

S. M. AND J. H. CARMEAN.
ELECTRIC HEATER.
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1,366,519.

Patented Jan. 25, 1921.

Fig. I.

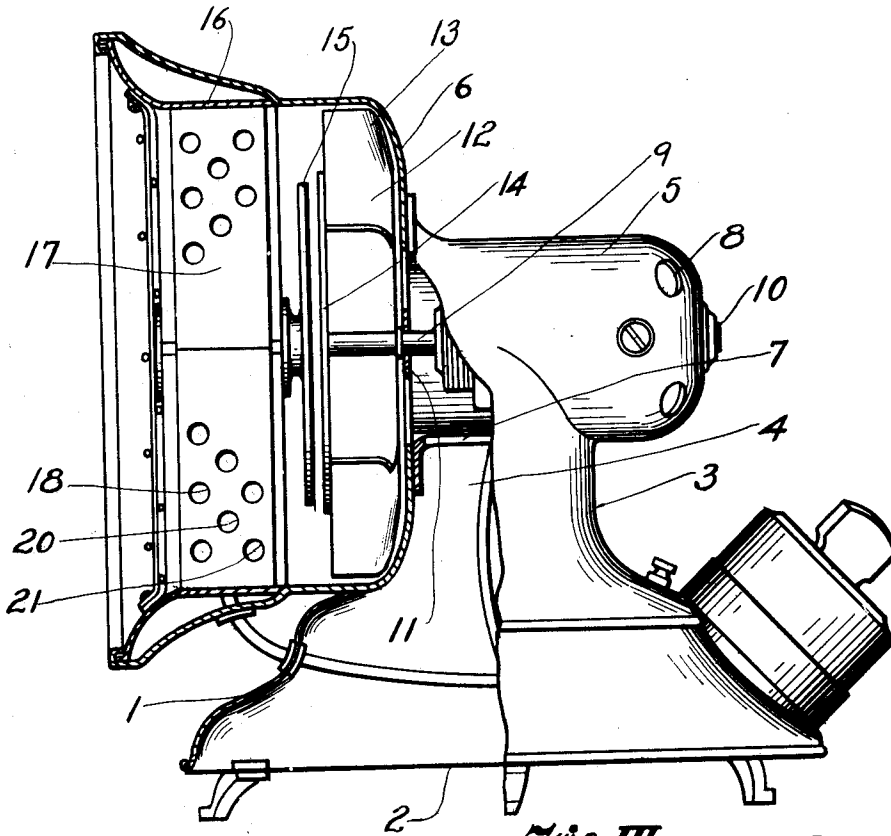


Fig. II.

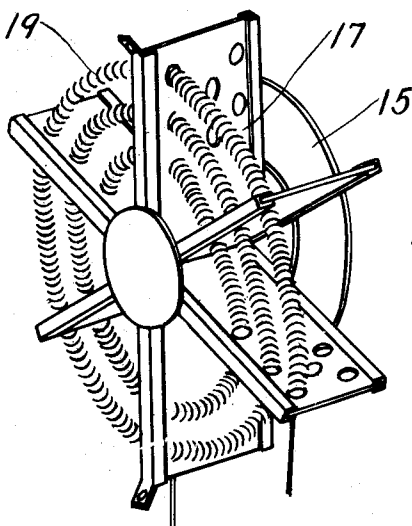


Fig. III.

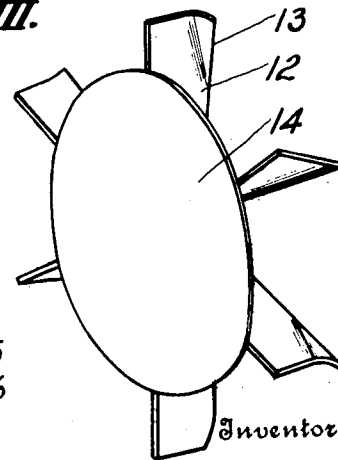
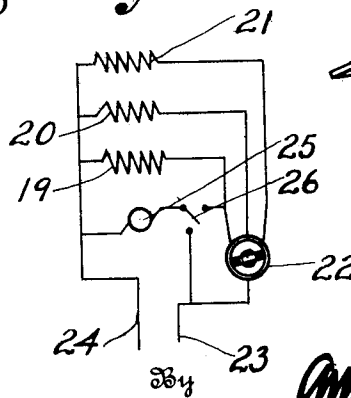


Fig. IV.



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ELECTRIC HEATER.

1,366,519.

Specification of Letters Patent.

Patented Jan. 25, 1921.

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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.

This invention relates to electrical heating devices and particularly to a device for effecting a circulation and heating of the air in a room so as to raise the temperature of the surrounding atmosphere.

The primary object of the invention is to provide an electrically controlled heating device whereby the cooler air of the room may pass through the device to be heated and be instantly circulated to raise the temperature of the room to the desired degree without any appreciable loss of heat energy, the distribution of heat being much more effective than is possible where the radiated heat is localized as is true where the ordinary radiator is employed.

