Aug. 9, 1949. L. A. BERGERON 2,478,559

QUICK HEAT AIR BLOWER AND DRYING APPLIANCE

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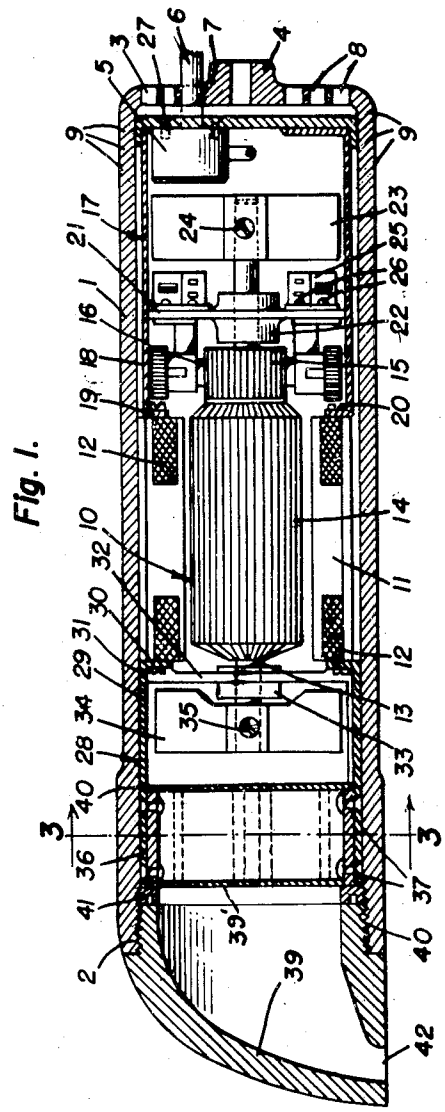


Fig. 1.

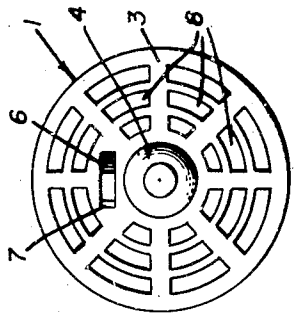


Fig. 2.

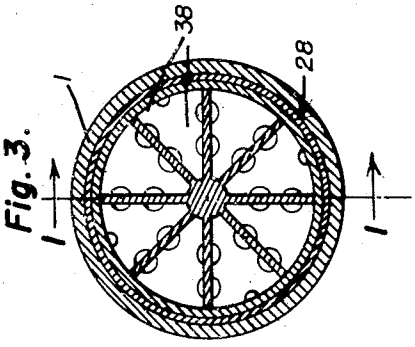


Fig. 3.

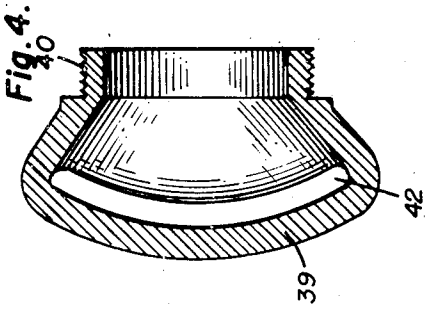


Fig. 4.

