

H. ANDERSON.

HEATER.

APPLICATION FILED DEC. 22, 1908.

981,353.

Patented Jan. 10, 1911.

2 SHEETS—SHEET 1.

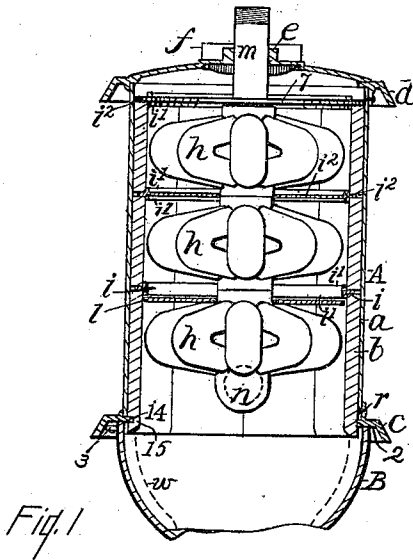


Fig. 1

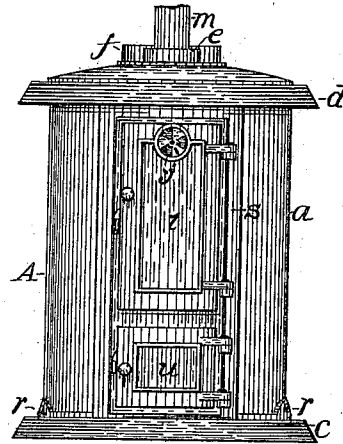


Fig. 2

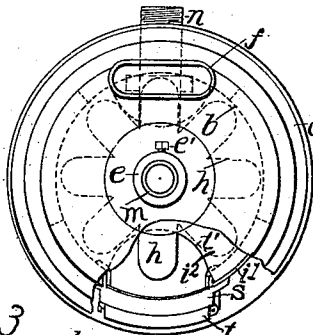


Fig. 3

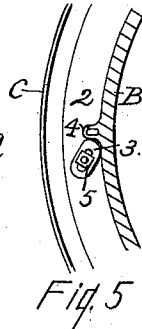


Fig. 5

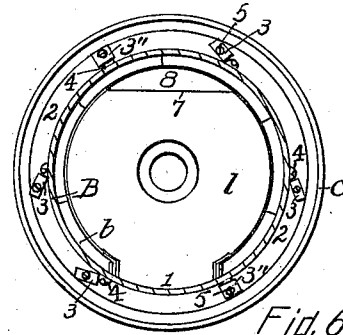


Fig. 6

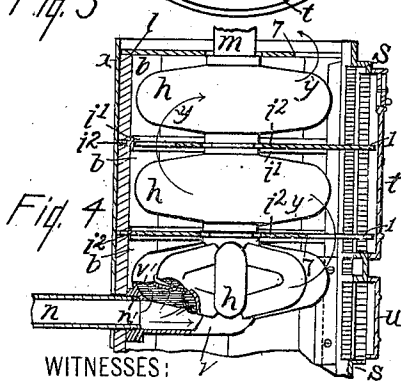


Fig. 4

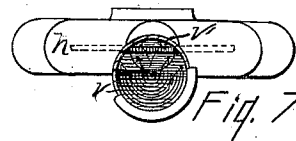


Fig. 7

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2 SHEETS-SHEET 2.

