June 12, 1945. H. M. REEVES 2,377,901

OIL HEATER

Filed April 9, 1942 3 Sheets-Sheet 1

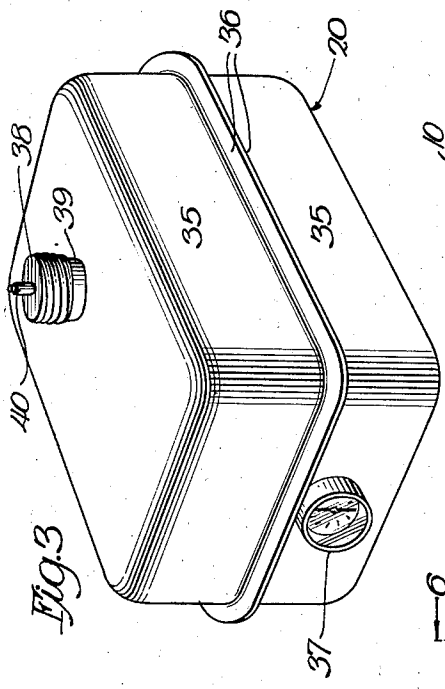


Fig. 3

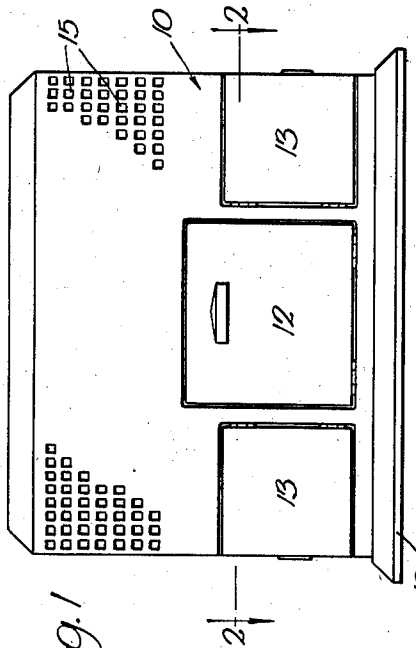


Fig. 1

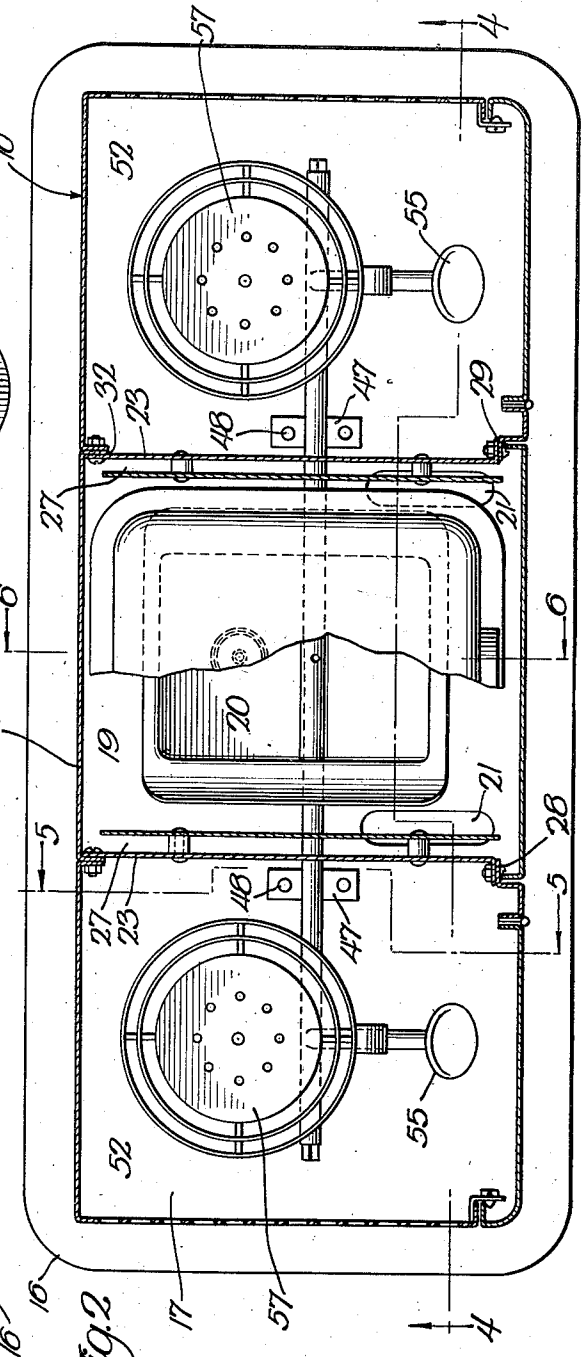


Fig. 2

INVENTOR.
Herbert M. Reeves
BY Frank H. Marks,
ATTY.

