July 21, 1936. L. P. HAUSSAUER 2,048,068

ELECTRIC WATER HEATER

Filed Nov. 5, 1935

Fig. 2.

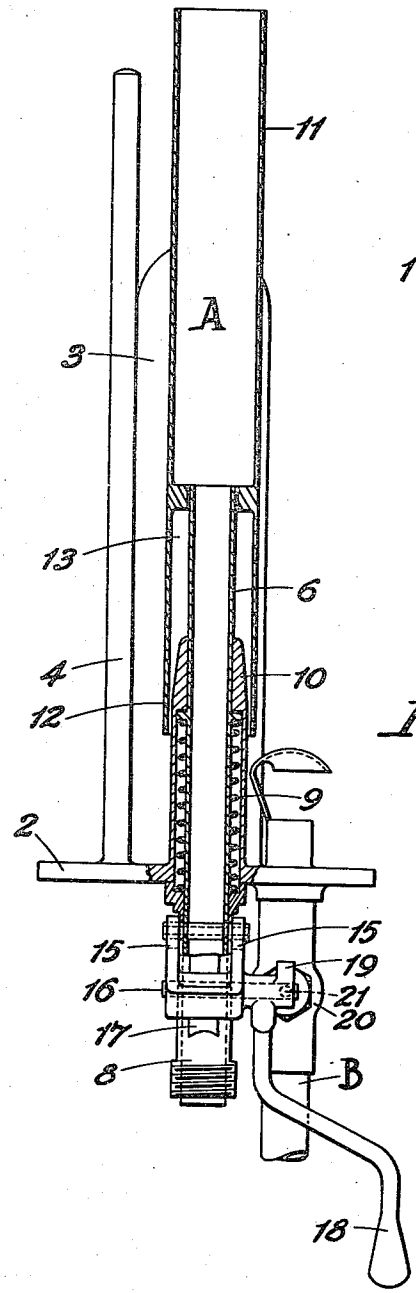


Fig. 1.

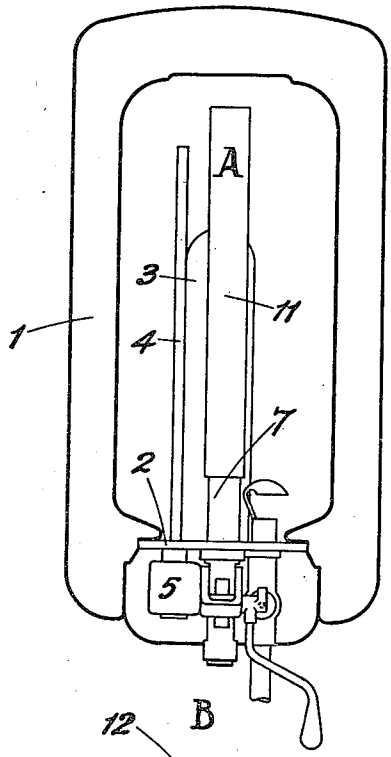
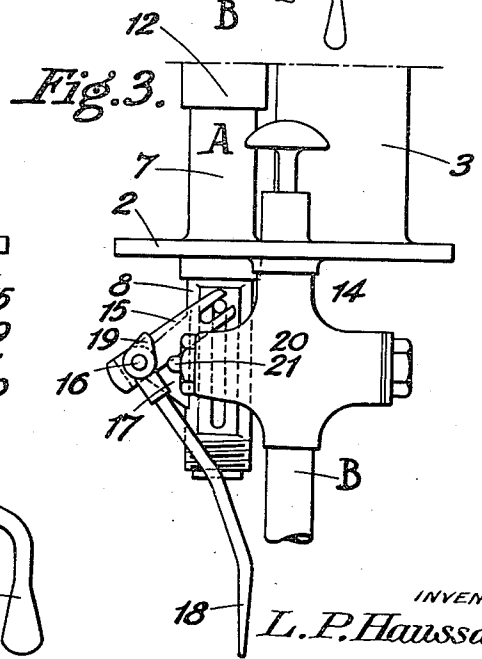


Fig. 3.



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ELECTRIC WATER HEATER

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7 Claims. (Cl. 219—38)

This invention relates to improvements in electric water heaters of the kind in which a hot-water outlet conduit extends through and upwardly from the base of the heating chamber to a point near the top thereof. In this kind, hot water is discharged by overflowing into and through the conduit. In this thermo-storage kind of heater the hot water is "pushed through" by the admission of cold water and generally one or more heating elements is or are mounted on the base of the hollow heater, the base also having an inlet cock and a baffle, together with the said outlet conduit or pipe; admission of cold water near the bottom causes hot water to be displaced and discharged via the discharge conduit at the top point aforesaid.

The present invention is directed to the provision of means to prevent dripping occasioned by expansion of the water during heating (cold inlet shut) causing leakage over the top of the outlet tube.

According to the invention the hot-water outflow pipe is constructed so that the effective height inside the heater (i. e. the height at which water can overflow) can be raised or lowered beneath the normal water level, for which purpose it is longitudinally slidable in the base of the heater, and an operating means is employed whereby the discharge pipe is moved as and when a press-in valve controlling the cold-water inlet is opened and shut.

By this means, the top of the hot-water pipe is raised clear of the normal water level in the heaters when the cold inlet is shut, and conversely lowered into an overflow discharge position only when the cold inlet is opened (which is the operation performed by the user to run off hot water).

