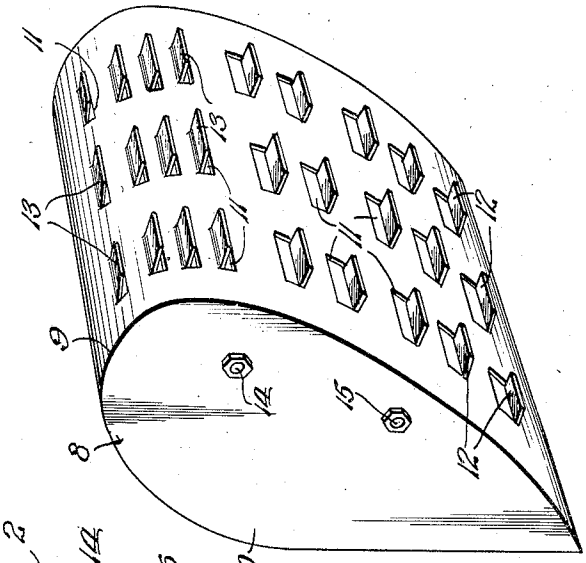
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APERTURED REFLECTOR FAN-ELECTRIC-HEATER

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Fig. 3.



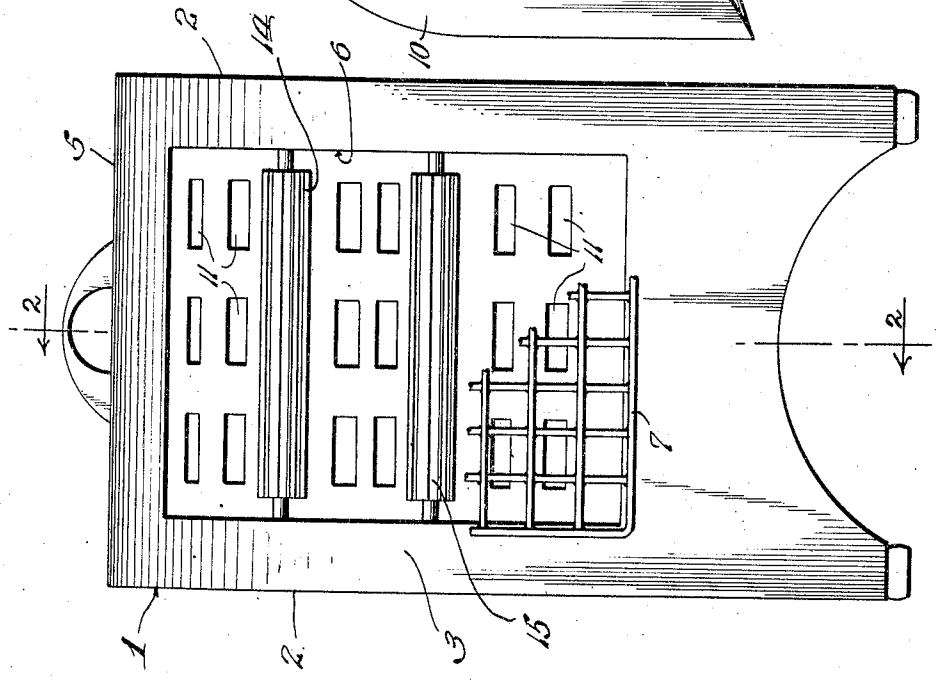


Fig. 1.

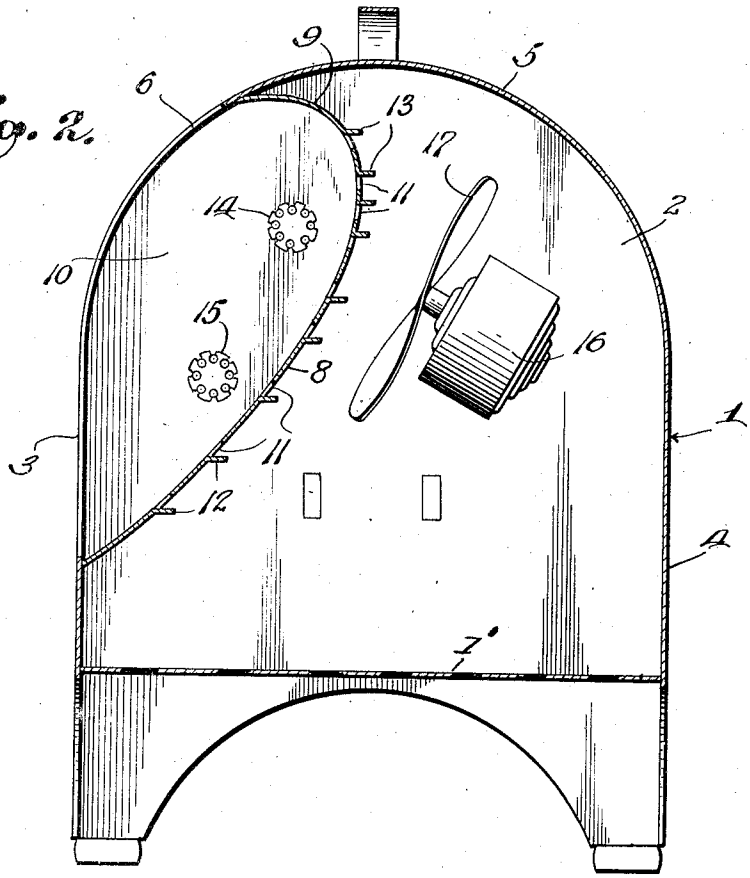
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APERTURED REFLECTOR FAN-ELECTRIC-HEATER

