No. 648,946. Patented May 8, 1900.

F. GUNTHER.

HOT WATER HEATER.

(Application filed Sept. 15, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

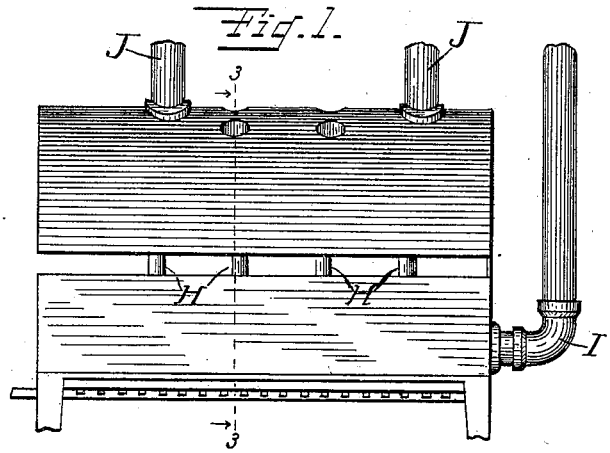

Fig. 2.

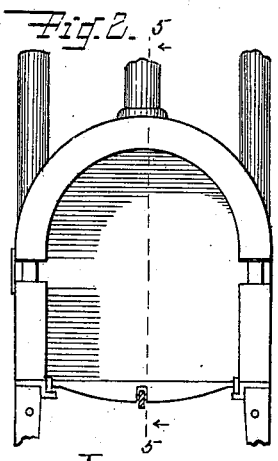

Fig. 3.

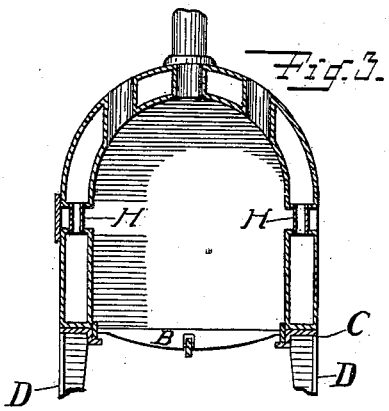

Fig. 4.

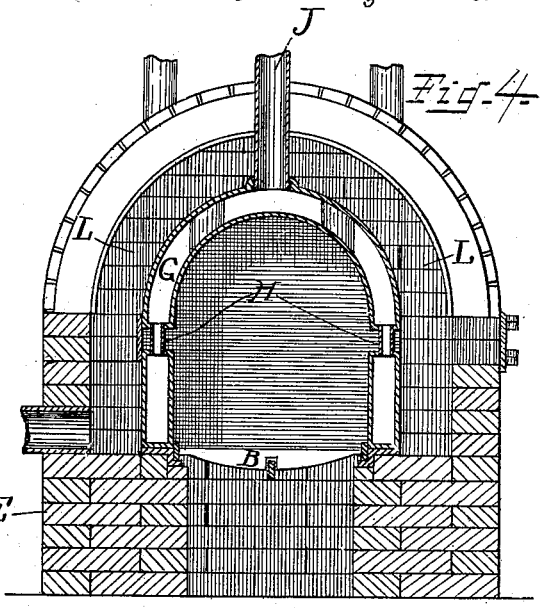

Fig. 5.

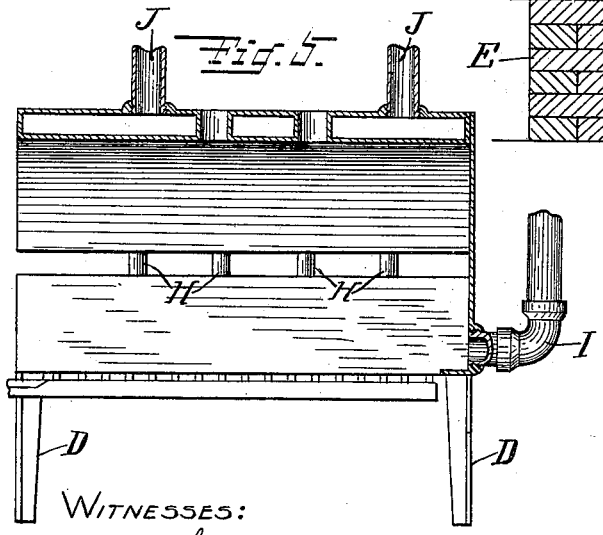

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Fig. 6.

