

(No Model.)

4 Sheets—Sheet 1.

C. L. RIDGWAY.

HEATING STOVE OR FURNACE.

No. 391,428.

Patented Oct. 23, 1888.

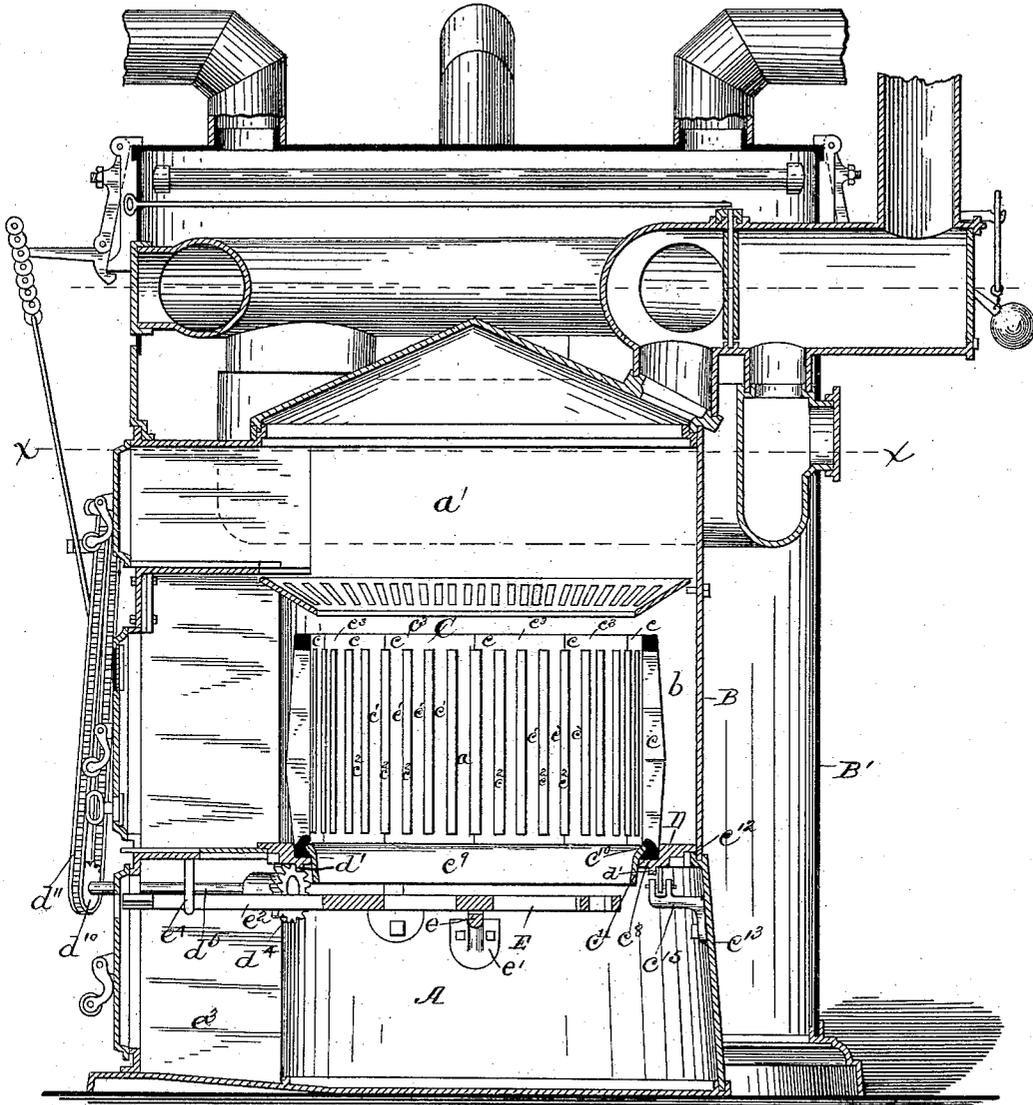


Fig. 1.

WITNESSES:

*Samuel A. Little.*  
*Edward H. Stevens.*

INVENTOR:

*Charles L. Ridgway.*

(No Model.)

