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W. C. COLEMAN

HEATER

Filed Aug. 6, 1923

2 Sheets-Sheet 1

Fig. 1.

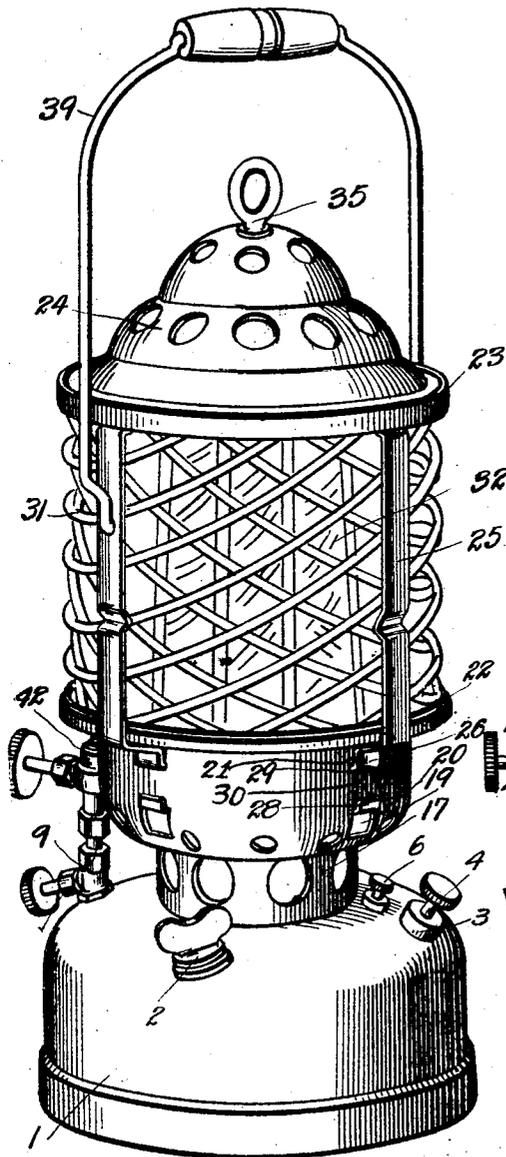


Fig. 2.

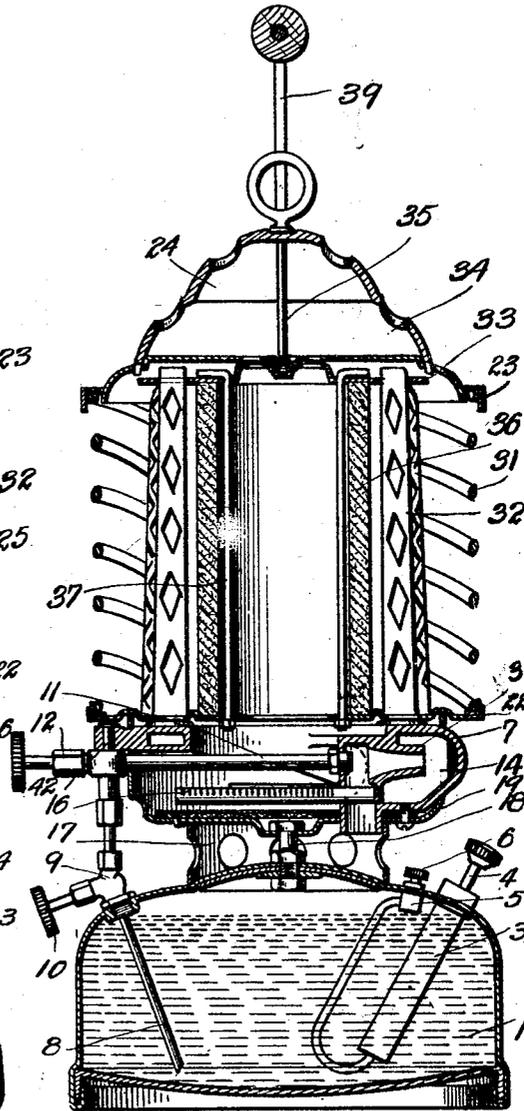
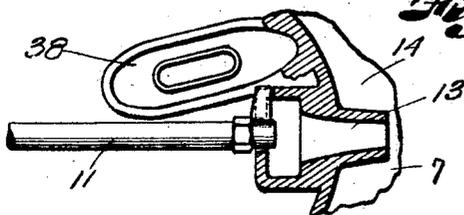


Fig. 3.



