

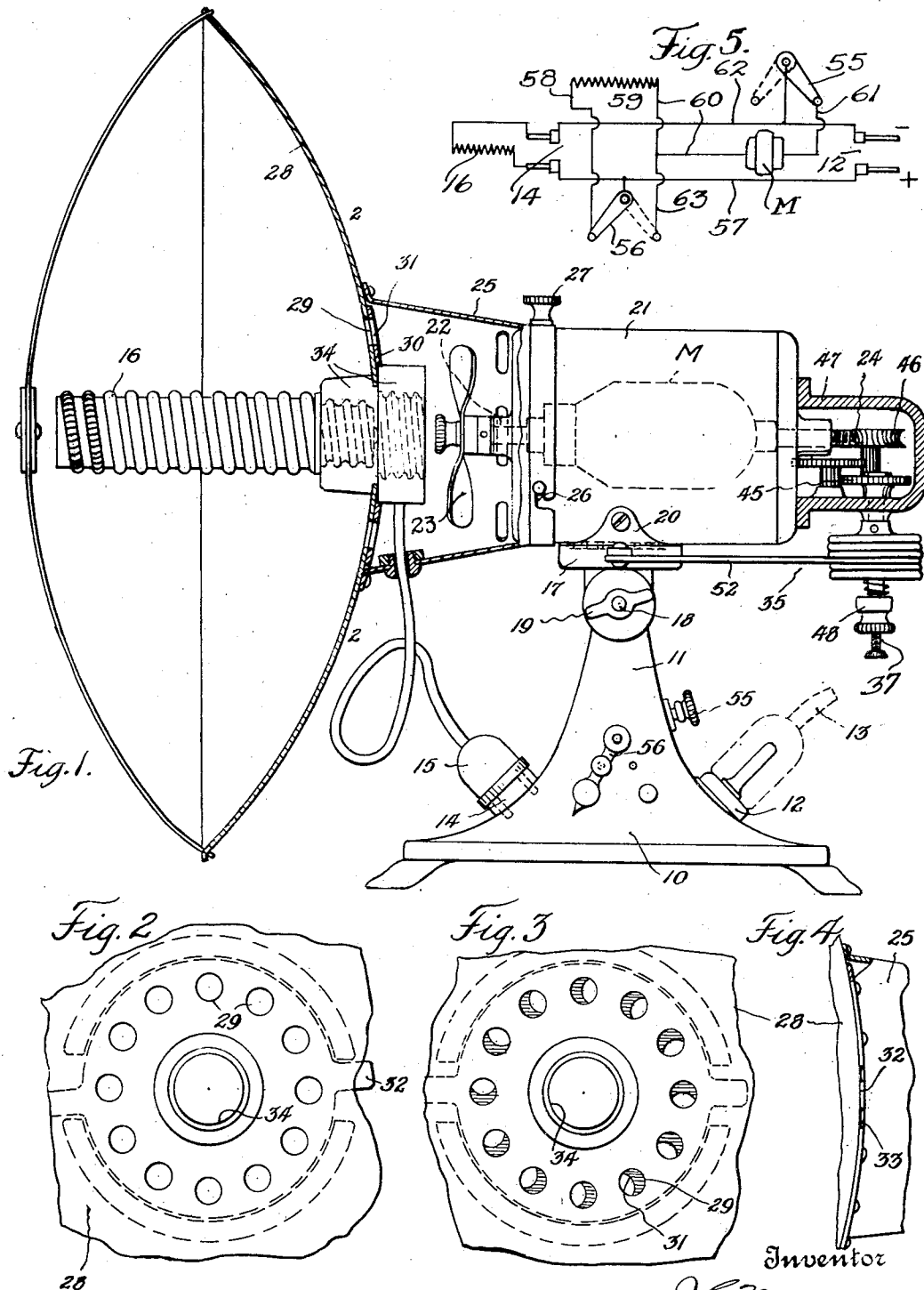
June 19, 1928

1,674,017

J. E. MARSDEN

COMBINATION ELECTRIC HEATER AND FAN

Filed March 15, 1926



Inventor
J. E. Marsden
By his Attorney
G. H. Zedler

Patented June 19, 1928.

