

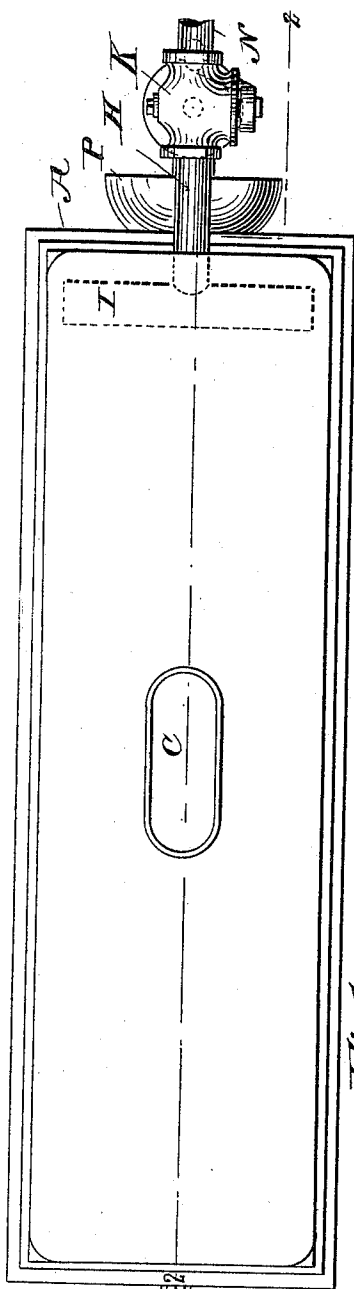
(No Model.)

2 Sheets—Sheet 1.

A. F. TRAGESER.
WATER HEATER.

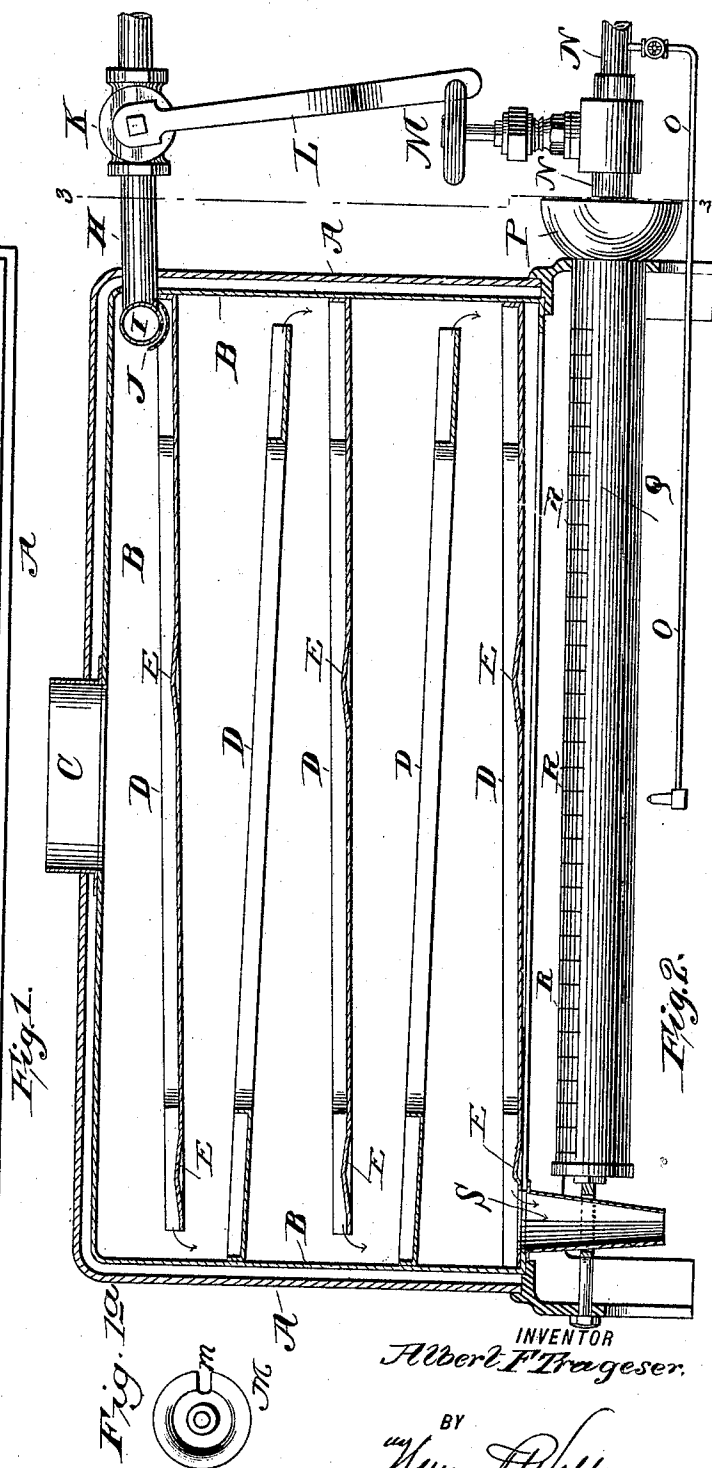
No. 584,276.

