

W. STOUT.

Grate for Stoves, Furnaces, &c.

No. 161,911.

Patented April 13, 1875.

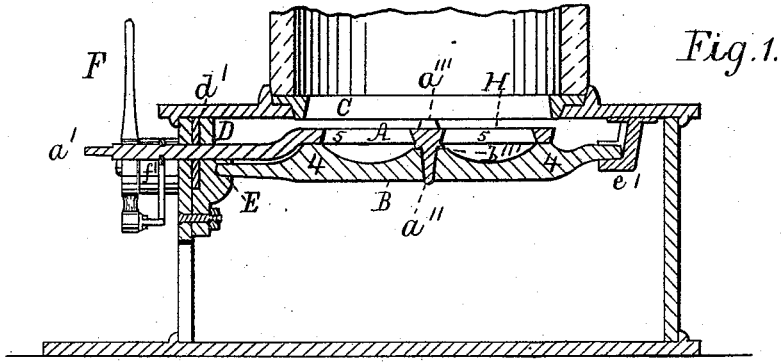


Fig. 1.

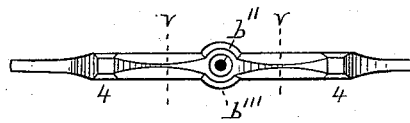


Fig. 2.

B  Fig. 3.

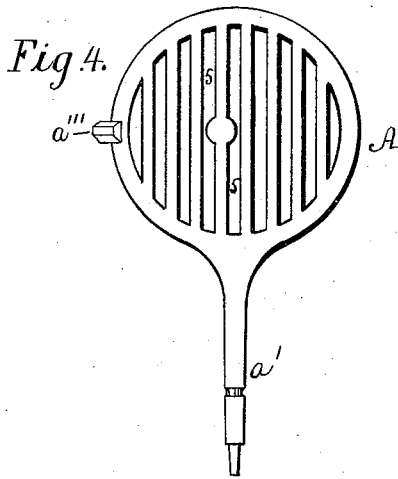


Fig. 4.

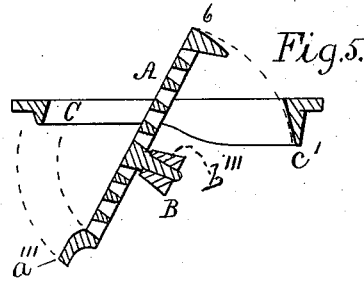


Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN GRATES FOR STOVES, FURNACES, &c.

Specification forming part of Letters Patent No. 161,911, dated April 13, 1875; application filed January 28, 1875.

*To all whom it may concern:*

Be it known that I, WATSON STOUT, of the city of Philadelphia, in the State of Pennsylvania, have invented an Improved Grate for Furnaces, Ranges, and Stoves, of which the following is a specification:

My invention relates especially to those grates which have both a tilting and a horizontally-oscillating motion, and has for its objects increased facility and accuracy in operating the grate, and also in providing for the introduction and removal or renewal of the same without removing any part of the body of the stove, range, or furnace for the said purpose; and my invention consists in the peculiar construction, combination, and mode of operation of certain devices, as will herein be fully described and explained with reference to the accompanying drawing, in which—

Figure 1 is a vertical central section of the base of a stove, with a short section of the fuel-cylinder, embodying my invention. Fig. 2 is a plan view of the grate-supporting bar detached; and Fig. 3, a transverse vertical section of the said bar on the dotted lines *v v* of Fig. 2. Fig. 4 is a plan view of the top or upper side of the grate and its handle. Fig. 5 is a central vertical section of the grate and its supporting-bar, showing the same as tilted, and a like section of the surrounding ring which supports the fuel-cylinder or fire-bricks, shown in Fig. 1. The plane of section in this figure is at right angles to that of Fig. 1.

The grate proper, A, is circular, and its bars are parallel with the vertical plane of its handle *a'*, which projects through a horizontal slot in the front plate of the base, after passing through a corresponding slot in a plate, D, which is permanently fixed to the back of said front plate, leaving a space between for a horizontally-sliding plate, *d'*, which is at least twice the length of the slots, respectively, and has a round hole in its midlength, through which the handle passes, and the latter carries the sliding plate *d'*, right and left alternately, so as to keep the two slots covered, and thus prevent the outward escape of ash-dust through them during the required oscillatory motion which may be given to the grate by means of its handle *a'*. (See Fig. 1.) A downward-projecting tapering stem, *a''*, is cast