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QUICK HEAT AIR BLOWER AND DRYING APPLIANCE

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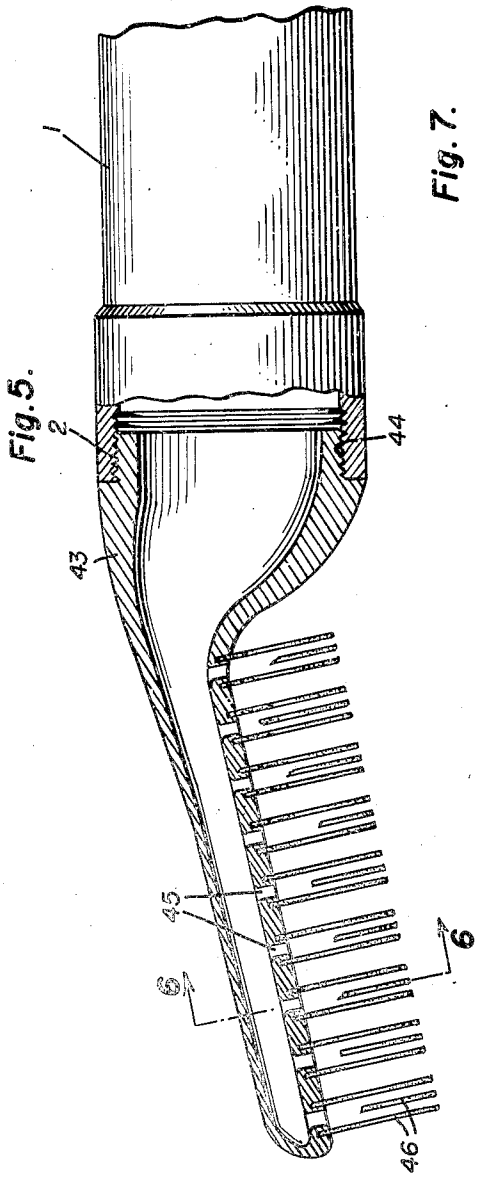


Fig. 5.

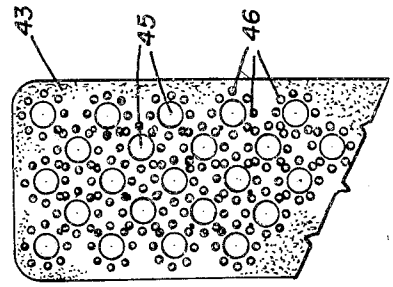


Fig. 7.

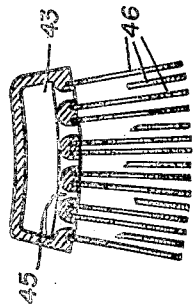


Fig. 6.

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UNITED STATES PATENT OFFICE

2,478,559

QUICK HEAT AIR BLOWER AND DRYING APPLIANCE

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8 Claims. (Cl. 219—39)

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This invention relates to improvements in portable electrically operated air heaters and blowers for use wherever heated air is required in sufficient volume and at a sufficient velocity for airing and drying purposes.

An object of the invention is to provide a portable quick heating air blower and drying appliance which will include a small high speed electric motor supporting air intake and exhaust fans on the opposite ends of the motor shaft, together with a plurality of electrically operated heating elements located between the exhaust fan and the air discharge nozzle, whereby air will be drawn into one end of the appliance and pass through and about the electric motor to be partially warmed by the heat from the motor, and then exhausted over the plurality of heating elements or units which are arranged longitudinally of the appliance, whereby a maximum heating surface will be provided for the air emanating from the exhaust fan and a minimum surface resistance will be presented to the air stream.

Another object of the invention is to provide an improved portable self-contained electrically operated air heater and blower, which will include a plurality of heating units and an electric motor for operating air intake and exhaust fans for drawing air into the body of the device and for discharging a considerable volume of air at relatively high velocity from the device after being heated by the heating units, and the further provision in the device of means for preventing radio interference consisting of two radio interference capacitors and one inductor connected to the terminals of the heater units and electric motor.

A still further object of the invention is to provide an improved portable electrically operated air heater and blower which will be adapted to receive interchangeable nozzle and brush heads, said device being highly efficient in operation and relatively inexpensive to manufacture and produce.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of this application,

Figure 1 is a longitudinal sectional view through the improved portable hot air heating and blowing drying appliance;

Figure 2 is an end view of the inner end of the portable hot air heating and blowing drying appliance;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

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Figure 4 is a longitudinal sectional view through the air nozzle head taken at right angles to the showing in Figure 1;

Figure 5 is a side elevation of one end of the portable hot air heating and blowing drying apparatus partially broken away to show the brush head in longitudinal section attached thereto;