1,674,017

UNITED STATES PATENT OFFICE.

JOHN E. MARSDEN, OF PHILADELPHIA, PENNSYLVANIA.

COMBINATION ELECTRIC HEATER AND FAN.

Application filed March 15, 1926. Serial No. 94,654.

This invention relates to electrical apparatus such as are used extensively for office and domestic purposes and has particular reference to heating and ventilating apparatus.

Among the objects of the invention is to provide a construction for attachment to any convenient or ordinary source of electricity such as is found generally in modern buildings, and whereby the atmospheric conditions in the room or building may be maintained in a more wholesome and comfortable condition, in all seasons of the year, than is generally possible without this improvement.

More specifically stated, one of the primary objects of the invention is to provide an electrical apparatus including a motor, and means to so harness the motor as to cause certain portions of the apparatus to oscillate around a substantially vertical axis, a heating coil being attachable to the oscillating parts, and means being provided to insure a substantial circulation of air along or around the heating coil, whereby the effectiveness of the coil as a heating unit may be materially enhanced.

A further object of the invention is to provide an electric heater provided with means not only for the circulation of air in the room with an increased heating capacity of the apparatus, but also with means for adjusting the heating unit and air circulating means around a transverse axis and with or without oscillating around a vertical axis.

A still further object of the invention is to provide an electrical apparatus having interchangeable heat producing means for cold weather, and ventilating means for hot weather, the apparatus being possessed of means for any suitable adjustment or oscillation thereof.

Another object of the invention is to provide a combination electric heater and ventilating fan with a motor and switch mechanism to bring the motor into or cut it out of circuit with the heating unit or ventilating fan as may be desired.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had

to the accompanying drawings in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a side elevation of a preferred embodiment of the invention equipped as a warm air circulating apparatus, parts being in section.

Fig. 2 is a vertical detail about on the line 2—2 of Fig. 1, indicating the air circulating control.

Fig. 3 is a similar view with the damper or air cut-off in a changed position from that of Fig. 2.

Fig. 4 is a fragmentary side elevation as would be seen in looking toward the left in Fig. 3.

Fig. 5 is a diagram of the electric wiring and switches.

Referring now more specifically to the drawings, I show my improvement as comprising a suitable base 10 having a pedestal 11, the base and pedestal constituting suitable housing means for the wiring connections and switches. 12 is a jack for the disconnectible attachment of a lighting circuit 13 or an equivalent source of power, and 14 is a jack for a similar connection of the plug 15 leading to the heating coil 16.

At 17 is a head connected to the upper end of the pedestal and adjustable around a horizontal axis 18 by means of a clamp 19, said head constituting the lower member of a turn table whose upper member 20 supports a casing 21 within which is housed a motor M having a horizontally disposed shaft 22. To one end of this shaft is secured a fan 23, while the opposite or rear end of the shaft is fitted with a worm 24.

Mounted detachably upon the front end of the casing 21 is a hood 25 shown as having bayonet slot connections at 26 with said casing and adapted to be clamped or locked in position by a thumb screw 27. The hood 25 flares somewhat toward the front and has secured to it the reflector shell 28 of substantially spherical segmental form such as has been used heretofore in electrical heaters of this general type. In line, however, with the hood 25 said shell 28 is provided with a circular series of holes 29 forming thin-plate orifices, concentric with the shell and axis of the motor, and associated with said series of holes is a similarly formed or annular shaped damper 30 having holes 31 corresponding in size, number, and arrangement with the holes 29. The damper is provided

