No. 855,410. PATENTED MAY 28, 1907.

A. OLESON & W. A. & C. C. WILLIAMS.

WATER HEATER.

APPLICATION FILED JUNE 14, 1906.

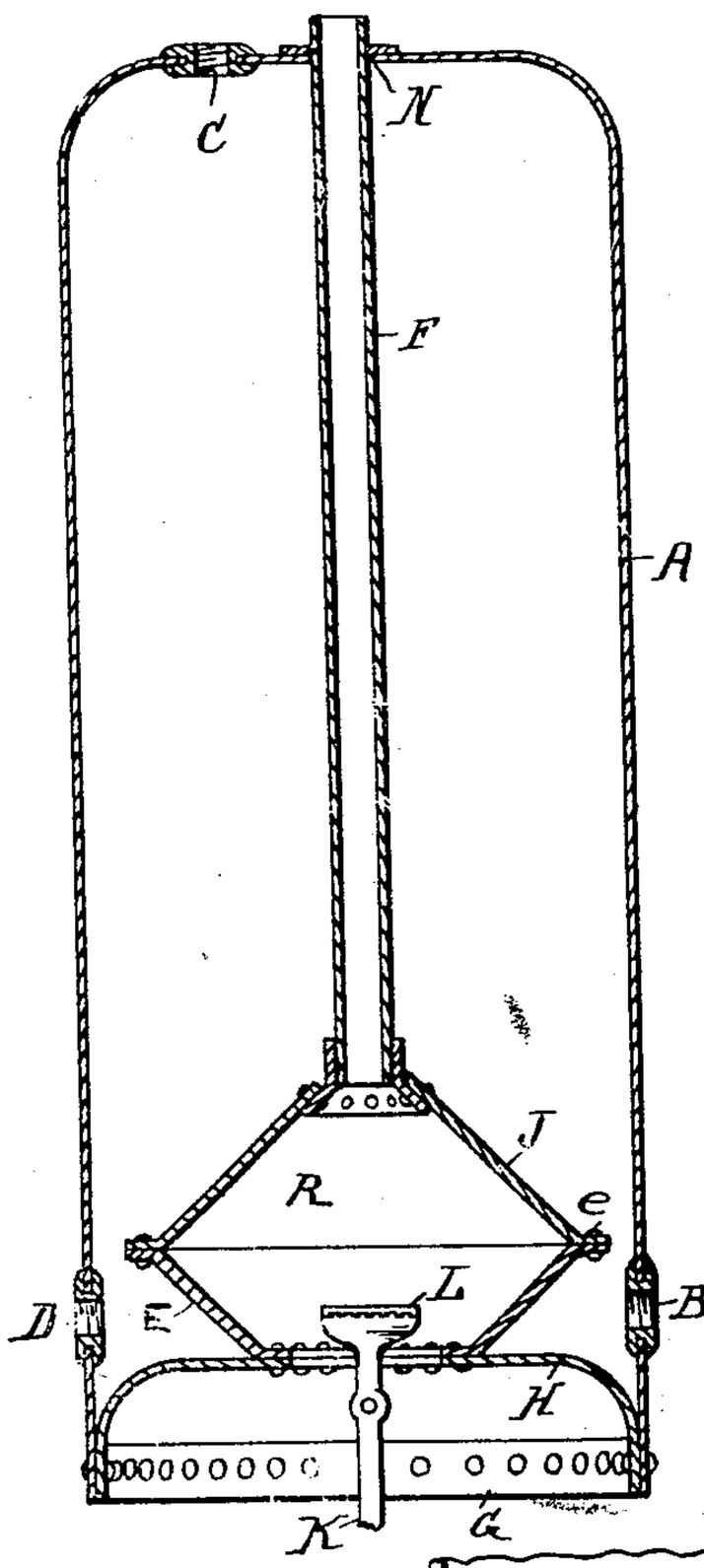

Fig. 1.