4 Sheets—Sheet 2.

C. L. RIDGWAY.  
HEATING STOVE OR FURNACE.

No. 391,428.

Patented Oct. 23, 1888.

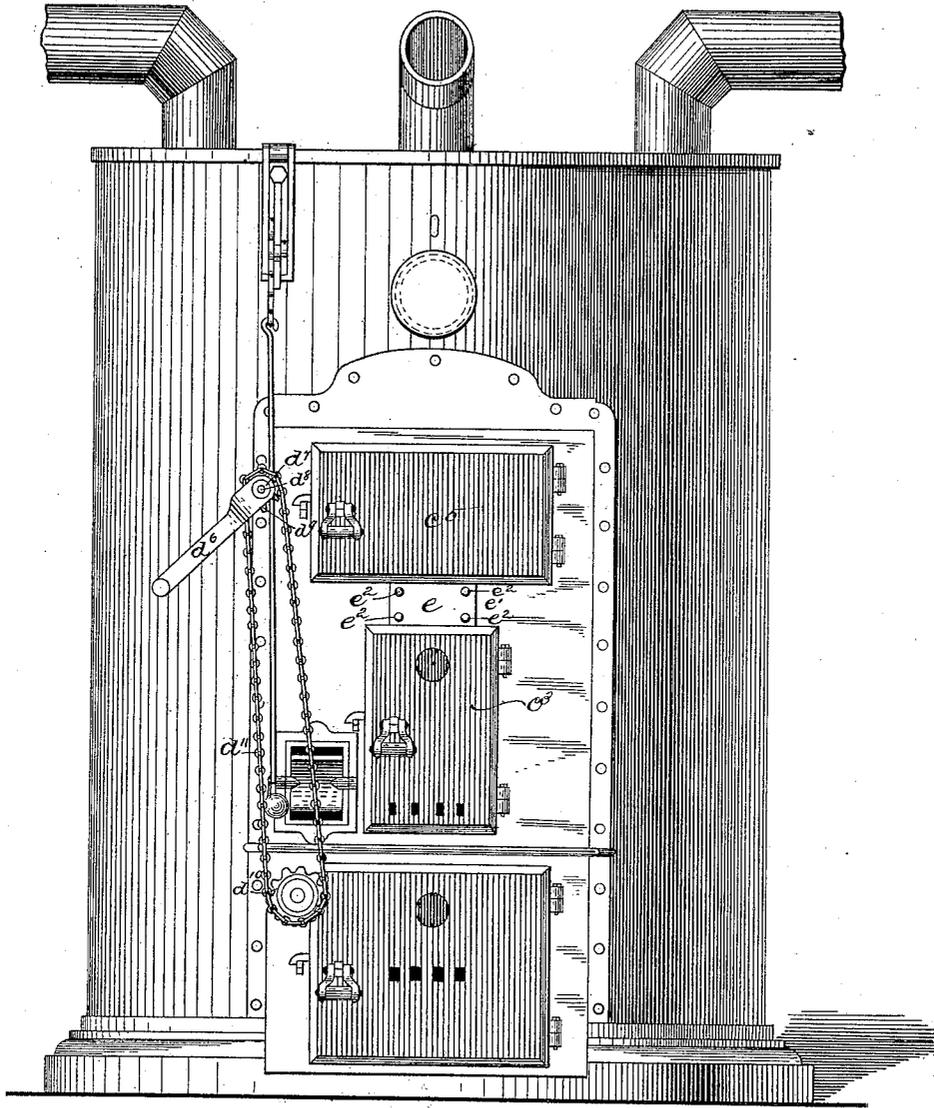


Fig. 2.

WITNESSES:

*George A. Libb,*  
*Edward G. Stevens.*

INVENTOR,

*Charles L. Ridgway*

(No Model.)

4 Sheets—Sheet 3.

C. L. RIDGWAY.  
HEATING STOVE OR FURNACE.

No. 391,428.

Patented Oct. 23, 1888.

