

(No Model.)

2 Sheets—Sheet 1.

J. E. CLAREY.
FURNACE.

No. 543,982.

Patented Aug. 6, 1895.

Fig. 1.

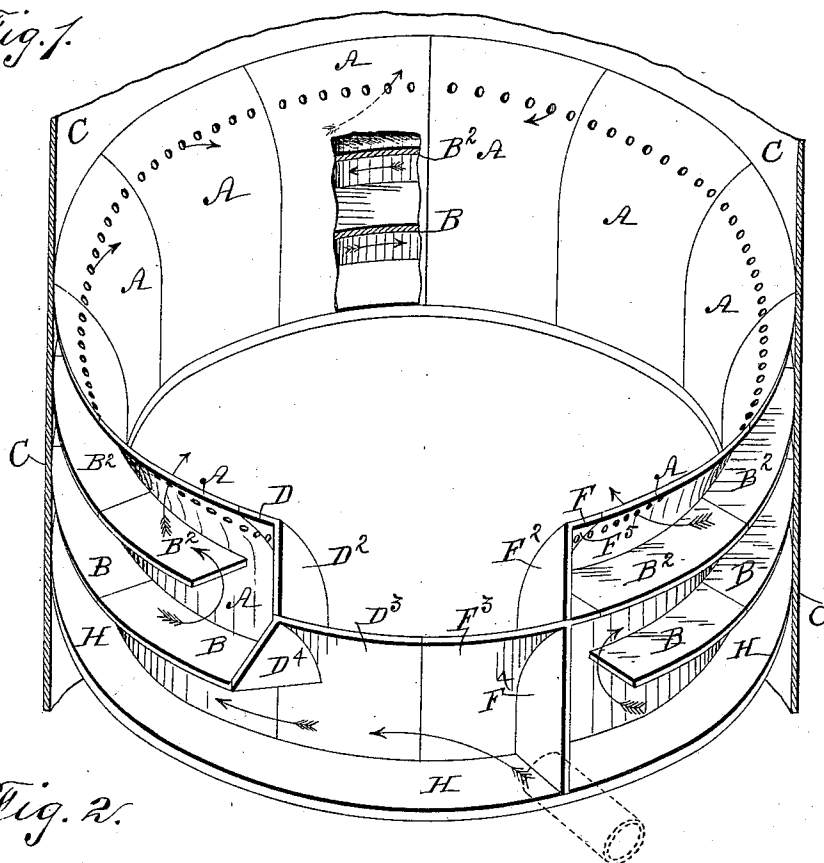
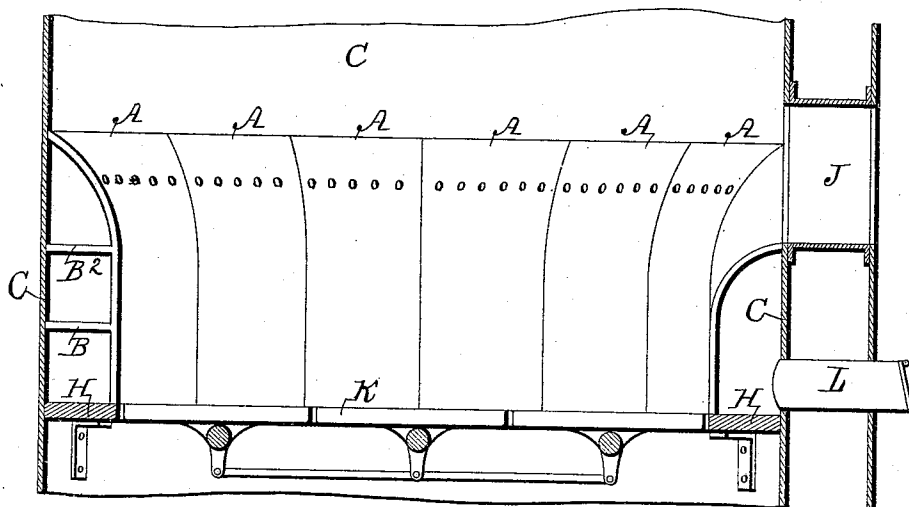


Fig. 2.



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Inventor: John E. Clarey.

By Thomas C. and J. Ralph Orwig, attys.

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2 Sheets—Sheet 2.

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Fig. 3.

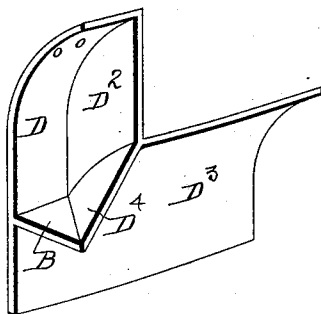
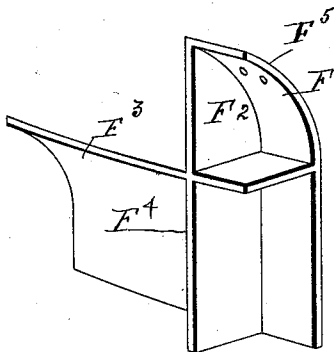


Fig. 4.



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Inventor: John E. Clarey,
By Thomas G. & J. Ralph Orwig Attys

UNITED STATES PATENT OFFICE.

JOHN E. CLAREY, OF DES MOINES, IOWA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 543,982, dated August 6, 1895.

Application filed November 24, 1894. Serial No. 529,820. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. CLAREY, a citizen of the United States of America, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Improvement in Furnaces, of which the following is a specification.

