(No Model.)

N. BRAYER.

FURNACE.

No. 457,250. Patented Aug. 4, 1891.

Fig. 1.

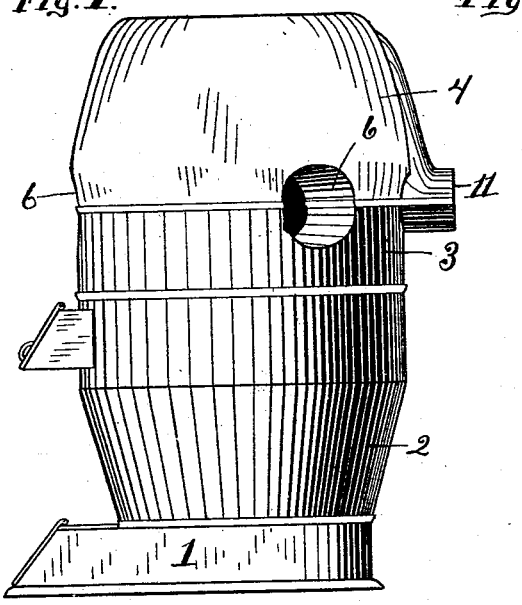


Fig. 3.

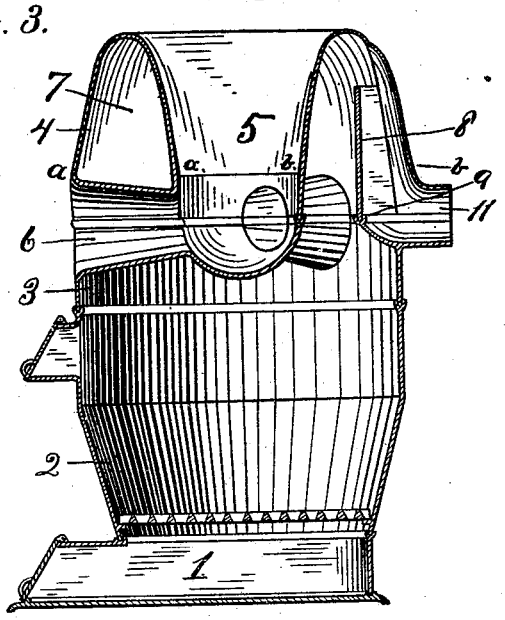


Fig. 2.

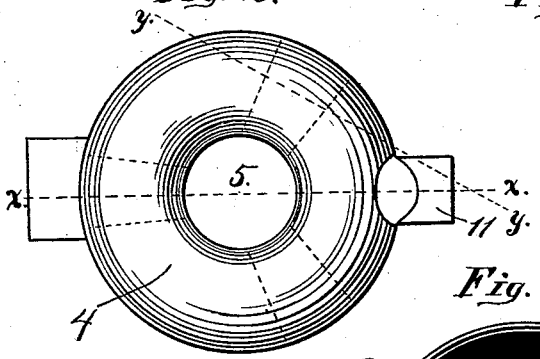


Fig. 4.

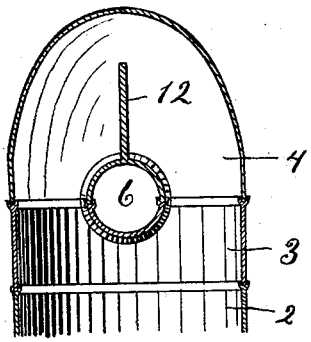
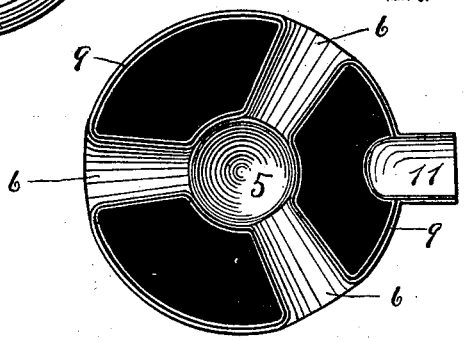


Fig. 5.



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FURNACE.

SPECIFICATION forming part of Letters Patent No. 457,250, dated August 4, 1891.

