

UNITED STATES PATENT OFFICE.

ALFRED C. CLAYTON, OF TORONTO, ONTARIO, CANADA.

WATER-HEATER.

993,506.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed October 7, 1910. Serial No. 585,831.

To all whom it may concern:

Be it known that I, ALFRED C. CLAYTON, of the city of Toronto, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

This invention relates particularly to water heaters using gas as a fuel and intended for attachment to kitchen range boilers, and my object is to devise a simple and cheap heater which will be economical in gas consumption. I attain my object principally by circulating the water through water sections spaced apart, connected by a pipe and connected each with an integral flaring skirt of solid metal. The skirts tend to concentrate the hot products of combustion on the undersides of the sections, but are preferably notched to admit of a certain amount of air normally passing up outside the sections mingling with the products of combustion below the sections. The lowermost section at least has passages formed through it for the products of combustion which are concentrated against the pipe connecting the bottom section with that above it by a frusto-conical funnel.

Figure 1 is a vertical section of a heater constructed in accordance with my invention. Fig. 2 is a cross-section on the line *a . . . a*, Fig. 1.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the casing formed as usual of sheet metal provided with a cast metal top B and base ring C.

D is the gas burner preferably of annular form and supported on the lug E formed on the base ring C.

The water containing system of the heater comprises a plurality of water sections. The lower section F is provided with one or more outer inlets G preferably at opposite sides whereby the heater is made right or left handed. The inlet nut required for use will be closed by a plug P which is indicated at the right hand side of Fig. 1. This section F has an annular opening H therein for the products of combustion. Above the section F is located the section I having a series of openings J formed therein for the passage of the products of combustion. The two water sections are connected by the pipe K and from the upper section extends the outflow pipe L leading to the range boiler.

This outflow pipe preferably leads out through the outlet M for the products of combustion. A smoke pipe may be connected with this outlet if desired.

Surrounding the pipe K is a frusto-conical funnel Q which rests on the lower section F and receives the products of combustion passing through the opening H. The upper end of the funnel is located a short distance below the under side of the upper section I. This funnel concentrates the hot gases against the pipe K and delivers them centrally against the under side of the upper section I. An important feature of my invention lies in the provision of one or more of the water sections with a flaring skirt N. These skirts are preferably integral with the sections and extend toward the inner surface of the casing A, but leave a clear space by which air may pass. These skirts keep the products of combustion traveling through the sections, instead of passing around the same in contact with the casing. At the same time air may pass up freely around the inside of the casing keeping the latter cool and providing additional air to render the combustion of gas as perfect as possible. To aid this air in mingling with the products of combustion notches O are formed in the skirts N. These notches in adjoining sections preferably break joint, as indicated in Fig. 2, though in Fig. 1 for convenience of illustration they are shown in line with one another.

It will be noted that the water space in the sections does not extend into the skirts N, so that perfect drainage of the sections is obtained from the inlets G whenever necessary.

I find that a construction such as described will satisfactorily accomplish the objects of my invention, the gas consumption for the amount of hot water obtained being very low.

What I claim as my invention is:—

1. In a water heater the combination of a water section provided with a water inlet, a water outlet and a passage for the products of combustion; an integral skirt of solid metal formed on said section; and a surrounding casing separated by a small space from said section and skirt.

2. In a water heater the combination of a water section provided with a water inlet, a water outlet and a passage for the products of combustion; an integral skirt of solid metal formed on said section; and a sur-

rounding casing separated by a small space from said section and skirt, openings being formed through said skirt to permit of air passing up outside the skirt mingling with products of combustion under the section.

3. In a water heater the combination of a water section provided with a water inlet, a water outlet and a passage for the products of combustion; a second section above the first provided with a water inlet and a water outlet; a pipe connecting the water outlet of the lower section with the inlet of the upper section; and a funnel surrounding said pipe adapted to concentrate the products of combustion passing through the lower section against the said pipe and the central part of the underside of the upper section.

4. In a water heater the combination of a water section provided with a water inlet, a water outlet and a passage for the products of combustion; a second section above the first provided with a water inlet and a water outlet; a pipe connecting the water outlet of the lower section with the inlet of the upper section; a funnel surrounding said pipe adapted to concentrate the products of combustion passing through the lower section

against the said pipe and the central part of the underside of the upper section; a surrounding casing; and a skirt on each section extending toward but separated from the casing by a space.

5. In a water heater the combination of a water section provided with a water inlet, a water outlet and a passage for the products of combustion; a second section above the first provided with a water inlet and a water outlet; a pipe connecting the water outlet of the lower section with the inlet of the upper section; a funnel surrounding said pipe adapted to concentrate the products of combustion passing through the lower section against the said pipe and the central part of the underside of the upper section, openings being formed through said skirt to permit of air passing up outside the skirt mingling with products of combustion under the section.

Toronto, this 3rd day of October 1910.

ALFRED C. CLAYTON.

Signed in the presence of—

ANNIE CAMPBELL,
E. P. HALL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
