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ELECTRIC HEATER.

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1,280,960.

Patented Oct. 8, 1918.

Fig. V

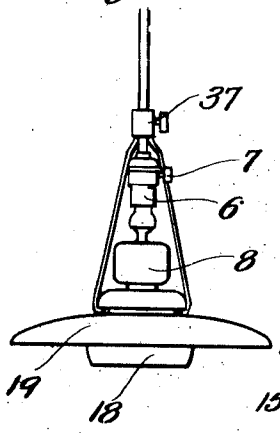


Fig. I

Fig. III

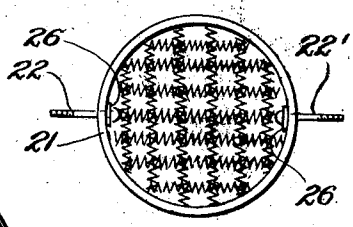


Fig. II

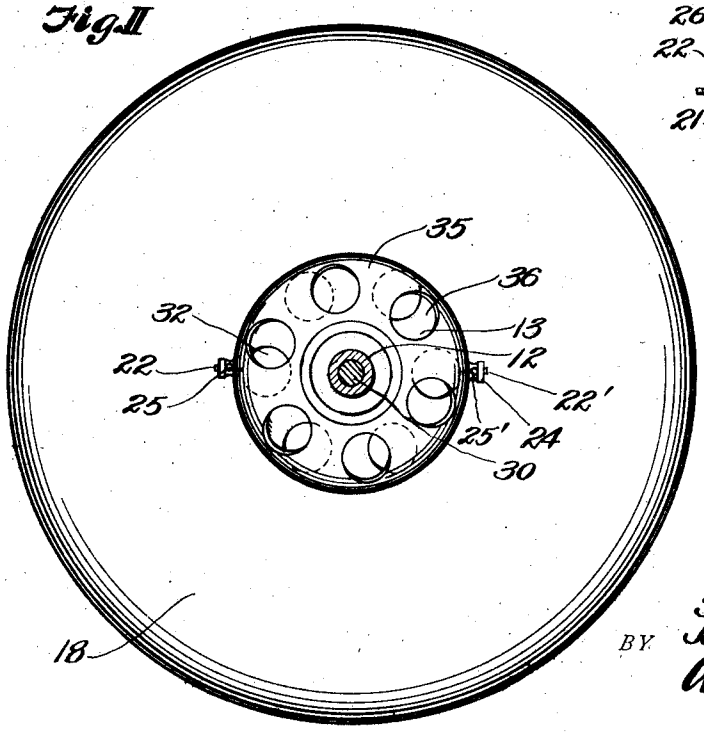
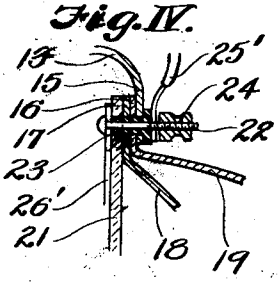


Fig. IV.



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ELECTRIC HEATER.

1,280,960. Specification of Letters Patent. Patented Oct. 8, 1918.

Application filed January 22, 1918. Serial No. 213,261.

To all whom it may concern:

Be it known that we, SAMUEL M. CARMEAN and JAMES H. CARMEAN, citizens of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Electric Heaters; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to electric heaters and more particularly an electric heater of a type that may be conveniently attached to and controlled from the ordinary incandescent lamp socket, the principal object of the invention being to provide an electric heater of this character comprising in its structure a heating chamber wherein a desired number of heating coils or other electrically heated elements are located, a motor driven fan for creating a forced circulation of air through the chamber about said heating elements and a deflector for facilitating the directing of the generated heat in a desired direction.

A further object of the invention is to provide a heater of this character of simple construction and attractive design and to so arrange the parts that they may be easily assembled or taken apart, and to equip the device with a threaded plug which may be applied to any ordinary lamp socket in the same manner as an incandescent lamp bulb would be applied and by which electric connection is made to energize the motor and to heat the coils.

In accomplishing these objects we have provided improved details of structure the preferred forms of which are illustrated in the accompanying drawings, wherein:

Figure I is a side view, partly in central, vertical section of an electric heater constructed according to the present invention.

Fig. II is a horizontal sectional view of the same taken on the line II—II, Fig. I.

Fig. III is a detail plan view of a form of heating element used in the device.

Fig. IV is an enlarged detail sectional view illustrating the connection of parts of the device.

Fig. V is a view of a heating device suspended by a lamp cord as distinguished from being supported from a rigidly fixed member.

Referring more in detail to the drawings:—

1 designates a tubular wall bracket of any suitable design wherethrough electric circuit wires 2—3 may be extended; the said bracket being provided at one end with a base flange 4 for receiving suitable anchor screws 5, or the like, whereby it may be fixed to a wall or other supporting member and at its outer end is provided with a socket member 6 of a type whereinto a lamp bulb of the ordinary incandescent type may be threaded, and which contains the usual circuit breaking or closing switch mechanism operated by means of a switch key 7. The socket is also adapted to receive the contact plug of the heating device presently described.

