

(No Model.)

2 Sheets—Sheet 1.

C. L. RIDGWAY.

HEATING STOVE AND FURNACE.

No. 395,352.

Patented Jan. 1, 1889.

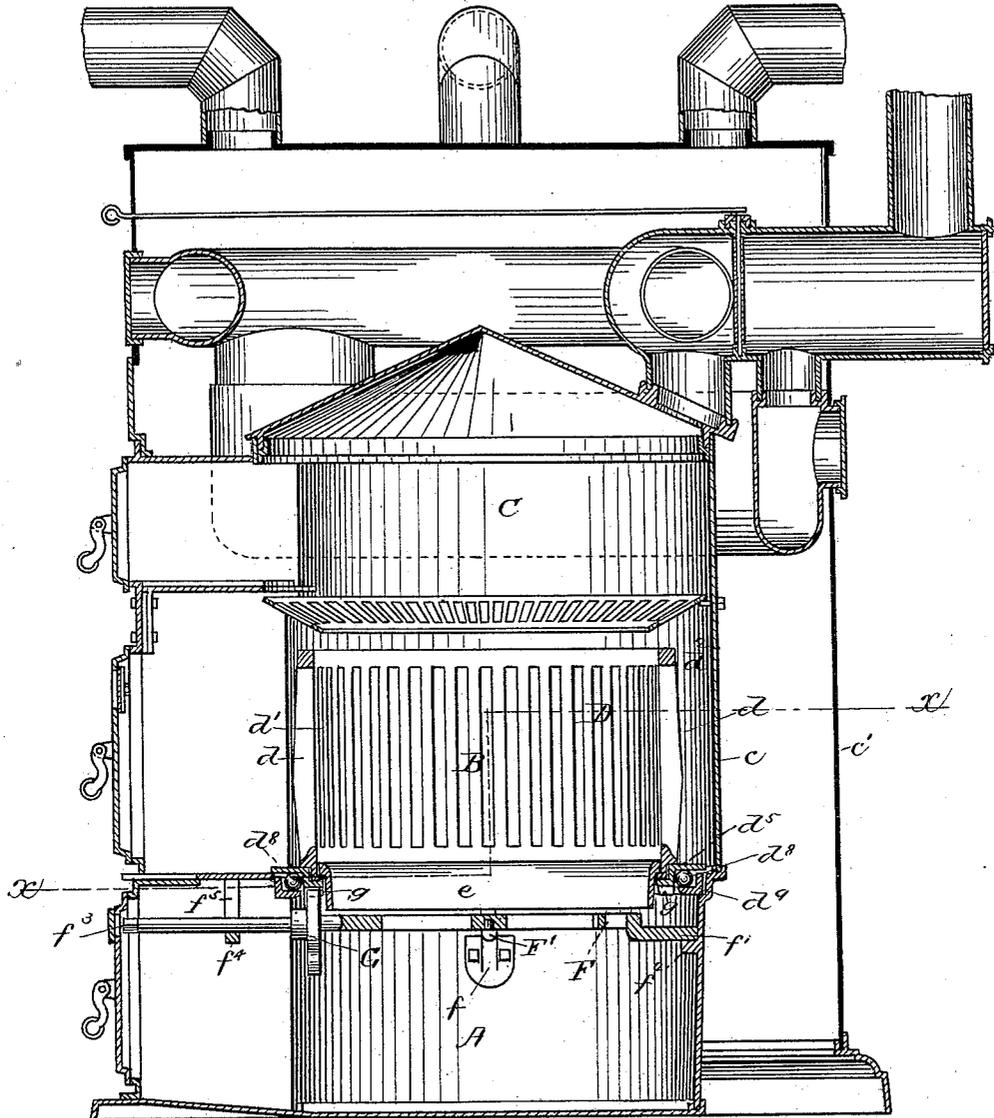


FIG. 1.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## HEATING STOVE AND FURNACE.

SPECIFICATION forming part of Letters Patent No. 395,352, dated January 1, 1889.

Application filed July 27, 1885. Serial No. 172,748. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES L. RIDGWAY, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Heating Stoves and Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention is an improvement upon that described in my patent, No. 281,795, dated July 24, 1883, for improvements in heating-stoves; and it relates especially to means for supporting the fire-pot wall and for revolving it, and also to means for simultaneously oscillating the grate and revolving the fire-pot wall.

