March 10, 1942. D. H. ROBBINS 2,276,093

PORTABLE OIL HEATER

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Fig. 1.

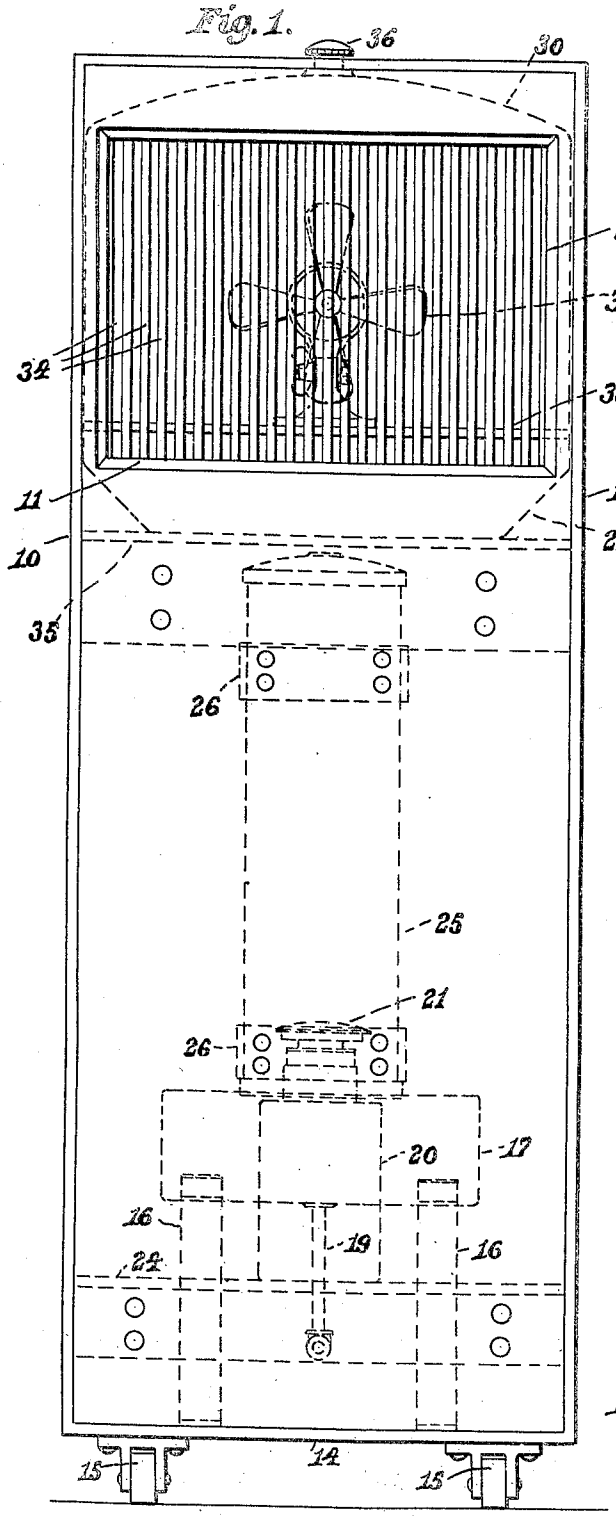


Fig. 2.

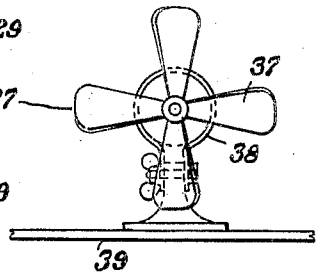
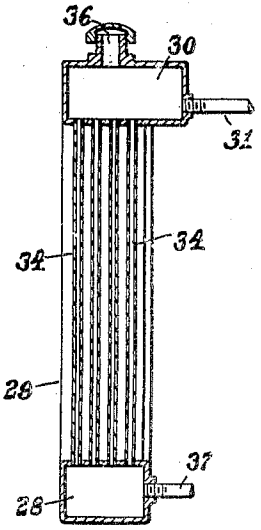


Fig. 3.



