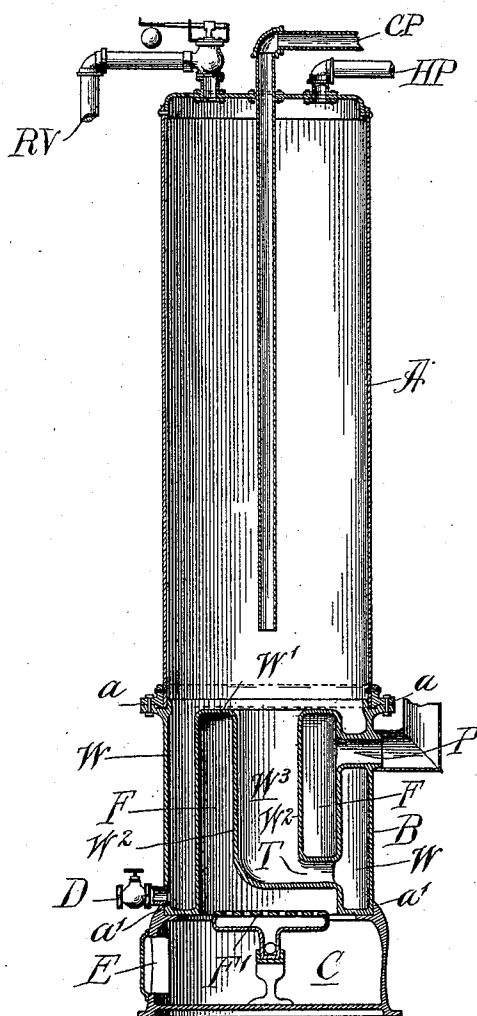


(No Model.)

F. L. RICE & A. D. LANGWORTHY.
COMBINED PRESSURE RESERVOIR AND HEATER.

No. 577,390.

Patented Feb. 16, 1897.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK L. RICE AND ALBERT D. LANGWORTHY, OF CHICAGO, ILLINOIS,
ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE KEYSTONE
HEATER COMPANY, OF SAME PLACE.

COMBINED PRESSURE-RESERVOIR AND HEATER.

SPECIFICATION forming part of Letters Patent No. 577,390, dated February 16, 1897.

Application filed December 13, 1894. Serial No. 531,650. (No model.)

To all whom it may concern:

Be it known that we, FRANK L. RICE and ALBERT D. LANGWORTHY, citizens of the United States, residing at the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Combined Water-Pressure Reservoir and Heater; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which forms a part of this specification, and in which similar letters of reference marked in said drawing indicate like parts.

Ordinarily in pressure-reservoirs the water has been heated therein in one of two ways. That is to say, a pipe has been lead from the reservoir to a water-back in some suitable heating-stove, with a return-pipe therefrom to the reservoir, whereby when a fire was built in said stove the thin body of water in the water-back would become heated more or less quickly and circulate to the reservoir. It being found necessary, however, to heat water in the reservoir for various purposes at times when it was not convenient or desirable to build a fire in said stove, a heating device has been commonly employed to act directly upon the reservoir. Such heating device usually consists of a suitable gas-burner fixed adjacent to the lower end of the water-reservoir and directing the products of combustion and the heat therefrom immediately against the lower end or head of said reservoir. Great difficulty has been experienced in the use of this class of devices due to the fact that a very considerable length of time is required to heat a given quantity of water in the reservoir, because of the relatively small surface of the latter that is exposed to the action of the heat.

Our invention therefore has for its object to provide a water-pressure reservoir with means for heating the water therein secured to said reservoir, so that the two shall constitute a unitary structure, and at the same time a device having substantially the same external appearance as the ordinary plumbers' water-pressure boilers now in use.

It is therefore the object of our invention

to produce a practical device which shall have a very much larger heating-surface exposed to the action of the heat, whereby the water in the reservoir may become heated very rapidly, and, further, that such device shall be strong, durable, simple, and inexpensive to manufacture. These objects and other advantages of our invention will be more fully understood by the subjoined description thereof and will be more particularly pointed out in the appended claim.

In the drawing we have illustrated our invention in a vertical sectional view and have shown it as provided with a gas-burner as a heating medium.

In said drawing the reservoir is shown as being constructed in two main sections—an upper section A and a lower section B—each of any suitable metal, suitably united together at *a*. The upper section A should preferably be of sheet metal similar to the common plumber's boiler, while the lower section B should preferably be of cast metal.

C is a suitable support or standard for the combined reservoir and heater, the same resting upon the base C, as shown at *a'*. The particular form of base shown is not important, but may be variously formed as desired.

E represents an air-inlet aperture in the base C, and D represents a drain-pipe provided with a suitable valve for controlling the same, the drain-pipe leading from the lower portion of the reservoir.

F represents a combustion-chamber arranged within the lower section B and shown as made integral therewith. Said combustion-chamber is made of less diameter than the inner diameter of the section B, so as to provide between the same and the walls of the section B an annular water-space W of relatively narrow cross-section.

CP designates the pipe for supplying water under city pressure to the reservoir.

HP represents the hot-water-pipe outlet from the reservoir, and RV represents any suitable form of relief-valve, whereby the pressure in the reservoir may be reduced if it becomes too great.

P is an exit-aperture for the products of combustion, communicating with the fire-

chamber F and preferably and as shown made integral with the lower section B and extending outwardly through the annular water-space W. In order to provide an additional heating-surface, said combustion-chamber is centrally recessed to form a depending water-leg W², which communicates with the main body of the reservoir and at or near its lower end with the annular water-space W by means of a connecting-conduit T. It will thus be observed that the entire space or chamber F is surrounded by the water-space W, except at the bottom thereof, which chamber in turn surrounds the central water-leg W². An increased heating-surface is thus afforded, and our device becomes a very rapid water-heater, while at the same time providing ample space for the storage of water. By making the lower section B of cast metal, as shown, it is obvious that all seams which would be exposed to the flame are avoided.

By the construction shown it is obvious that the upper section may be readily separated from the lower section, so as to gain access to the latter for the purpose of cleaning out scale or sediment that may collect thereon and render the surfaces exposed to the fire less effective for the transmission of heat.

While the point of juncture of the two sections is shown at *a*, it is apparent that the joint may be made lower down or higher up on the side and still render it easily accessi-

ble for removing the upper section from the lower one or for other purposes.

While we have shown what we deem to be the preferred form of our invention, yet it is obvious that many changes in the details thereof may be made without departing from the spirit of our invention and without involving more than ordinary mechanical skill. We do not wish, therefore, to be limited to the precise construction herein shown and described.

What we desire to claim as our invention and to secure by Letters Patent is as follows:

In a combined water-heater and pressure-reservoir the combination of an upper sheet-metal cylindric portion, a lower cast-metal portion, an annular water-space in the lower portion communicating directly with the water-space in the upper portion, a central water leg or space in said lower portion communicating at its upper end with body portion of the reservoir and at its lower end with said annular water-space, a combustion-chamber within the annular water-space and surrounding the central water-space, and means for supplying heat to the combustion-chamber, substantially as described.

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Witnesses:

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