

UNITED STATES PATENT OFFICE.

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WATER HEATER AND CONDENSER.

SPECIFICATION forming part of Letters Patent No. 641,597, dated January 16, 1900.

Application filed March 30, 1899. Serial No. 711,098. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. KINNEY, a citizen of the United States, residing at Arroyo Grande, in the county of San Luis Obispo and State of California, have invented a new and useful Water Heater and Condenser, of which the following is a specification.

The invention relates to improvements in water heaters and condensers.

10 The object of the present invention is to improve the construction of water heaters and condensers and to provide a simple, inexpensive, and efficient device adapted to be used in connection with an ordinary stove and capable of affording a supply of hot water and 15 distilled water and of automatically controlling the supply of cold water to take the place of the hot water drawn off and the distilled water resulting from the condensation of the steam arising from the heater.

20 A further object of the invention is to utilize the full heating capacity of a stove without increasing the consumption of fuel and to raise the temperature of the water within the tank or reservoir by utilizing it to effect a condensation of the steam.

25 The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

30 In the drawings, Figure 1 is an elevation of a heating and condensing apparatus constructed in accordance with this invention. Fig. 2 is a vertical sectional view.

Like numerals of reference designate corresponding parts in both figures of the drawings.

1 designates a vertical tubular boiler or hot-water receptacle arranged within the first section 2 of the stovepipe of a stove 3 and provided at one side with a horizontal branch or lateral 4, extending through the stovepipe and having its outer terminals threaded for the reception of a hot-water faucet 5, by means of which hot water is drawn off from the boiler 1. The lower end of the boiler is provided with a threaded cap 6, and its upper end is provided with an elbow 7, extending through the stovepipe and supporting a conical hood 8, constructed of sheet metal and having an inwardly inclined or tapered bottom portion 9, connected with the upper arm

of the elbow, at the outer face of the same, at a point below the upper edges thereof, to provide an annular groove or gutter 10. The inner horizontal arm of the elbow 7 is connected with a horizontal extension of the upper end of the boiler.

The boiler or hot-water reservoir receives its supply of water through a pipe 11, extending from it to a tank or cold-water reservoir 12, located a suitable distance from the stovepipe, and the supply-pipe 11 is connected with the boiler at a point near the bottom thereof, as clearly shown in Fig. 2 of the drawings.

The water of the boiler or reservoir is heated by circulating it through a coil 13, located within the fire-box of the stove and connected with the boiler by branch pipes 14 and 15, the water circulating in the direction indicated by the arrows in Fig. 2. The pipe 14, which conducts the water from the boiler to the coil, is connected with the former at a point below the place where the other pipe 15 returns the water to the boiler; but instead of employing a coil 13 the pipes 14 and 15 may be connected with any ordinary water-back.

The steam and vapors arising within the boiler enter the hood 8 and are partially condensed by the same, and the steam and partially-condensed vapors descend from the hood to a conical condenser 16 through a pipe 17, which has its upper end communicating with the lower portion of the hood at the gutter 10. The conical condenser 16, which receives the partially-condensed vapors and steam, is located within the tank or cold-water reservoir, at the bottom thereof, and is provided at its bottom with a pipe 18 for the discharge of distilled water. The condenser consists of a cone having its apex at the bottom and a flat top suitably secured to the upper edges of the cone. The lower end of the steam-pipe 17 extends through the wall of the tank 12 and is connected with the condenser near the top thereof.

Within the tank or cold-water reservoir is arranged a cylindrical float 18^a, which is adjustably connected at its upper end with one arm of a lever 19, which is fulcrumed between its ends on an arm or standard 20. The other arm of the lever is connected by a rod or bar 21 with an arm or lever 22 of a cock or valve

23 of a cold-water-supply pipe 24. The cold-water-supply pipe 24 extends from the water-main to the tank 12, and as the water in the latter is consumed the float descends and through the medium of the lever and the connecting-bar 21 opens the valve or cock 23 and turns on the water, and as soon as the water rises within the tank 12 the float will operate the said connections to close the cock or valve.

10 By this construction the supply of water is automatically controlled, as will be readily seen. The standard 20, which is mounted on the tank 12, is provided with a series of perforations 24 for the vertical adjustment of the pivot 25 of the lever 19, and the connecting-bar 26, extending from the float to the lever, is provided with a corresponding series of perforations 27 to permit the adjustment of the pivot 28. The water in the boiler rises

20 to the same height as the water within the tank 12 and it will be clear that by raising and lowering the float and the lever the amount of water contained within the apparatus may be regulated.

