H. S. HUMPHREY.

WATER HEATER.

APPLICATION FILED APR. 27, 1914.

1,251,085. Patented Dec. 25, 1917.

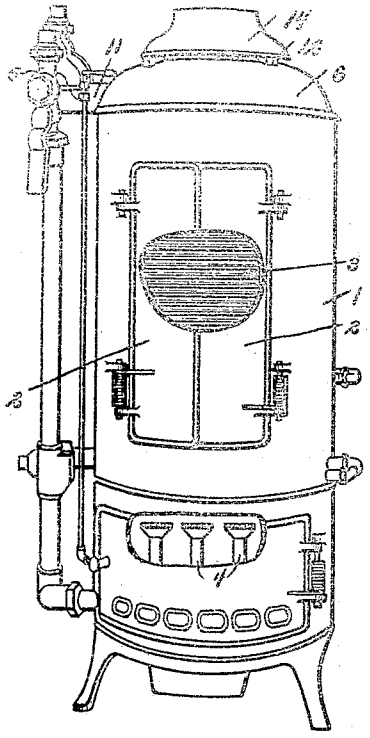


Fig. I.

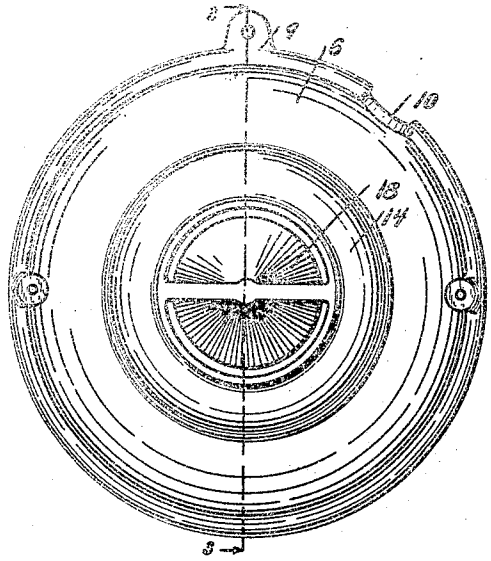


Fig. II.

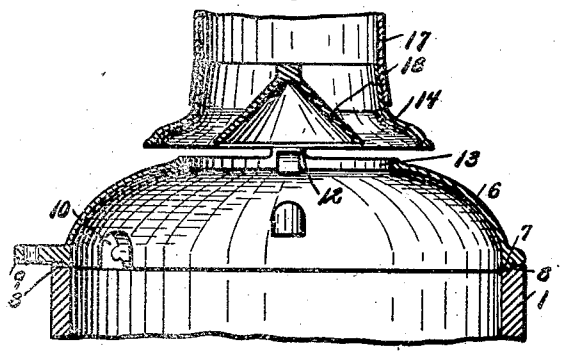


Fig. III.

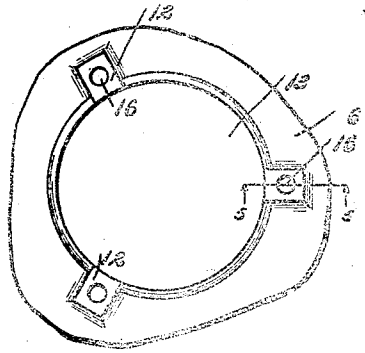


Fig. IV.

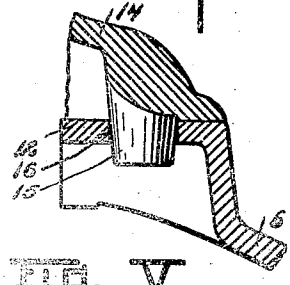


Fig. V.

Witnesses
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UNITED STATES PATENT OFFICE.

HERBERT S. HUMPHREY, OF KALAMAZOO, MICHIGAN.

WATER-HEATER.

1,251,035. Specification of Letters Patent. Patented Dec. 25, 1917.

Application filed April 27, 1914. Serial No. 834,648.

To all whom it may concern:

Be it known that I, HERBERT S. HUMPHREY, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

This invention relates to improvements in water heaters.

My present improvements relate to water heaters in which the boiler, usually of the coil type, and the heating burners therefor are arranged within a casing, the products of combustion being delivered from the top of the casing.

It is the main object of my present invention to provide in a water heater of this type an improved ventilator whereby the products of combustion are effectively delivered and down drafts through the casing prevented; further, to provide in a water heater an improved ventilator having these advantages, which is simple and economical in structure and has the appearance or effect of constituting a unitary part of the heater casing.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure I is a front view of a water heater embodying the features of my invention, the parts of the casing being broken away to show the arrangement of the burners and boiler within.

Fig. II is a plan view of the casing top with the ventilator in position.

Fig. III is a detail vertical central section on a line corresponding to line 3—3 of Fig. II.

Fig. IV is a detail plan view of the casing top with the ventilator removed.

Fig. V is an enlarged detail view partially in vertical section, on a line corresponding to line 5—5 of Fig. IV.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the heater casing 1 is preferably cylindrical as illustrated, and provided with doors 2. Within the casing is a boiler 3 of the coil type, the heating burners 4 being arranged below the coils.

