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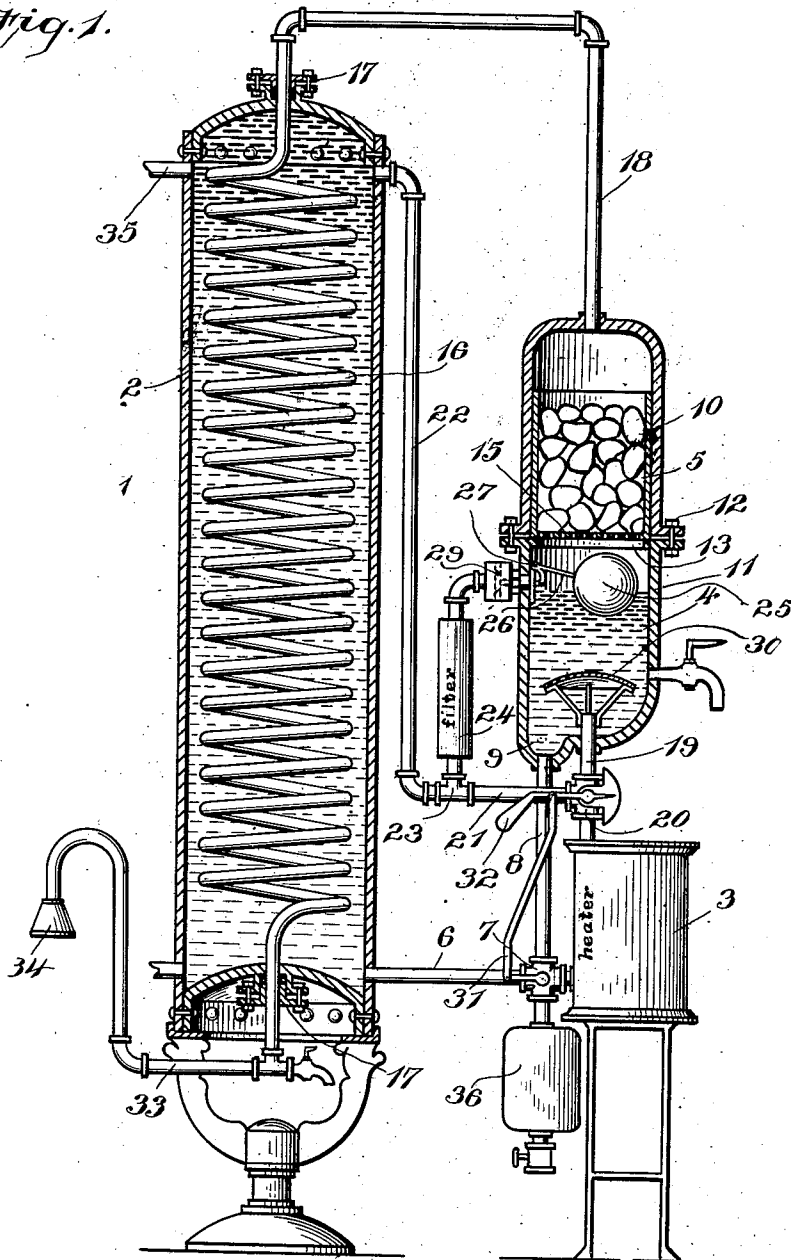
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D. W. DALEY, C. A. GUNN & F. R. DALEY.
COMBINED WATER HEATER AND STILL.