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OIL HEATER

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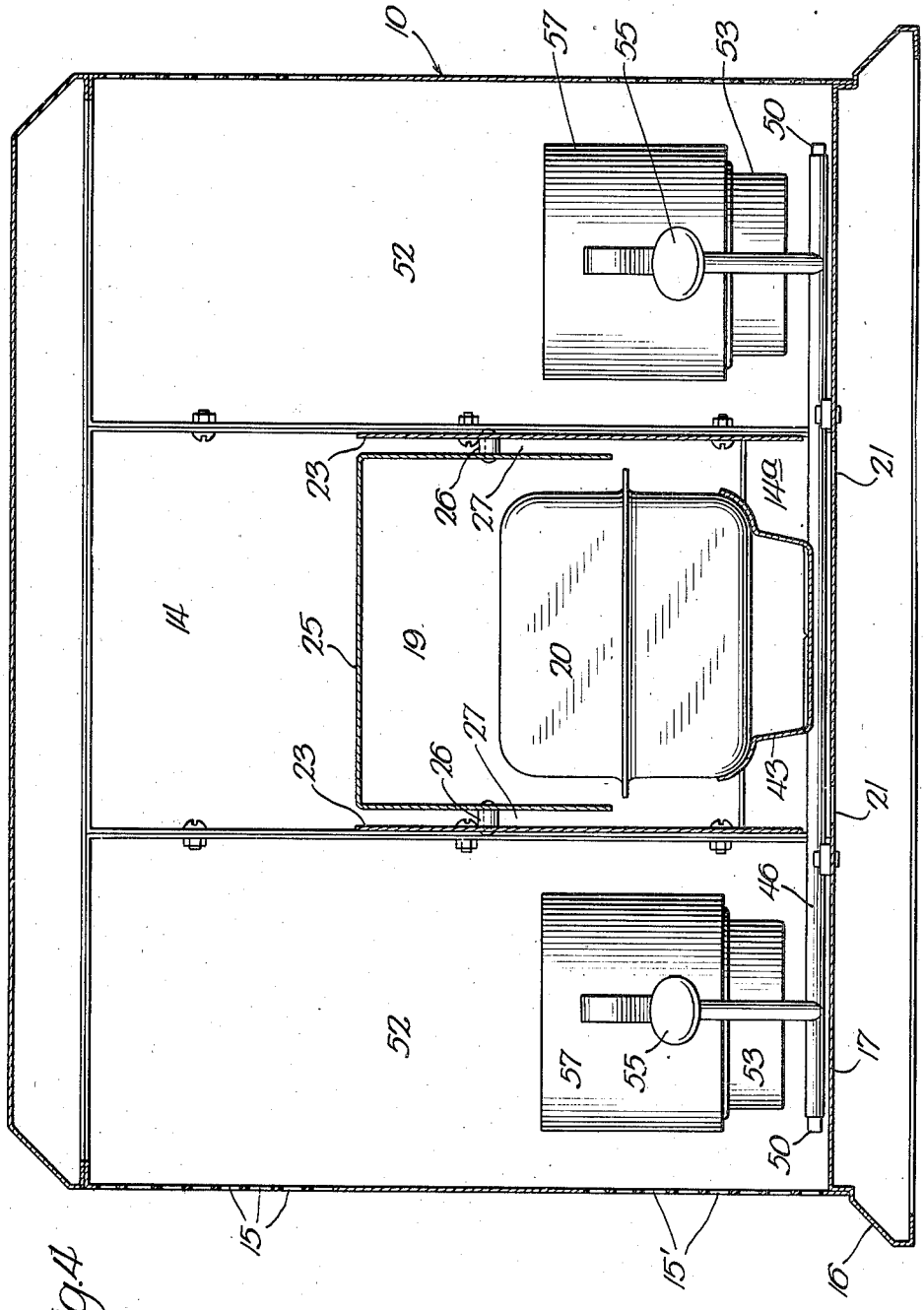


Fig. 4

INVENTOR.
Herbert M. Reeves
BY Frank H. Marks
ATTY.