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HEATER.

Application filed August 6, 1923. Serial No. 656,104.

To all whom it may concern:

Be it known that I, WILLIAM C. COLEMAN, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Heaters; and I 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to liquid hydrocarbon fuel consuming heaters, and the primary object is to provide an efficient, portable heater, in which the maximum heat may be generated from a given amount of fuel; for example, gasoline. In carrying out my invention, I contemplate the utilization of radiants as part of the burner. The radiants, which consist of refractory material, having projections adapted to be heated to incandescence are commercial products previously incorporated as parts of gas stoves. I have found that these same radiants are similarly adapted for use in connection with oil stoves, and by reason of the fact that the projections on the radiants can be heated to incandescence the gases generated from the gasoline can be raised to a very high temperature so that practically perfect combustion takes place, the results being that there will be no soot or smoke present. In this way, the use of radiants differs from the use of radiants where gas is burned, because the temperature at which the gas is burned has no effect on its combustible qualities, but if the oil vapors are raised to a very high temperature, more perfect combustion takes place than if they are burned at a lower temperature. In other words, the radiants act as superheaters with very marked results over the ordinary gas burner, the effect being that the heat generated is very much higher than with the ordinary gas stove. The radiants are preferably arranged in a circle so that the heat may be throughout in radial lines about a common center, but, if desired, parts of the series may be omitted, as, for example, where it is desirable to set the stove in the corner of the room or in front of some object which might be affected by the heat from the radiants. Ordinarily, however,

I prefer to arrange the radiants in a circle, to obtain the most desirable results.

The construction of the invention will be understood by reference to the following description, in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of a heater constructed in accordance with my invention;

Fig. 2 is a vertical, longitudinal, sectional view through the same;

Fig. 3 is a sectional view through the discharge nozzle from the vaporizing chamber;

Fig. 4 is a disassociated view of the radiant carrier and the base of the stove;

Fig. 5 is a top plan view of the base;

Fig. 6 is a sectional view through the radiant carrier, showing the radiants in section; and

Fig. 7 is a detailed view of a hot plate which may be substituted on the base for the radiant carrier.

Referring now to the drawings by numerals of reference:

1 designates a fount, which also comprises the base of the stove. The fount may be filled through a filler opening normally closed by a filler cap, 2. The fuel, for example, gasoline, is fed to the heater under pressure, and for this purpose I provide a pressure generating pump, 3, in the fount, 1, which is provided with a piston rod, 4, controlled from the outside of the fount, as will be clearly seen by reference to Figs. 1 and 2. The pump discharges through the discharge chamber, 5, adapted to be controlled by a valve, 6, so that when the pump is not in operation, communication between the pump and the fount can be cut off by the valve 6. Consequently danger that the pressure will reduce to atmosphere back through the pump will be avoided. The fuel under pressure will be fed to the burner, 7, through a pipe, 8, which is submerged in the fuel in the fount, 1, the base pipe 8 communicating with the pipe, 9, controlled by the valve, 10. The pipe 9 discharges into the preheater tube, 11, controlled by a valve, 12. The preheater tube, 11, discharges through a nozzle, 13, into the burner chamber or space, 14. The burner chamber is circular, and its top is provided with burner tips or discs, 15, through which the gasified fuel may pass. The burner chamber discharges into a tube, 16, immediately below the vaporizing tube, 11, so that the vaporizing tube may be heat-