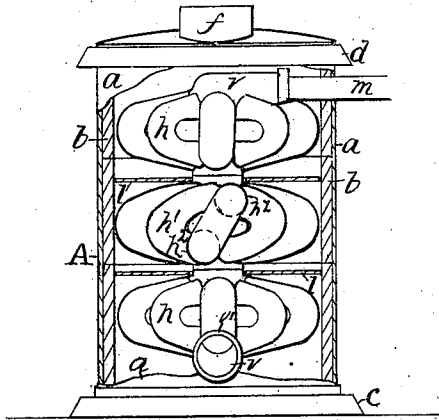


Fig. 8

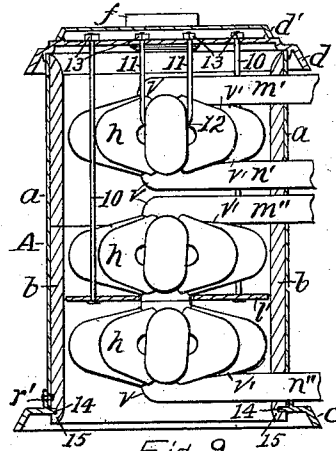


Fig. 9

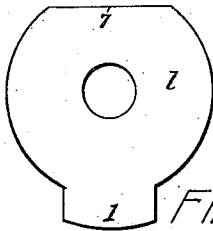


Fig. 10

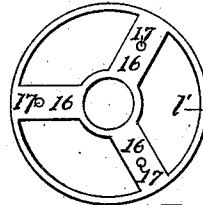


Fig. 11

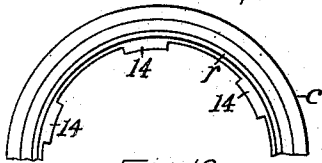


Fig. 12

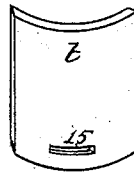


Fig. 13

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HEATER.

981,353.

Specification of Letters Patent.

Patented Jan. 10, 1911.

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To all whom it may concern:

Be it known that I, HOMER ANDERSON, a citizen of the United States, and resident of Peekskill, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Heaters, of which the following is a specification.

This invention relates to hot water heaters, and its object is primarily to provide heating apparatus that is adaptable to heating stoves, both stoves in use and stoves in process of manufacture. They are adaptable to globe stoves, so-called oak stoves, and any stove or heater having a fire pot that will support the superstructure that will be herein described. It may be used not only for heating rooms and collections of rooms, but also as a water heater for tanks, as a gas water heater, a steam super-heater, &c. It has particular applicability to the distributing of heat on the same floor with the heater, and for heating a large room on one floor by the radiation from the stove, and rooms above the large room by means of hot water in coils or radiators. These objects are attained by the means set forth in these specifications and the accompanying drawings, in which like characters refer to similar parts throughout the several views.

Figure 1 is an elevation of the heater in transverse section. Fig. 2 is an elevation of the complete heater. Fig. 3 is a top view of the heater showing a portion of the top plate cut away. Fig. 4 shows several parts of the heater in cross section and elevation. Fig. 5 is a detail relating to a fastening for the heater. Fig. 6 is a view of the heater from the bottom, showing the absence of the water sections, and the location of a fire pot in relation to the heater. Fig. 7 represents the inlet to a bottom heater section. Fig. 8, sheet 2, is an elevation partly in cross section showing the outlet from the heater to be at the side of the heater. Fig. 9 shows in elevation a special arrangement of the water heater. Fig. 10 is a plan of a draft diaphragm. Fig. 11 is a plan of a centering plate. Fig. 12 represents a detail relating to the fire brick lining. Fig. 13 represents the reverse side of one of the bottom row of fire bricks.

In Fig. 1, A represents the heater and B the fire pot of a globe stove, indicating how the structure A, Fig. 2, is designed to be

applied to any suitable base of a stove, heater, or gas or oil burning support. The heater is a complete structure in itself.

Referring to Fig. 1, a ring *c* adapted, as shown, to the top edge of a fire pot B, embodies a plain under-surface 2, see also Figs. 2 and 6, of a width that will make the ring adaptable to fire pots that vary only an inch or two in diameter, that is, there may be that much variation in fire pots of, say twenty inches in diameter, as made by different manufacturers, so that a twenty inch ring might be adaptable to anything from nineteen to twenty-one inches in diameter.

Upon the base ring *c* is erected a cylinder of either sheet or cast metal *a*, of a height adapted to the size and number of the water sections. In the drawing three sections are shown, of a particular form, although any section adapted for the purpose may be used. The cylinder is provided with a top, with a collar *e* thereon for the outlet pipe *m* from the sections. Provision may be made for taking the outlet pipe from the side of the heater, as at *m*, Fig. 8. When the pipe is taken out through the collar *e* a set screw *e*¹, Fig. 3, is provided for securing the pipe in the collar as a support for the sections. A smoke pipe collar *f* Figs. 1, 2, 3, 8, 9 is also provided on the top.