Application filed February 10, 1891. Serial No. 380,920. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAS BRAYER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My present invention has for its objects to provide a hot-air furnace that shall be exceedingly simple in construction, being preferably cast in sections, and one that will utilize all the heat from the fuel in the most thorough manner, all as will be hereinafter fully described, and the novel features pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a side elevation of a furnace constructed in accordance with my invention; Fig. 2, a plan view of the same; Fig. 3, a vertical section on the line *x x* of Fig. 2; Fig. 4, a similar view on the line *y y* of Fig. 2; Fig. 5, a plan view of one of the sections of the furnace.

Similar letters of reference indicate similar parts.

My furnace consists, as usual, of several superposed sections or rings, the joints between the sections being formed, as usual, by the edge of the upper section entering a corresponding groove of the next lower one, the section 1 in the drawings embodying the ash-pit. Section 2 embodies the fire-pot and main feeding-aperture and at the lower end supports the grate of the ordinary or preferred construction, while sections 3 and 4, the construction and arrangement of which constitute the subject-matter of my present invention, are arranged above this.

Arranged over the fire-pot is a central hot-air chamber 5, communicating with the external air by a series of air-passages 6, extending from the outside of the furnace and in a position to be subjected to the heat derived from the heated products of combustion from the fire. The upper part of air-chamber 5 is open, discharging upward, while the inner and outer walls are connected at the top, forming a closed chamber 7 for the products of combustion, and it will be noted also that the inner and outer walls of the upper part of this chamber 7 incline toward each other, so that the products rising can more readily act upon them and heat them more thoroughly than if they were vertical. The exit-flue 11 for the products of combustion is arranged at the rear of the furnace, half of it being formed in section 3 and half in section 4, while a curved plate 8, resting in the groove 9 in section 3, prevents the direct exit of the products and compels them to rise some distance in the dome before escaping. Also, to prevent the direct exit of the products and to insure their rising to the top and thoroughly heating the dome or the upper section, I arrange on the pipes 6 suitable deflecting plates or webs 12, as in Fig. 4, which are arranged, if only three of said pipes are employed, as in the present instance, upon the two side pipes. Of course, instead of employing three, a greater number of pipes or conduits could be employed, if necessary.

The section 3 is, as shown in Fig. 5, cast integral with the lower halves of the pipes 6 and the bottom of the hot-air chamber 5, and is further provided with the grooves 9, which the depending flanges of the superposed section 4 enter, making a tight joint afterward luted or packed with a composition or sand, as will be understood.

The upper section 4 is preferably cast in one piece, the line *a b*, Fig. 3, representing the point at which the pattern is parted, so as to be more readily drawn from the sand, and with it is formed the half-section of the exit-flue 11, and the lower edges of this upper section rest in the grooves 9, formed in section 3, as in Fig. 5.

By this construction it will be seen not only is the furnace simplified, but the heat of the fire and products is utilized to the fullest extent, being compelled to rise to the highest points, as indicated by the arrows, and brought in contact with the walls of the dome which heat the air thoroughly in the air-chamber 5 and outside of it.

Numerous modifications could well be made without departing from the spirit of my in-

vention, and I do not therefore desire to be confined to precisely the construction employed.

I claim as my invention—

1. In a hot-air furnace, the combination, with the dome having the central air-chamber arranged over the fire-pot and the several air-conductors connecting therewith, of the exit-flue and the deflecting-plates arranged on the conductors on opposite sides of the exit-flue extending up into the dome, substantially as described.

2. In a hot-air furnace, the combination, with the dome having the central air-chamber arranged over the fire-pot and the several air-conductors communicating therewith, of the exit-flue having the plate in front thereof and the deflecting-plates arranged on the conductors on opposite sides of the exit-flue and extending up into the dome, substantially as described.

3. In a hot-air furnace, the combination, with the section having the half-tubes and the air-chamber bottom formed therewith, of the superposed dome-section having the half-tubes formed thereon and the openings between them, substantially as described.

4. In a hot-air furnace, the combination, with the fire-pot section having the half-tubes, the air-chamber bottom and the portion of the exit-flue formed therewith and provided with the grooves, of the superposed dome-section co-operating with the first-mentioned section having the half-tubes and the openings between them, and the curved exit-flue deflecting-plate resting upon the lower section and projecting into the upper one, substantially as described.

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