Patented June 8, 1897.



WITNESSES

C. W. B. Benjamin
Wm. O. Humphrey



INVENTOR

Albert F. Trageser.

BY

Henry T. Wells
ATTORNEY

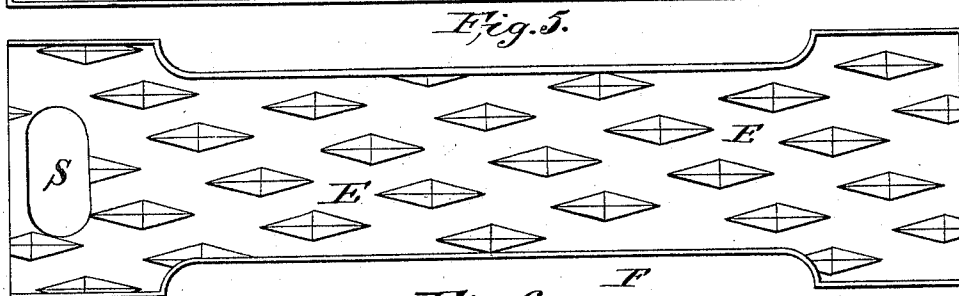
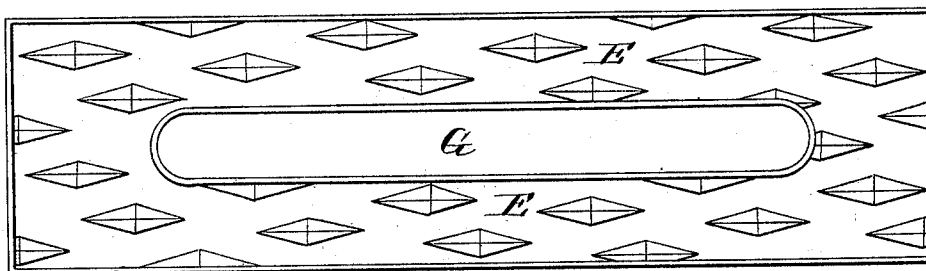
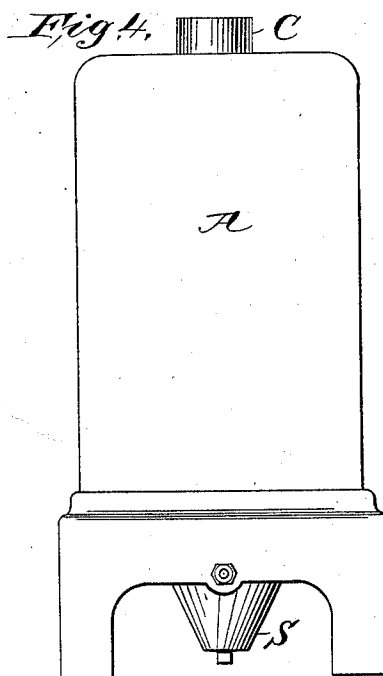
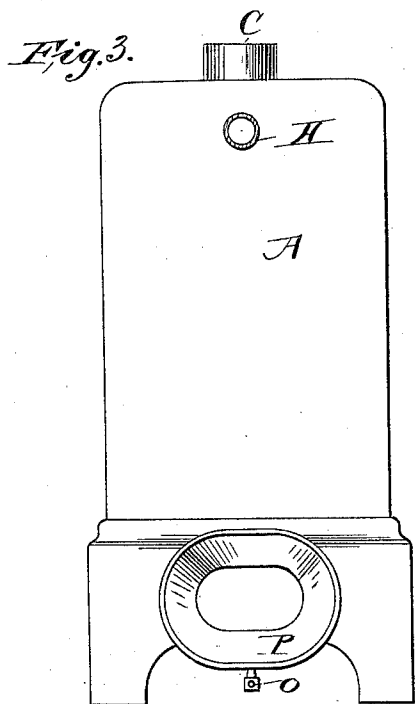
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Chas. B. ...
Wm. A. ...