The heater may be used without fire brick or other lining; but to prevent a surplus of heat radiation from the outfit as a stove, lining, preferably of fire brick, is used as shown by *b*. For some uses a lining would be indispensable, while in others, as, for instance, the distribution of heat in a large room, a lining would not be required.

At *i*, Fig. 1, a ring is shown as separating the tiers of fire bricks, and as having flanges *i*¹ for retaining the fire bricks in their places. Such rings will not be needed in small heaters. Such rings, with diaphragms, between the water sections, are shown at *i*², Figs. 1 3 4 to be integral. At *l*, Fig. 1, a diaphragm is shown as fitting loosely within the fire bricks and lying on the top of the section *h*. Such a diaphragm used alone, without the rings *i*, serve to help retain the fire bricks in their places, and during transportation and handling, steady the sections, or give support to the sections sidewise.

The fire bricks are preferably made to protect the ring *c* from the action of the fire, where it projects inwardly over the

fire pot, as at 14 15, Figs. 1 and 9. As shown in Fig. 12 the inner edge of the ring *c* is provided with projections 14, seen also in Figs. 1 and 9. The fire brick is shown in Fig. 13 as provided on its reverse side with a recess 15, that fits over the projections, as in Figs. 1 and 9. These projections also give vertical support to the fire bricks. The recesses in the bricks are removed from the edges of the bricks, and so do not materially weaken the bricks, while the arrangement admits of the bricks projecting into the fire pot. If the fire pot be lined with fire bricks, the heater is thus lined from the grate to the top. A fire brick lining of the fire pot is indicated by the broken lines *w*.

The casing of the heater is provided with a door frame *s*, Figs. 2 4 of a length to admit of a fire door *u*, and a long cleanout door *t*. The cleanout door is to give access to the water sections to clean them of ash and soot deposits. To guard against directing cold air currents against the water sections, the draft register *j* is placed at the top of the cleanout door. Fastenings of the casing *a* to the base ring *c* are shown at *r r*, Figs. 1 2 which may be by means of lugs as there shown, or by a deep flange as at *r¹*, Fig. 9.

The diaphragms *i²* or *l*, Figs. 1 3 4 8 are placed between the sections in order to cause the products of combustion to sweep across the sections alternately, as shown by the arrows *y*, Fig. 4. The diaphragm may have semi-circular openings as at *l¹*, Fig. 4, or preferably have a segment cut away from one side as at 7, Figs. 6 and 10. The diaphragms are also provided with a projection 1 to enter the projecting door frame and door, when such are used, as in Figs. 3 4 6 7.

Fig. 9 shows an absence of diaphragms, the plate *l¹* being made as in Fig. 11, with a rim and a perforated center connected by arms 16. The plate, like the diaphragms, serves as a brick support and to steady the sections during transportation, and further as a means for supporting the sections, when the sections are to be supported from the heater top *d*, as in Fig. 9. Holes 17 in the arms are for hanger rods 10.

In Figs. 5 and 6 are shown means for securing the heater on a stove or other base, to avoid circumferential displacement of the stove by grate shaking. The weight of the heater and the connected piping will hold the heater steady. Fire pots are provided with lugs, as at 4, Figs. 5 6. To the under side of the heater base ring *c* adjustable stops 3, with fastening bolts or screws 5 are provided to be set against the stove lugs as shown, particularly in Fig. 5. In some cases the stops 3 may be used as clamps to set over the stove lugs, as at 3'' 3'' Fig. 6.

The heater as thus described presents the appearance substantially as shown in Fig. 2,

except as to ornamentation that may be disposed upon it. It is not a heater designed to be located in a cellar, but for situations where a cellar heater could not be employed, or where its employment would not be desirable by reason of its uncouthness. It can be adapted for placement in cellars, but that is not one of its valuable purposes.