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Fig. 4.

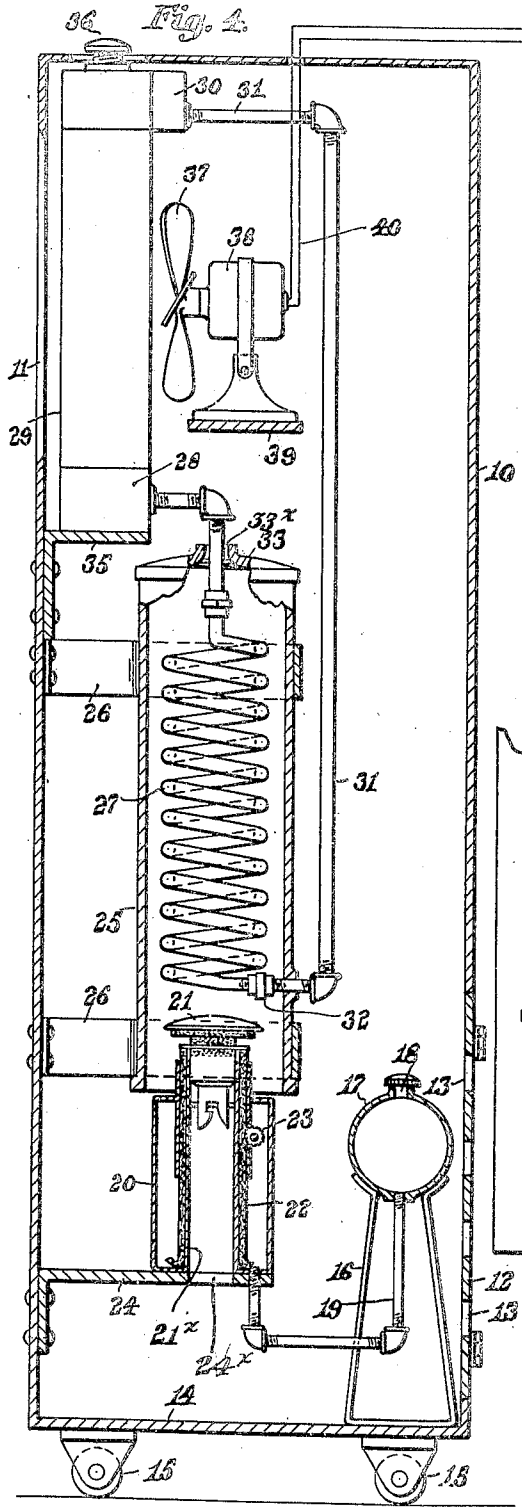
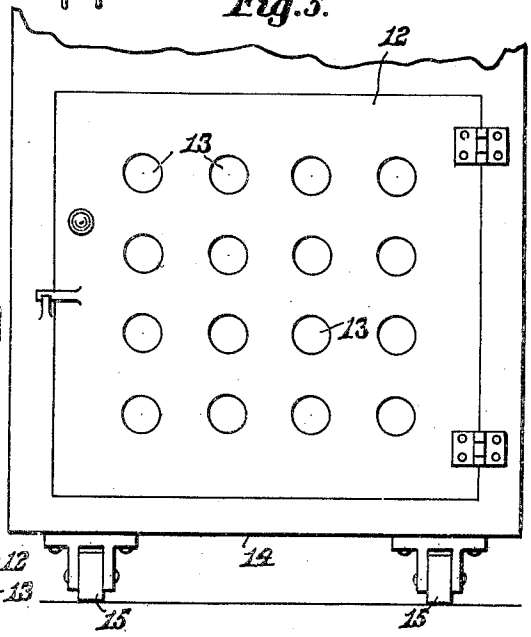


Fig. 5.



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UNITED STATES PATENT OFFICE

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PORTABLE OIL HEATER

Donald H. Robbins, Somerville, Mass.