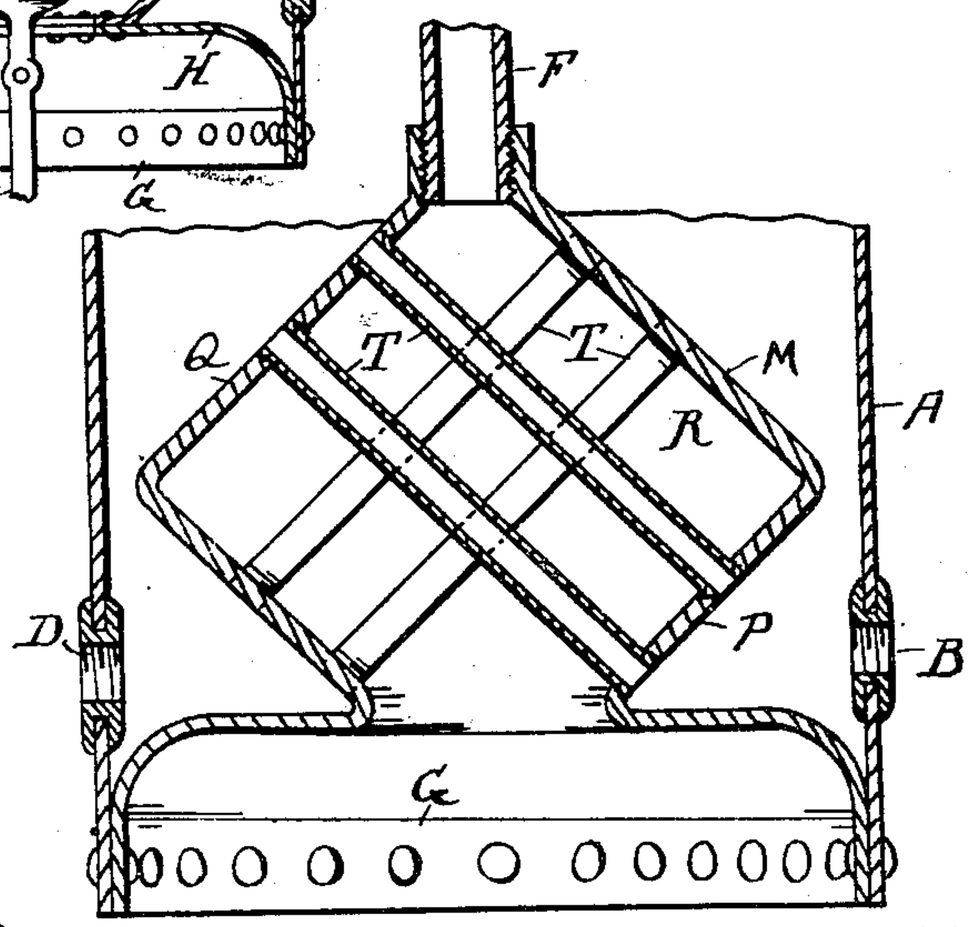

Fig. 2.

-Witnesses.-
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UNITED STATES PATENT OFFICE.

ALBERT OLESON, WILLIAM A. WILLIAMS, AND CHARLES C. WILLIAMS, OF TOLEDO, OHIO; SAID OLESON ASSIGNOR TO SAID WILLIAM A. WILLIAMS AND CHARLES C. WILLIAMS.

WATER-HEATER.

No. 855,410. Specification of Letters Patent. Patented May 28, 1907.

Application filed June 14, 1906. Serial No. 321,613.

To all whom it may concern:

Be it known that we, ALBERT OLESON, WILLIAM A. WILLIAMS, and CHARLES C. WILLIAMS, all of whom are citizens of the United States, residing at Toledo, county of Lucas, State of Ohio, have invented certain new and useful Improvements in Water-Heaters; and we declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to water heaters, and has for its object an improved means whereby the contents of an ordinary upright domestic heater may be quickly and economically heated by means of an attachment which occupies but little space, and is equally adapted to use either gas or kerosene.

In the drawings:—Figure 1, is a vertical sectional view of a boiler of this type, in which our invention is installed. Fig. 2, is a vertical sectional view of the lower part of the boiler, and of a modified form of heating chamber of the shape shown in Fig. 1, and which is cast in one piece.