Figure 6 is a sectional view taken on the line 6—6 of Figure 5, and

Figure 7 is a bottom plan view of a portion of the brush head.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

In carrying out the invention, there is provided an elongated tubular body or case 1, preferably made of light metal and covered with a coating of attractively colored plastic if desired. The body or case 1 is thickened at one end and is internally threaded at 2 to interchangeably receive nozzle or brush heads, and is closed at its opposite or inner end as at 3. An integrally formed bushing or collar 4 is provided centrally of the end 3 and is adapted to receive an electric conductor cable which will be connected to a source of electric current supply (not shown) and to a switch 5 suitably mounted in the inner end of the case 1, and having a switch operating arm 6 extending through a slot 7 in the said end 3.

A plurality of air inlet openings 8 and 9 will be formed through the end 3 of the case 1, and through the body or case adjacent its inner end, respectively, to admit air to be drawn into and through the body or case.

A small high speed electric motor 10 will be positioned approximately centrally of the body or case 1, and includes the field coil 11 and the field windings 12, the armature shaft 13 extending well beyond the ends of the motor, the armature winding 14, commutator 15 and brushes 16.

The spider frame element generally denoted by the reference numeral 17 extends across the inner end of the body or case 1 and has the arms 18 extending to points adjacent the field winding 12, which are bent inwardly at 19 and are secured by the screws 20 to the said field winding 12. Inwardly extending arms 21 are formed integrally with the spider 17 and support the roller bearing 22, which in turn supports one end of the armature shaft 13. A multiple blade suction fan 23 is secured to the end of the shaft 13 by means of the set screw 24. The radio interference capacitors 25 are secured to the spider 17 by means of

the rivets 26, also an inductance, together with said capacitors will be electrically connected to the terminals of the air heater later to be described, and to the terminals of the electric motor 10 to completely prevent radio interference when the device is in operation. The switch 5 will be secured to the spider 17 by means of the screws 27.

A second spider frame generally denoted by the reference numeral 28 will include a plurality of arms 29 which are bent inwardly as at 30 and are secured by the screws 31 to the adjacent field winding 12. Inwardly extending arms 32 are formed on the spider 28 and support the roller bearing 33 in which the outer end of the armature shaft 13 is rotatably mounted. A multiple blade exhaust fan 34 is secured on the shaft 13 by means of the set screw 35.

An insulating ring or band 36 is secured to the spider 28 by the rivets 37, while a plurality of heating units 38 are mounted longitudinally between the arms 39' and 40 of the spider 28, whereby a maximum heating surface will be provided for the air, while a minimum of resistance is presented to the air stream from the exhaust fan 34.

It will be noted that there is an annular air space between the field windings 12 and the inner wall of the case 1, and also a second annular air space between the field windings 12 and the armature winding 14, whereby an unrestricted and uninterrupted flow of air may be had from the air inlet openings 8 and 9 to and through the case 1, until the air is discharged therefrom.

As before mentioned, the air as it enters the case 1 will be preheated or partially heated as it passes over and around the electric motor 10 by absorbing heat from the said motor. Then the exhaust fan 34 will blow the preheated air over and around the heating units 38 to discharge the hot air in a very considerable volume and at a very considerable velocity through the selected nozzle or brush head onto the article, material or device to be dried.

An air discharge nozzle 39 is threaded at 40 and is adapted to be received in the threaded outer end of the case 1 to seat on the exteriorly threaded locking ring 41, which holds the mechanism as a single unit within the case 1. The nozzle 39 is formed with an arcuate discharge opening 42, as clearly shown in the drawings.

A hollow brush head 43 is exteriorly threaded at its inner end as at 44, and is likewise adapted to be interchangeably received within the threaded outer end of the body or case 1. The brush head is narrowed adjacent its outer end and is formed with a plurality of air discharge openings 45 about which the bristles 46 are concentrically arranged.