Application May 24, 1939, Serial No. 275,381

4 Claims. (Cl. 126—101)

This invention relates to portable heaters adapted for use in small stores and apartments and by which the air in a room may be quickly heated and maintained at any desired temperature.

The invention consists of a housing having in the bottom thereof an oil burner, above which is an enclosed water coil the upper end of which is connected to the lower compartment of a radiator, the upper compartment of which has a return pipe leading to the lower end of said coil, and said radiator having in the rear thereof a motor-driven fan for forcing air between the pipes of the radiator and into the room to be heated.

The object of the invention is the production of an inexpensive means for heating the air in a room which will be very effective in operation and which may be operated at very little expense.

This object is attained by the mechanism illustrated in the accompanying drawings.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawings, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings

Figure 1 represents a front elevation of a heater embodying the principles of the present invention.

Figure 2 represents an elevation of a revoluble fan used in the same.

Figure 3 represents a vertical transverse section of the radiator of said heater.

Figure 4 represents a vertical transverse section of said heater, and

Figure 5 represents a rear elevation of the lower end of the heater housing.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10 is a housing having in the upper end of the front wall thereof an opening 11 and having the lower end of its rear wall provided with a hinged door 12 near its lower end, this door 12 having a plurality of openings 13 therethrough whereby fresh air may be admitted to the interior of the housing 10.

The lower wall 14 of the housing 10 has casters 15 secured thereto whereby the housing may be readily moved from place to place.

Inside the door 12 and mounted upon supports 16 is an oil tank 17 provided at the top with a filling opening 18. The tank 17 may be filled with oil by opening the door 12.

From the lower end of the tank 17 extends a pipe 19 to the lower end of an oil compartment 20 into the upper end of which extends an oil burner 21 having a wick 22, the lower end of which is disposed in the oil compartment 20 this wick being adapted to be adjusted by means of the member 23 in any well known manner.

The oil compartment 20 is mounted upon a shelf 24 secured to the inner face of the front wall of the housing 10, and the oil in this compartment 20 is maintained at the same level as the oil in tank 17.

The shelf 24 is provided with an opening 24x from which extends upwardly a pipe 21x through which air may pass to the burner 21.

The burner 21 is disposed within the lower end of a vertical tubular member 25, said tubular member being supported by straps 26 secured to the inner face of the front wall of the housing 10.

Within this tubular member 25 and above the burner 21 is a coiled pipe 27, the upper end of which connects with the lower compartment 28 of a radiator 29, the upper compartment 30 of which has a return water pipe 31 extending therefrom and connected at its lowest end at 32 with the lowest end of the coiled pipe 27.

The upper end of the tubular member 25 has a closing cap 33 with an opening 33x therein whereby all of the heat from the burner 21 passing through the tubular member 25 thoroughly heats the water in the coiled pipe 27.

As this water is heated it will pass upwardly into the compartment 28 of the radiator 29 and through the vertical pipes 34 thereof into the upper compartment 30 from which the water will pass outwardly through the pipe 31 into the bottom of the coiled pipe 27 in which it will again be heated.

By this means there is a continuous circulation of the water through the coiled pipe 27, the radiator 29, and the pipe 31.

The radiator 29 is mounted upon a shelf 35 secured to the rear face of the front wall of the housing 10, and is disposed immediately in the rear of the opening 11 in the front wall of the housing 10.

The upper compartment 30 of the radiator 29

is provided with means 36 by which the radiator and coiled pipe 27 may be filled with water.

Immediately in the rear of the pipes 34 of the radiator 29 is a fan 37 adapted to be revolved by a motor 38 mounted upon a shelf 39 extending from one side wall of said housing to the other side wall thereof.

The fan 37 when in operation will draw upwardly the fresh air entering the lower end of housing 10 through the opening 13 in door 12 and force this air outwardly between the vertical pipes 34 of the radiator 29, the air becoming thoroughly heated by contact with these pipes before entering the room to be heated.

