D. HANLON.

WATER HEATER.

APPLICATION FILED MAY 17, 1909.

940,685. Patented Nov. 23, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

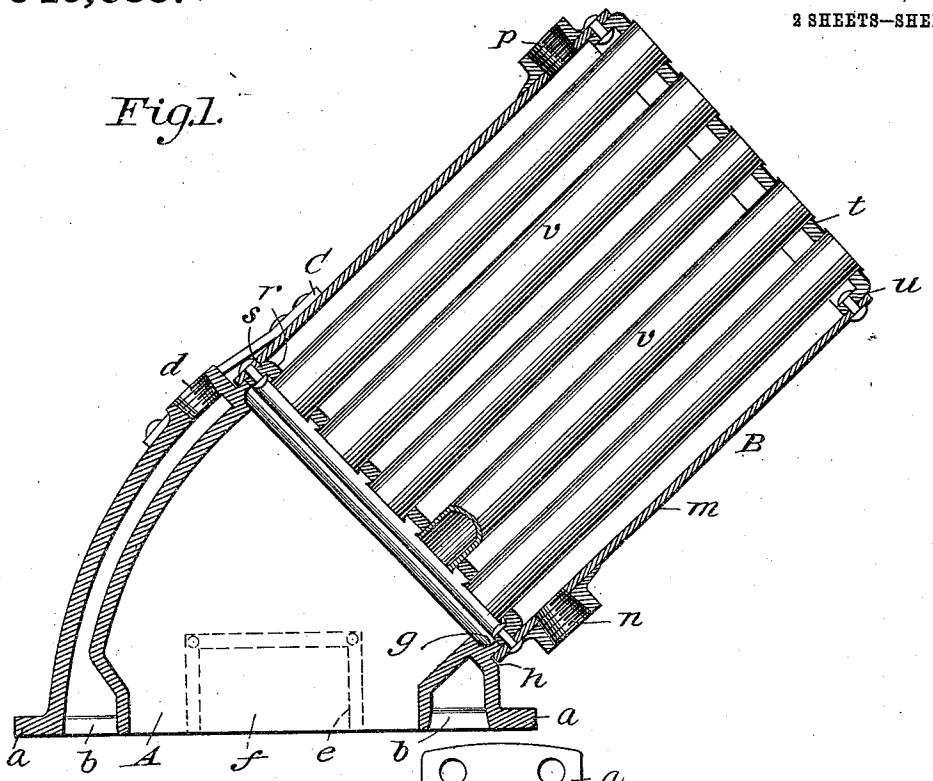
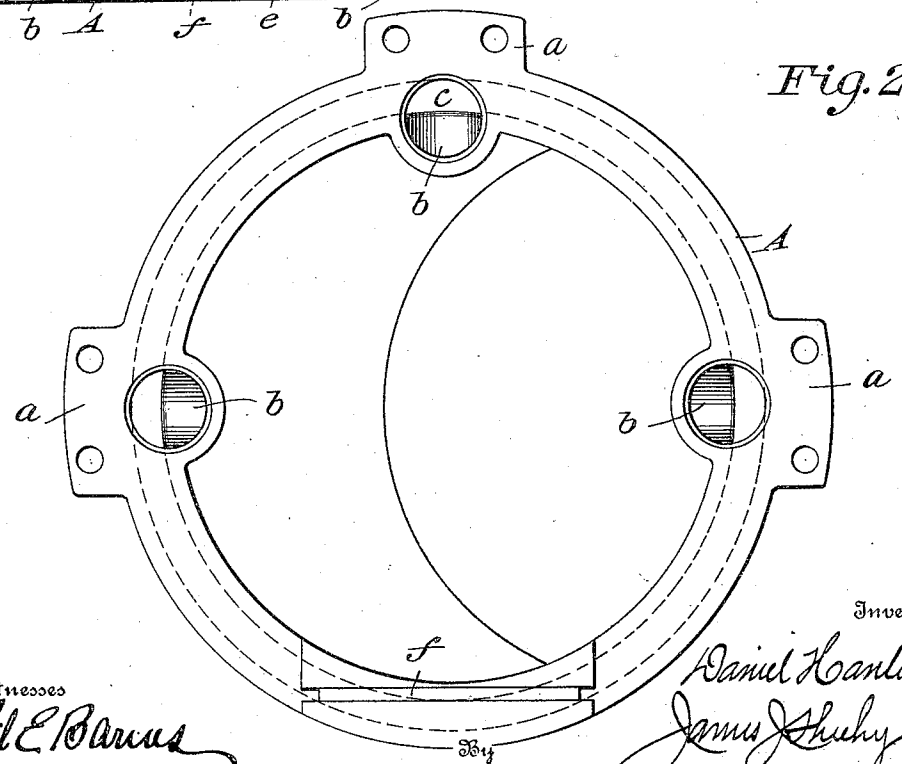