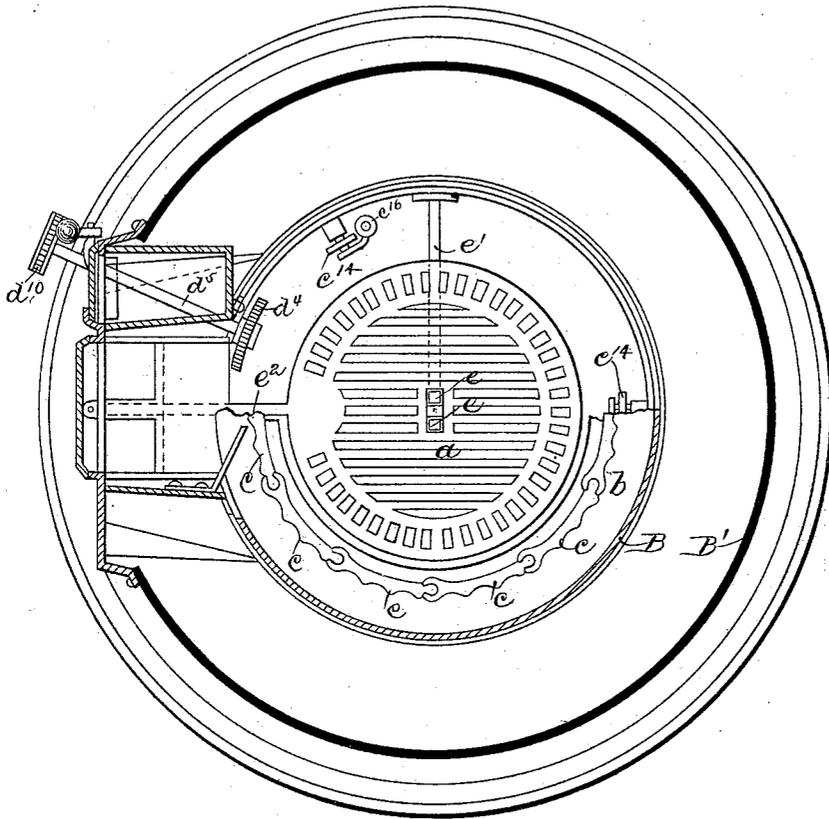


Fig. 3.

WITNESSES

*George A. Libb.*  
*Edward H. Stevens.*

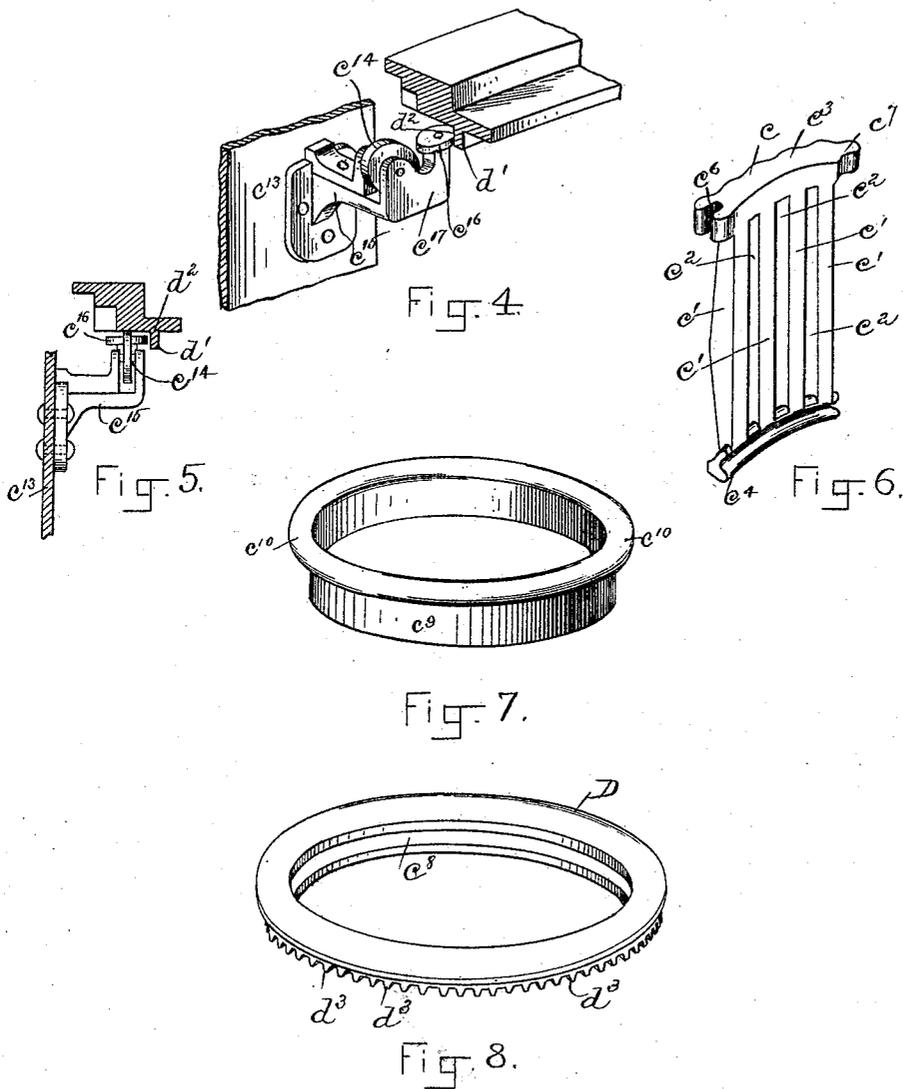
INVENTOR.