25 The float 18^a is guided in its vertical movement by a rod or bar 29, which is received within a tube 30 of the float. The tube 30, which extends from the top to the bottom of the float, forms an opening through the same, and the rod 29, which forms a fixed guide, is mounted upon the top of the conical condenser. The joints between the bar 26 and the lever and the float permit the latter to move vertically without binding on the guide-rod.

35 The invention has the following advantages: The condensing and heating apparatus herein shown and described is simple and comparatively inexpensive in construction. It is adapted to operate in connection with an ordinary stove, and by arranging the boiler within the stovepipe an increased amount of heat is obtained without increasing the consumption of fuel. The water within the tank or cold-water reservoir is utilized for condensing the steam and vapors, and the temperature of this water is thereby raised before it is introduced into the boiler. The mechanism for automatically controlling the admission of water to the tank 12 is adapted to be readily adjusted for regulating the quantity of water contained within the apparatus. Also by locating the boiler within the stovepipe of the stove it is housed out of the way and does not take up any space in the stove which could be otherwise utilized, and it does not take up any of the space of the room.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is—

65 1. In a device of the class described, the combination with a stove and a stovepipe, of a reservoir or boiler arranged within the stovepipe and having its upper portion extending

through the same and provided with a hood for collecting steam and vapor, and means for supplying water to the boiler, substantially as described. 70

2. In a device of the class described, the combination with a stove and a stovepipe, of a reservoir or boiler arranged within the stovepipe and having its upper portion extending through the same and provided with a hood for collecting steam and vapor, and a water-heating device arranged within the stove and extending to the stovepipe and communicating with the boiler or reservoir, substantially as described. 75 80

3. In a device of the class described, the combination with a stove, and a stovepipe, of a boiler located within the stovepipe, a water-heating device arranged within the stove and extending therefrom to the stovepipe and communicating with the boiler, a tank connected with the boiler and having means for discharging the distilled water, a condenser arranged within the tank and connected with the said means, and pipe connections between the boiler and the condenser, substantially as described. 85 90

4. In a device of the class described, the combination with a stove, and a stovepipe, of a boiler arranged within the stovepipe and extending through one side thereof and having an exterior vertical portion, a hood for collecting steam and vapor connected with the exterior of the vertical portion of the boiler at a point below the upper edges thereof, to form a gutter, a tank, and a condenser connected with the gutter, substantially as described. 95 100

5. In a device of the class described, the combination of a stovepipe, of a boiler arranged therein and extending through one side thereof and having a vertical exterior portion, and a hood secured to the outer face of the said vertical portion of the boiler at a point below the upper edges thereof to form a gutter, substantially as described. 105 110

6. In a device of the class described, the combination of a boiler arranged within a stovepipe and having its upper portion extending through the same and terminating in a vertical exterior top portion, a hood arranged over the upper end of the boiler and having a base portion united with the exterior of the boiler at a point below the upper edges thereof and forming a gutter at the exterior of the boiler, a pipe extending from the gutter and designed to be connected with a condenser, and means for supplying the boiler with water, substantially as described. 115 120 125

7. In a device of the class described, the combination with a stove and a stovepipe, of a vertical boiler arranged within the same and having a horizontal portion extending through the stovepipe, a water-heating device arranged within the stove and extending to the stovepipe and communicating with the boiler, an exteriorly-arranged hood mounted on the extended portion of the boiler, a 130

tank connected with the latter, a condenser arranged within the tank, and a steam-pipe extending from the hood to the condenser, substantially as described.

5 8. In a device of the class described, the combination with a stove and a stovepipe, of a boiler arranged within the stovepipe, a water-heating device arranged within the stove and extending to the stovepipe and
10 communicating with the boiler, an exteriorly-arranged hood connected with the boiler, a tank, a condenser arranged within the tank and connected with the hood, a feed-pipe 11
15 extending from the tank to the boiler, a cold-water-supply pipe having a cut-off or valve, and a float arranged within the tank and connected with the cut-off or valve, substantially as described.

20 9. In a device of the class described, the combination of a tank, a supply-pipe communicating with the tank and having a valve or cut-off, a conical condenser arranged within

the tank and having a horizontal top, a rod forming a guide and mounted on the condenser, a float arranged within the tank and
25 having an opening receiving the guide-rod, and connections between the float and the valve or cut-off, substantially as described.

10. In a device of the class described, the combination of a tank, a condenser arranged
30 within the tank at the bottom thereof, a supply-pipe communicating with the tank and having a valve or cut-off, and a float operating in the tank above the condenser and connected with the valve or cut-off, substantially
35 as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES S. KINNEY.

Witnesses:

JAMES E. CONRAD,
J. S. KINNEY.