Referring to the drawings, Figure 1 is a view in vertical transverse section of a furnace having the features of my invention. Fig. 2 is a front elevation of the base of the furnace, representing the wall of the fire-pot and the devices for revolving the same and oscillating the grate. Fig. 3 is a view below the line *xx* of Fig. 1, with a portion of the wall of the fire-pot removed to better show the construction. Fig. 4 is a detail view, in vertical section, enlarged, representing the manner of supporting the fire-pot wall; and Figs. 5 and 6 are detail views, hereinafter referred to.

A is the ash-pit; B, the fire-pot; C, the combustion-chamber; *c*, the radiator-wall; *c'*, the outer casing of the furnace; D, the fire-pot inclosure or wall, which is like that described in my said patent in that it has the vertical bars *d* and vertical spaces *d'*, the bars being connected at their upper and lower ends. The wall is arranged to be revolved in the chamber *d*<sup>2</sup> immediately surrounding it, and it is so sustained or supported that it may be turned with very little friction. I have therefore provided in the lower section, *d*<sup>3</sup>, of the fire-pot wall the annular recess *d*<sup>4</sup>, Fig. 4, for the reception of the annular angle-plate *d*<sup>5</sup>, having the vertical part *d*<sup>6</sup>, the horizontal extension or flange *d*<sup>7</sup>, and the exterior horizontal bearing flange or plate *d*<sup>12</sup>. This plate *d*<sup>5</sup> is sustained by the continuous series of balls *d*<sup>8</sup>, carried or supported by the annular sup-

port, angle-piece, or holder *d*<sup>9</sup>, which rests upon the ledge or shoulder *d*<sup>10</sup>, formed upon the ash-pit plate or wall *d*<sup>11</sup>. The balls *d*<sup>8</sup> extend around the base of the fire-pot wall, and as the balls are held between the angle-plate *d*<sup>5</sup> and the angle-plate *d*<sup>5</sup> they provide a double bearing for the fire-pot-wall, one being vertical, or that which results from the flange *d*<sup>12</sup> of the plate *d*<sup>5</sup> resting directly upon the balls, and the other being lateral or horizontal, occasioned by the balls bearing against the vertical portion *d*<sup>6</sup> of the annular angle-plate or rotary supporting-ring *d*<sup>5</sup>.

The lower section of the fire-pot wall has an inwardly-extending ledge, E, which acts as a shoulder to receive and support the cylindrical covering piece or ring *e*, the outwardly-extending flange or upper portion, *e'*, of which rests upon the ledge E. This cylindrical covering piece or ring extends downwardly very nearly to the upper surface of the grate F.

The ashes, soot, &c., from the fire will fall to some extent upon the surface of the bearing-flange *d*<sup>12</sup> of the plate *d*<sup>5</sup>, and the bulk thereof is removed therefrom as the plate is revolved through the opening D', Fig. 4, into the ash-pit, enough of the ashes, however, remaining in the space or joint outside the plate *d*<sup>5</sup> to pack it sufficiently to prevent air entering the chamber *d*<sup>2</sup> directly from the ash-pit, while the holes D<sup>2</sup> in the angle-plate *d*<sup>9</sup> permit the ashes or soot which may sift through the joint from time to time to fall into the ash-pit, and thus prevent them from accumulating and clogging the balls.

The grate F has a central pivotal support, F', resting on the bracket or support *f*, and is thus adapted to be oscillated horizontally thereon. The grate has also a backwardly-extending arm, *f*<sup>1</sup>, resting on the ledge *f*<sup>2</sup>, Fig. 1, and a forwardly-extending arm, *f*<sup>3</sup>, resting on the bracket *f*<sup>4</sup>, Figs. 1 and 2, such arms *f*<sup>1</sup> and *f*<sup>3</sup> serving as trunnions or pivots on which the grate may be tilted when desired. The arm or bar *f*<sup>3</sup> affords means for horizontal oscillation of the grate upon its central support, the arm being engaged by a shaker

in a well-known manner, the extent of the movement being limited by the stops  $f^2$ , which constitute the vertical portions of the bracket  $f^4$ . The bar  $f^3$  carries, also, the pawl G, which is arranged thereon to swing vertically and to engage the teeth  $g$ , formed upon the under surface of the part  $d^1$  of the supporting-plate  $d^2$ , the pawl being weighted, so that its upper end is always in position to engage with the teeth  $g$ .

