

S. W. BROWN.
WATER HEATER.
APPLICATION FILED JULY 7, 1909.

985,001.

Patented Feb. 21, 1911.

2 SHEETS-SHEET 1.

Fig. 1

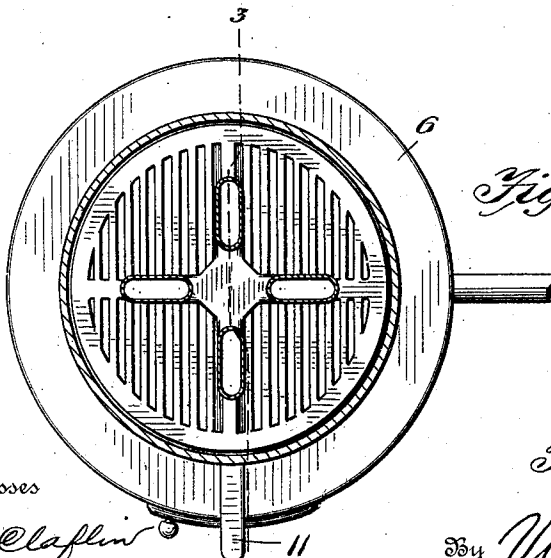
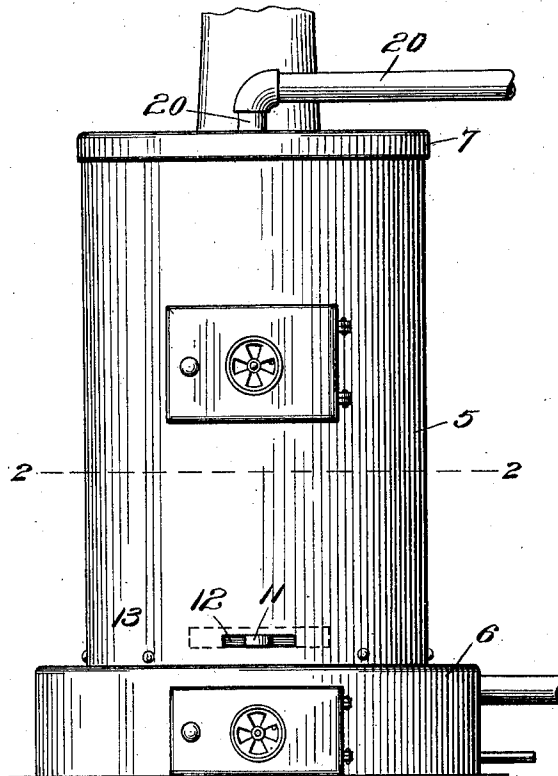


Fig. 2

Witnesses

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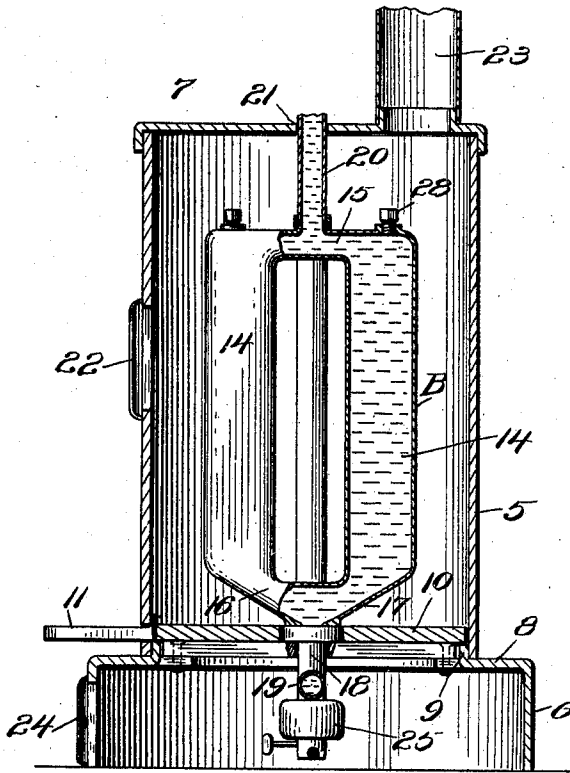
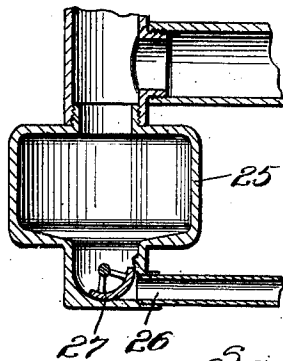


Fig. 3

Fig. 4



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UNITED STATES PATENT OFFICE.

SAMUEL W. BROWN, OF HEBRON, INDIANA.

WATER-HEATER.

985,001.

Specification of Letters Patent.

Patented Feb. 21, 1911.

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To all whom it may concern:

Be it known that I, SAMUEL W. BROWN, citizen of the United States, residing at Hebron, in the county of Porter and State of Indiana, have invented new and useful Improvements in Water-Heaters, of which the following is a specification.

This invention relates to water heaters and it has for its objects to simplify and improve the construction and operation of this class of devices, and to provide a water heater for general purposes in which large surface area shall be exposed to the action of the fire, thus enabling the water to be rapidly and thoroughly heated.