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Fig. 2.



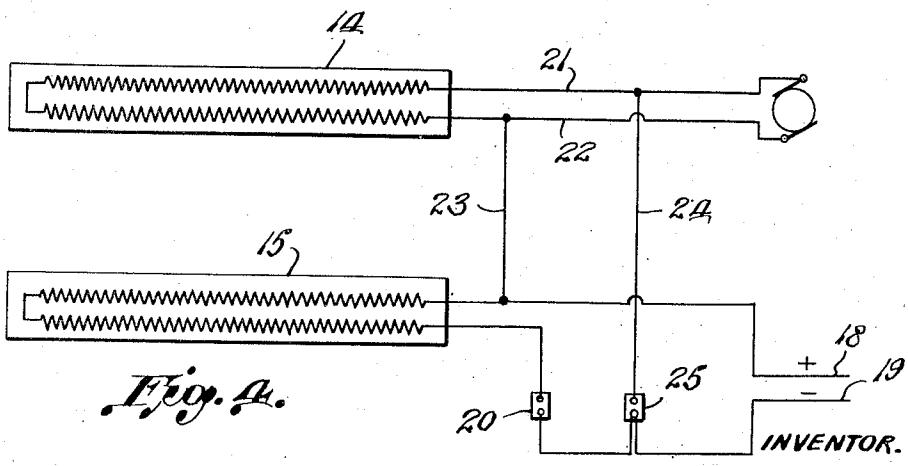


Fig. 4.

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APERTURED REFLECTOR FAN-ELECTRIC-HEATER

George M. Marr, New York, N. Y.

Application June 20, 1945, Serial No. 600,566

4 Claims. (Cl. 219—39)

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This invention is directed to an electric heater preferably, but not necessarily, of the portable type wherein provision is made for heat distribution by convection, radiation and forced air circulation.

The primary object of the present invention is the provision of means of a simple compact nature wherein the heater may utilize heat dissipation by convection and radiant air currents or may selectively include heat dissipation by forced air currents.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a front elevation partly broken away of the improved heater;

Figure 2 is a section on line 2—2 of Figure 1;

Figure 3 is a perspective view of the reflector;

Figure 4 is a diagrammatic view of the wiring diagram.

The improved heater includes a casing 1, having spaced parallel side walls 2 and front and rear walls 3 and 4 merging into a curved top 5. The front wall 3 is formed with an opening 6 of less width than the width of the casing and terminating in spaced relation to the bottom and to the top of the wall. This opening is preferably covered by a wire guard 7 of conventional construction which preferably extends throughout the full opening 6. The casing which is open at the bottom and protected by a grill 1' admits cool air from the exterior of the casing.

A reflector 8 is arranged within the casing 1 being secured adjacent the lower edge of the opening 6 and then curving inwardly and upwardly on a gradual curve to near the top where it is given a more abrupt curve at 9 and secured to the casing in line at the upper edge of the opening 6. This reflector has imperforate side walls 10 extending from the reflector proper 8 to the front of the casing so that the reflector 8 and side walls 10 form in effect, a closure within the casing 1. The reflector wall 8 is formed with openings 11 preferably though not necessarily, rectangular, formed by dividing the metal on three connected lines and deflecting the material thus cut inwardly of the reflector plate 8. The material thus inwardly directed is throughout the lower series of openings 11 projected from the lower edge of the openings as at 12 while these portions of the upper series of openings are projected from the upper edge of the openings as at 13. Thus, the openings provide in the upper series a plurality of louvres opening upwardly and throughout the lower series of openings, louvres opening downwardly.

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Within the reflector are arranged conventional heating elements 14 and 15, supported at their ends in the side walls 10 of the reflector, and preferably substantially coextensive with the transverse length of the reflector. The upper heating element is arranged closer to the top of the reflector than is the lower heating element to the bottom of the reflector.