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

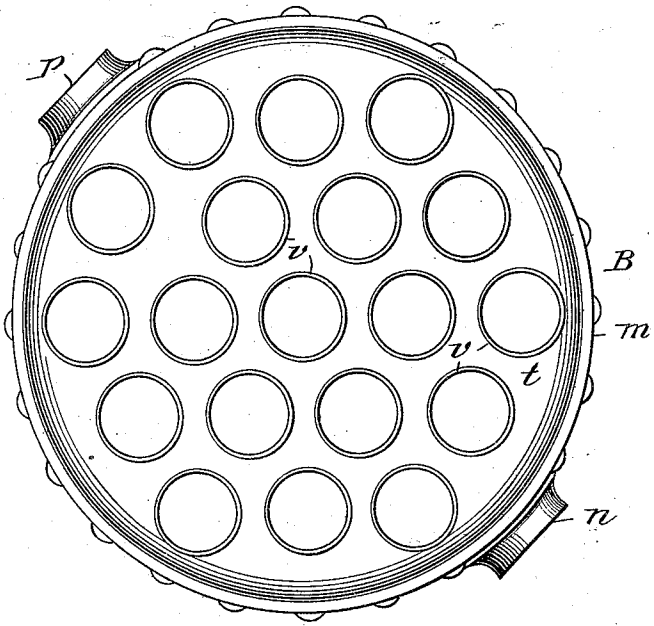
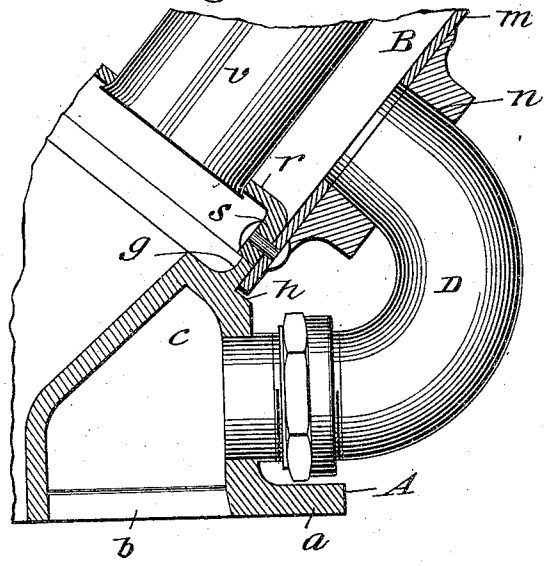


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

DANIEL HANLON, OF SPOKANE, WASHINGTON.

WATER-HEATER.

940,685. Specification of Letters Patent. Patented Nov. 23, 1909.

Application filed May 17, 1909. Serial No. 496,354.

To all whom it may concern:

Be it known that I, DANIEL HANLON, citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented new and useful Improvements in Water-Heaters, of which the following is a specification.

My present invention has to do with hot water heaters such as are designed for domestic purposes; and it has for its general object to provide an auxiliary heater constructed with a view of being applied to and used in combination with hot water heaters such as at present in use and adapted to utilize the heat values of the products of combustion at a point intermediate the hot water heater proper and the chimney or uptake.

Another object of the invention is the provision of an auxiliary heater so arranged relative to the hot water heater proper that said auxiliary heater is convenient of access for cleaning purposes and is adapted to retard the upward passage of products of combustion so as to take practically all of the heat values from said products incidental to the passage of the same and utilize the said heat values in raising the temperature of the water present in the auxiliary heater.

Other objects and advantageous features of the invention will be fully understood from the following description and claim when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:

Figure 1 is a vertical, diametrical section of the auxiliary heater constituting the best practical embodiment of my invention that I have as yet devised. Fig. 2 is an inverted plan view of the base of the novel auxiliary heater. Fig. 3 is a plan view of the upper end of the water container comprised in my improvements. Fig. 4 is a detail section illustrative of the manner in which the water container of the base is connected with the induction orifice in the dome or top water container of my improvements when it is deemed expedient to have the heated water pass from the hot water heater proper up into the base of the auxiliary heater and from thence into the water container of the dome.