My object is, first, to facilitate the construction, improve the efficiency, and increase the durability of that portion of a stove or furnace with which the burning fuel comes in contact above the grate and that is subjected to intense heat; second, to convey and circulate air as required to prevent the metal from warping and burning; third, to superheat and distribute air to the burning fuel to promote combustion and to prevent the waste and annoyances incident to the escape of black smoke and soot; and I accomplish the results contemplated by the invention herein-after set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my invention, showing mating sections detachably connected with each other and a portion of the wall of a stove and a ring. Fig. 2 is a transverse sectional portion of the fire-pot. Figs. 3 and 4 are perspective views of sections of the fire-pot adapted for producing a doorway and an air-chamber under the doorway.

In the drawings the letter A is used to mark sections of the complete device that are uniform in shape and size and adapted to be assembled and detachably combined in forming a complete fire-pot. Their lower portions are straight and top portions curved outward and perforated, and each section has two or more lateral extensions B and B², that are adapted to engage the inside face of a wall or cylinder C, as shown in Fig. 2, in such a manner that they will, in combination with the wall C, produce air-chambers between the sections and the wall, through which chambers air can be circulated around the fire-pot, as required, to prevent the sections A from burning and warping, and also for the purpose of superheating and distributing air to the fire within the fire-pot.

D is a section of my complete device adapted to produce an opening or doorway leading to the fire-pot, as shown in Fig. 2, and

also adapted to aid in directing and circulating air that is admitted through a tube, as indicated by dotted lines in Fig. 1, or in any suitable way. This section D has an integral vertical side portion D², that is adapted to serve as a portion of the wall of the doorway, and a shorter portion D³ having an extension D⁴, that engages the lower extension B of the adjoining section A. Said extension D⁴ is inclined, so as to aid in deflecting and directing air into the chamber under said extension B. The upper extension B² of the same, adjoining section A, is shorter than the lower extension B, and thereby an opening is provided that allows air to pass from the middle air-chamber into the top chamber and passage-way, from whence it is distributed through perforations in the curved top portions of the sections A, as required, to promote combustion of fuel within the fire-pot.

F is a section adapted in form to aid in producing a doorway and a chamber under the doorway. It has integral vertical side portions F² at its top, corresponding with the part D² and also adapted to serve as a wall for the doorway. It corresponds with the portion D² of the section D and is adapted to serve as a part of the wall of a doorway.

Section F³ corresponds with the section D³ and has a right-angled extension F⁴ that closes the two lower chambers or passage-ways for air produced by the sections A having lateral extensions B and B².

F⁵ is a lateral extension that abuts against the edge of the extension D² of the section A and closes the end of the upper air-chamber, from which superheated air is distributed to the fire in the fire-pot.

H is a metal ring in concentric position with the cylinder C, and serves as a support for the series of sections A and the sections D and D³ and F and F³, and also as a bottom for the lower chamber and air passage-way.

J represents a doorway to the fire-pot fixed to the cylinder C.

K represents a grate in the bottom of the fire-pot in the plane of the ring H and in concentric position therewith.

The sections A, D, D³, F, and F³ are preferably made of cast metal in suitable molds, but may be made of fire-clay or other suitable material.

It is obvious that a fire-pot and air-circulator, air-heater, and air-distributor can be readily and advantageously produced by simply assembling the series of sections A, D, D³, F, and F³, that are complete in themselves, by placing them upon the ring H and combining them with the cylinder C in the manner shown and described.

It is also obvious that the sections can be made of any size required to produce fire-pots adapted for stoves and furnaces of different sizes.

In the practical use of my invention air admitted into the chamber under the doorway through an inlet-tube L, as shown in Fig. 2, will pass through the lower chamber or passage-way to the end thereof, and then upward and backward in the second passage-way to its end, and from thence upward again and into the top chamber or passage-way, as indicated by arrows, to be distributed therefrom to the fire through the perforations in the curved top portions of the sections A.

It is obvious that the cold air thus admitted and circulated will prevent the sections of the fire-pot from becoming unduly heated and that the heat radiated from them will heat the air as it circulates, so that it will be superheated when it is distributed by and discharged from the upper chamber or passage-way into the fire-pot to promote combustion of fuel in the fire-pot.

I claim as my invention—

1. An improved fire pot for stoves and furnaces comprising a series of sections that are straight and square ended at their lower end portions and adapted to rest upon a flat surface to project vertically, perforated and

curved outward at their upper ends and provided with outward extensions at different points of elevation that terminate in the planes of their top edges to engage the inside surface of a cylinder to produce communicating air chambers extending horizontally, mating sections having integral vertical side portions adapted to produce a doorway and to close the ends of the upper horizontal air chamber and also to produce an air chamber under the doorway communicating with one end of the lower horizontal chamber, a flat ring fixed to a cylinder to support the said sections, and a cylinder in engagement with the top edges of the curved sections and the edges of their horizontal outward extensions, all arranged and combined in the manner set forth, for the purposes stated.

2. In a fire pot for furnaces, the section D having a vertical portion D², a horizontal extension D³ and an inclined portion D⁴, and the section F having a vertical portion F² and extensions F³, F⁴, and F⁵, in combination with a series of sections A having lateral extensions B and B² and provided with perforations at their curved top end portions, a flat ring to support said sections and a cylinder to inclose all of the said sections, as shown and described, to produce a doorway and an air chamber under the door way and communicating chambers extending horizontally from the chamber under the doorway for the purposes stated.

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Witnesses:

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