No. 829,984. PATENTED SEPT. 4, 1906.

P. MANFRED.

HEATER.

APPLICATION FILED NOV. 9, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

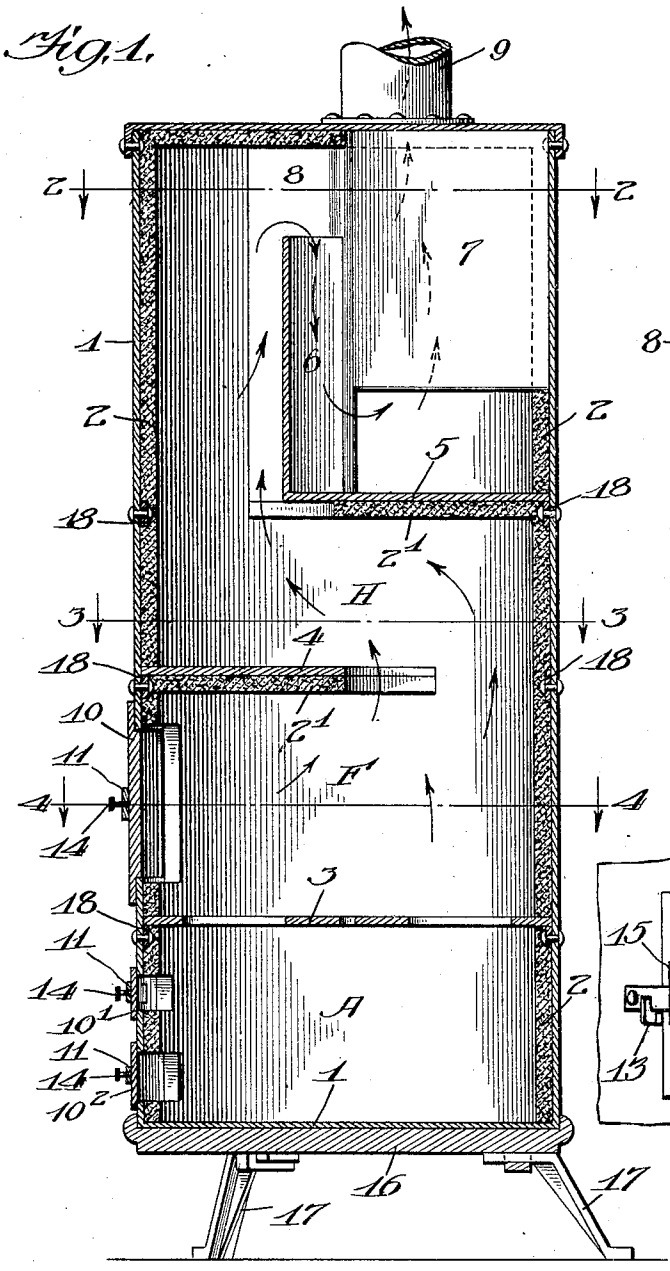


Fig. 5.

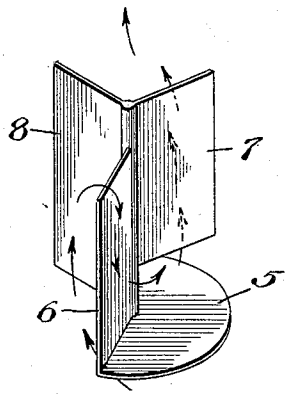
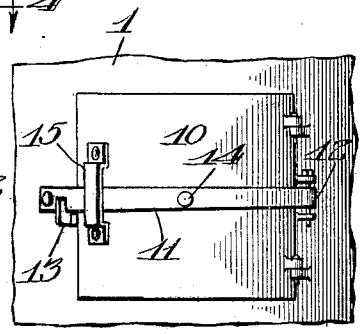


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 2.