In the preferred embodiment of the invention, a pivoted operating lever having a suitable handle is employed to slide the pipe, and a cam, rotatable on the lever axis, is fixed in relation to the lever, and co-acts with the operating stud or push-button of the press-in valve. The particular method of slidably mounting the outlet pipe through the heater base is also a feature of the invention, and is described later.

In order that the invention may be readily understood, reference is directed to the following description and accompanying drawing, wherein:—

Figure 1 is a diagrammatic elevation of a heater according to the invention (the casing being in section);

Figure 2 is a sectional elevation to a larger scale of the heater base and its various members attached thereto, the thermostat being omitted;

Figure 3 is an outside elevation of the bottom part looking from the right of Figure 2.

Referring to the drawing the double-walled insulating casing of the heater is designated 1, the base 2, the heater element casing 3, the hot-water outflow generally by the letter A, the cold-water inlet B, the thermostat casing 4, and the thermostat 5.

The outflow pipe A comprises a lower part 6 which slides through a guide comprising the guide sleeve 7 having the bearing head 10. This lower part 6 is encircled by a compression spring 9 inside the guide 7 which normally exerts a force to keep the pipe A in the highest position. The pipe 6 extends through a closely fitting bearing 10 at the end of the sleeve 7 and carries an extension 11 of larger diameter which has a skirt 12 surrounding the sleeve 7. The skirt 12 is spaced away from the sleeve 7 and an air pocket is formed in the space 13 which tends to prevent leakage through bearing 10 and to keep the pipe 6 clean.

The external guide sleeve 8 is slotted on each side so that a pin 14 fixed on each side of the tube 6 may work up and down therethrough. A lever 15 is pivoted at 16 to a bracket 17 fixed to the sleeve 8. The lever is stirrup shaped whereby two arms 15 lie one on each side of the sleeve 8; the arms are slotted to engage the pins 14. The lever is provided with an operating handle 18. On the same axis 16 is mounted a cam 19 which is fixed in relation to the lever 15 so as to move therewith.

The cold water inlet B is provided with a valve 20 which is of the press-in type having an operating stud or button 21 adapted to be pressed in against spring action to open the valve. The aforesaid cam 19 co-acts with the stud 21 in such manner that rotation of the cam will press the stud and operate the valve.

In operation, when hot water is required, the handle 18 is moved to the left (with reference to Figure 3) which immediately depresses the pipe A by the lever 15, and the expanded hot water flows out. On completion of the movement of the handle 18 the cold supply is opened through the cam 19 and operating stud 21. The inflowing cold water forces out further hot water. On releasing the handle 18, the cold supply ceases (as the valve 20 is allowed to close) and the pipe A is automatically raised above the water level under the action of the spring 9. The relationship of cam 19 and press stud 21 is preferably one where-

in on releasing the handle 18 the cold water is shut off first allowing the tube A to move well above the water level.

I claim:—

1. In combination, a liquid receptacle, means including a valve for the supply of liquid to said receptacle, said valve tending constantly to assume a closed condition and including a normally projected operator to be depressed to open the valve, a liquid discharge tube within the receptacle having a top opening disposed normally above the level of liquid in the receptacle, said tube being movable downwardly to dispose its top opening below the level of liquid in the receptacle to permit liquid to flow from the receptacle through said tube, means for raising and lowering said tube, and means whereby said valve operator is depressed in response to actuation of said first mentioned means to lower said tube.

2. The combination as set forth in claim 1 in which the means for raising and lowering the tube comprises a rotatable element having a handle, and in which the means for depressing the valve operator comprises a cam fixed with respect to said element for rotation therewith and disposed for cooperation with said valve operator.

3. In combination, a liquid receptacle, means including a valve for the supply of liquid to said receptacle, a liquid discharge tube within the receptacle having a top opening and movable upwardly to a position in which said opening is disposed above the level of liquid in the receptacle to prevent flow of liquid from the receptacle and movable downwardly to a position in which said opening is disposed below the level of liquid in the receptacle to permit liquid to flow from the receptacle through said tube, yieldable means tending constantly to urge said tube upwardly to its first mentioned position, means for moving said tube downwardly to its second mentioned position, and means whereby said valve is closed and opened responsive to said movements of said tube, respectively.

4. In combination, a liquid receptacle, means including a normally closed valve for the supply of liquid to said receptacle, a vertically movable liquid discharge tube within the receptacle having a top opening, yieldable means tending constantly to move said tube upwardly to a position in which its top opening is disposed above the level of liquid in the receptacle, means for moving said tube downwardly to a position in which its top opening is disposed below the level of liquid in the receptacle, and means movable with said last named means and operable upon tube lowering movement of said last named means to open said valve.

5. The combination as set forth in claim 4 in which the means for moving the tube downwardly comprises a lever having a connection with the tube, and in which the means for opening the valve comprises a cam.

6. In combination, a liquid recepacle having a bottom wall, means including a normally closed valve for the supply of liquid to said receptacle, a tubular member rising from said bottom wall, a vertically disposed tube within said member and vertically slidable therein, a skirt carried by said tube and closed at its top with respect to said tube and extending downwardly over said member, said tube having a top opening, means tending constantly to move said tube upwardly to a position in which its top opening is disposed above the level of liquid in the receptacle to prevent flow of liquid from the receptacle through said tube, means for moving said tube downwardly to a position in which its top opening is disposed below the level of liquid in the receptacle to permit flow of liquid from the receptacle through said tube, and means whereby actuation of said last named means to lower said tube opens said valve.

7. The combination as set forth in claim 6 in which the means tending constantly to urge the tube upwardly comprises a spring housed within said hollow member.

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