Oct. 14, 1952 P. VARIS 2,614,201

ELECTRIC FAN WITH HEATING ATTACHMENT

Filed May 8, 1950

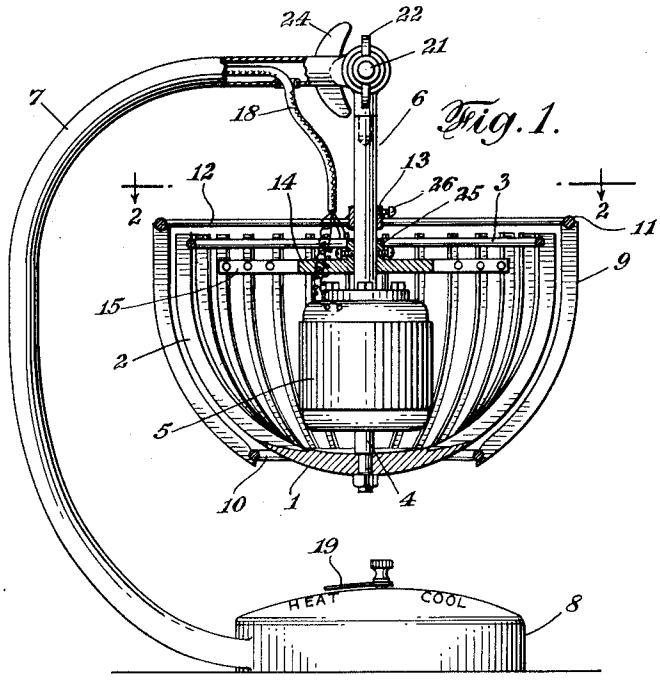


Fig. 1.

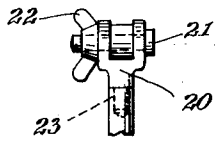


Fig. 3.

Fig. 4.

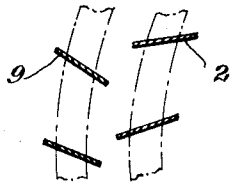
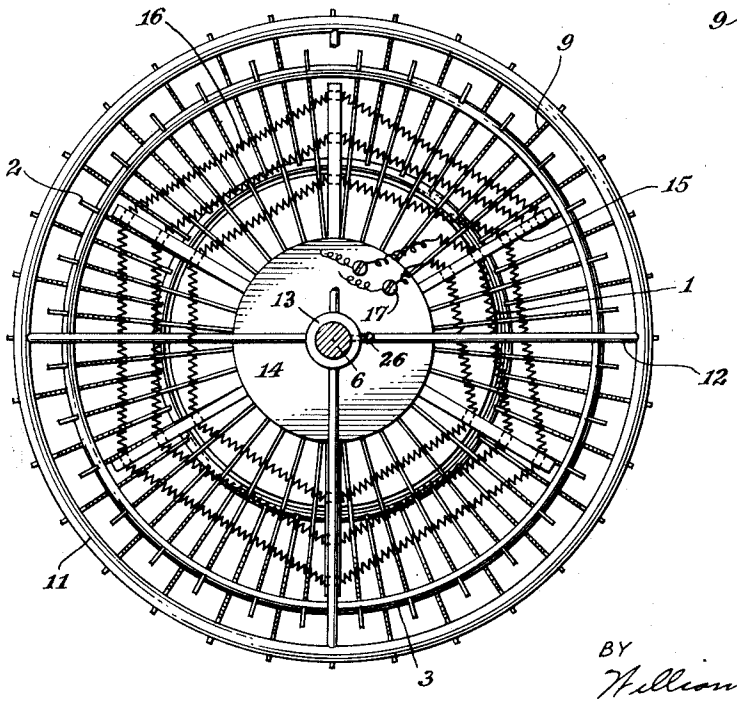


Fig. 2.



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ELECTRIC FAN WITH HEATING ATTACHMENT

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5 Claims. (Cl. 219—39)

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My invention is an improvement in fans, especially power-driven fans for circulating air and equipped with means for heating air when a rise in temperature is needed.

An important object of my invention is to provide a circulating fan, operated preferably by electric current, and mounted so that it can be adjusted to change the direction of the air current which it creates; and equipped with a heating member and means for energizing said member when desired.

A further object is to provide such a fan of efficient construction, and having a suitable support upon which the fan is securely mounted.

Other objects are made apparent in the following description, and a preferred embodiment of the improved fan is illustrated in the drawings. But this disclosure is explanatory only, and the construction set forth herein can be changed in various details without deviation from the essential characteristics of the invention as defined in the appended claims.

On said drawings:

Figure 1 is a side view of a fan according to this invention.

Figure 2 is a top view on a larger scale, viewed from the plane of line 2—2 in Figure 1.

Figure 3 presents a detail; and

Figure 4 is a diagrammatic view showing the interaction of the blades of the fan with the deflector elements for distributing the air which the fan sets in motion.