The water section *h*, shown in Figs. 1, 2 4 8 9 is one known as comprising hollow hubs with connecting pipes whereby the water must pass through the pipes to go from one hub to the other. It has a central connection that involves an elbow to make a pipe connection, to adapt the section for a side connection, and better adapt it for the use herein shown, an outlet *v* is cast on the section, and involves a part of one of the section bends, as at *v¹*, Figs. 4 7 8 9, in which the inlet starts from the section where the hub of the section would be, and is extended horizontally to the side of the section in line with the bend with which it merges, with this effect: Were the water of low temperature to enter directly into one of the bends it would prevent a free circulation of the water in the section, and would particularly destroy the circulation in that bend. By leading the water in partly below the level of the junction of all the bends in the manner shown, the water has an abundance of room in which to distribute itself through all the bends alike, and with a minimum of disturbance of the circulation. One type of this section is shown in Fig. 7, the inlet *v* being enlarged to show how the entering water would find ample room in the eight bends to divide itself between the eight. With this connection the sections can be hung in this heater nearer to the fire than when an elbow must be employed.

Fig. 9 shows an arrangement of these sections, in which hot water may be used from two of them for one purpose, as for heating rooms, and from the other one for some other purpose, as supplying hot water for some particular use. The upper section is shown as suspended from the top *d* by means of looping rods 11 11 and nuts 13 13. The two lower sections are suspended from the top by means of the plate *l* and rods 10 10 and nuts 13 13. To conceal the nuts on the top an additional plate *d¹* is provided.

As a means of obtaining a greater contact surface between the bends of the sections and the products of combustion, the bends of the section are shown as having an inclination from the perpendicular, as in the section *h¹*, Fig. 8. This is particularly advantageous where the sections are used without the diaphragms, as the ascending heat currents hit the upper part of the bend *n¹* as squarely as they do the lower part *n²* of the bend.

Having described my invention, what I

claim and desire to secure by Letters Patent is:—

1. The combination in a water heater, comprising a base, a casing with a cover mounted on the base, a fire brick lining within the casing, water sections within the casing, outlet and inlet pipe connections with the water sections, the base provided with adjustable stops for interlocking with lugs on a fire pot.
2. The combination in a water heater comprising a base adaptable to a fire pot, means on the base for interlocking the lugs on a fire pot, a casing with a cover mounted on the base, fire brick lining within the casing, lugs on the base ring, recesses in the fire bricks to engage with said lugs, the fire bricks adapted to extend within the fire pot, water sections within the casing, inlet and outlet connections with the sections, and a front on the casing comprising a fire door and a clean-out door.
3. The combination in a water heater comprising a base adaptable to a fire pot, means on the bottom of the base for binding the base and fire pot together, a casing with a cover and a door front mounted on the base, fire brick lining within the casing, fire brick supports on the base engaging with the fire bricks, the fire bricks adapted to extend within a fire pot, water sections within the casing with inlet and outlet connections, and diaphragms between the sections.

4. The combination in a water heater, of a base adaptable to a fire pot, a casing with a cover and door front on the base, fire brick lining within the casing, fire brick supports on the base engaging with the fire bricks, the fire bricks adapted to extend within a fire pot, water sections within the casing, one part of said sections having inlet and outlet connections separate from the inlet and outlet connections of the other portion of the sections.

5. In a water heater section comprising hollow hubs connected with pipes whereby the water must pass through the pipes to get from one hub to the other hub, the connecting pipes set at an inclination from the perpendicular between the two hubs.

6. In a water heater section comprising hollow hubs connected with pipes whereby the water must pass through the pipes to get from one hub to the other hub, a side pipe connection with the section, the connection engaging with and merging into one of the pipes, a part of the pipe area extending outside of the junction of the pipes on the hub.

Signed at Peekskill, in the county of Westchester and State of New York this sixteenth day of December A. D. 1908.

HOMER ANDERSON.

Witnesses:

E. J. HORTON,
FRANK LEVERICK.