APPLICATION FILED MAY 18, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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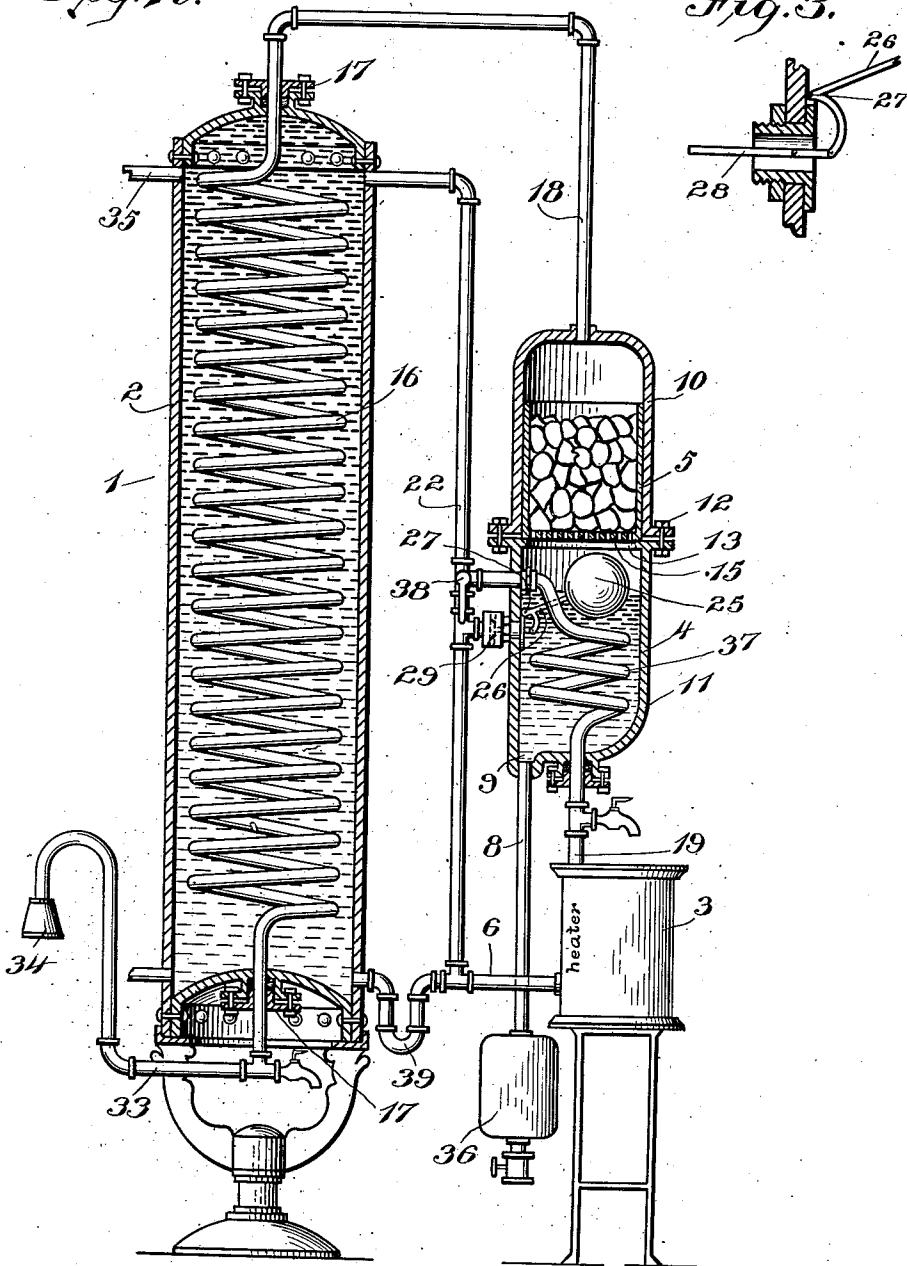
COMBINED WATER HEATER AND STILL.

APPLICATION FILED MAY 18, 1906.

2 SHEETS—SHEET 2.

Fig. 2.

Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

DENNIS WILLIAM DALEY, CHARLES ALEXANDER GUNN, AND FRANK RICHARD DALEY, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS OF ONE-FIFTH TO MOLLIE DALEY AND ONE-FIFTH TO ELVIE DALEY, BOTH OF PITTSBURG, PENNSYLVANIA.

COMBINED WATER HEATER AND STILL.

No. 849,210.

Specification of Letters Patent.

Patented April 2, 1907.

Application filed May 18, 1906. Serial No. 317,460.

To all whom it may concern:

Be it known that we, DENNIS WILLIAM DALEY, CHARLES ALEXANDER GUNN, and FRANK RICHARD DALEY, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in a Combined Water Heater and Still; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to a combined still and domestic water-heater, and has for its object to provide a device of this class which can be utilized as an ordinary domestic water-heater and which can instantly be converted into a water-still.

With this object in view our invention consists in the novel construction of the steam-tank.

Our invention also consists in the novel construction and arrangement of all the parts, all of which will be first fully described and afterward specifically pointed out in the appended claims.

Referring to the accompanying drawings, Figure 1 is a vertical sectional view of our device. Fig. 2 is a similar view showing a slight modification, and Fig. 3 is a detail sectional view of the steam-tank-valve-controlling mechanism.

Like numerals of reference indicate the same parts throughout the several figures, in which—

1 indicates the device, which comprises the hot-water tank 2, water-back or heater 3, steam-tank 4, and charcoal-can 5.

