

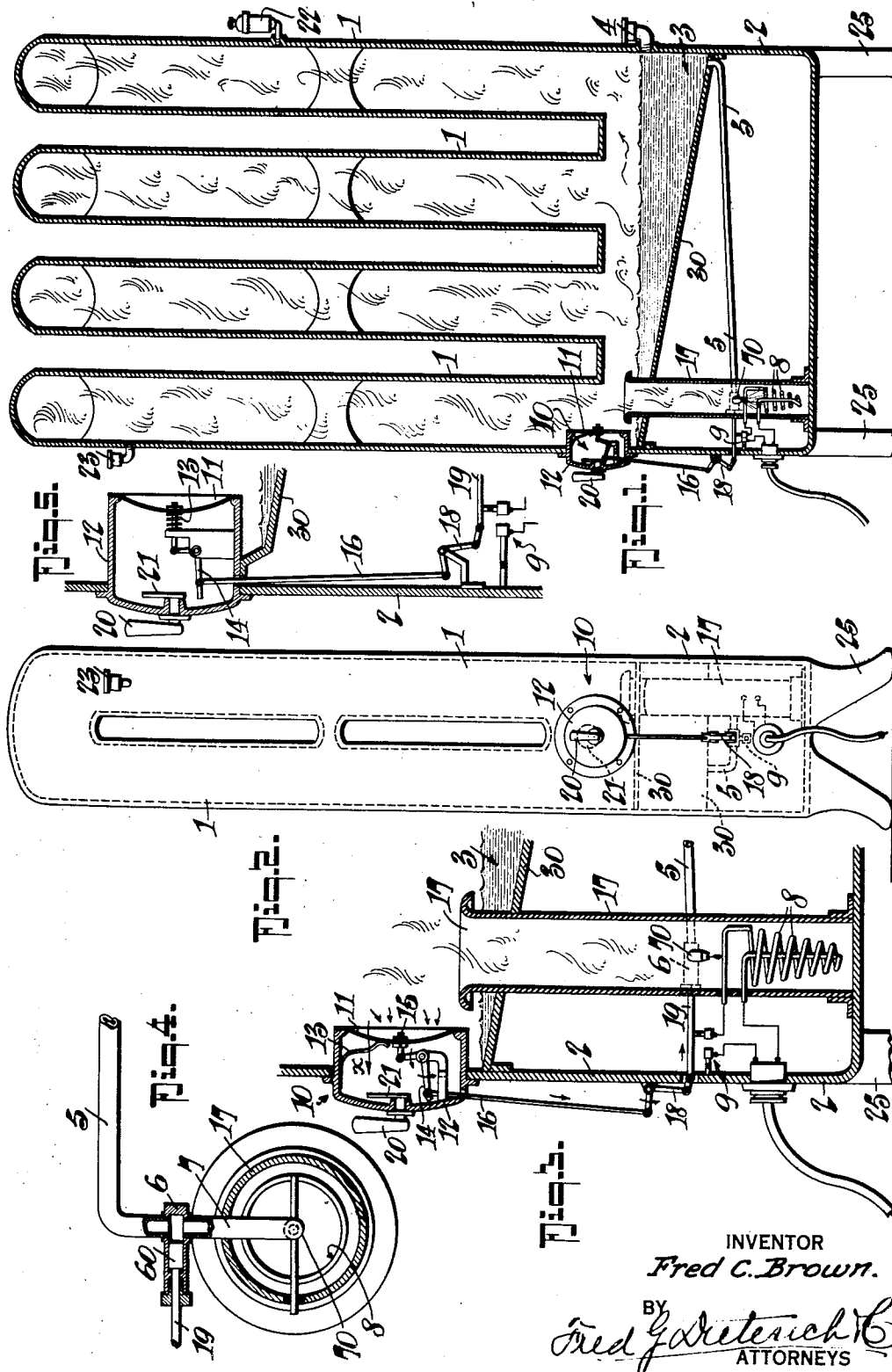
Sept. 9, 1924.

F. C. BROWN

1,507,985

PORTABLE SELF HEATING RADIATOR

Filed Oct. 20, 1922



INVENTOR
Fred C. Brown.

BY
Fred Garrettschick
ATTORNEYS

UNITED STATES PATENT OFFICE.

FRED C. BROWN, OF SEATTLE, WASHINGTON.

PORTABLE SELF-HEATING RADIATOR.

Application filed October 20, 1922. Serial No. 595,877.

To all whom it may concern:

Be it known that I, FRED C. BROWN, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a new and useful Portable Self-Heating Radiator, of which the following is a specification.

