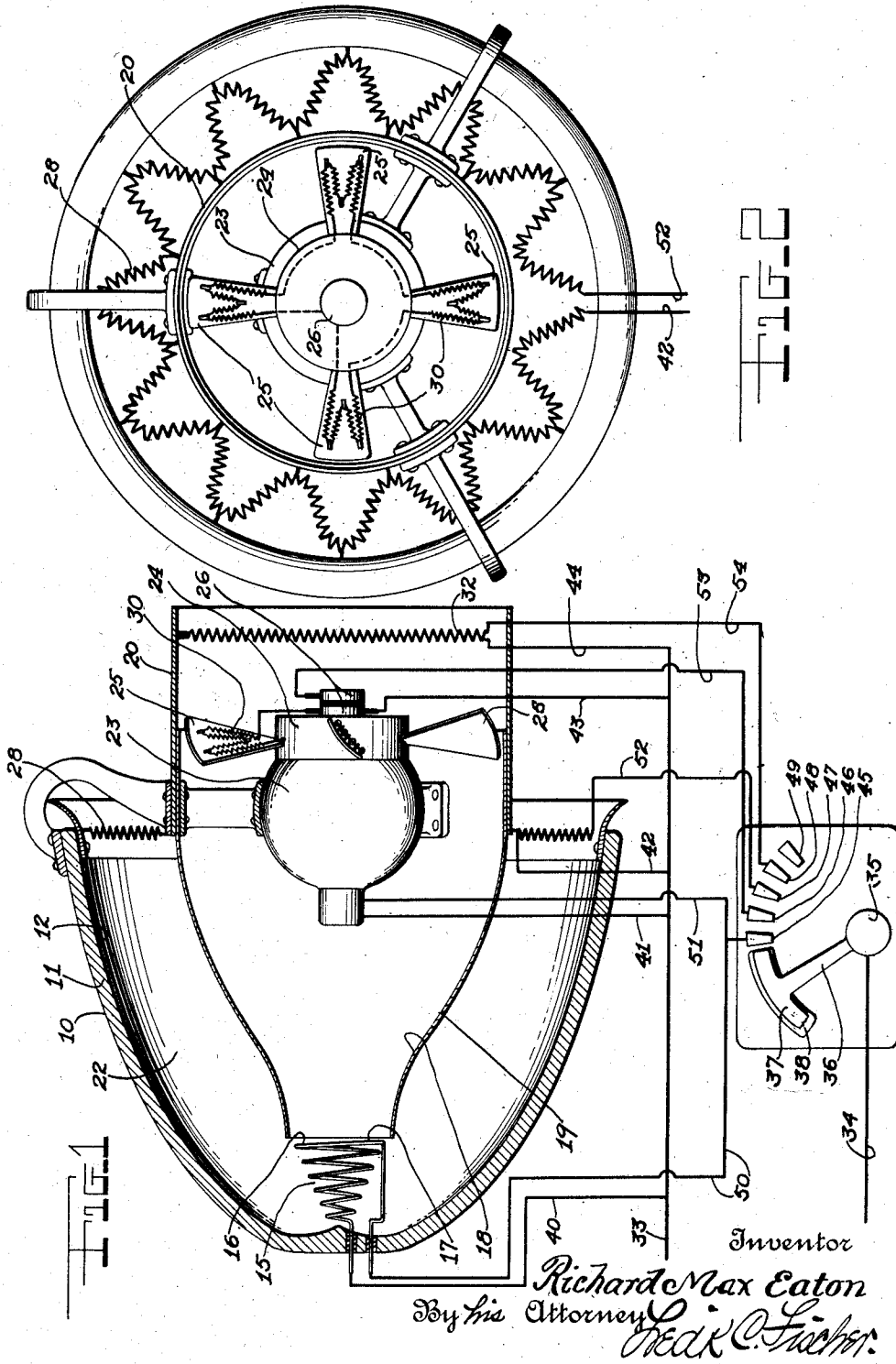


R. M. EATON.
ELECTRIC HEATING DEVICE.
APPLICATION FILED OCT. 6, 1920.

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UNITED STATES PATENT OFFICE.

RICHARD MAX EATON, OF NIAGARA FALLS, NEW YORK.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RICHARD MAX EATON, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Electric Heating Devices, of which the following is a specification.

The principal object of this invention is to provide an efficient apparatus for producing a volume of heated air, when and as desired, the same being operated by an electric current in an unusually economical manner, substantially all of the heat generated being conserved.

A further object is to cause the air current to circulate through the apparatus, means being provided to purify the air during its passage.

Another object attained is in the means for controlling the degree of heat as may be required.

These and other analogous objects are attained by the novel combination and arrangement of parts and principles, as hereinafter described and shown in the accompanying drawings, forming a material part of this disclosure, and in which:—

Figure 1 is a longitudinal central sectional view of an electric heater made in accordance with the invention.

Fig. 2 is an end view of the same.

The apparatus is intended for use as an attachment for hot air heating systems, or to operate directly within a room in which it is desired to raise the temperature, without admitting cold fresh air, as in dwellings, driers, etc., where an electric current is obtainable, the device being used on 110 or 220 volt circuits.

The principles involved are based on known scientific facts, namely:

That light rays produce heat when directed against a substance or the atmosphere; that air is purified by both heat and light and in an intensified manner when combined; that a heated substance tends to heat insulate itself, and finally, that greater efficiency is attained in a heating system by forced circulation.