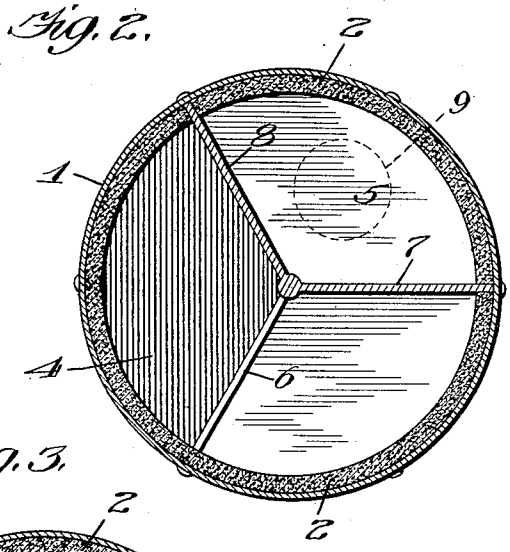


Fig. 3.

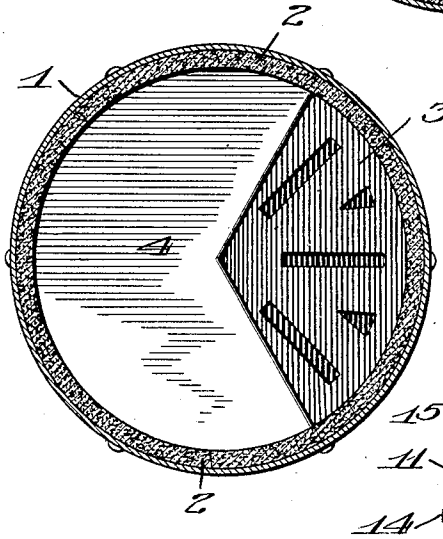
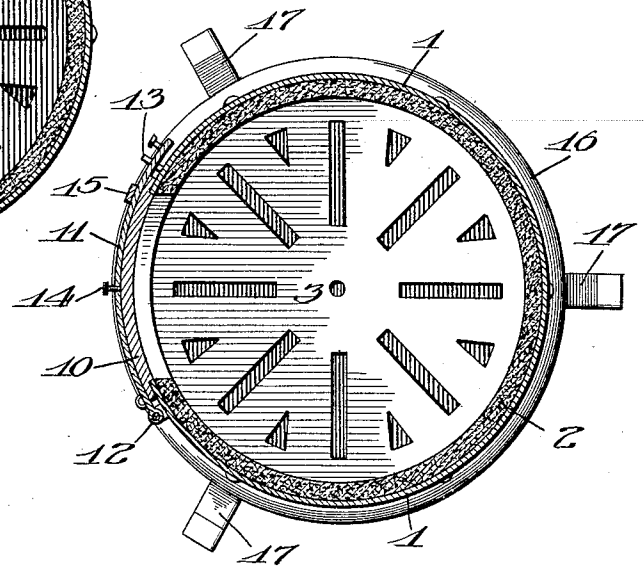


Fig. 4.



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PHILIP MANFRED, OF CHICAGO, ILLINOIS.

HEATER.

No. 829,984. Specification of Letters Patent. Patented Sept. 4, 1906.

Application filed November 9, 1905. Serial No. 286,460.

To all whom it may concern:

Be it known that I, PHILIP MANFRED, a subject of the Emperor of Russia, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Heaters, of which the following is a description.

My invention relates to that class of devices used for heating, and has for its object the production of an economical, efficient, and labor-saving heater.

To this end my invention consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claim.

In the drawings, wherein like reference characters indicate like or corresponding parts, Figure 1 is a vertical section of the preferred form of my device. Fig. 2 is a cross-section taken on line 2 2 of Fig. 1. Fig. 3 is a cross-section taken on line 3 3 of Fig. 1. Fig. 4 is a cross-section taken on line 4 4 of Fig. 1. Fig. 5 is a perspective view of one form of baffling arrangement. Fig. 6 is a front elevation of the preferred form of doors.

