May 18, 1926. 1,585,449

H. R. WELSH

WATER GRATE

Filed Nov. 6, 1920

Fig. 1.

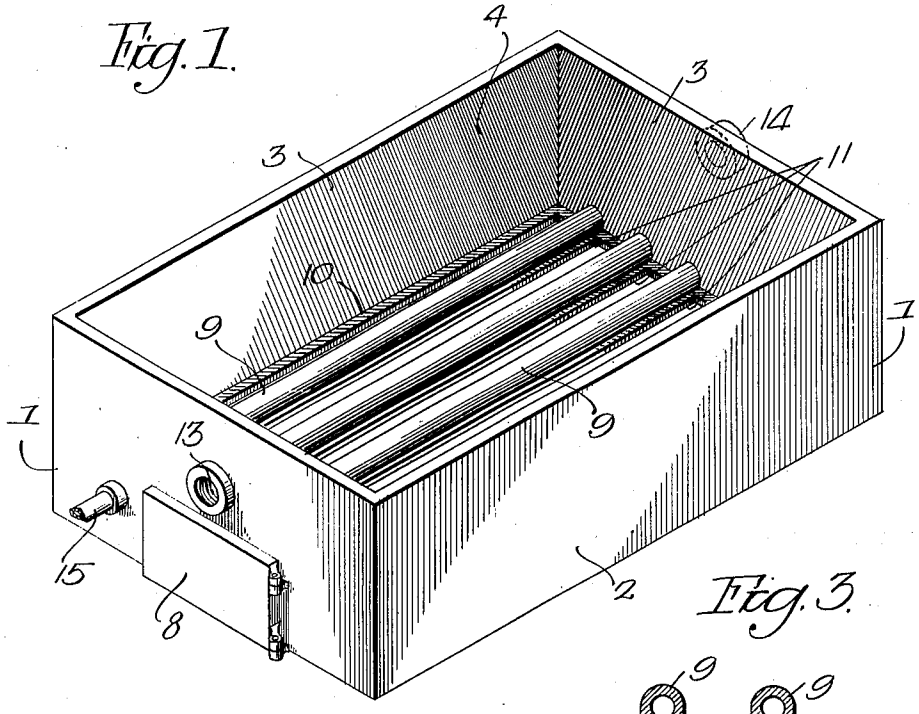


Fig. 3.

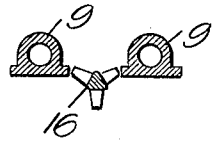
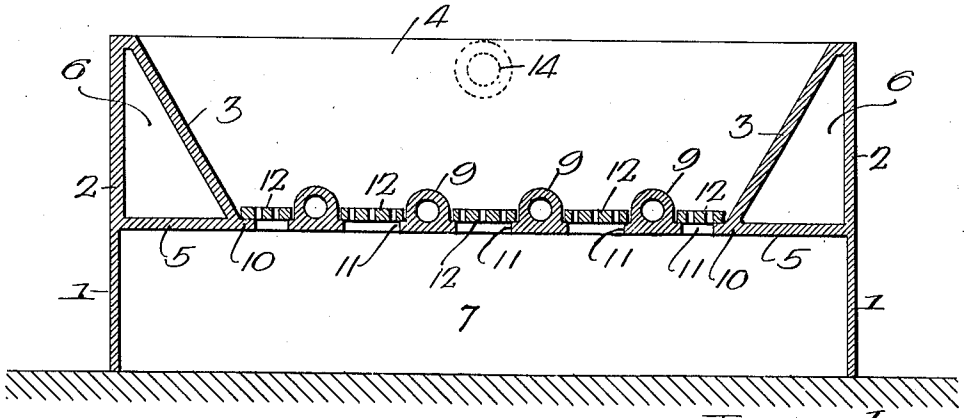


Fig. 2.



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UNITED STATES PATENT OFFICE.

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WATER GRATE.

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This invention relates to certain improvements in hot water heaters and has to do more particularly with a novel form of bottom section for a hot water heating boiler; one object being to provide a water grate section whose construction and arrangement of parts shall be relatively simple and inexpensive as well as highly efficient under operating conditions.

It is further desired to provide a novel form of hot water heater section whose construction and arrangement of parts are such that there shall be no leakage of air at or adjacent the grate level and which shall include a novel combination of grate sections and water conduits for supporting the contents of the fire pot.

These objects and other advantageous ends I attain as hereinafter set forth, reference being had to the accompanying drawings, in which,

Fig. 1 is a perspective view of a bottom heater or boiler section constructed in accordance with my invention;

Fig. 2 is a transverse vertical section of the structure shown in Fig. 1; and

Fig. 3 is a fragmentary vertical section showing a rocking grate section as used with my invention.

In the above drawings, 1 represents a box-like casting, rectangular both in plan and in elevation and made up in the present case, of outer walls 2 and a downwardly and inwardly inclined inner wall 3 defining or constituting the side portions of a fire pot 4. The bottom edge of this inner inclined wall is connected to the adjacent portion of the outer or main wall 2 by a bottom member 5 forming with it an endless water containing cavity 6. The space 7 below the inwardly projecting bottom member 5 constitutes an ash pit and in the front end of the casting 1 there is provided an opening into this chamber having a door 8.

Extending from front to rear of the casting 1 and connecting the front portion of the water chamber 6 with the rear part thereof, are a series of water conduits 9 spaced apart and placed at or slightly above the level of the bottom of the surrounding water chamber 6. The bottom member 5 of said endless tubular water chamber has inwardly extending flanges 10 and each of the conduits 9 has laterally extending ledges 11 serving in the present instance to support a series of perforated plates 12 constituing the grate sections for the spaces between the water tubes 9. Obviously any other suitable or desired form of grate sections, stationary or movable, may be employed depending on whether forced or natural draft is to be employed and in Fig. 3 I have shown a common form of rocking grate section 16 as mounted between the water tubes 9 for the purposes of my invention. The chamber 6 has a water inlet 13 and an outlet 14 suitably placed to secure the most efficient heating of the water supplied to the chamber 6. An inlet 15 to the ash pit may be connected to a suitable source to supply air under pressure for forced draft.

Under conditions of use the burning fuel supported upon the water tubes 9 and grate sections 12 within the fire pot 4 serves to heat the water in said tubes and in the surrounding water chamber 6; it being of course understood that the casting 1 is mounted on a suitable base or foundation so that any air required for combustion is necessarily delivered to it solely through the opening controlled by the door 8 or through the draft inlet 15.

Any suitable form of upper water section or sections may be mounted upon the flat upper face provided by the top edge of the walls 2 and 3, but as these constitute no part of my invention they have not been illustrated.

Any ashes passing through the perforated plate 12 may be removed from time to time through the door closed opening of the ash pit and clinkers or large masses of ash collecting in the fire pot may be removed in the customary manner through the fire door opening provided in one of the upper heater sections.

I claim:

A bottom section for a hot water heater comprising a substantially vertical outer wall defining a casing; downwardly and in-

wardly inclined inner walls within the upper part of the casing; laterally extending bottom walls connecting the outer wall to the inner edges of the inclined walls to form an endless water chamber, said bottom walls extending inwardly beyond the edge of the inclined inner walls to form a ledge; water tubes extending between opposite portions of the chamber, said tubes having ledges projecting on opposite sides thereof; and grate members adapted to rest on the ledges of the side walls and the ledges of the water tubes to be supported thereby.

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