With this and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described, and better pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being however understood that no limitation is necessarily made to the precise structural details herein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawing: Figure 1 is a side elevation of a water heater constructed in accordance with the invention. Fig. 2 is a horizontal sectional view taken on the plane indicated by the line 2—2 of Fig. 1. Fig. 3 is a vertical sectional view taken on the plane indicated by the line 3—3 of Fig. 2. Fig. 4 is a sectional detail view on a larger scale of the sediment receptacle at the lower end of the boiler.

Corresponding parts in the several views are denoted by like characters of reference.

The outer shell or casing of the improved water heater is composed of the fire box 5 which is supported upon the ash pit 6 and which is provided at its upper end with a lid or cover 7; the latter being preferably readily detachable in order that convenient access may be had to the interior. The ash pit 6 is composed of a cylindrical shell having at its upper edge a flange 8 at the inner edge of which is formed an upstanding rim or collar 9; the cylindrical shell of the fire box 5 is supported upon the flange 8, the lower edge of said fire box being fitted adjacent to the collar 9 whereby the parts are

retained in proper relative position. A grate 10 is supported for oscillation upon the upper edge of the collar 9, said grate being provided with a shaking handle 11 that projects through a slot or aperture 12 in the front side of the shell or casing constituting the fire box; the latter being connected with the collar 9 by fastening means such as bolts or rivets 13.

The grate, 10, supports the boiler B, which is composed of a plurality of vertically disposed flattened tubes 14 of suitable dimensions, said tubes being connected at their upper ends by converging radial arms 15, and at their lower ends by similarly converging radial arms 16, which latter however, are downwardly inclined upon their lower surfaces as will be clearly seen at 17 in Fig. 3 of the drawings. The boiler has a downwardly extending feed pipe 18 that projects through an aperture in the grate which latter will thus be free to oscillate upon the feed pipe. The latter has a laterally extending branch 19 constituting the inlet end which may be connected in any suitable manner with the source of supply of feed water. The upper end of the boiler is provided with an axially disposed discharge pipe 20 extending through an opening 21 in the lid 7, and assisting in supporting the boiler in a proper upright position within the casing constituting the fire box. The latter is provided with a feed door 22 and a pipe 23 may be suitably connected with the lid 7 for the purpose of carrying off the products of combustion. Access to the ash pit may be had through a door 24.

Suitably connected with the feed pipe 18, preferably at the lower end of the latter which projects within the ash pit, and below the laterally extending branch inlet pipe 19 which communicates with the source of supply of feed water, is a casing 25 constituting a reservoir having at its lower end a laterally extending outlet 26 which may be closed and controlled by a valve or cock 27 of suitable construction and located within the settling chamber or casing 25. The chamber or casing 25 is for the reception of sediment and impurities of all kinds that may be precipitated by the feed water, and which will naturally find their way into said receptacle over the inclined surfaces of the connecting arms 17 of the boiler tubes; scales or incrustations that are removed or

loosened from the boiler tubes will likewise enter the receptacle 25 from which the impurities may be drained or blown off in the usual manner. The upper ends of the boiler tubes have been shown as provided with readily movable threaded plugs 28 to enable the interior of said tubes to be conveniently and thoroughly cleaned when required.

10 From the foregoing description, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The feed water may be supplied by gravity or by mechanical pressure in any suitable, well-known and convenient manner. Owing to the construction of the boiler with a plurality of flattened tubes of large area it is obvious that a relatively large heated surface will be exposed to the action of the fire maintained in the fire box, and the water will thus be rapidly heated to the desired temperature or converted into steam if so desired. The hot water or steam, as the case may be, will be conveyed through the exit pipe to the point or points where it is to be utilized for heating or other purposes.

The particular construction and arrangement of the boiler which is composed of a plurality of vertically disposed tubes connected at their upper and lower ends will cause the surfaces of said tubes to be thoroughly exposed to the heat from the fuel upon the grate. It will, furthermore, be noticed that the upright tubes will not obstruct the feeding of fuel through the feed door which is located relatively near the upper end of the casing in order that a deep fire may be maintained when desired.

40 Having thus described the invention, what is claimed is—

1. In a water heater, a boiler comprising a plurality of vertical tubes provided adjacent to their upper and lower ends with radial arms converging and connected together, the arms at the lower end being

provided with inclined downwardly converging bottom surfaces, said boiler being provided at its upper end with a discharge pipe extending upwardly and at its lower end with a downwardly extending feed pipe, in combination with a casing including an ash pit and a grate provided with a central aperture through which the feed pipe extends, and the converging radial arms at the lower end of the boiler combining to constitute a bearing seat whereby the boiler is supported upon the grate.

2. In a feed water heater, a casing, a grate having a central aperture, and a boiler arranged within the casing and including a plurality of vertical tubes provided adjacent to their upper and lower ends with radial arms converging and connected together, the arms at the lower end being provided with inclined downwardly converging bottom surfaces combining to constitute a bearing seat, whereby the boiler is supported upon the grate, said boiler being also provided with a feed pipe extending from the downwardly inclined bottom members through the central aperture of the grate, and a settling chamber upon said feed pipe beneath the grate.

3. In a water heater, a boiler consisting of an integral structure comprising a plurality of vertically disposed flattened tubes provided adjacent to their upper and lower ends with converging radial arms merging together, the arms at the lower end being provided with inclined downwardly converging bottom surfaces, said boiler being provided at its upper end with a discharge pipe extending upwardly and at its lower end with a feed pipe extending downwardly and carrying a settling chamber.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL W. BROWN.

Witnesses:

IDA E. FISHER,

GEORGE C. GREGG.