This invention relates to improvements in portable self-heating radiators, particularly of that class wherein the steam generating elements and the radiator body are so combined that the radiator may be readily moved about to any desired room or place, and my said invention comprehends an improved construction of self-heating radiator of the general type mentioned that embodies the peculiar and novel arrangement and combination of parts hereinafter described and specifically stated in the appended claims, reference being had to the accompanying drawing, in which:

Figure 1 is a vertical section of my improved self-heating radiator, the parts being shown at their normal or steam generating adjustment.

Figure 2 is an end elevation thereof, the relation of the vaporizing chamber, the water feed and the spraying devices being indicated in dotted lines.

Figure 3 is a detail vertical section on an enlarged scale of the vaporizing mechanism and the pressure controlled devices in their shut-off position.

Figure 4 is an enlarged detail horizontal section of the sprayer, the control valve and the heating element hereinafter mentioned, the valve being shown in the open position.

Figure 5 is a detail sectional view illustrating a modified arrangement of the lever mechanism and the control diaphragm.

The radiator proper may be of any approved form it being, in the construction shown in the drawing, composed of a plurality of like tubes or units 1—1, the lower ends of which communicate with a bottom extension 2. The radiator body is mounted on end legs 25—25 which, to facilitate moving the radiator to the desired places may, in practice, be equipped with rollers (not shown).

The bottom extension 2 provides a water holding compartment 3 into which the water is entered, through a filling vent 4, to the desired level, for example, as shown in Figure 1, by reference to which it will be seen the bottom 30 of the water holding compart-

ment is inclined on an angle to carry the water toward an outlet pipe 5, and for other reasons presently explained.

The pipe 5 extends across from one end of the compartment to the other end. The pipe 5 communicates with a valve controlled chamber 6, with which is joined a spray feeding pipe 7 that extends laterally from the chamber 6, and enters a vaporizing tube or chamber 17 where it terminates in a downwardly directed spray nozzle 70. Nozzle 70 directs the water onto a heating element, which element, in the present showing is an electrically energized heating coil 8 mounted in the lower end of the vaporizing tube 17 and whose opposite terminals are connected with a cutout 9 which is adapted for being shut off, simultaneously with the spray water control valve, as hereinafter stated.

10 designates a pressure controlled means for bringing the electrical heating element and the spray devices into action for making steam for heating the radiator and for cutting out the said heating and spraying elements when the steam pressure within the radiator rises above a predetermined point.

The vaporizing tube or chamber 17, as is clearly shown in Figure 1, is located adjacent the high end of the bottom 30 and its upper end extends upwardly above the said bottom to discharge the vapor or steam into the radiator units as indicated on the drawing.

By projecting the vaporizing tube 17 through the high end of the bottom 30 any tendency of the water to cool the steam as it passes from the tube 17 is reduced to the minimum since the greater part of the water fed into the compartment 3 is carried away from the said vaporizing tube 17.

The pressure controlled device, before referred to, is located at the end of the radiator adjacent the vapor tube 17 and the said device embodies a diaphragm 11 located in a tubular housing 12 which projects laterally from the aforesaid radiator end and the said diaphragm is held to its normal or innermost adjustment by a suitably arranged spring 13, whose tension is such that when the steam pressure within the radiator passes a predetermined point the diaphragm 11 is forced outwardly in the direction of the arrow α , to thereby shut off the water to the spray nozzle and to cut out the current to the electric heater.

Any suitable connections between the diaphragm 11 and the cutout devices for the heater and sprayer may be provided. In the drawing is shown a bell crank lever 14 pivotally mounted within the housing 12, having one end thereof joined to the said diaphragm as at 15 and the other end thereof to a link or lever 16 projecting from the housing 12 downwardly and connected at its lower extremity with another bell crank lever 18, pivotally mounted upon the bottom extension 2 and having linked pivoted connection with a valve rod 19 carrying a cutout valve 60 within the valve body 6.

From the foregoing it will be readily seen that when the excess pressure of steam within the radiator causes the outward movement of the diaphragm 11, the various levers and links above described will change in position from that shown in Figure 1 to that shown in detail in Figure 3.

20 designates the handle of a control or detent 21 for holding the lever 14 to the water and electric shutoff adjustment when the radiator is not in use.

22 represents the standard type of radiator valve and 23 indicates a safety valve for releasing the internal or steam pressure within the radiator if it gets beyond the point that the shutoff control valve devices are set for.

By reference to Figure 5, it will be seen that the lever mechanism may readily be arranged to be hidden from view if desired and a coil spring may be utilized to exert the desired inward pressure upon the diaphragm.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, the manner of its operation and the advantages of my invention will be readily apparent to those familiar with the manufacture and use of self-heating radiators.