The fresh air entering the housing 10 through the openings 13 in the door 12 passes by the fuel storage tank 17 and thus keeps the oil in said tank at the proper temperature, causes the proper combustion of the burner 21 and then passes upwardly through the inside of the housing or cabinet 10.

On the passage upwardly of this air from the bottom of the housing 10 to the top thereof, it is thoroughly heated by the burner 21 and also by the heat radiated from the tubular member or casing 25, thus changing the temperature of the air before it reaches the fan 37 by which the heated air is forced through the radiator 29 into the room to be heated.

The motor 38 has an electric circuit 40 extending therefrom to a plug 41 which may be connected to any suitable electric socket within the room in which the housing 10 is located.

In the electric circuit 40 is a thermostat 42 of any usual construction which may be set to cause the motor 38 to operate when it is desired to raise or lower the temperature in the room being heated.

The fresh air admitted to the interior of the housing through the opening 13 in the door 12 will assist in maintaining the combustion of the oil burner.

Only a minimum amount of oil is required to maintain a sufficient heat from the burner 21 to thoroughly heat the water in the coiled pipe 27 and therefore the heater may be kept in operation at very little expense.

At the same time, it has been found in practice that the air passing through the radiator 29 will be heated sufficiently to maintain a desired temperature in a small apartment of four or five rooms.

The housing is portable so that it may be located at any convenient point where it is desired to secure the greatest amount of heat.

Such a heater is very desirable in small stores which are not provided with furnaces or other heating devices, furnishing as it does sufficient heat to maintain any desired temperature in said store.

In case the tenant in a small store desires to move into another location, the heater is of such a character that it may be readily moved with the other furnishings of the store.

This is also true when the heater is used for heating small apartments.

It has been found in practice that three and one-half quarts of oil will last for eleven hours, giving all the heat that is required.

Although oil is preferably used in the burner 21 there is never any odor which comes from said burner until the wick is well burned out.

The wick, however, on the oil burner 21 lasts for about three months without any odor coming therefrom, and it is only at the end of that period it is necessary to apply a new wick.

It is believed that the operation and many advantages of the invention will be understood without further description.

Having thus described my invention, I claim:

1. In an air heater, a portable housing having a fresh air inlet at the bottom of a wall thereof, an oil burner therein, an oil supply tank for said burner adjacent said air inlet, a tubular member closed at the top by a cap having an opening therein, the lower end of said member surrounding said burner, said tubular member being between said tank and the front wall of said housing, a coiled pipe within said tubular member, a radiator above said tubular member adjacent to the front wall of the housing and opposite an air discharge outlet in said front wall, said radiator being connected at its lower end with the upper end of said coiled pipe, a return pipe extending from the upper end of said radiator to the lower end of said coiled pipe, and a motor-driven fan for drawing air through said inlet, past said supply tank and tubular member and then forcing the same through said radiator and outlet opening.

2. In an air heater, a portable housing having fresh air inlets at the lower end of a wall thereof and an opening for the discharge of heated air at the upper end of its front wall, a radiator adjacent to said front wall and opposite said air discharge opening, an oil burner in said housing, an oil supply tank for said burner disposed between the burner and the fresh air inlets, a tubular member above said burner, a coiled water pipe within said member with its opposite ends connected to the opposite ends of said radiator, a cap for the upper end of said tubular member, and a motor-driven fan for drawing air through said inlet, past said supply tank and tubular member and then forcing the same through said radiator and outlet opening.

3. In an air heater as set forth in claim 2, in which the oil burner is surrounded by an oil compartment into which the lower end of the burner wick extends, said compartment communicating with the oil supply tank.

4. In an air heater as set forth in claim 2, in which the oil burner is surrounded by an oil compartment having an air pipe centrally disposed therein extending upwardly and surrounded by the wick of said burner said pipe being open at its lower end.

DONALD H. ROBBINS.