front edge or side, constituting, in part, the bearing-surface on which said sliding motion is had, and by means of which, also, said dumping and returning motion is accomplished, said support having its axis parallel, or nearly parallel, to the direction of the sliding movement of the grate.

This invention is designed to be used in any kind or description of stoves or furnace in common use—that is, in cook-stoves, heating-stoves, or hot-air furnaces—and may be made square, oblong, round, or elliptical, or any shape occasion demands. It is more particu-

larly adapted for large-oven cook-stoves, having rectangular fire-chambers.

Heretofore dumping-grates for cooking-stoves have been generally hung or suspended by pivots or bearings at or near their centers; but such arrangement or construction has been found inconvenient in practice, because when the grate was dumped the front curved plate of the oven, which usually projects forward and extends a little under the grate, seriously interferes with the free discharge of the ashes, clinkers, &c., into the ash-pit beneath. Grates constructed and suspended in this manner have usually been dumped and returned to position by means of a handle, the eye of which fitted upon the axis or journal of the grate where it projected through the side of the stove, or outward toward the front of the ash-pit in the fore part of the stove.

In the present instance, I have illustrated my invention as applied to the fire-chamber of a common cooking-stove; but from this explanation and what follows it will be plain how it can be applied to any stove or hot-air furnace.

In the annexed drawing, A represents the grate; A', the axes or journals at its rear ends. These are supported in any convenient manner, and in the present instance I have shown one passing through the end plate of the stove, and the other resting in or upon a curved lug cast on the front oven-plate. B is the rocking support, hinged beneath the grate in any manner or method, to give firm bearing; or the journals of the said support may be fitted to and turn in suitable holes pierced at any convenient height or point in the end plates, as now seen at C C' C'' in the drawings. When the bearing is placed or hinged near the bottom of the ash-pit, the said support must of necessity have longer arms than when the ends are journaled in holes at C' or C''. It may be found of advantage sometimes to journal one or both ends of this support upon suitable projections cast or fastened on the inner face of the ash-pit. (One of them may now be seen at D, Fig. 1.) This support, lever, or bearing-bar may be made in various different shapes, not only in that now shown in the drawing, where the arms, extending upward from the ends of the main shaft, have inward

horizontal projections, whereon the edges of the grate rest; or it may consist of a bar, the ends of which are bent at right angles, and provided on the outer face of their extremities with projections, which serve as journals or pivots, and by which they are fixed in position in the holes or apertures aforesaid. When thus placed, the horizontal portion of the bar, coming up under the front edge or side of the grate, furnishes the rest or movable support or dumping device, as before fully described. The mere form of the support may be changed without in the least changing the aim and scope of this feature of my invention.

As thus made and constructed, the operation of this device may be readily understood. The grate being set in position, its rear side supported by the journals, one of which passes through the end plate of the stove, and the other in like manner passing through the end plate on the opposite, or resting upon a suitable seat cast upon the front oven-plate, or at any convenient point on the side plate, and its front edge or side resting upon the bearing-surface or arms of the hinged support, lever, or bar, can remain at rest and bear the coals; or if desired—as, for instance, to shake out ashes—can be moved or slid to and fro horizontally by means of the shaking-bar E or any similar instrument. To operate the shaking-bar a fulcrum can be made at F by casting a lug upon the outside of the end plate of the ash-pit and fire-chamber, into the eye of which the projection on the lower face of said bar may be fixed as at f, while the inner end of the bar is inserted into a mouth or aperture, a, in the end of the grate-journal, projecting through the end plate or wall of the stove. When thus placed in position a horizontal movement of the handle or longest arm of the shaker causes the grate to move or slide to and fro horizontally upon the bearings afforded by the journals on its rear, adjusted as aforesaid, and the upper surface or arms of the hinged lever, bar, or support under its front edge or side. By means of the same shaking-bar, or by any like or convenient means, the journal or axis of the said support, lever, or bearing-bar may be operated. The end b of the same, projecting through the side wall or plate of the stove, usually on the same side with the fulcrum or lug and journal, as above described, is easily reached for the purpose. In the present form of illustration the eye in the handle of the shaking-bar is fitted upon this

journal end, and thus the said bar, lever, or support can be moved inward till it rests upon the front oven-plate or suitable stops cast in the sides of the stove-plates. In this motion, and by means of it, the front of the grate falls and moves or slides on said support downward until it comes down upon the front oven-plate or suitable supports or rests provided for the purpose. When, now, it is desired to return the grate to its horizontal position, the said bar, lever, or support is turned by the shaking-bar so as to lift the arms or bearing-surface up, and by this means the front of the grate is readily and easily raised; and when the said bar or support is thus moved back to a vertical or nearly-vertical position the grate has assumed a horizontal position. To prevent the said bar, lever, or support from falling outward at the front of the grate any suitable means, as lugs G, cast upon the inside faces of the walls of the stove, may be used.

It will be perceived that the support, lever, or bar pivoted in this manner is not liable to be thrown out of position when the grate is moved to and fro horizontally, as above described, or by any ordinary use; thus it affords a safe and permanent support for the grate, except when force is applied at the axis to move it.

By supporting and hinging the grate in this manner, and by this general arrangement of the several parts, no difficulty is experienced in working the grate as above described, even when it has suffered or undergone the usual upward and downward warping.

Having thus fully set forth the nature and merits, what I claim as new is—

1. A fire-grate pivoted or journaled at its rear ends or side, and having bearings, all as described, in combination with a hinged or pivoted bar or support, upon and by which it is sustained at its front edge or side, and whereby it may be dumped or returned to position, substantially as set forth.

2. The grate A, journaled and supported as set forth, whereby it is capable of a horizontal vibratory motion or of being dumped or returned to position, as herein explained and described.

In testimony whereof I have hereunto set my hand this 24th day of July, 1872.

GEORGE W. GARDNER.

Witnesses:

JOHN W. ALGER,
C. D. KELLUM.