The body of the fan comprises a hub 1 to the rim of which are affixed the blades 2. The fan has the approximate shape of half a sphere with the hub 1 at a pole thereof and the blades joined at one end to the hub 1. The blades curve outward and extend away from the hub 1, and the other ends are united by a ring 3. The cage-like framework of the fan is rotatable and is made fast to the lower end of a vertical shaft 4 carrying the armature of an electric motor in a casing 5. This casing is secured to the lower end of a rod 6, adjustably connected to a post 7 affixed to a base 8. The fan can be made to operate in the position shown on Figure 1, or swung up to a position in which the hub 1 is uppermost, or at any intermediate position.

Enveloping the fan is a second stationary framework comprising elongated deflector strips 9, curved so as to be convex along their outer edges. These deflector members are affixed at one end to a ring 10 that is approximately in the plane of the hub 1; and at their opposite ends to a ring 11 which is a little beyond the plane of

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the ring 3. This ring is joined by rods or connectors 12 to a hub 13 fixed upon the rod 6 between the ring 3 and the top of the post 7. The cage-like framework including the deflectors 9 is thus hung upon the rod 6 and cooperates with the blades 2 in distributing the air in all directions.

Between the ring 11 and the housing 5 of the motor is a heater member comprising a disk 14 of insulating material made fast to the rod 6. The disk has radiating arms 15 carrying electrical resistance coils 16 extending in several parallel lines around in the space between the disk 14 and the blades 2. The elements 16 are attached to binding posts 17 on the disk 14, and to these posts are connected the ends of electrical conductors 18 which supply current. These conductors are enclosed by the post 7, which is hollow, and run to the base 8, which carries a switch 19. The base has terminals so arranged that the switch can close a circuit to energize both the motor in the housing 5 and the heater together, or the motor only. Hence air at ordinary temperature can be set into motion, or the air can be heated as the fan revolves. The switch terminals in the base 8 will be joined to an ordinary flexible conductor with a plug at one end for insertion into an outlet of a wiring system.

The upper end of the rod 6 has a forked element 20 with openings in both arms for a bolt 21 to be passed through the end of the post 7 between the two arms of the element 20. The bolt is made fast by a wing nut 22. The element 20 has a threaded stud 23 by which it is screwed to the upper end of the rod 6. On the post 7 adjacent the element 20 are upper and lower stop projections 24. Hence the fan and the deflectors can be secured with the hub uppermost or lowermost, or at any point between these extremes. The blades 2 and 9 can be disposed in any relative position, with the blades 9 at an angle to the blades 2, as illustrated in Figure 4; and with the planes of the blades all in planes that pass through the axis of the shaft 4 or at any angle to such planes as will ensure effective operation and distribution of the air flow to the extent required. The disk 14 has a hub 25, and the hubs 13 and 25 are made fast to the rod by screws 26.

The fan of this invention is especially useful indoors to facilitate thorough ventilation of all parts of a room.

Having described my invention, what I believe to be new is:

1. Apparatus comprising a cage-like framework containing fan-blades and a cage-like

framework enveloping the first-named framework, and containing deflector blades in the periphery thereof, means for rotatably mounting the first-named framework, and means for maintaining the other framework stationary, said apparatus also having a heater member rigid with the outer framework and disposed within the framework of said fan blades.

2. Apparatus comprising a hub, fan blades affixed thereto and curved to form a hemi-spherical cage-like framework, a rotatable shaft to which the hub is affixed, a motor casing bearing said shaft, a rod suspending said casing in fixed position, and a hemi-spherical cage-like framework affixed to said rod and having deflector blades enveloping the first-named framework, said apparatus also having a heater member affixed to said rod and disposed within the first-named framework.

3. Apparatus comprising a hub, fan blades affixed thereto and curved to form a hemi-spherical cage-like framework, a rotatable shaft to which the hub is affixed, a motor casing bearing said shaft, a rod suspending said casing in fixed position, and a hemi-spherical cage-like framework affixed to said rod and having deflector blades enveloping the first-named framework, said apparatus also having a heater member affixed to said rod and disposed within the first-named framework, a post to which said rod is adjustably connected, a base for the post and a switch on the base to control the motor and heater member.

4. Apparatus comprising a hub, a rotatable shaft carrying said hub, a housing for an electric motor, fan blades secured at one end to the hub, a ring joining said blades at the opposite ends, a framework comprising deflector blades and rings uniting the adjacent ends thereof enveloping said fan blades, a rod affixed to said casing, said framework being made fast to said rod and a support to which said rod is adjustably connected, said apparatus also having an electric heater member adjacent one end of said fan blades and enveloped by said blades, means for securing said member to said rod and a switch on said support for said member and said motor.

5. Apparatus comprising a hub, a rotatable shaft carrying said hub, a housing for an electric motor, curved fan blades secured at one end to the hub, a ring of larger diameter than the hub joining said blades at the opposite ends, a framework comprising curved deflector blades and rings uniting the adjacent ends thereof enveloping said fan blades, one of the last-named rings encircling the ring joined to the fan blades, a rod affixed to said casing, a bearing on said rod, radial connectors joining said encircling ring to said bearing, a support to which said rod is adjustably connected, said apparatus also having an electric heater member adjacent one end of said fan blades and enveloped by said blades, said member comprising a disk of insulation secured to said rod, and a switch for said member and said motor.

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