The bracket and socket member here shown form no part of the present invention but are merely described in order to more clearly set forth the application and operation of the heating device presently described and to emphasize the fact that the present device is intended for use in combination with lamp sockets of the ordinary type without alteration whether the socket is a part of a fixed bracket as shown in Fig. I or suspended by a cord as shown in Fig. V.

In its preferred form of construction the heating device embodying the present invention comprises in its structure an electrically operated motor indicated by the casing 8; the latter being provided at its upper side with threaded connecting plug 9 that is adapted to be threaded into or from the socket member 6 to support the motor and other parts suspended therefrom and is provided with contact members through which electrical connection is made between the motor coils and circuit wires 2—3 and also, as is later described, with the opposite poles of the heating element used.

Preferably, but not necessarily, the plug 9 is mounted on the motor by a ball and socket connection indicated at 10 so that the heating device may be turned in its mounting to deliver a blast of heated air from the heater in any desired direction within the limits permitted by the joint connection.

Extending centrally from the under side of the motor housing is a hub 12 and mounted thereon is a supporting plate 13, the latter comprising an internally threaded collar portion 14 which is threaded onto the hub 12 and at its outer end is provided with a downwardly opening rim flange 15.

Mounted within the rim flange 15 of the supporting plate are the flanged upper ends 16—17 respectively of a somewhat spherical shaped housing 18 and an extended downwardly curved deflector plate 19; the housing 18 forming a downwardly opening heating chamber 20 wherein the heating element, presently mentioned is located and the plate 19 which extends beyond the heating chamber serving to deflect heat generated and delivered from the chamber in a downward direction and also preventing a circulation of the heated air directly back to the heating elements.

Mounted within the heating chamber is a vertically arranged cylindrdical coil supporting housing 21 preferably of porcelain, or any other suitable non-conductive non-inflammable material, which is supported closely within the upper end of the heating chamber by means of binding posts 22—22′ which extend outwardly through the housing 21, the flanges 16—17 of the housing 18 and deflector plate 19 and the flange 15 of the supporting plate 13 and serve to retain the parts in connected relation; the said post being insulated from the parts supported thereby and from the supporting cap by insulation indicated at 23 and at their outer ends are connected by taps 24 threaded thereon, with electric circuit wires 25—25′ which lead into the plug 9 and there make suitable connections with the contact points within the socket member 6 so that a circuit may be closed therethrough simultaneously with the closing of a circuit within the motor.

Located within the porcelain housing 21 and electrically connected at opposite terminals with connecting plates 26—26′ depending from the oppositely disposed binding posts 22—22′ is a heating element 27 which may comprise one or a plurality of wire coils or any other suitable element that may be heated by a current of electricity flowing therethrough; the connection being such that one pole of the heating element is fixed by an electrical connection to the plate 26 and the opposite pole is similarly fixed to the plate 26′.

The preferred heating element comprises a continuous coil, strung back and forth within the housing in superimposed layers and in crossed relation so that air delivered therethrough is thoroughly heated when it leaves the housing.

Extending from the motor housing revolubly through the hub 12 and into the heating chamber 20 is a motor driven shaft 30 and fixed thereon is a circulating fan 31 which operates as is shown above the heating element, so that when in operation, air may be drawn thereby through openings 32 in the supporting plate 13 and forcibly discharged through the coils of the heating element and base opening of the heater housing 17.

In order that the amount of air delivered to the coils may be regulated I provide the plate 13 with a damper plate 35 which is fitted closely and revolubly thereon and which has openings 36 therein which correspond to the openings 32 in the plate 13 so that by turning the damper plate the openings of the two may be brought into registration to permit a maximum opening area, or may be so moved that the opening area may be partly or entirely closed.

In Fig. V we have shown a heating device mounted in a suspended socket as distinguished from the fixed socket as is shown in Fig. I. This means of suspension being illustrated in order to show that the device is not necessarily limited to use with fixed sockets although the fixed socket is preferable as it enables the heater to be directed in any desired direction which is not possible when used with a cord suspended socket.

This figure also illustrates the use of separate switches for controlling current to the motor and heating elements; the motor here being operated under control of the switch in the socket member 6 and the heating element being controlled by a switch 37 also connected with the circuit wires 2—3. It is apparent that should a plurality of heating elements be used a like number of switches could be used to give individual control of each element and they could be turned on or off according to the amount of heat desired.

While we have shown the motor supported from the plug by a ball and socket joint, we do not intend to limit the construction to this particular connection, as it is also intended to make heaters of this character that may be suspended by a cord equipped at its upper end with a plug for application to a socket and also to make heaters with plugs formed integrally or rigidly with the motor housing without a joint connection.