It will be seen from this description that upon the horizontal movement of the bar or rod  $f^3$  to oscillate or shake the grate the pawl G is moved therewith, and that its movement in one direction will cause the plate  $d^2$  and the fire-pot wall to be revolved, and that upon the reverse movement thereof the pawl will pass along the teeth to a position to again engage with a tooth automatically, preparatory to again partially revolving the plate and the wall upon the next forward movement of the bar or rod.

It will be apparent that, if desired, the pawl may be held out of engagement with the annular serrated supporting-plate, and that the grate may then be oscillated without imparting motion to the fire-pot.

It will be understood that I do not herein broadly claim either a horizontally-revoluble fire-pot wall or cylinder, an oscillating grate, or a grate which may at will be either oscillated or dumped, being well aware that such constructions, independently, are old.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a heating stove or furnace, the combination, with the wall of the ash-pit, of a transversely-angular supporting-ring resting upon such wall, a series of anti-friction rollers loosely supported upon such supporting-ring, an annular support resting upon the anti-friction rollers, and an annular or cylindrical fire-pot resting upon the annular roller-supported support, substantially as described.

2. The combination, with the wall of an ash-pit, of an annular support consisting of vertical and horizontal portions, a series of anti-friction rollers resting upon such annular support, a supporting-ring or double-angle plate resting upon the series of anti-friction rollers and covering the inner surface of the same, and a fire-pot resting upon such angle-plate, substantially as specified.

3. The combination, with the wall of an ash-pit, of a recessed and perforated annular support which rests thereon, a series of movable anti-friction rollers which are supported at bottom and covered exteriorly by such perforated annular support, a supporting-ring or double-angle plate which rests upon the anti-friction rollers and covers the same interiorly, and a fire-pot which rests upon the supporting-ring or double-angle plate, substantially as set forth.

4. The combination, with the wall of an

ash-pit, of an annular support having an exterior vertical portion and an interior horizontal perforated portion, a series of anti-friction rollers upon such annular support, an annular rotary plate which has a main vertical portion, an upper exterior, and a lower interior horizontal portion, and a fire-pot which has double bearing-faces, one of which rests upon the exterior and the other upon the interior horizontal portion of the double-angle plate.

5. The ash-pit wall having a supporting-shoulder, the perforated single-angle plate, the series of anti-friction rollers, the double-angle plate, the fire-pot provided with inner annular flange or ledge at its lower extremity, and the cylindrical or annular covering-piece resting upon the flange or ledge and extending downwardly over the inner portion of the fire-pot and of the double-angle plate, all in combination, substantially as described.

6. The combination, with the wall of the ash-pit, of an annular support resting upon such wall, a series of anti-friction rollers upon such annular support, an upper annular angle-plate having a series of bottom engaging-teeth supported upon the anti-friction rollers, a fire-pot resting upon such upper annular angle-plate, and a horizontally-oscillating grate provided with a pawl for engagement with the bottom teeth upon the upper annular angle-plate, substantially as described.

7. The combination of the ash-pit wall having the shoulder  $d^{10}$ , the angle-plate  $d^9$ , the series of balls  $d^8$ , the rotary plate  $d^3$ , and the superposed fire-pot wall D, substantially as set forth.

8. The combination, in a furnace or heating-stove, of a rotary fire-pot wall, a grate adapted to have an oscillating movement imparted to it, and a device connecting the grate or grate-operating mechanism with the fire-pot wall, whereby upon the movement of the same in one direction the fire-pot wall is caused to be revolved, all substantially as described.

9. The combination, in a heating stove or furnace, of a rotary fire-pot wall having teeth  $g$ , a grate adapted to have an oscillating movement imparted to it, and a pawl carried by the grate-operating arm or rod and arranged to engage the teeth of the fire-pot wall when it is moved in one direction, all substantially as described.

10. A heating stove or furnace which is provided with a rotary fire-pot wall and with an oscillating grate which carries a pawl, which may or may not engage the fire-pot wall to rotate the same when the grate is oscillated.

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Witnesses:

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