June 12, 1945. H. M. REEVES 2,377,901

OIL HEATER

Filed April 9, 1942 3 Sheets-Sheet 3

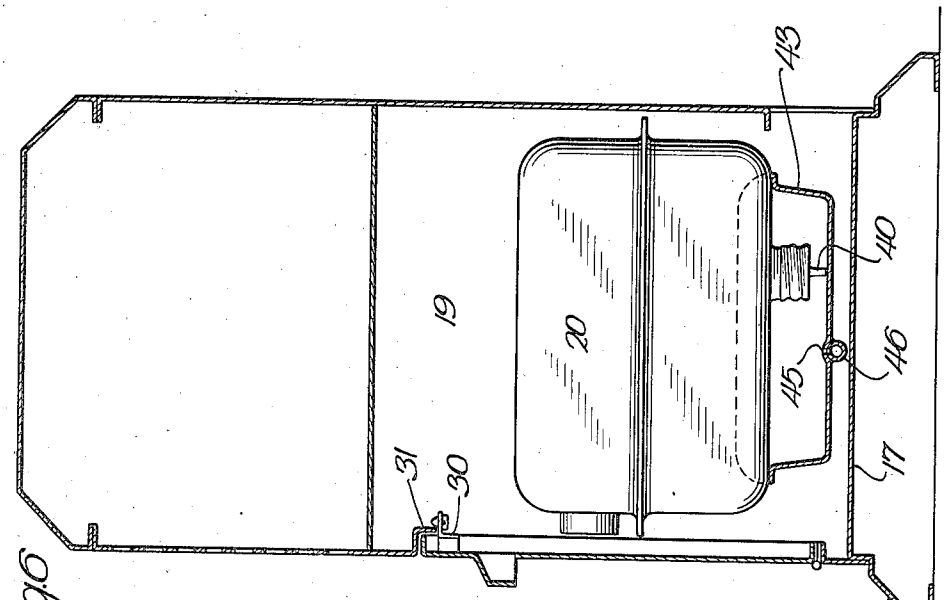


Fig. 6

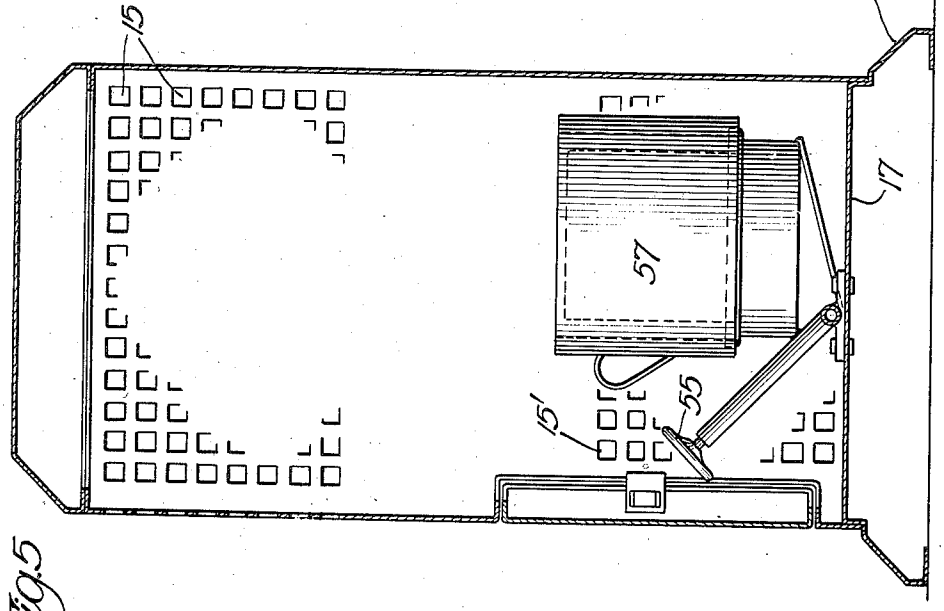


Fig. 5

INVENTOR.
Herbert M. Reeves
BY Frank H. Marks,
ATTY.

Patented June 12, 1945

2,377,901

UNITED STATES PATENT OFFICE

2,377,901

OIL HEATER

Herbert M. Reeves, Kankakee, Ill., assignor to Florence Stove Company, Gardner, Mass., a corporation of Massachusetts

Application April 9, 1942, Serial No. 438,273

4 Claims. (Cl. 126—93)

My invention relates to oil heaters for living quarters, and has to do more particularly with the combination of a cabinet with a plurality of heaters and a fuel tank therefor, all disposed within the cabinet and so arranged as to make the most economical use of the space provided within the cabinet, so that a heating device of maximum capacity is provided within a minimum of space, and with no outwardly projecting parts.