*Charles L. Ridgway.*

C. L. RIDGWAY.  
HEATING STOVE OR FURNACE.

No. 391,428.

Patented Oct. 23, 1888.



WITNESSES:  
*George A. Gibbs,*  
*Edward A. Stevens,*

INVENTOR,  
*Charles L. Ridgway,*

# UNITED STATES PATENT OFFICE.

CHARLES L. RIDGWAY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE RIDGWAY FURNACE AND STOVE COMPANY, OF NASHUA, NEW HAMPSHIRE.

## HEATING STOVE OR FURNACE.

SPECIFICATION forming part of Letters Patent No. 391,428, dated October 23, 1888.

Application filed March 1, 1886. Serial No. 193,579. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. RIDGWAY, of Boston, in the county of Suffolk and Commonwealth 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 which is described in Letters Patent of the United States No. 281,795, which were issued to me July 24, 1883; and it relates especially to the fire-pot wall and to the special means employed for operating and revolving it.

It further relates to various details of construction, all of which will hereinafter be described and explained.

Referring to the drawings, Figure 1 is a central vertical section of a furnace having the features of my invention. Fig. 2 is a front elevation of the furnace. Fig. 3 is a section upon and in plan below the line  $xx$  of Fig. 1. Fig. 4 is a detail view illustrating the manner of supporting the fire-pot wall. Fig. 5 is a view in section further illustrating the devices represented in Fig. 4. Fig. 6 is a perspective view of one section of a fire-pot wall. Fig. 7 is a view of a ring or sleeve which forms the lower part of the fire-pot. Fig. 8 is a view in perspective of the plate which bears or supports the fire-pot wall.

A is the ash-pit;  $a$ , the fire-pot;  $a'$ , the combustion-chamber; B, the inner radiator or casing of the furnace, forming the combustion-chamber and the downward extension  $b$  thereof, which encircles the fire-pot.

B' is the outer casing of the furnace, and C is the wall of the fire-pot.

I have shown the fire-pot as composed of a series of sections,  $c$ , which are substantial counterparts, and which preferably are united with each other, as hereinafter described.

Each of the sections  $c$  is composed of an upper curved bar or segment of a ring,  $c^1$ , a lower curved bar or segment, and the intermediate connecting-bars,  $c'$ , which alternate with the corresponding openings  $c^2$ , all as best

seen in Fig. 6. The edge of the upper cross-bar or segment,  $c^1$ , of each section, upon one side thereof, has the recess  $c^3$ , and the opposite extremity of the section has a corresponding projection or tongue,  $c^4$ , the tongue of one section being adapted to enter and fit the recess in the coincident section, by which means the members of the series are firmly secured together, the whole constituting the complete annular or cylindrical fire-pot wall.