The water and gas valve mechanism 5 is mounted on the side of the casing. As the details of this mechanism form no part of my present invention, I do not illustrate or describe the same herein.

The casing top 6 is convex in form and provided with a flange 7 fitting within the shoulder 8 at the upper end of the body of the casing,—see Fig. III. The top has a projecting ear 9 at one side to which the valve mechanism 5 is connected. The casing is also provided with an opening 10 for the water inlet pipe 11.

A plurality of hood rests 12 are spaced about and raised above the discharge opening 13 of the casing top. The hood 14 is arranged on these rests 12 and is provided with lugs 15 engaging holes 16 in the rests so that the hood is removably retained in position.

The hood is flared downwardly, the diameter of its lower end being substantially greater than the diameter of the delivery opening 13 of the casing so that the hood overhangs the opening, its lower edge projecting well beyond and being supported in a spaced relation to the top. The hood is adapted to receive a flue 17.

Within the hood is a conical deflector 18, the diameter of the deflector being approximately that of the top of the hood. The deflector is supported so that its lower edge is substantially in the plane of the lower edge of the hood. The deflector is supported by the cross bar 19 which, in the structure illustrated, is integral with the hood and deflector.

With the parts thus arranged, the products of combustion pass freely through the top opening 13 and through the hood around the deflector. In the event of down drafts through the hood, the air is directed by the deflector between the lower edge of

the hood and the top of the casing. It has been somewhat common practice to use separate sheet metal ventilators requiring separate crating and care in crating in order to prevent injury, as such hoods collapse quite easily and are of comparatively large dimensions. My improved ventilator is substantial in construction, the parts being castings so that they are not likely to be injured in transportation, and the heater may be crated for shipping with the ventilator in position.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner, a convex casing top having a central discharge opening and spaced hood rests about said opening, said rests being raised above the edge of said opening and having holes therein, a downwardly flared hood open at its top and bottom arranged on said rests with its lower edge in a spaced relation to the top and having retaining lugs engaging the holes in said rests, the diameter of the bottom of the hood being greater than the diameter of the opening in the top whereby the hood overhangs the top opening, said hood being adapted to receive a flue, and a conical deflector supported centrally within said hood with its lower edge substantially in the plane of the lower edge of the hood, the diameter of the lower end of the deflector approximating the diameter of the top of the hood, said deflector being supported by a cross bar at its upper end integral therewith and with said hood.

2. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner, a convex casing top having a central discharge opening and spaced hood rests about said opening, said rests being raised above the edge of said opening and having holes therein, a downwardly flared hood open at its top and bottom arranged on said rests with its lower edge in a spaced relation to the top and having retaining lugs engaging the holes in said rests, the diameter of the bottom of the hood being greater than the diameter of the opening in the top whereby the hood overhangs the top opening, and a deflector supported centrally within said hood.

3. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner, a casing top having a discharge opening, a downwardly flared hood open at its top and bottom, mounted on said top with its lower edge in a spaced relation thereto, the diameter of the bottom of the hood being greater than the diameter of the opening in the top whereby the hood overhangs the top opening, and a conical deflector supported centrally within said hood with its lower edge substantially in the plane of the lower edge of the hood, the diameter of the lower end of the deflector being slightly less than the diameter of the top of the hood, said deflector being supported by a cross bar at its upper end integral therewith and with said hood.

4. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner, a casing top having a discharge opening, a downwardly flared hood open at its top and bottom mounted on said top with its lower edge in a spaced relation thereto, the diameter of the bottom of the hood being greater than the diameter of the opening in the top whereby the hood overhangs the top opening, and a deflector supported within said hood having a diameter less than the diameter of the opening in the top and the bottom of the hood.

5. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner having a discharge opening, a downwardly flared hood open at its top and bottom mounted on said casing with its lower edge in a spaced relation thereto, the diameter of the bottom of the hood being greater than the diameter of the discharge opening of said casing, whereby the hood overhangs the discharge opening, said hood being adapted to receive a discharge flue, and a deflector supported within said hood with its lower edge substantially in the plane of the lower edge of the hood and having a diameter less than the diameter of the opening in the top and the bottom of the hood.

6. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner comprising a top having a discharge opening, a downwardly flared hood open at its top and bottom mounted on said top with its lower edge in a spaced relation thereto, the diameter of the bottom of the hood being greater than the diameter of the opening in the top whereby the hood overhangs the top opening, a conical deflector supported within said hood with its bottom edge in spaced relation to the edge of the discharge opening in said top, and the side of the deflector constituting substantially a continuation of the surface of said top.

7. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner comprising a casing top having a discharge opening, a hood for said opening having a portion overhanging said opening, said hood being open at the top, an upwardly converging deflector mounted centrally of said opening, the bottom of said deflector being

substantially flat and having a diameter less than the diameter of the opening in the top of said casing and less than the diameter of the hood, the bottom of said deflector lying substantially in the plane of the bottom of the hood, substantially as described.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

HERBERT S. HUMPHREY. [L. S.]

Witnesses:
LUELLA G. GREENFIELD,
ANNIE E. PARRY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."