on the bottom or under side of one of the bars of the grate A, so as to be nearer to the falling than to the rising side thereof, and thus give a preponderance to the rising side of the latter, and also cause it to be held down by the weight of the fuel, and on the upper side of the rim of the grate, at the falling side, a raised projection, *a'''*, is cast, which catches under the ring C, and thus prevents that side of said grate from being raised or tilted above the intended horizontal position, and at the same time allows that side of said grate to fall or tip downward, by the operator, as occasion may require. (See Figs. 4 and 5.) The said grate A is supported on the bar B, with the tapering stem *a''* of the grate in a correspondingly-tapered hole, *b''*, in a boss, *b'''*, (see Fig. 2,) near the midlength of said bar B, so as to allow the grate to be oscillated upon the said boss, while at the same time the rim of the grate rests upon the two opposite bosses 4 4. Between the boss *b'''* and the respective bosses 4 4 the said bar B is cut away at its upper side, so as to clear the grate-bars above, and these two remaining parts taper upward, respectively, in their transverse sections, as shown in Figs. 3 and 2, and thus allow the upward-turned end of a poker to be introduced into the slots or spaces 5 5, in raking the fire. (See Figs. 2, 3, 4.) The bottom edge of the front journal of the bar B is on the plane of the bottom edge of B, and rests in an open bearing, E, while the rear journal of said bar is cranked upward above the plane of the bottom edge of B, and rests in an open bearing, *e'*, which is attached to the plate above it. (See Fig. 1.) The handle *a'* of the grate A, is cranked downward nearly to the upper side of the front journal of B, so that the bottom edge of the said handle is nearly aligned with the bottom edge of the rear journal of the bar B. (See Fig. 1.) The object in cranking the rear journal of B, and the front journal of A, is to facilitate the movement of the grate and bar in tilting the same, as they are connected together by the stem *a''* and boss *b'''*, and consequently rotate together in the operation of tilting the grate. (See Fig. 5.) The grate A is supported in a plane a little below that of the bottom of the rim of the surrounding ring C, so as to prevent any obstruction in

tilting the grate downward at that side, and also allow a free oscillatory motion to the grate in shaking the latter, but the side of the ring, which is at the rising side of the grate, has a downward-projecting flange, *c'*, beveled from the inside downward and outward, as shown in Fig. 5, and the under side of the rim of the grate A has a downward projecting flange, 6, at the rising side of said grate, which is curved concentrically to the tilting point or axis of the same. The object of the flange 6 and the beveled flange *c'* of the ring C, is to prevent any lumps or fragments of coal or cinder from getting between the said flanges 6 and *c'*, and thereby preventing that side of the grate A from being readily tilted upward. (See Fig. 5.)

It will be understood, without any further description, that, as the grate A is connected to the journaled bar B by means of the stem *a''* and hole *b''*, they will allow the grate to be oscillated horizontally on the said bar B, and that as the journal portion of the handle *a'* of the grate is aligned with the rear journal of the bar B, the grate can be easily tilted upon said journals, the front journal of the bar B at the same time turning in the open bearing B, as before explained. It will also be understood, without further description, that the flanges 6 and *c'* will prevent fragments of coal or cinders from getting in between them, and hindering the commencement of the operation of the described tilting motion of the grate; that the tapering transverse section of the bar B, as shown in Figs. 2 and 3, will afford easy access to the grate-slots directly above each side of said bar, for raking them with a poker; and that the grate A and bar B can be

readily lifted and taken out at any time without lifting or removing the ring C, and the fuel-cylinder or fire-bricks which rest thereon.

The fulcrum of a hand-lever, F, of the first order, may be pivoted to the front plate of the base, with its weight-point connected to the arm *a'* of the grate A by a stiff connecting-rod, *f'*, for the purpose of enabling the operator to oscillate or shake the grate horizontally with less exertion of hand-power, but, at the same time, the ordinary removable handle for dumping a tilting-grate may be used for shaking it also, if desired, and the lever F dispensed with.

I claim as my invention—

1. The combination, consisting of the grate A, provided with the eccentrically-fixed pivot or stem *a''*, as described, the supporting-bar B, provided with end journals rocking in the fixed bearings E and *e'*, as described, and the ring C provided with the downward-projecting flange *c'*, as described, the said parts being arranged to operate in the manner and for the purposes hereinbefore set forth.

2. The combination, with the upper surface of the rim of the downwardly-tilting portion of the grate A, of the raised projection *a'''*, as described, for the twofold purpose of arresting the upward or return motion of that side of the grate after it has reached its normal horizontal position, and affording an open space between the rim of the grate and the under side of the ring C of said side of the grate.

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Witnesses:

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