With the parts of the heater so constructed and assembled, in using the same, it may be applied to the socket 6 by threading the plug 9 therein so that by operation of the switch parts of the socket controlled by the key 7, electrical connection may be made or broken with the heater parts.

With the heater mounted in the socket as shown it is apparent that on closing the switch the motor will be energized to operate the fan to intake air through the open-

ings of the supporting plate and to discharge it through the housing 21 and coils of the element and from the base opening of the housing 17.

It will be seen that the amount of heated air delivered from the housing may be determined by the relative location of the openings in the damper and supporting plates and that the damper may be so adjusted that a small amount of air heated to a high temperature or a greater amount of air at a lower temperature may be delivered through the coils.

It is also apparent that closing the switch also closes an electric circuit through the coils of the heating elements and they are heated accordingly and transmit their heat to the air as it is discharged therethrough and the latter is delivered from the housing in a heated condition.

It is apparent also that by mounting the device by a ball and socket connection, the heated blast may be directed and maintained in any desired direction by adjusting the mounting direction of the socket and it is further seen that the device may be readily removed from one socket and replaced in one at a different point according to where it is desired to generate the heat.

While we have shown the device in this present design we do not wish to be limited to this particular construction or combination of parts as it is apparent that heating elements, housings and deflectors of various kinds and designs may be combined with an air circulating element in various combinations without departing from the invention.

Having thus described our invention, what we claim as new therein and desire to secure by Letters Patent, is:

1. In an electric heating device, a motor housing, a supporting plate fixed to the motor housing having openings therethrough and a down turned annular flange, a heating chamber having a base opening and a flanged upper end opening seated in said supporting plate flange, a heating element located within the heating chamber, a motor located within the motor housing, a fan operable by the motor for creating a circulation of air downwardly through said heating element and from said heating chamber, a plug on the motor applicable to an electric lamp socket of conventional type for making electrical connection with the motor and heating element and a damper comprising a plate revolubly mounted on the supporting plate and having openings therein adapted to be moved into or from registration with the plate openings for the purpose set forth.

2. In an electric heating device, a motor housing, having a downwardly extending hub portion, a supporting plate threaded onto said hub, having openings therethrough and provided with a downturned annular flange, a deflector plate mounted in said flange, a housing having a base opening and a flanged upper end opening seated within said supporting plate flange, a heating element mounted in the last named housing, a motor located within the motor housing having a shaft extending downwardly from the hub member, a fan fixed on said shaft operable thereby to create a forced circulation of air through said heating element and downwardly from said housing, and means for electrically connecting the motor and heating element with a lamp socket of a conventional type for the purpose set forth.

3. In an electric heating device, a motor housing having a downwardly extending hub portion, a supporting plate threaded onto said hub, having openings therethrough and provided with a downturned annular flange, a deflector plate mounted in said flange, a housing having a base opening and a flanged upper end opening seated within said supporting plate flange, a heating element mounted in the last named housing, a motor located within the motor housing having a shaft extending downwardly from the hub member, a fan fixed on said shaft operable thereby to create a forced circulation of air through said heating element and downwardly from said housing, and a plug mounted on the motor housing applicable to an electric lamp socket of conventional type through which electrical connection is made with the motor and heating element.

4. In an electric heating device, a motor housing having a downwardly extending hub portion, a supporting plate threaded onto said hub, having openings therethrough and provided with a downturned annular flange, a deflector plate mounted in said flange, a housing having a base opening and a flanged upper end opening seated within said supporting plate flange, a heating element mounted in the last named housing, binding posts extending through said plate flange, the deflector and heating element housing to support the same in functional position, and having electrical connection with opposite poles of the heating element, a plug mounted on the motor applicable to a lamp socket of conventional type wherethrough electrical connection is made with the motor and with said binding posts to energize the heater and means for controlling an electrical circuit through the motor and heating element.

5. In an electric heater, a suspended motor, a fan driven thereby, an open ended housing supported by the motor, heating elements in said housing, a hood surrounding said housing and constituting a heating chamber and a heat deflector surrounding said hood.

6. In an electric heater, a housing contain-

ing heating elements, a hood surrounding said housing and a concavo-convex deflector surrounding said hood.

7. In an electric heater, a housing, electric heating elements in said housing, a heater hood surrounding said housing, a deflector surrounding the hood and binding posts in electrical connection with said heater elements and passing through the housing, the hood and deflector to hold them together.

8. In an electric heater, a motor, a fan driven thereby, a supporting plate carried by the motor, an electric heater containing housing, a hood surrounding the same and means for securing the housing and hood to the supporting plate, said means being in electrical connection with the heating element in the housing.

In testimony whereof we affix our signatures.

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