In articles of this class previously known it has been customary to arrange the fuel tank outside of the heater casing for a number of reasons. In the first place, it was considered desirable to place the tank in a position remote from the burners for reasons of safety; also, it was considered that placing the reservoir within the cabinet would require a cabinet of excessive bulk and this, in turn, would not only raise the cost of the device, but would also render it less attractive in appearance.

I have devised a novel arrangement whereby the space wherein the fuel reservoir is positioned is maintained at a moderate temperature, with a reasonable factor of safety, and the space is so utilized that the burners and reservoir are all positioned within a cabinet of moderate size. The obvious advantages are that the cabinet may be fabricated at a relatively low cost; the absence of extruding parts renders the device clean and sanitary, while the arrangement is highly attractive, neat and compact in appearance.

Various other objects and advantages will probably suggest themselves to those skilled in the art as the description proceeds.

Referring now to the drawings forming a part of this specification and illustrating a preferred embodiment of my invention—

Figure 1 is a front elevational view of a heater forming a part of my invention;

Figure 2 is a sectional view, on an enlarged scale, taken substantially along the line 2—2 of Figure 1;

Figure 3 is a perspective view of a fuel tank forming a part of my invention;

Figure 4 is a sectional view taken substantially along the line 4—4 of Figure 2; and

Figures 5 and 6 are sectional views taken substantially along the lines 5—5 and 6—6, respectively, of Figure 2.

The numeral 10 indicates generally a cabinet forming a part of my invention. It should be understood that this cabinet may take a wide variety of shapes and forms. The cabinet is preferably formed of sheet metal or the like and is provided with access doors 12 and 13, 13. It will be understood, of course, that these doors may be provided in various other arrangements as, for example, one large door instead of a plurality of smaller doors, etc. The casing 10 may be formed in such a manner as to provide in one piece the front, sides and part of the back wall, with an inserted back central panel 14 (Figures 2 and 4) which terminates a relatively short space above the base to provide an air gap 14a. Warm air escape vents 15 are provided in the upper portion of the front and sides of casing 10 and similar vents 15' for introduction of air are provided in the lower portion of the side walls.

The casing rests on a base 16 which may be stamped from an integral piece of sheet metal, providing a floor 17 for the casing 10.

Behind the door 12 is a chamber 19 for housing a fuel tank or reservoir 20. This chamber is defined by a portion of the floor 17, a pair of partitions 23, 23, and a substantially U-shaped baffle member 25 secured to the members 23 as by means of rivets or screws and spacers 26, 26, to provide air gaps 27, 27. Apertures 21 are provided in the floor 17 and positioned approximately below the air gaps 27, 27 between the walls 23 and the baffle 25, so that air entering the casing through the openings 21 will tend to flow up through these insulating spaces 27 and thus maintain the reservoir chamber 19 at a relatively low temperature. Air entering the chamber 19 through the gap 14a will further contribute to this effect. This arrangement furnishes inexpensive insulation for the reservoir chamber.

The partitions 23, 23 are secured as by screws 28 or the like to the front and back walls of the casing 10. It will be noted (Figure 2) that the front wall of the casing 10 is flanged as at 29 to engage corresponding flanges on the partitions 23 and also for the purpose of retaining the door 12, the latter having a spring catch 30 engaging a similar flange 31 above the door. Also, the rear panel 14 is flanged as at 32 to engage a similar flange on the rear extension of the casing, these parts being retained by means of screws or the like (Figure 2).

The tank or reservoir 20 is preferably formed from a pair of relatively shallow pan-shaped members 35, 35 having peripheral flanges 36 which are secured together in fluid-tight engagement as by solder or the like. The members forming the tank may be pressed from sheet metal, making a relatively inexpensive device from the standpoint of labor and materials. A gage 37 is connected to a suitable float arrangement (not shown) for indicating the volume of

fuel within the tank. Access to the tank is obtained by means of a screw cap **38** which engages a similarly threaded neck **39** formed on the tank, the cap **38** having a suitable valve mechanism disposed therein which is actuated by means of a plunger **40**. In this connection it will be observed that the tank as shown in Figure 3 is in position for filling and is reversed as shown in Figures 4 and 6 when the device is in operation.