As shown in the drawings, the hot-water tank 2 is connected to the water-back or heater 3 by means of a pipe 6, within which pipe is a three-way valve 7. Passing upwardly from said valve 7 is a pipe 8, which connects with the bottom of the steam-tank 4, a pocket 9 being formed in said steam-tank at the point of entrance of said pipe 8. As shown, the steam-tank 4 is constructed,

preferably, of two sections 10 and 11, which are suitably flanged and coupled together by means of bolts 12. Secured within the upper section 10 and preferably resting on an annular flange 13 in the lower section 11 is a charcoal-can 5, which is filled preferably with charcoal or other suitable material, the bottom 15 of the can 5 being perforated, as shown. Referring now to the hot-water tank 2, it will be seen that a coil 16 is arranged within said tank, the ends of the coil passing out through the ends of the tank through suitable stuffing-boxes 17, said coil 16 being connected to the upper section 10 of the steam-tank 4 by means of a steam-line-pipe 18.

Referring now to the water-back or heater 3, it will be seen that the said water-back or heater is connected to the steam-tank 4 by means of a pipe 19, within which pipe is located a three-way valve 20, and also connected to said valve 20 is a pipe 21, which forms the hot-water line 22, and connected to the hot-water line 22, preferably at a point 23, is a filter 24, which filter is connected to the steam-tank 4, as shown. Within the steam-tank 4 is a valve-float 25, secured to a lever 26, fulcrumed at 27, said lever being connected to a valve-stem 28, Fig. 3, the valve and seat being located within the valve-casing 29, as shown in Fig. 1.

Referring again to the water-back or heater 3 in connection with the steam-tank 4, it will be seen that a deflecting-plate 30 is arranged above the pipe 19, which connects the heater or water-back 3 with the steam-tank 4, and it will also be seen that the three-way valve 7 and three-way valve 20 are connected together by means of a link 31, a single handle 32 on the valve 20 being arranged so that both valves 7 and 20 are operated simultaneously by a single movement.

Referring to the hot-water tank 2, it will be seen that below the bottom thereof the coil 16 connects with the pipe 33, which forms a trap and which is provided with a flared outlet or nozzle 34, and it will also be seen that a pipe 35, leading to the domestic fixtures, enters the hot-water tank 2 near the top thereof. Referring again to the valve 7, it will be seen that the sediment-tank 36 is

connected thereto at a convenient point below said valve.

Referring to Fig. 2, which illustrates a slight modification of our invention, it will be seen that in place of connecting the water-back or heater 3 directly with the steam-tank 4, as shown in Fig. 1 and as before described, a coil 37 passes through said steam-tank 4 and is connected to the hot-water line 22, a valve 38 being provided so as to shut off the connection. It will also be seen that a trap 39 is provided in the pipe 6, which connects the hot-water tank with the water-back or heater 3.

Having thus described the several parts of our invention, its operation is as follows: Referring particularly to Fig. 1, it will be seen that when it is desired to employ the device for a simple domestic heater the valves 7 and 20 are provided, so as to cause a direct connection between the hot-water tank 2 and the water-back or heater 3, the valve 7 shutting off connection between the pipe 8 and the water-back or heater 3. At the same time said valve 7 is moved the valve 20 is moved so as to close the connection between the steam-tank 4 and the water-back or heater 3 and to open connection between the water-back or heater 3 and the hot-water line 22. Following the connections therefore it will be seen that the water passes from the hot-water tank 2 into the water-back or heater 3, where it is heated and passes out of the water-back or heater 3 into the hot-water line 22, where the water again enters the hot-water tank 2 near the top thereof. By this arrangement, therefore, we have a simple domestic water-heating apparatus. When, however, it is desired to use the device as a water-still, the valves 7 and 20 are turned so as to close connection between the pipe 6 and the water-back or heater 3, and at the same time the valve 20 is turned so as to close the connection between the hot-water line 22 and the water-back or heater 3. At the same time that this connection is closed connection is opened between the steam-tank 4 and the water-back or heater 3 through the valve 20 and connection is opened between the steam-tank 4 and the water-back or heater 3 through the valve 7. Following these connections, therefore, it will be seen that the water passes from the water-back or heater 3 into the steam-tank 4 and back from the steam-tank 4 into the water-back or heater 3 through the pipe 8 and valve 7. As the water is heated in the water back or heater 3 it passes up into the steam-tank 4, strikes the deflecting-plate 30, so as to prevent disturbance at the surface of the water in the steam-tank 4 and also for the purpose of deflecting any sediment down into the pocket 9. As the water boils in the steam-tank 4 the steam passes through the perforated