Referring by letter to the said drawings, and more particularly to Figs. 1 to 3 thereof: A is the base of my novel auxiliary heater, which is preferably cast of metal consonant with its purpose. The lower end of the said base is horizontal so as to adapt it to be superposed on the upper end of an ordinary or any other suitable hot water heater, and at said end are provided three (more or less) apertured lugs *a*, designed to receive bolts or the like employed in the fixing of the auxiliary heater on the ordinary hot water heater. It will also be seen by comparison of Figs. 1 and 2 that the lower end of the base A is provided with water ports *b*, designed to communicate with similar ports in the hot water heater proper, and that in communication with the said ports *b* is a water space *c* from the upper portion of which leads an outlet port *d*. It will further be understood by reference to Fig. 1 that the base A forms an additional combustion chamber, for an important purpose hereinafter set forth; that the base is preferably equipped with a clean out opening *e*, normally closed by a plate or door *f*; and that the upper end of the base is pitched at about the angle illustrated from the vertical, and is provided with a preferably circular flange *g* and a shoulder *h* surrounding the said flange.

B is what I will hereinafter denominate the dome of my novel auxiliary heater. The said dome because of the inclination of the upper end of the base A, is disposed at an angle of about 45 degrees. This will be appreciated as an important advantage when it is stated that the said inclination of the dome affords ready access thereto for cleaning. The chief advantage, however, of inclining the dome in the manner stated, lies in the fact that by virtue of the inclination of the dome the same is enabled to retard the products of combustion enroute to a chimney or uptake, with the result that practically all of the heat values are taken from said products of combustion and utilized to the best advantage in heating the water contained in the shell *m* of the dome. In addition to the said shell *m*, which is preferably of steel and provided with an induction orifice *n* and an eduction orifice *p*, the dome B comprises a lower head *r*, flanged at *s* and permanently connected to the shell, an upper head *t*, flanged at *u* and also permanently connected to the shell, and a plurality of flues *v* extending through and suitably fixed with respect to the heads *r* and *t*. The heads *r* and *t* and the flues *v* are all preferably formed of steel for the sake of

durability and also in order to conduct the heat given off by the products of combustion to the water. It will further be understood by reference to Fig. 1 that the flange *s* of head *r* bears on the upper edge of the base flange *g*, and that the lower end of the shell *m* surrounds the said flange *g* and bears on the shoulder *h* of base A, and consequently a single strap such as the strap C, Fig. 1, bolted or otherwise fixed to the base A and the dome B is sufficient to hold the dome in proper position on and connect it to the base A; the said strap being disposed at the highest point of the lower portion of the dome. From this provision it will be manifest that when it is necessary for any reason to remove the dome, the same may be quickly and easily accomplished by lifting the dome off the base after the strap C is disconnected from either the base or the dome.

It is obvious that any suitable means may be employed for conducting the smoke and other products of combustion from the upper ends of the flues *v* to a chimney or uptake, and inasmuch as the said means forms no part of my invention I have deemed it unnecessary to illustrate the same.

In the practical working of my novel auxiliary heater, the circulating water on its return to the heater may circulate through the dome, and from thence back to an apartment or apartments to be heated, or else the circulating water on its return to the heater is carried into the water space of the hot water heater proper, from whence it passes up into the water space *c* of the base A and from the latter through a pipe D to the induction orifice *n* of the dome B. This latter arrangement is clearly shown in Fig. 4, and will be readily understood by reference thereto.

In addition to the practical advantages hereinbefore ascribed to my improvements, it will be noted that the same are susceptible of quick and easy installation, and that all of the parts of the said improvements are calculated to last quite as long as the parts of an ordinary hot water heater.

When the dome B is lifted off the base A in the manner before described, a person may obviously reach into the combustion chamber of the base A for the purpose of making any repairs or alterations that may be necessary.

As before stated the construction herein illustrated and described constitutes the best practical embodiment of my invention of which I am cognizant, but it is obvious that in the future practice of the invention such changes or modifications may be made as fairly fall within the scope of my invention as defined in the claim appended.

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

An auxiliary water heater adapted for use on upright heaters, and comprising a base containing a combustion chamber and having a horizontal lower end and an inclined upper end, the latter disposed at an angle of about 45 degrees, and an inclined dome extending upwardly from the inclined upper end of the base and at a right angle to said end and having induction and eduction orifices for water and also having inclined flues for conducting products of combustion through the said dome and water contained therein.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DANIEL HANLON.

Witnesses:
F. S. McWilliams,
H. L. McWilliams.