The tank **20** normally seats in a trough **43** with the valve plunger **40** pressed upwardly by the bottom wall of the trough (Figure 6), thus opening the valve and permitting the liquid fuel to flow into the trough. This trough communicates by means of an aperture **45** with a tube **46** by which the trough is supported, this tube being secured to the floor **17** of the base as by means of brackets **47** welded or otherwise secured to the tube, and screws **48**. The tube **46** has its ends plugged as at **50**.

Between the respective partitions **23** and the side walls of the casing **10** are burner chambers **52, 52**. Connected to the tube **46** within the burner chambers are burner bowls **53, 53**, the fuel for each burner bowl being controlled by means of a valve indicated generally by the numeral **55**.

These burner bowls may be of standard or other suitable design and accordingly are not shown in detail. Removably seated on each of the burner bowls is a burner indicated generally by the numeral **57**. These burners are preferably of the wickless type of well-known or other suitable construction.

From the foregoing, it will be understood that I have provided an exceptionally compact and efficient heater and one which possesses numerous advantages over devices of similar type which have been previously known. I have provided a plurality of burners, having a high heat capacity, entirely enclosed in an attractive ornamental cabinet along with an adequate fuel reservoir. The entire device may be easily kept clean on the outside so that one's clothes in brushing against the casing will not be soiled, entirely eliminating the unsightly and dirty parts which have usually been disposed outside the casing. The novel arrangement, including the baffling, etc., renders the fuel supply entirely safe and free from fire hazard so that the most rigid underwriters' requirements are satisfied. Furthermore, by reason of the simple and compact arrangement of the parts, my device may be constructed most economically.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention and, hence, I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims.

I claim:

1. In a device of the type described and in combination, a casing, a pair of spaced partitions therein defining with said casing a pair of spaced burner chambers, a hood substantially in the shape of an inverted U cooperating with said casing to define a reservoir chamber between said burner chambers, burners disposed in said burner chambers and a fuel reservoir disposed in said reservoir chamber, means for conducting fuel from the reservoir to said burners, the leg portions of the U being spaced from said partitions and defining therewith air spaces between said reservoir chamber and said burner chambers, said casing having apertures admitting air into said reservoir chamber and into said burner chambers.

2. In a device of the type described and in combination, a casing, a pair of spaced partitions therein defining with said casing a pair of spaced burner chambers, a hood substantially in the shape of an inverted U cooperating with said casing to define a reservoir chamber between said burner chambers, burners disposed in said burner chambers and a fuel reservoir disposed in said reservoir chamber, means for conducting fuel from the reservoir to said burners, the leg portions of the U being spaced from said partitions and defining therewith air spaces between said reservoir chamber and said burner chambers, said reservoir chamber being apertured in the lower portion thereof whereby air may flow into said reservoir chamber and up through said air spaces so as to heat insulate the reservoir from the burner chambers.

3. In a device of the type described, a casing, a pair of spaced vertical partitions therein defining a reservoir chamber with a pair of burner chambers flanking it, burners in said burner chambers and a fuel reservoir in said reservoir chamber, fuel feeding connections from said reservoir to said burners, each burner chamber having a air inlet in its lower portion and an air outlet in its upper portion, and a hood substantially in the shape of an inverted U disposed over the reservoir with the leg portions of the U extending downwardly between said spaced partitions and in spaced relation thereto and defining therewith substantially vertically extending air flues, said reservoir chamber having an air inlet in its lower portion, said air flues opening upwardly into a space above the reservoir chamber within the casing and said space communicating with the upper portions of the burner chambers whereby the circulation of air through said burner chambers induces a flow of air through said flues to heat insulate the reservoir.

4. In a device of the type described, a casing, a pair of spaced vertical partitions in the lower portion of said casing defining a reservoir chamber therein with a pair of burner chambers flanking it, burners in said burner chambers in the lower portion of the casing and a fuel reservoir in said reservoir chamber in the lower portion of the casing, fuel feeding connections from said reservoir to said burners, the upper portion of the casing comprising a space substantially clear from end to end of the casing above said reservoir and burners, each burner chamber having an air inlet and the reservoir chamber having an air inlet, and a hood substantially in the shape of an inverted U disposed over the reservoir with the leg portions of the U extending downwardly between said spaced partitions and secured thereto in spaced relation therefrom and defining therewith substantially vertically extending air flues, said flues opening upwardly into said clear space in the upper portion of the casing and said space having an air outlet whereby circulation of air from the inlets of the burner chambers to the outlet of said space induces a flow of air upwardly through said flues to insulate the reservoir.

HERBERT M. REEVES.