ed to convert the liquid fuel into vapor before it passes to the burner. This will be well understood, as generically it follows the lines of common burner construction. The burner, 7, is supported upon the fount by an open collar, 17, which is fastened to the fount by a bolt, 18. The burner is provided with a shell, 19, having spaced perforations, 20, and spaced notches, 21, the latter being in the upper edge of the shell. A radiant carrier is adapted to be supported by the shell, and it may be secured thereto by certain large bars, the radiant carrier, comprising a cage consisting of a lower ring, 22, and a top ring, 23, the top ring carrying a canopy or covering 24. The rings 22 and 23 are fastened together by vertical rods, 25, the rods having depending fingers, 26, with offset portions, 27, terminating in upturned hooks, 28. The radiant carrier may, therefore be fastened to the base by springing in the fingers, 26, so that the hooks, 28, will engage in the rectangular openings, 20. The movement of the carrier will cause the shoulders, 29, of the offset portions to spring over the edges, 30, of the notches, 21, so that the radiant carrier is held in place. The ring, 22, supports a screen or guard, 31, and within the guard are a plurality of vertical radiants, 32. These consist of upstanding bars of refractory material with projections 33 extending radially therefrom, which will become incandescent under the action of the gases passing up through the burner opening, 15. The burner opening, 15, is in line with the projections on the radiants. Consequently, the elongated radiant bars will be heated from end to end producing a high incandescent color, which not only has high efficiency but makes a very attractive heater. The radiants rest on the ring plate, 22, and have their upper ends extending through a ring plate, 33, which is fastened to the horizontal wall, 34, of the cowl, 24, by a bolt, 35, between the ring parts 22 and 33; and within the cylindrically arranged radiants is an insulating wall, 36, which is secured to the plates by the bolts 37 (see Fig. 2). The vaporizing chamber can be initially preheated by placing liquid in the preheater cup, 38, adjacent to the vaporizing tube, 11, and if the tube 11 is heated hot enough to vaporize the fuel, it will furnish gas or vapor to the burner member, 16, so that thereafter the burner member 16 will provide the necessary heat for the vaporization.

The device can be rendered readily portable by fastening a bail, 39 to opposite bars,

25, as will be clearly seen by reference to Figs. 1, 2, and 4. If it is desired to use the heater as a stove, the radiant carrier, or top, may be removed, and a hot plate, 40, may be substituted; the hot plate having depending fingers, 41, corresponding to fingers, 26, which may be secured in the openings 20 and the notches, 21.

When the parts are properly assembled, it will be necessary only to heat the vaporizing tube, 11, so that the fuel, which has previously been put under pressure by the pump, will pass through the vaporizing tube, where it will be converted into vapor in a manner common to oil burning practice. The vaporized fuel will then pass up through the radiants and heat them, as previously described, the radiants refracting the heat in radial lines about the heater.

The vaporizing tube is mounted on the mixing chamber and swiveled to swing enough to align over the priming pan for preheating, the swivel connection being shown at 42. After the vaporizing tube is heated so that the oil will be vaporized, the tube can be swung back to the proper position with respect to the burner.

What I claim and desire to secure by Letters-Patent is:

1. An oil stove comprising a fount, a vaporizing means above the fount communicating therewith, a removable radiant carrier comprising a cage having depending fingers removably engaging the fount, and radiants arranged in a circle within the carrier above the vaporizing means.

2. In an oil stove comprising a fount, a burner carried by the fount, a ring supported above the burner having a radiant receiving groove, a vertical insulating tube carried by the ring, radiants receivable in the groove in a circle about the tube, a ring at the upper end of the tube having openings therein for receiving the upper end of the radiants and means for fastening the rings together to hold the radiants in position.

3. In an oil stove having a base, a burner supported by the base, a plate carried by the base above the burner having an opening therein; a vertical tube in line with the opening to form a flue, a ring at the upper end of the tube, and radiants receivable between the plate and the ring and arranged in a circle about the tube.

In testimony whereof I affix my signature.

WILLIAM C. COLEMAN.