As is shown in the drawings, the preferred form of heater is made up of walls of terra-cotta, clay, fire-brick, or similar material 2, and provided with doors 10, 10′, and 10^2, adapted to make the openings to the fire-box or combustion-chamber F and ash-pit A practically air-tight when they are closed. To retard the heated gases on their way to the stack or chimney, any preferred form of baffling arrangement may be used. In the drawings, baffle-plates 4 and 5, forming a receiving or heat-storing chamber H, and radially-disposed plates 6, 7, and 8 are shown. The radially-disposed plates allow the heated gases everywhere to come in contact with the inside wall of the heater and also increase the heat-storing capacity of the same. These plates may be formed of any suitable heat-storing material or, if prefered, suitable metal plates, as shown at 4 and 5, may be employed with their exposed surfaces protected by a covering of fire-brick or clay or other heat-storing material 2′. If preferred, plates 6, 7, and 8 may be similarly protected or made entirely of suitable heat-storing material. It is obvious that partition 4 may be dome-shaped, if desired. By using heat-storing material for the baffle-plates the heat-storing capacity of the heater is greatly increased and a better combustion obtained, due to the incandescence of the plates, thereby greatly increasing the efficiency of the heater. When supporting-plates are used, they are preferably arranged so as to be protected by the heat-storing material.

Surrounding the body of the heater is preferably placed an outer casing 1, made of metal, to which may be secured supporting-rings 18 in any preferred way. Instead of rings 18 several small supporting-shoulders may be used or the baffling-plates 4 or 5 may be recessed in and supported by the fire-brick or body of the heater 2.

Any preferred means may be employed to close the openings to the fire-box and ash-pit and practically make the same air-tight, a simple form of door being shown in Fig 6. Across the door is a bar 11, provided with a thumb-screw 14 or equivalent means so arranged that when 14 is screwed in the door is forced up tight against the frame.

Any suitable or preferred form of grate 3 may be used. In the drawings a cylindrical form of heater is shown; but it is obvious that the shape is immaterial and that the legs 17 may be supplied or the heater may rest directly on the base. Various immaterial changes may be also made in the baffling arrangement shown. Hence I do not wish to limit myself to the exact form shown.

In the preferred form when there is a fire on the grate the heated gases and smoke pass from the combustion-chamber F through the storing-chamber H and up over plate 6, down under plate 7, thus coming in contact with the inside wall of the heater at all points, and thence up and out through flue 9 to the stack or chimney. In this way the heated gases are retained in the heater for some time, thoroughly heating the walls 2 and the baffle-plates. When the walls 2 are sufficiently hot, the doors may be closed, so as to make the openings air-tight, and thus the fire checked. The walls of the heater and the baffle-plates inside continue to slowly radiate the heat stored therein for a considerable length of time, of course the heat being replenished to some extent from the checked fire. As is obvious, there is a less amount of fuel and labor required and a steadier and softer heat given off—that is, the expelled heat is more equably maintained at a constant temperature. When the doors are closed and the thumb-screws tightened up, it is obvious that the danger arising from gases escaping through the openings is reduced to

the minimum. In the drawings two doors are shown to the ash-pit. If desired, one will be sufficient. By the term "heat-storing material" I wish to be understood as meaning material—such as terra-cotta, fire-brick, or clay—suitable for storing up the heat and operating in the manner described.

What I claim as new, and desire to secure by Letters Patent, is—

In a heater of the kind described, a shell of heat-storing material, said shell having an exterior non-combustible casing, in combination with a grate and two transverse partitions of heat-storing material having openings therethrough offset from one another, forming a draft-chamber, a combustion-chamber, and a heat-storing chamber, said heat-storing chamber being provided with a series of radially-disposed baffle-plates of heat-storing material, said combustion-chamber provided with an opening for charging the same and a door for closing the said opening and substantially making the same air-tight, a door and opening for regulating the draft to said draft-chamber and means for substantially making the same air-tight, means for supporting said transverse partitions and baffling-plates, and a flue for conveying away the waste productions of combustion.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PHILIP MANFRED.

Witnesses:
ROY W. HILL,
CHARLES I. COBB.