It is believed from the foregoing description that the mode of operation of the improved quick heat air blower and drying appliance will be readily understood.

While the preferred embodiment of the invention has been illustrated and described, it will be understood that it is not intended to limit the scope of the invention thereto, as many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. A portable electrically operated air heater and blower including a hollow case formed with air inlet ports in one end, a hot air discharge head at the opposite end of said case, spaced spiders detachably supported in said case, a motor in said case and attached to said spiders, inlet and exhaust fans supported on and operated by said motor, and heating units in said case interposed between said exhaust fan and the hot air discharge head.

2. A portable electrically operated air heater and blower including a hollow case formed with air inlet ports, a hot air discharge head threaded in the opposite end of said case, spaced spiders detachably supported by said case, a locking ring interposed between one of said spiders and said head, a motor in said case, a switch therefor, inlet and exhaust fans on the opposite ends of the motor shaft, and streamlined heating units in said case between said exhaust fan and the hot air discharge head whereby air drawn into the case is preheated by contact with said motor prior to contact with said heating units.

3. A portable electrically operated air heating blower and drier including a hollow case formed with air inlet ports in one end thereof, an interchangeable hot air discharge head on the opposite end of said case, spaced spiders in said case forming an open motor housing, motor field coils and an armature mounted on said spiders, a switch therefor, inlet and exhaust fans on the opposite ends of said armature, air heating units in said case between said exhaust fan and said hot air discharge head, and radio interference suppressors connected with said motor and air heating units.

4. A portable electrically operated air heating blower and drier including a hollow case formed with air inlet ports in one end thereof, an interchangeable hot air discharge head on the opposite end of said case, spaced spiders detachably mounted in said casing, motor field coils and an armature mounted in said spiders forming an open motor housing, a switch therefor, inlet and exhaust fans on the opposite ends of said motor shaft, and air heating units supported by one of said spider frames between said exhaust fans and said hot air discharge head.

5. A portable electrically operated air heating blower and drier including a hollow case formed with air inlet ports in one end thereof, an interchangeable hot air discharge head on the opposite end of said case, an electric motor in said case, a switch therefor, spider frames slidable in said case at the opposite sides of said motor and secured thereto, inlet and exhaust fans on the opposite ends of said motor shaft, air heating units supported by one of said spider frames between said exhaust fans and said hot air discharge head, a locking ring threadedly received between said head and one of said spider frames.

6. A portable electrically operated air heating blower and drier including a hollow case formed with air inlet ports in one end thereof, an interchangeable hot air brush head on the opposite end of said case, a removable assembly in said case including an electric motor, a switch therefor, spider frames slidable in said case at the opposite sides of said motor and secured thereto forming a portion of said assembly, inlet and exhaust fans on the opposite ends of said motor shaft, air heating units supported by one of said spider frames between said exhaust fans and said hot air discharge brush head, radio interference suppressors connected with said motor and air heating units, and a locking ring removably positioned within the outer end of said case

to support said assembly in operative position therein.

7. A portable electrically operated air heater and blower including a hollow case formed with air inlet ports in one end, a discharge head threadedly received in the opposite end of said case, a first spider frame supported in said case, a locking ring interposed between said head and said first spider frame, a second spider frame spaced from said first spider frame, an armature carried by said frames, field coils connecting said frames thereby forming an open housing motor, fan blades supported adjacent the opposite ends of the armature shaft, and a heating unit supported in said case adjacent said air discharge head.

8. In a portable electrically operative air heater and blower, a hollow case having a detachable discharge head threadedly received at one end thereof and inlet ports at the opposite end thereof, a motor and heater assembly detachably received within said case, said assembly including a pair of spaced spider frames detachably supported in said case, a locking ring interposed between one of said spiders and said head, a heating element supported on said spider adjacent said locking ring, field coils supported between and connecting said spiders, an armature rotatably mounted between said spiders and air impelling means attached to the armature shaft adjacent both ends thereof, a switch associated with the motor and supported by the casing.

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