In the casing 1 in the rear of the reflector is a motor 16 on the shaft of which is arranged an ordinary fan 17 serving to direct air currents through the louvres of the reflector. The front surface of the reflector plate 8 and the inner surfaces of the side walls 10 of the reflector are highly polished for maximum reflection and serve with this function in preventing excessive heat from reaching the side walls of the casing 1 so that the reflector as a whole is exteriorly rather cool. The rear wall of the reflector being formed with openings will permit cool air from the open bottom of the heater case to pass into and through the reflector by convection and further to permit air from the fan to circulate in a similar manner.

The heating element or elements raise the temperature of the surrounding air causing it to rise, thereby creating a vacuum. Cool air from the floor rushes into the casing, passes through the perforations in the reflector and in turn becomes heated.

Means are provided for a selective energization of one heating element or the other heating element combined with the motor, the system being illustrated more particularly in Figure 4. Here, the service conductors 18 and 19 lead through a switch 20 to the lower heating element 15. The upper heating element 14 is in circuit with the fan through conductors 21 and 22 connected through extensions 23 and 24 to the service mains 18 and 19. The extension 24 leads through a switch 25 and the guard 7 may be formed with particularly arranged openings 26 providing access to the switch operating means.

Obviously, by closing switch 20 the lower heating element alone is energized while by closing switch 25 the upper heating element and the motor are energized driving the fan. By closing both switches, both heating elements and the fan are operated.

It will be quite obvious that on the energization of the lower heating element by closing switch 20, convection and radiant air currents only are set up for the dissipation of the heat while on closing switch 25, and thereby driving the fan, the heat dissipation is by radiance, con-

vection and forced air currents. Both switches closed will, of course, increase the heat dissipation as will be evident.

The radical difference in the arrangement of the louvres tends to direct the air from the fan more effectively in contact with the heating elements. From Figure 2 it will be apparent that the air from the fan will be through upper louvres directed downwardly to the upper heating element, while the lower louvres will serve to direct the air from the fan upwardly toward the lower heating element.

Of course, the fan motor may be independently controlled if desired, such being conventional and not necessary to illustrate. The louvre openings may be in other than rectangular form if desired so long as they deflect the air from the fan in the desired direction.

It will be quite apparent that in the use of the improved heater the heat dissipation may be selectively controlled to convection and radiant heat distribution or convection, radiant heat and forced air current distribution. The heat dissipation will be confined practically entirely to the interior of the reflector and the inner surfaces of the parts making up the reflector may be so finished as to insure the maximum reflection from such surfaces.

I claim:

1. An electric heater comprising a casing, a reflector having rear and side walls mounted within the casing to provide a heating chamber in registry with an outlet opening in the front part of the casing, heating means mounted within said chamber, said rear wall of the reflector being provided with a multiplicity of air passages wherein air is drawn into the heating chamber from the bottom of the casing by convection, and means in the upper part of the casing immediately rearward of the reflector for forcing air through said reflector openings into said heating chamber and forwardly of the casing.

2. An electric heater comprising a casing, a reflector having rear and side walls mounted within the casing to provide a heating chamber in registry with an outlet opening in the front part of the casing, heating means mounted within said chamber, said rear wall of the reflector being provided with a multiplicity of air passages wherein air is drawn into the heating chamber from the bottom of the casing by convection, and means in the upper part of the casing immediately rearward of the reflector for forcing air through said heating chamber and forwardly of

the casing, said casing having an apertured bottom wall below the reflector, said rear wall of the reflector being provided with projections disposed to direct the forced air current through the heating chamber in a substantially horizontal direction.

3. An electric heater comprising a casing, a reflector having rear and side walls mounted within the casing to provide a heating chamber in registry with an outlet opening in the front part of the casing, heating means mounted within said chamber, said rear wall of the reflector being provided with a multiplicity of air passages wherein air is drawn into the heating chamber from the bottom of the casing by convection, said casing having an apertured bottom wall below the reflector to allow the passage of replacement air into the bottom of said casing, and air forcing means mounted substantially above said bottom wall in the rear part of the casing to direct the rising convection air currents forwardly through said heating chamber and forwardly of the casing.

4. An electric heater comprising a casing, a reflector, mounted in the upper part of said casing and having rear and side walls mounted within the casing to provide a heating chamber in registry with an outlet opening in the front part of the casing, heating means mounted within said chamber, said reflector being provided with a multiplicity of openings in said rear wall and throughout the area thereof to form air passages through which air is drawn by convection upwardly into the heating chamber from the bottom of the casing, and means in the rear part of said casing and rearward of the reflector for forcing air through said reflector openings into said heating chamber and forwardly through the outlet opening of the casing.

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