Fig. 6.

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UNITED STATES PATENT OFFICE.

ALBERT F. TRAGESER, OF NEW YORK, N. Y.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 584,276, dated June 8, 1897.

Application filed October 20, 1896. Serial No. 609,443. (No model.)

To all whom it may concern:

Be it known that I, ALBERT FERDINAND TRAGESER, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

My invention consists of a water-heater designed to be operated by the ordinary domestic servant to furnish a continuous supply of hot water as long as may be desired and to be used and disused at a moment's notice. It is primarily designed for domestic use in flats and the like, or wherever permanent water-heating devices—such as the water-back and the hot-water boiler of the ordinary cooking-range—are either permanently or for any reason temporarily unavailable. While devices for this purpose are already known, they are complex, cumbersome, and expensive and not very efficient, considering their bulk, first cost, and cost of operation. My device, on the contrary, is, comparatively speaking, small, simple, cheap to make and cheap to use, and very efficient.

In experimental practice my device, when measuring but twenty-one inches long by seven inches wide by twelve inches high on the outside, has raised continuously one and one-half gallons of water per minute from 55° up to 140° Fahrenheit.

My device has the further superiority that it absolutely drains itself when disused, so that no stagnant water remains therein.

In the drawings forming part of this specification, Figure 1 represents a top plan view. Fig. 1^a is a fragmentary top view showing the handle of the main gas-valve. Fig. 2 represents a side elevation, partly in section, on the line 2 2 of Fig. 1. Fig. 3 is an elevation of the inlet end of my device. Fig. 4 is an elevation of the opposite end. Figs. 5 and 6 are plan views of the shelves within my device over which the water flows while being heated.

In the drawings, A represents an outer casing for ornamental purposes, inclosing most of the operative parts of my device.

B is the shell of my water-heater, provided with an exit C at top for the escape of air and spent gas.

D represents a series of shelves, arranged as shown in Fig. 2, over which the water flows in a thin sheet during the process of heating in the direction indicated by the arrows. These shelves have the form shown in Figs. 5 and 6, the bottom shelf next the source of heat having the form of Fig. 6, the next above that having the form of Fig. 5, the third that of Fig. 6, only shortened and not perforated at S, and so on alternately throughout the series, no matter how many shelves may be employed. These shelves are preferably embossed on their upper surface with slightly-raised projections E E, which may be of any form which will tend to cause the downflowing sheet of water to diffuse itself more evenly over the surface of the shelf. The lower shelf and those of similar form in the series are cut away on the sides, as shown at F in Fig. 6, the object being to provide a space between the edge of the shelf and the wall of the inner shell B for the circulation of the heat. The other shelves in the series, being each alternate shelf, are provided with a central longitudinal opening G for the same purpose. The edges of these shelves, as well as of the various openings therein aforesaid, are turned upward, so as to confine the flowing water upon the shelves except at the discharge ends.