The invention consists broadly in providing a motor driven fan or air pump adapted to direct a flow of air into contact with a heating element or elements so as to raise the temperature of the air, together with means for arresting the velocity of the air from the fan and discharging it in a symmetrical stream so as to cause uniform heating of the stream throughout, thereby avoiding the loss of the heat generated in the heater and at the same time providing an equal distribution of the heated air to commingle with the surrounding atmosphere.

In carrying out our invention we have provided means whereby the heater may be constructed in a simple, efficient and durable manner, well calculated to serve the purpose for which it is intended.

Among the manifold advantages of our invention is the provision of means whereby air may pass over and about the heater element which is in axial alinement with the air impeller or fan, and we have provided means whereby the opening of the heat elements may serve as a radial means in direct-

ing the flow of air in a relatively straight stream line parallel to the axis of the impeller.

In devices of the class described it is desirable that the stream or column of heated air issuing from the heating device be of uniform density throughout so that there will be an equal distribution of the issuing stream to commingle with the surrounding atmosphere and so that the heated stream may be directed along a given line.

Where a centrifugal fan is employed, the air passes from the fan with a whirling motion, due partly to the velocity imparted thereto by the fan blade and in part to the construction of the fan blade and unless some means is provided for controlling the air issuing from the fan, the direction of its travel is extremely difficult to determine.

We have also provided means whereby the heating member may be constructed of sections, each section being independently controlled and thereby making it possible to vary the quantity of heat supplied at any one time.

We have also provided means whereby the heater may be constructed with a maximum capacity confined in a relatively small space, with the parts so constructed that they may be readily assembled or disassociated as the occasion may demand.

In the drawings,

Figure I is a view of the side elevation and a section throughout in accordance with our invention.

Fig. II is a perspective view of one of the heating elements and the deflecting frame.

Fig. III is a detail, perspective view of the impeller and baffle, and

Fig. IV is a diagrammatic view of the wiring for the heater.

In carrying out our invention we employ a base 1 provided with an air inlet 2, communicating with a hollow standard 3, having an air space 4 therein. The hollow standard 3 supports a motor casing 5 and a fan housing 6. The motor casing 5 is provided with an air inlet opening 7 communicating with the hollow standard and an additional air inlet opening 8 in line with the armature of the motor whereby the air may be directed above the armature to keep it cool. The shaft 9 of the motor is journaled in bearings 10 and 11 and carries an air impeller or fan comprising radial blades 12, having their tips bent slightly forward as

at 13, to direct the air in a forward direction.

14 is a baffle shown as connected to the motor shaft 9 and said baffle is parallel to the baffle 15 consisting of a disk carried by the heater frame, the baffles being so arranged that the air current will be directed about the perimeter near the outer edge of the fan casing so that the air will pass there-through into the heating chamber 16 and by reference to Fig. I it will be observed that the baffle 15 is so disposed with respect to the coils that the heat generated by the coils will be screened off from the shaft 9 and from the armature coils so that overheating of the armature coils from the heating coils will be prevented.

The heater frame may be constructed in a novel manner by providing blades 17 arranged about a common center as shown in Fig. II, the flat side of the blades being parallel to the axis of the blades 12 and each blade is provided with an opening in alignment and with corresponding openings adjacent the blades to receive the heating element. The opening 18 is to receive a coil or heater 19, which consists of a resistance coil of suitable wire. The opening 20 receives a similar coil and the opening 21 an additional coil.

In the present construction there are three coils, two of which may be included in the circuit by the switch 22, connected to the wire 23, it being understood that the circuit is completed by the wire 24 and the motor 25 may be in circuit through switch 26.

While we have shown a switch 22 for controlling the coils, it is obvious that a thermostat control may be employed in the base 1 or at a suitable point upon the heater casing whereby variations in temperature about the heater casing may control the number of coils which are to be energized.

It will also be apparent that by providing a construction such as herein disclosed the heated air will be distributed throughout the room more efficiently than is possible with a radiator where the heat is localized in a zone about its location.

What we claim and desire to secure by Letters-Patent is:

1. In a heating device, a support, an air impeller carried by said support, radial stationary blades in front of the air impeller for retarding the velocity of the air delivered by the impeller, electro heating means carried by said blades, and means for energizing the heating means.

2. In a heating device, a support, an air impeller carried by the support, removable radial stationary blades in front of the air impeller for retarding the velocity of the air delivered by the impeller, electro heating means carried by said blades, and means for energizing the heating means.

3. In a heating device, a support, an air impeller carried by said support, radial stationary blades in front of the air impeller for retarding the velocity of the air delivered by the impeller, electro-heating means carried by said blades, and means for energizing the heating means.

4. In a heating device, an air impeller, an electrical motor for driving said impeller, an electro-heat element supporting means in front of the electric motor, and a disk-shaped screen deflecting the heat lines away from the motor, said screen being carried by the electro-heat element supporting means.

5. In a heating device, a support, an air impeller carried by said support, heating coil supporting means in front of the impeller, said means also serving as an air retarding means, and a disk-shaped impeller-shaft-guarding screen carried by said means.

6. In a heating device, a support, an air impeller carried by said support, a disk carried by the air impeller, radial blades in front of the impeller, coils carried by said blades, and a disk carried by said blades and spaced from but parallel with the first named disk.

In testimony whereof we affix our signatures.

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