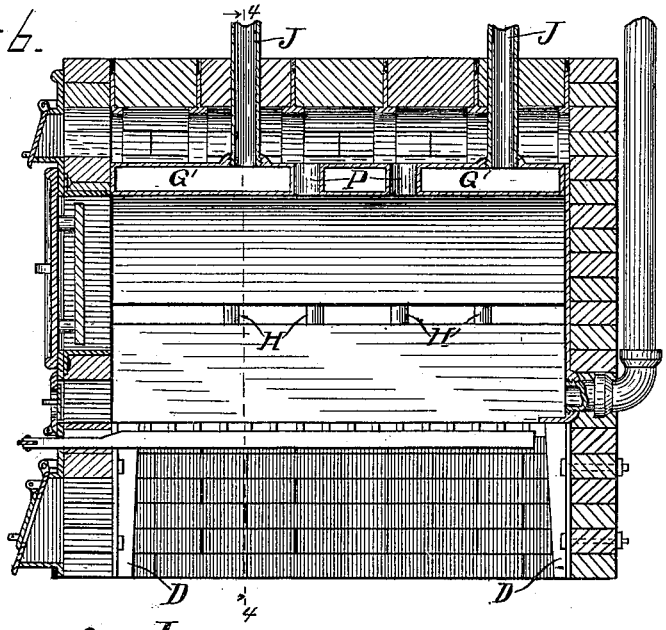


Fig. 8.

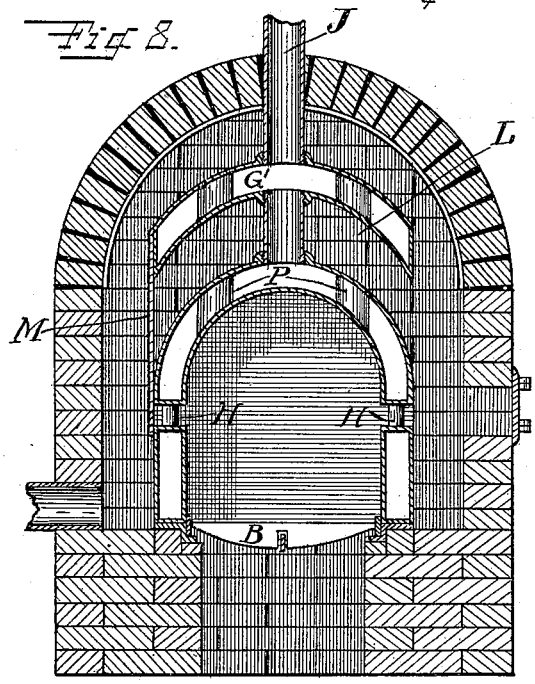
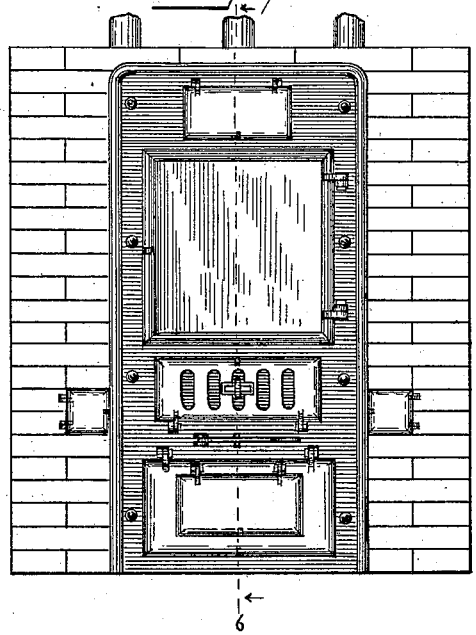


Fig. 7.



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UNITED STATES PATENT OFFICE.

FREDRICK GUNTHER, OF KEWANEE, ILLINOIS.

HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 648,946, dated May 8, 1900.

Application filed September 15, 1899. Serial No. 730,644. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK GUNTHER, a citizen of the United States, residing at Kewanee, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Hot-Water Heaters, of which the following is a specification.

My invention relates to certain new and useful improvements in hot-water heaters; and its primary object is to construct the heater in a novel manner to secure a better circulation of heat and a greater area of heating-surface for the boiler than has been possible in heaters of this character heretofore constructed.

Another object of the invention is to provide an improved boiler for hot-water heaters of such a character that the heat may act on both sides thereof and raise the temperature of the water quickly.

Another important object of the invention is to provide a hot-water heater of simple construction which can be built inexpensively and which will give far superior results to the heaters now in general use.

My invention has other objects in view, which will be fully and clearly pointed out hereinafter and specifically described in connection with the accompanying drawings, in which—

Figure 1 is a side elevation showing a heater embodying my invention. Fig. 2 is an end elevation. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 1. Fig. 4 is a transverse sectional view on the line 4 4 of Fig. 6, showing the heater mounted in a suitable casing. Fig. 5 is a longitudinal sectional view on the line 5 5 of Fig. 2. Fig. 6 is a longitudinal sectional view on the line 6 6 of Fig. 7, suitably arranged in a brick casing. Fig. 7 is a front view of my improved heater, showing the doors and front plate thereof. Fig. 8 is a cross-sectional view showing a modification of my invention.