with one or more laterally projecting finger pieces 32, each projecting through a slot 33 in the front end portion of the hood 25 and whereby the damper may be adjusted
 5 around its axis for controlling the amount of opening through the holes aforesaid. The damper is mounted to rotate around the socket connection 34 wherein the coil 16 is secured. It will be noted that the heating
 10 coil 16 is mounted coaxially of the motor shaft, the fan 23, and the hood 25 with which the series of ventilating holes 29 and 31 likewise have co-axial relation. The rotation of the motor shaft causes a corre-
 15 sponding rotation of the fan 23, which being located within the hood 25 causes the forced circulation of air from the motor casing or the region of the base 10 through the hood and thence forward through the holes 31
 20 and 29, a portion of the air being caused to impinge against or upon the heated coil 16 and which becoming heated thereby passes on across the room along with the other portions of the air, while the cooler
 25 strata of the air from the floor or region of the floor circulate toward the base and motor to be driven as aforesaid into and through the heated region of the shell 28. The air discharge orifices are located in relative
 30 proximity to the heating coil and due to the concavity of the reflector 28, the air is discharged toward the adjacent end of the heating coil. The air will retain a large part of the initial whirling movement imparted
 35 to it by the fan, because the holes 29 and 31 constitute thin-plate orifices. The air will therefore spread out in a conical form permitting the free end of the heating coil to be retained constantly at a glowing heat, to
 40 permit the heater to operate efficiently through the reflection of radiant heat by the reflector.

I provide means also to accentuate this moderate blast formation resulting from the
 45 rapid rotation of the fan 23, by providing means for the lateral oscillation of the motor and heater mechanism around the vertical axis of the turn table 17. Any suitable means may be provided for this purpose
 50 and when set into operation, I have ascertained as a result of extensive experiments, the lateral swing of the shell 28 has a pronounced effect to produce a fling or additional impulse to the heated air currents
 55 passing through and from the shell. For the automatic lateral oscillation of the mechanism I prefer to employ the mechanism constituting the subject matter of a divisional application, the same including,
 60 briefly described, clutch mechanism shown as a whole at 35 from which leads an arm 52 to any fixed support as at the head of the pedestal and including also a vertical shaft

between which and the fan shaft 22 is a train of gears 24, 45, and 46 housed within a casing 47. A finger piece 48 regulates the
 65 clutch mechanism.

As thus far described and illustrated especially in Fig. 1 with the main line 13 connected and if it is desired to operate the
 70 motor for rotation of the fan 23 and the oscillation of the motor casing and other parts, the switch 55 will be closed and a movable switch arm 56 shown on the front of the pedestal is so shifted to the left as to
 75 complete the circuit through the line 57, arm 56, line 58, choke coil 59, line 60, through the motor, and line 61, switch 55, and line 62 back to the main circuit. As shown in the diagram of Fig. 5 under these conditions the
 80 heating coil 16 if in place in its socket 34 will glow and produce a large amount of heat which will permeate through and be carried by the fresh air delivered from the fan 23 through the hood and rear wall of
 85 the shell as above described. The fan 23 is very small and therefore a small amount of current is required for the operation of it from the motor. Hence the choke coil is inserted and brought into action by the
 90 movable switch arm 56.

I claim:

1. In mechanism of the class set forth, the combination of a pedestal, a casing supported on the pedestal, a motor in said casing,
 95 a fan actuated by said motor, a guard enclosing the motor and supported by the motor casing, a reflector supported by said guard, the central portion of the reflector constituting an end wall for the guard, a
 100 socket at the center of the reflector in alignment with the fan and motor, a heating coil mounted in said socket, and openings in said end wall of the guard to admit air from the fan into the region of the heating coil.
 105

2. In mechanism of the character set forth, the combination of a motor casing, means to support said casing, a motor journaled within the casing and having a
 110 substantially horizontal shaft, a fan driven from the front end of said shaft, guard means surrounding the fan and attached to the motor casing, said guard means including a shell of concave form, an electric
 115 socket in the bottom of said shell in alignment with the motor shaft, a heating coil secured in said socket, and electrical connections for controlling the action of the heating coil and motor including an annular damper
 120 adjusted movably around the axis of the shaft and coil socket, said shell and damper having series of holes adapted to register more or less according to the volume of air desired to be passed therethrough.

In testimony whereof I affix my signature.

JOHN E. MARSDEN.