Having these principles in view, reference will now be had to the accompanying drawings in detail, in which the numeral 10 designates in general a parabolic shaped cone, its outer surface being enveloped by

a heat insulator or protective covering 11 and its inner surface 12 given a highly efficient light reflecting finish.

Within the focus of the parabolic reflector 10 is a glow coil 15 made of wire having a high electrical resistance, open wound to present a conical helix the base or largest diameter 16 being outermost.

Adjacent the base of the glow coil is the smaller, open end 17 of a funnel-shaped cone 18, its base merging into a cylindrical tube 20 acting as the outlet or exhaust of the apparatus and extending outward beyond the base edge of the reflector 10.

The exterior surface 19 of the cone is highly finished to act as a reflector and is arranged approximately concentric with the reflecting surface 12, between which is an air space 22.

An electric motor 23 is mounted within the cone 18 the motor shaft having fixed to it a hub 24 carrying fan blades 25 rotatable within the tube 20, the extending end of the shaft having mounted upon it a commutator 26.

The foregoing parts constitute the principal mechanical elements of the apparatus, and, as may be seen, are arranged upon an axis common to all.

Disposed between the outer edge of the reflector 12 and base of the cone 18, at its junction with the tube 20, is a heating coil 28 bent sinuously to act as a screen at the entrance to the chamber or air space 22.

Another similar coil 30 is bent to pass repeatedly over the faces or air pressure sides of each of the fan blades 25, to which they are firmly secured, their terminals being engaged to the commutator 26.

Near the outlet end and within the interior of the tube 20 is another heating coil unit 32 through which the air finally passes in emerging from the apparatus.

A source of electricity (not shown) has leading from it conductors 33 and 34, the latter connecting with a rheostat switch 35, the handle 36 of which actuates a contact 37 normally resting on an insulated wiper 38.

The wire 33 has branches respectively leading to the smaller end of the glow coil 15, 41 connected with the armature of the motor 23, 42 to the heating coils 28, 43 to the fan blade coils through the commutator 26 and branch 44 to the outer heating coil 32.

Return currents are conducted to the rheostat switch contacts 45, 46, 47 and 48 by conductors 50 from the glow coil base 16, the same having a branch 51 from the motor 5 23, wire 52 from the heating coils 28, wire 53 from the commutator 26 and wire 54 from the heating coil 32.

In operation, if a moderate amount of heat is desired, the contact 37 of the thermostat switch is moved off the wiper 38 to engage the conductor 45, thus energizing the motor and causing the coil 15 to glow, drawing in air through the space 22 walled with reflectors, forcing it through the light rays of the glow coil and expelling it through the exhaust tube 20 in a heated and purified condition.

If more heat be required the contact is moved to engage the conductor 46, encircling the coils upon the blades of the fan; a further movement to the conductor 47 heating the coils 28; while an extreme movement of the contact 37 to the conductor 48 cuts into operation the coil 32 installed in the tube 20 delivering the full effect of the apparatus.

Thus when all of the heating units are cut in, the air is heated at 28, at 15 at 30 and at 32, the air being positively caused to circulate through the heating units.

The foregoing disclosure is to be regarded as descriptive only, and not as restrictive or limitative of the invention, of which obviously an embodiment may be constructed including many minor modifications without departing from the general scope herein indicated and denoted in the appended claims.

I claim—

40 1. An electric heater comprising a parabolic cone having a reflecting interior, a hollow conical reflector spaced therewithin, a glow coil at the inner open end of said reflector and means within said reflector for 45 creating an air current therethrough.

2. An electric heater comprising a parabolic cone having a reflecting interior surface and a heat insulated exterior, a hollow conical reflector mounted concentrically 50 within said cone, there being a space therebetween, a glow coil between the apex of said cone and the open end of said hollow reflector, an exhaust tube at the base of said reflector and means partially in said re- 55 flector and in said tube for inducing a cur-

rent of air through the mentioned space, glow coil and reflector outward from said tube.

3. An electric heater comprising a parabolic cone having a reflecting interior, a hollow conical reflector spaced therewithin, a glow coil at the inner open end of said reflector, a heating coil at the entrance to the space between said reflector and said cone and means within said reflector for 60 creating an air current therethrough.

4. An electric heater comprising a parabolic cone having a reflecting interior, a hollow conical reflector spaced therewithin, a glow coil at the inner open end of said re- 70 flector, a heating coil at the entrance to the space between said reflector and said cone, a heating coil at the open base of said reflector and means within said reflector for creating an air current therethrough. 75

5. An electric heater comprising a concave reflector, a heating means at the focal point of said reflector, a hollow concave reflecting cone spaced concentrically within said reflector and means for creating an air 80 current through the space between the reflecting surfaces.

6. An electric heater comprising a parabolic cone having a reflecting interior surface and a heat insulated exterior, a hollow 85 conical reflector mounted concentrically within said cone, there being a space therebetween, a glow coil between the apex of said cone and the open end of said hollow reflector, a fan mounted in said reflector, a 90 plurality of heating coils disposed on the blades of said fan and means for conducting an electric current to all of said coils.

7. An electric heater comprising a pair of conical reflectors, respectively internal and 95 external, arranged in spaced relation, a motor, and a fan driven thereby mounted within the inner reflector, a plurality of heating coils disposed in the space between said reflectors and at the base of the inner 100 reflector, heating coils on the blades of said fan, electric connections to said coils and said motor and a switch for controlling the current in said connections.

This specification signed and witnessed 105 this 30th day of September, 1920.

RICHARD MAX EATON.

Witnesses:

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