What I claim is:

1. In a radiator of the class described, the combination with the radiator body provided with a water holding chamber which extends across and in communication with the separated hollow radiator tubes, a vaporizing chamber located internally of and adjacent one end of the radiator and which discharges upwardly through the bottom of the water holding chamber, a heat generator located within the vaporizing chamber, the radiator having a fluid inlet, a sprayer cooperative with the vaporizer chamber and which discharges onto the heat generator, a connection between the water chamber in the radiator and the sprayer, a control valve in the said connection, and a shifting lever mounted upon the radiator for turning off or on the valve in the water connection.
2. In a radiator, the combination with the radiator body having a fluid inlet and having separated heat radiating tubes and pro-

vided with a water holding chamber which extends across and is in communication with the separated heat radiating tubes, of a vaporizing chamber located internally of and adjacent one end of the radiator and which discharges upwardly through the bottom of the water holding chamber, a heat generator located within the vaporizing chamber, a sprayer cooperative with the vaporizing chamber which discharges onto the heat generator, a connection between the water chamber in the radiator and the sprayer, a control valve in the said connection, and a pressure controlled valve-shifting lever mounted upon the radiator and connected with said control valve for turning off or on the valve in the water connection as the generated steam pressure in the radiator rises above or falls below predetermined limits.

3. A portable heater of the character described, comprising a radiator body which includes a plurality of hollow uprights and a water receiving chamber below the said uprights with which the open bottoms of the hollow uprights communicate, the water chamber having a bottom that inclines downwardly from one end of the radiator to the other end thereof, the radiator having a water inlet, a vaporizing tube located beneath the high end of the water chamber bottom and projected upwardly through the said high end of the bottom to discharge the vapor above the water level of the radiator, a heat generator located within the vaporizing tube, a spray pipe that projects into the radiator and into the vaporizing tube, a nozzle on said tube for discharging onto the heat generator, a connection between the low end of the water chamber and the spray pipe, a valve in such connection, means for energizing the heat generator, the said means including a cutout, and a lever device mounted upon the radiator and connected with said valve and with said cutout and adapted for simultaneously cutting out the heat generator and the spray pipe under one adjustment and restoring the said spray pipe and the heat generator to their operative condition under another adjustment.

4. A portable heater of the character described, comprising a radiator body which includes a plurality of hollow uprights and a water receiving chamber below the said uprights with which the open bottoms of the hollow uprights communicate, the water chamber having a bottom that inclines downwardly from one end of the radiator to the other end thereof, the radiator having a water inlet, a vaporizing tube located beneath the high end of the water chamber bottom and projected upwardly through the said high end of the bottom to discharge the vapor above the water level of the radiator, a heat generator located within the vapor-

izing tube, a spray pipe that projects into the radiator and into the vaporizing tube, a nozzle on said tube for discharging onto the heat generator, a connection between the low end of the water chamber and the spray pipe, a valve in such connection, means for energizing the heat generator, the said means including a cutout, a lever device mounted upon the radiator and connected with said valve and said cutout and adapted for simultaneously cutting out the heat generator and the spray pipe under one adjustment and restoring the said spray pipe and the heat generator to their operative condition under another adjustment, and a pressure means connected with said lever device for effecting adjustment of the said lever device in accordance with the varying pressures of the vapor within the radiator body.

5. A portable heater of the character described, comprising a radiator body which includes a plurality of hollow uprights and a water receiving chamber below the said uprights with which the open bottoms of the hollow uprights communicate, the water chamber having a bottom that inclines downwardly from one end of the radiator to the other end thereof, the radiator having a water inlet, a vaporizing tube located beneath the high end of the water chamber bottom and projected upwardly through the said high end of the bottom to discharge the vapor above the water level of the radiator, a heat generator located within the vaporizing tube, a spray pipe that projects into the radiator and into the vaporizing tube, a nozzle on said tube for discharging onto the heat generator, a connection between the low end of the water chamber and the spray pipe, a valve in such connection, means for energizing the heat generator, the said means including a cutout, a lever device mounted upon the radiator and connected with said valve and with said cutout and adapted for simultaneously cutting out the heat generator and the spray pipe under one adjustment and restoring the said spray pipe and the heat generator to their operative condition under another adjustment, a pressure-actuated means connected with said lever device for effecting adjustment of the said lever device in accordance with the varying pressures of the vapor within the radiator body, and a detent externally of the radiator for holding the lever device to the position that turns off the heat generator and the water to the spray pipe.

FRED C. BROWN.