Referring to the drawings, in which like letters of reference denote corresponding parts in all of the figures, A designates the fire-box, and B grate-bars of any suitable description, said grate-bars being supported on the frame C, which in turn is mounted on the legs D, as shown in Fig. 3, or on the brick foundation E. (Shown in Fig. 4.) The boiler is arranged above and around the fire-box, and it is of a novel construction, comprising two sections F and G. The lower section F is made in two parts, each comprising a rectangular body supported on the frame of the heater at each side of the fire-box and throughout the length of the heater. The upper section of the boiler is constructed in the form of an arch, which is supported above the fire-box in such a manner that its lower edges will be separated from the lower section of the boiler a suitable distance, thereby providing an opening between the two sections of the boiler through which the heated air may pass to radiate above and around the outer side of the boiler. The arch G of the boiler is connected with the lower sections of the boiler by means of the vertical tubes H, so that the air may circulate through the upper and lower sections of the boiler.

Air is admitted to the boiler through the supply-pipe I, which is connected with the lower part of one end of the boiler, as shown in Fig. 5, and the heated water escapes from the boiler through the hot-water pipes J, the smoke-flue K being provided on one side of the heat-radiating surface L. In order that the heated air may be directed to circulate over the greatest possible area of the boiler, I provide the plate M on the outer side of the boiler to close the space between the arch and the lower section on that side of the boiler adjacent to the smoke-flue, so that the air will circulate through the open space N between the arch and the lower section of the boiler on the right-hand side and around the outer surface of the boiler in the space L. By this means I provide a large area of circulation for the hot air, during which it is always in contact with the boiler, and the boiler is of such a construction that the water will be quickly heated.

In Figs. 1 and 4 I have illustrated my invention showing the boiler supported on legs D, and in Figs. 4 and 6 I have shown the boiler mounted on a suitable foundation and inclosed within a casing.

In Fig. 8 I have shown a supplemental arch G′, located above the arch G of the boiler, which is employed when it is desired to increase the capacity of the heater, said supplemental arch being supported above the

arch G and connected with the hot-water pipe J, so that the water may pass from the arch G into the arch G′ and thence through hot-water pipe J. This arrangement of the supplemental arch provides an additional circulating-space L′ between the two arches, the plate M being extended up to join the two arches together at one side, and thereby form a single side wall for the circulating-space L.

It will not be necessary to enter into a detailed description of the manner in which my heater may be incased and supported, as a great many changes may be made therein without in any way departing from the spirit or sacrificing the advantages of the invention.

The operation of the improved heater will be readily understood, it is believed, from the foregoing description. The heated air passes from the fire-box through the side opening between the arch and the lower section of the boiler and through the openings P in the arch and circulates around on the outer side of the boiler, the said boiler being of such construction that the heat will act on the water instantly and raise the temperature quickly.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a hot-water heater, a boiler consisting of a lower section comprising compartments arranged on opposite sides of the fire-box, and an upper arched section supported above said compartments and separated therefrom to form spaces through which the heat may circulate to pass above and around the boiler; and pipe connections at intervals between the upper and lower sections.

2. In a hot-water heater, a boiler comprising a lower section consisting of two rectangular compartments arranged at opposite sides of the fire-box, and an upper arched section supported above the lower section and separated therefrom to form circulating-spaces, and pipe connections at intervals between the upper section and the compartments comprising the lower section.

3. In a hot-water heater, a boiler comprising a lower section and an upper arched section supported above the lower section and connected therewith at intervals, a circulating-space between the upper and lower sections of the boiler and a plate inclosing the circulating-space on one side of the boiler, substantially as described.

4. In a hot-water heater, the combination with a fire-box of a boiler comprising two sections, the lower section consisting of two longitudinal parts arranged on each side of the fire-box, and an upper arched section supported above the lower section and connected therewith at intervals, a supply-pipe communicating with the lower section of the boiler, exit-pipes leading from the upper portion of the arched section of the boiler and a plate secured on one side of the boiler to close the space between the upper aud lower sections of the boiler on that side, substantially as described.

5. In a hot-water heater, a boiler comprising a lower section, an upper arched section supported above the lower section and connected therewith, a supplemental section arranged above the arched section and connected therewith and a plate secured on one side of the boiler for closing the circulating-space between the upper and lower sections at that side, substantially as described.

FREDRICK GUNTHER.

Witnesses:
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S. L. ATTWATER.