bottom 15 of the charcoal-can 5 and through the charcoal into the steam-line 18 and down through the coil 16 in the hot-water tank 2, where the steam is condensed, producing the distilled water, which finds its outlet through the flared nozzle 34, said nozzle being preferably perforated to aerate the water. The heat given up from the condensing-coil 16 raises the temperature of the water in the hot-water tank, beginning at the top, where the hot-water supply for the fixtures is taken off through the pipe 35, thus utilizing all the waste heat without heating the water-supply excessively. The water in the hot-water tank 2 being under pressure passes from the hot-water tank through the hot-water line 22, up through the filter 24, and into the steam-tank 4, at which point the flow of water is controlled by the float-valve 25, so that the water in said steam-tank is always kept at a uniform height. As shown in Fig. 3, the valve-stem 28 and the valve-lever 26 extend within the steam-tank 4, the working parts of the valve being on the outside of the tank and within the valve-casing 29, Fig. 1.

The operation of the modification shown in Fig. 2 is substantially the same as we just described for Fig. 1, with the exception that when it is desired to utilize the device as a simple domestic water-heater the valve 38 is turned so as to close connection between the hot-water line 22 and the bottom of the hot-water tank. Thus the water passes from the bottom of the hot-water tank through the pipe 6 into the water-back or heater 3, through the coil 37 in the steam-tank 4 and into the hot-water line 33, back again into the hot-water tank 2. When utilizing this construction as a water-still, the valve 38 is turned so as to shut off connection between the top of the hot-water tank and the coil 37 in the steam-tank 4. The water therefore passes from the water-back or heater 3 through the coil 37 in the steam-tank 4, through the valve 38, down through the lower portion of the hot-water line 22 into the pipe 6, back into the heater 3, the trap 39 preventing the hot-water from entering the bottom of the hot-water tank 2. In this construction the water in the steam-tank 4 is brought to the boiling-point by the coil 37 therein, and the steam passing from the water in the steam-tank 4 finds its way through the charcoal into the condensing-coil 16 precisely the same as before described, and the height of water in the steam-tank 4 is controlled by the valve-float 25 and the valve the same as before described.

If desired, any suitable apparatus, such as thermostat, may be employed in connection with the device in order to keep the temperature of the water uniform and prevent waste of heat when water is not being drawn off for use.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the character described, 5 the combination of the hot-water tank, a water-back or heater associated therewith, steam-tank associated with said water-back or heater and means for leading the steam from said steam-tank through the said hot- 10 water tank for condensing the steam, substantially as described.

2. In a device of the character described, the combination of the hot-water tank, a 15 water-back or heater connected thereto in such manner as to provide free circulation of water through said hot-water tank and heater, a steam-tank associated with said 20 water-back or heater; means for providing a free circulation of water through said steam-tank and the water-back or heater, and means for leading the steam from said steam-tank through said hot-water tank to con- 25 dense the steam and to heat the water in said hot-water tank, substantially as described.

3. In a device of the character described, the combination of the hot-water tank, a 25 water-back or heater connected thereto, a steam-tank associated with said water-back or heater, means for simultaneously shutting 30 off connection between the said hot-water tank and water-back or heater and for bringing into connection the said steam-tank and water-back or heater, substantially as de- 35 scribed.

4. In a device of the character described, the combination of the hot-water tank, a 35 water-back or heater connected thereto, a steam-tank connected with said water-back or heater, a deflecting-plate in said steam- 40 tank, a charcoal-receptacle associated with

said steam-tank and a condensing-coil with- in said hot-water tank and connected to said steam-tank, substantially as described.

5. In a device of the character described, the combination of a hot-water tank, a water- 45 back or heater connected thereto, a steam-tank connected to said water-back or heater, a receptacle for holding a purifying material associated with said steam-tank and a con- 50 densing-coil within said hot-water tank, said condensing-coil receiving the steam passing from said steam-tank, substantially as de- scribed.

6. In a device of the character described the combination with a heater and a hot- 55 water tank, of a steam-tank arranged to be supplied from said hot-water tank, and a coil within said steam-tank for leading the water from said heater through said steam- 60 tank to heat the water therein, and means for leading the water from said coil to said hot-water tank, substantially as described.

7. In a device of the character described the combination with a heater and a hot- 65 water tank, of a steam-tank arranged to be supplied from said hot-water-tank, means for leading water from said heater through said steam-tank for heating the water therein, 70 and means for leading the water passing through said steam-tank to said hot-water tank, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

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CHARLES ALEXANDER GUNN.
FRANK RICHARD DALEY.

Witnesses:

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