The lower extremity or edge of the fire-pot wall is received within the recess  $c^5$  of the annular supporting-plate D, and it is held therein, and the joint between these two coincident parts is covered by the ring or cylindrical piece  $c^6$ , which has an outwardly-extending section,  $c^7$ , which rests upon a flange,  $c^8$ , of the supporting-plate D, which extends inward somewhat farther than the lower extremity of the fire-pot wall. This ring or cylindrical piece  $c^6$  forms, in effect, a downward extension to or prolongation of the fire-pot, and its lower edge extends nearly to the upper surface of the grate E.

The outer flange-like edge,  $d^9$ , of the annular supporting-plate D rests lightly upon—that is, it is barely in contact with—the flange  $c^8$ , which extends inward from the ash-pit wall or plate  $c^9$ ; but the plate is mainly sustained by the anti-friction supports  $c^{10}$ , which are in this instance represented as rollers provided with pivots  $c^{11}$ , which are journaled in brackets  $c^{12}$ , which extend inwardly from the ash-pit wall or plate  $c^9$ , and which may be provided in any desired number.

To prevent the annular supporting-plate D from bearing against the inner surface of the vertical wall B, which constitutes the inner radiating casing or shell of the furnace, I have provided such plate with a downward extension or bottom flange,  $d'$ , which affords an outer bearing-face,  $d^2$ , and I have provided, also, the anti-friction rollers  $c^{13}$ , having vertical axes, as shown in Figs. 3, 4, and 5, to bear against the face  $d^2$ . These rollers or revoluble bearings  $c^{13}$  are supported upon laterally-projecting bearings  $c^{14}$  of the brackets  $c^{12}$ , and by receiving any lateral movement of the plate D they serve to prevent its edge  $d^9$  from com-

ing in contact with the lower portion, *b*, of the inner shell or radiating-casing, *B*, of the furnace.

The plate *D* is further provided upon its under surface, near its outer edge, with the continuous series of gear teeth or cogs  $d^3$ , and I have arranged in the ash-pit a pinion,  $d^4$ , upon a shaft,  $d^5$ , to engage with the teeth or cogs upon the plate *D* and revolve the same, together with its superposed fire-pot wall. The shaft  $d^5$  is suitably supported in a fixed part of the furnace, and its outer end, which projects through the outer casing of the furnace, may be squared to receive an operating-crank in the ordinary low-down manner; or it may be connected with an elevated operating-crank, as  $d^6$ , to enable an operator to revolve the supporting-plate and its superposed parts without stooping. In the drawings I have represented this high-up crank  $d^6$  as arranged at the left hand of the combustion-chamber; but I do not confine myself to this special location, although I consider it the best, because the most convenient. This crank  $d^6$  is connected or secured to a sleeve,  $d^7$ , which is supported by the shaft  $d^8$ , which is fastened to the furnace-casing, and which carries or supports a chain-pinion,  $d^9$ . The lower shaft,  $d^8$ , also has a chain-pinion,  $d^{10}$ , and these chain-pinions are connected by the chain  $d^{11}$ . As to size, the upper pinion may bear any desired relation to the lower pinion. In the drawings it is represented as somewhat smaller.

It will be observed that the fire-pot wall and its connections comprise the annular plate *D*, the wall proper—that is, the sections or segments *c*—and the ring or sleeve  $c^9$ . In other words, the fire-pot and ring are carried by the annular plate *D*, which is so shaped as to suitably receive them, and the plate *D* is itself mounted upon anti-friction supports. It will also be seen that the plate *D* furnishes, by its teeth or cogs  $d^3$ , means whereby the fire-pot is revolved, and that the means shown comprise a pinion, which is arranged to engage with the teeth upon the plate, and a shaft, which carries the pinion and which extends outwardly through the exterior wall of the furnace.