The casing A and shell B of my water-heater, together with the shelves D and their openings F and G, are oblong in plan, as shown in Figs. 1, 5, and 6, and are thus readily made of the required capacity to insure heating a sufficient quantity of water in an apparatus of given height and width occupying the least possible space, while a free and effective circulation of the hot air is provided for through and around the successive shelves transversely as well as longitudinally back and forth beneath the successive shelves, so as to fully utilize the combustion of gas and render the flow of heated air unobstructed and uniform.

H is the water-supply pipe, which terminates within the interior of my device in the rectangular double-armed or T-shaped pipe I. (Best shown in dotted lines in Fig. 1.) The pipe I is provided with a number of small holes upon its under side for the escape of the water received from the supply-pipe.

J in Fig. 2 is a curved trough placed parallel with and a slight distance from the pipe I to serve the purposes of a baffle-plate, so that the small streams of water which issue with force from the pipe I may impinge upon the baffle-plate J and be broken up. The baffle-plate J is provided with openings of its own, through which the water impinging upon it may escape gently onto the upper shelf and be as evenly diffused thereon as possible.

The water-supply pipe H is provided with a horizontal spigot-valve K, actuated by the long arm L. This arm L is so locked into the wheel-shaped actuating-handle of the gas-valve M by means of a notch *m*, Fig. 1^a, in said handle that the gas-valve cannot be opened and the gas admitted to the heating-burner without first raising the arm L and thus opening the water-valve K and starting a flow of water through the device, the object being to render it impossible to injure the device by applying the heat while the device is dry.

N is the gas-supply pipe, provided with a subsidiary pipe O, terminating in a small burner.

P is the air-mixer, attached to the heating-burner Q. The burner Q is placed in the position shown in Fig. 2. It is provided on its upper surface with a number of saw-slits or other orifices for the escape of the gas.

S, Figs. 2, 4, and 6, is the hot-water discharge.

The inner shell and the shelves of my water-heater may be made of sheet-copper or any other suitable material. The outer shell A, being merely for ornamental purposes, may be made according to taste.

My device is operated as follows: The arm L, Fig. 2, is raised, so as to disengage the actuating-handle of the gas-valve M. This starts the water, which escapes from the pipe I onto the baffle-plate J, and thence flows in a thin sheet over the inclined surface of the upper shelf toward its lower end. Thence it escapes, as indicated by the arrows, from shelf to shelf until it finally makes its escape at the hot-water exit S at the bottom of the device. As soon as the gas-valve is freed, by raising the arm L of the water-valve or it may be previously, gas is admitted to the sub-

sidary gas-pipe O and its burner is lighted. The main gas-valve M is then opened and the gas sent into the heating-burner Q through the air-mixer P to insure perfect and smokeless combustion. As the mixed air and gas escapes from the heating-burner Q through the orifices R R the gas is ignited by the subsidiary burner attached to the pipe O, and the device is in operation and will act continuously until stopped. When the device has served its purpose for the time being, the main gas-valve M is closed, which extinguishes the heating-burner. The arm L from the water-valve is then brought downward and locked into the actuating-handle of the main gas-valve, which shuts off the supply of water. Lastly, if not before, the gas is shut off from the subsidiary pipe O and the device is at rest until next required. As soon as the water is turned off the shelves D drain themselves successively, so that they may be and are dried by the retained heat.

Having thus described my invention and its mode of operation, what I claim as new, and desire to patent, is—

1. In a water-heater, the combination with a shell having an air-exit at top, means for introducing running water at the top of said shell and a heat-generator at its bottom, of a water-exposing and self-draining shelf above said heat-generator provided on top with flow-diffusing projections, substantially as hereinbefore specified.

2. The combination, in a water-heater oblong in plan, of a water-supply pipe at top, terminating at one end of the heater in a T-shaped pipe the cross-piece of which is perforated at bottom, a perforated baffle-plate beneath said cross-piece, a series of water-exposing shelves, a shell within which said shelves are supported one below another, a heat-generator beneath the lowest shelf, and a hot-water discharge at bottom, substantially as hereinbefore specified.

Signed at the city of New York, in the county of New York and State of New York, this 1st day of October, A. D. 1896.

ALBERT F. TRAGESER.

Witnesses:

HENRY P. WELLS,
WM. O'SHAUGHNESSY.