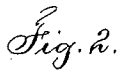


Boilers.

No. 155,054.

Patented Sept. 15, 1874.



Witnesses

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Inventor

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BOILERS.

Specification forming part of Letters Patent No. **155,054**, dated September 15, 1874; application filed June 1, 1874.

To all whom it may concern:

Beitknown that I, THOMAS W. WEATHERED, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Boilers for Water-Heating Apparatus, of which the following is a specification:

In Letters Patent No. 27,858 there is shown a hot-water boiler with a water-heating vessel within the double dome. My present invention is an improvement that has for its object the increasing of the heating-surface, and directing the products of combustion so that they circulate through the fire-chamber, and at the same time the dust and sooty accumulations can be cleaned out of the fire-chamber with great facility.

In the drawing, Figure 1 is a vertical section of the improved boiler, and Fig. 2 is a sectional plan at the line *x x*.

The inner case *a* and outer case *b* are united together at the lower flanges *c*, and provided with a door-frame at *e*, as has heretofore been usual; but this furnace and boiler have been made circular. In greenhouses, to which this furnace is especially applicable, the space is usually contracted in width, and hence round boilers of large size cannot easily be employed. I make the cases *a b* with flattened sides, as seen in Fig. 2, and provide for using the ordinary length of grate-bars *f* by introducing an inclined dead-plate, *g*, between the back ends of the grate-bars and the rear portion of the inner case *a*. This construction allows of the use of the usual-sized fire-bed, and increases the surface within the boiler for heating the circulating water; and the cases *a b* are arched upwardly at the lower edge to conform to the shape of the inclined dead-plate, thereby lessening the weight and cost of material. The ash-pit case *h*, upon which the furnace stands, is of usual construction, except that the back plate thereof is, by preference, straight, to correspond to the back ends of the grate-bars. The water-heating vessel *o* within the fire-chamber has usually been circular, with a pipe, *r*, inserted at one side, and a rising circulating-pipe, *s*, passes from the top to the water-

space between the two cases of the boiler; but this vessel *o* has been concentric with an annular flue or opening around it of uniform width, or nearly so; hence the heated products of combustion pass by the most direct course to the escape-flue.

My improvement is made for the special purpose of insuring a regular circulation of the products of combustion. For this purpose I make the vessel *o* of a size and shape to nearly touch the inner surface of the case *a* at the sides and front, but leaving a wide flue-opening, *v*, at the back; thereby the products of combustion are directed backwardly over the dead-plate *g* before returning forward to the escape-flue *w*. Said vessel *o* and flue-opening *v* are shown in Fig. 2 by dotted lines.

Difficulty has heretofore arisen in furnaces of this character in cleaning the upper surface of this water-vessel *o* of the dust and sooty accumulation, because the escape-flue has been either at the top or the back. I introduce the opening for the escape-flue at the front and some little distance below the top of the boiler, and provide a stopper, 7, by the removal of which access is given to the upper part of the boiler without removing the smoke-pipe *w*, and a damper, 5, is inserted at the base of the smoke-pipe to regulate the draft. The stopper 7 may also be employed for this purpose by opening it more or less, and allowing cool air to enter the chimney or flue *w*.

I claim as my invention—

The water-vessel *o* within the water-boiler case *a*, and contiguous thereto at the front and sides, but with the flue *v* at the back portion, in combination with the escape-flue at the front of the boiler and above the supply-door of the furnace, as and for the purposes set forth.

Signed by me this 21st day of May, A. D. 1874.

THOS. W. WEATHERED.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.