The grate *E* is arranged immediately below the opening or aperture inclosed by the ring or sleeve  $c^9$ . It has a downwardly-extending pivot-pin, *e*, which enters a recess in a supporting bar, rod, or bracket,  $e^1$ , which projects horizontally from the vertical face of the ash-pit wall. It has also a bar or rod,  $e^2$ , which extends horizontally into the opening or passage  $c^9$  to the ash-pit, and which is supported in a horizontal position by the hook  $e^4$ . By unhooking the shaft or rod  $e^2$ , I am enabled to depress it and thus tilt the grate forward upon its pivotal center. If the rod or shaft  $e^2$  be not unhooked, the grate can be turned or dumped to the right—that is, toward the side opposite to that from which the supporting arm or bracket  $e^1$  projects, the pivotal connec-

tion with the same being, as already described, such as to facilitate such operation.

A fire-pot wall which is composed of sections is not herein broadly claimed, for I am well aware that such a construction has long been known.

A fire-pot wall which is composed of a series of vertical open-work or grated sections is not herein broadly claimed, the same being shown in an application serially numbered 193,583, filed by me in the United States Patent Office on the 1st day of March, 1886. Neither a fire-pot wall which is supported upon a rotary plate and is revoluble therewith, nor a fire-pot which is rotated through the operation of a shaft and pinion, is herein broadly claimed, both being shown in United States Patent No. 281,795, which was issued to me on the 24th day of July, 1883.

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, a fire-pot wall which consists of a series of sections, *c*, each of which is composed of an upper curved bar or segment,  $c^3$ , having at one extremity a recess,  $c^6$ , and at the opposite extremity a projection or tongue,  $c^7$ , a lower curved bar or segment,  $c^4$ , and a series of vertical intermediate connecting-bars,  $c^5$ , substantially as described.

2. The combination, in a heating stove or furnace, of the annular plate *D*, sustaining the fire-pot wall and having bottom flange, as shown, the said fire-pot wall, the anti-friction supports  $c^4$ , and the anti-friction guides  $c^{16}$ , as and for the purposes described.

3. The combination, in a heating stove or furnace, of a revoluble fire-pot wall, which is provided with an outwardly-projecting horizontal operating-shaft, which is provided with an exterior pinion, an elevated exterior operating-shaft which is provided with a pinion and with a crank-arm, and a chain which connects such upper and lower exterior pinions together for operation.

4. In a stove or furnace, the combination of a revoluble plate, which supports the fire-pot wall and which is provided with engaging serrations, and an operating-shaft which is provided upon its inner end with a pinion for engagement with the serrations upon the supporting-plate, and which is provided upon its outer end with a pinion for engagement by a chain, whereby the supporting-plate is made operable from an exterior point above the plane of such plate.

5. The combination of the plate *D*, the fire-pot wall resting thereon, the downward extension  $d^7$ , having the surface  $d^2$ , the anti-friction supports or bearings, and the lateral anti-friction bearings  $d$ , adapted to bear against the surface  $d^2$  of the said extension  $d^7$ , all substantially as described.

6. In a heating stove or furnace, the combination, with the revoluble recessed plate *D*, supporting the fire-pot wall *C* and resting

upon bottom anti-friction supports, of the pivoted and oscillating independent dumping-grate E, substantially as set forth.

7. The combination of the supporting-brackets  $e^{15}$ , having the vertically-revoluble anti-friction supporting-rollers, and the horizontally-revoluble anti-friction guide-rollers, and the supporting-plate D, adapted to bear against both the supporting-rollers and the guide-rollers, substantially as and for the purposes described.

8. The combination of the ash-pit wall, having the contact-flange  $c^{12}$  and the supporting-bracket,  $e^{15}$ , with the annular plate D, having recessed edge  $d^{10}$  and bottom flange,  $d'$ , substantially as set forth.

9. A heating stove or furnace which is pro-

vided with a fire-pot wall which is horizontally revoluble upon anti-friction supports, and with an independent grate which is adapted to be tilted or dumped in either of two directions which are at right angles with each other, substantially as specified.

10. A heating stove or furnace which is provided with a revoluble plate which supports the fire-pot wall, and with a fire-pot wall which is composed of vertically-arranged interlocking or self-securing sections, substantially as and for the purposes described.

CHARLES L. RIDGWAY.

Witnesses:

GEORGE A. GIBBS,  
EDWARD G. STEVENS.