A, indicates an ordinary upright boiler with a cold water intake opening B, and a hot water outlet C. D is an outlet to which a mud valve may be attached. Through the center of the boiler extends a flue F, which may open either into the outer air or into a chimney or stove pipe, and which, at its lower end, communicates with a chamber R, which is of the shape of two truncated cones placed with their bases adjacent, so that the widest part of the chamber thus inclosed is approximately midway between the top and bottom of the chamber. The lowermost portion of the lower or inverted cone E joins the edges of the diaphragm H, which incloses a space which is in communication with the chamber formed by the two truncated cones, and from which similarly all water is at all times excluded. Extending through the bottom plate G of the boiler is a supply pipe K through which the fuel used may be supplied to a burner L, which is just above the union of the diaphragm H and the walls E. When the burner is lighted, the only escape for the heat thus generated being up the flue F, the surrounding walls E, J, and H are very quickly heated and soon communicate this heat to the water on their outer faces. The inlet pipe B in Fig. 1 being located at a point below the greatest projection of the chamber walls, furnishes the cold water at a most desirable point for heating, and this may be depended upon to rise and give way to other water as soon as it is heated. The resilience of the material of the walls J, E, and H is such that the flue F can be screwed down as much or as little as desired to make a tight joint, from its controlling nut N in the crown plate of the boiler.

In Fig. 2 a slight variation in the form of chamber shown in Fig. 1, is disclosed, the component walls M being cast in a single piece, instead of riveted together, as J, E, and H in Fig. 1, the inlet pipe B opening at some point that is below the greatest projection of the walls M, and there may be placed several pipes T leading from the lower or overhanging face P of the walls through to the upper faces Q, which facilitate the rise of the heated water from the lowermost part of the water chamber to the upper part of the boiler, without necessitating the passage of all such water past the projecting shoulders of the heating chamber. In all the types, however, reliance is placed on the heating of the walls of the heating chamber because of the small capacity and the small amount of heat which the flue can carry away, rather than the direct impinging of the flame upon the walls which separate the water and heating chambers.

What we claim is:—

1. In a water heater, in combination with a vertically extending tank, provided with an inlet orifice near its lower end and with an outlet orifice near its upper end, a flue extending lengthwise thereof to a point external to its upper end, and wholly out of communication with the fluid containing part of the tank, a biconical chamber truncated at each end and connected at one end with the inner end of said flue, that portion of the chamber which is of greatest diameter being located above the inlet orifice, a diaphragm registering with the lower end of the chamber, and, with the walls thereof, closing its interior from communication with the water-containing portion of the tank, and a burner

within said chamber and communicating with an external source of supply, adapted to heat the walls of the chamber and thereby to heat and cause to rise above the large diametered portion of the chamber and toward the top of the tank the water adjacent thereto, substantially as described.

2. In a water heater, in combination with a tank provided with an inlet opening near the bottom portion and an outlet opening near the top, a diaphragm partially closing the lower end of the tank, a burner communicating with an external source of fuel supply extending through the open central portion of the diaphragm, a biconical chamber, whose greatest diameter is at its center portion about said burner and registering with its lower edge with the open portion of the diaphragm, its greatest diametrical portion being above said inlet opening, and a flue leading from the top of said chamber and passing through the tank to the outer air at the top thereof, substantially as described.

3. In a water heater, in combination with a tank provided with an inlet opening near the bottom thereof, a diaphragm, whose central portion is perforated, within the tank and spaced from one end thereof, a burner in communication with an external source of supply engaging through the perforated central portion of said diaphragm, a biconical air chamber surrounding said burner and wholly out of communication with the water-containing portion of the tank, the lower edges of its walls being complementary to and connected with the centrally perforated edge of the diaphragm, and that portion of the chamber whose diameter is greatest being above the inlet opening, pipes extending through said chamber from that portion of its walls below said portion of greatest diameter to points thereabove, and a flue leading from the opposite end of the chamber from that adjacent to the diaphragm through the tank to the outer air, substantially as described.

4. In a water heater, in combination with a tank and a longitudinally extending flue therewithin, said tank being provided with inlet and outlet pipes, a water tight chamber in the bottom portion of said tank, and connecting at its upper end with said flue, and its top and bottom portions being of smaller diameter than the center portion, a plurality of conductor pipes extending through said chamber from apertures in the lower portion of the walls of said chamber to similar apertures in the upper surface of the walls of the chamber, and a burner within the chamber communicating with a source of fuel supply external thereto, substantially as described.

In testimony whereof, we sign this specification in the presence of two witnesses.

ALBERT OLESON.
WILLIAM A. WILLIAMS.
CHARLES C. WILLIAMS.

Witnesses:
WALTER L. GRUDZINSKI,
J. H. LEAMING.