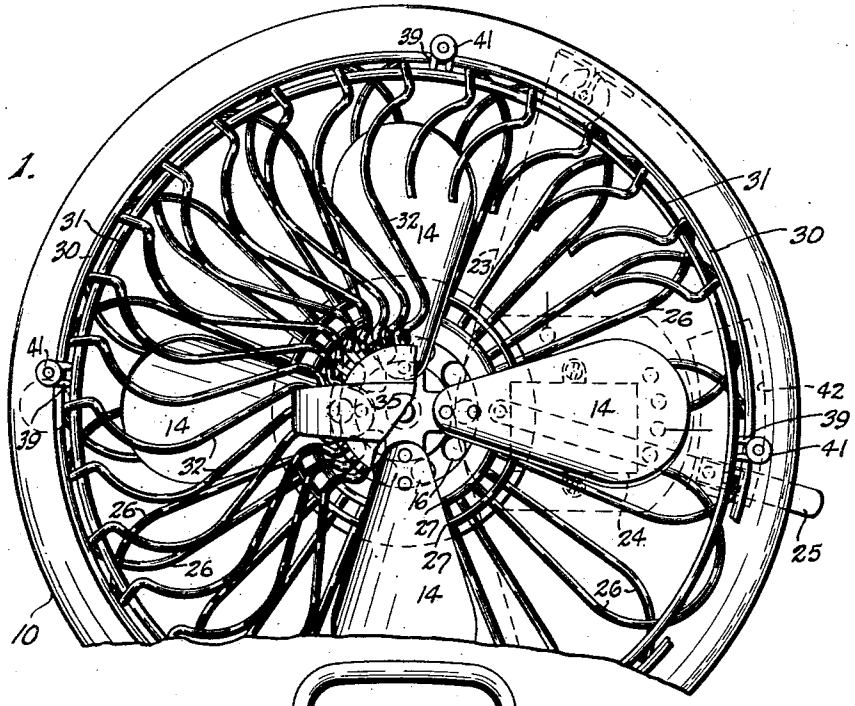
Feb. 11, 1930. H. HUBBELL, JR 1,746,531

ELECTRIC FAN

Filed March 3, 1927

Fig. 1.



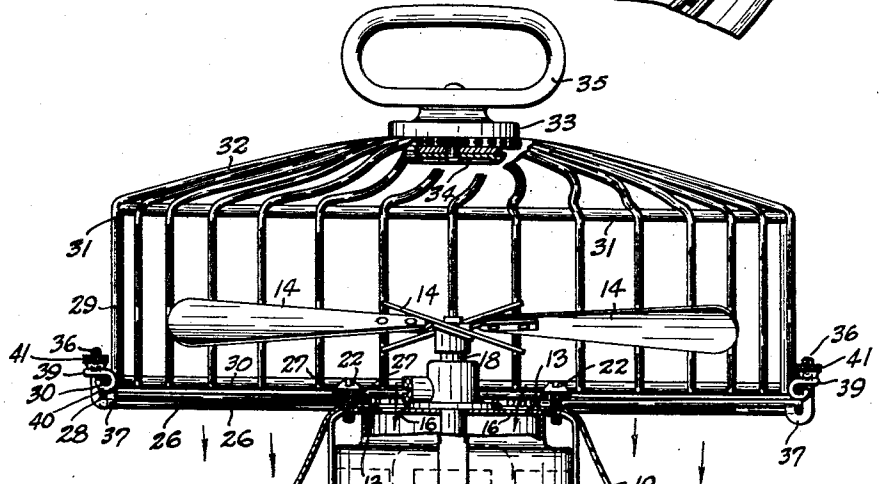


Fig. 2.

Inventor

By Harvey Hubbell Jr.

Wooster & Davis Attorneys.

Patented Feb. 11, 1930

1,746,531

UNITED STATES PATENT OFFICE

HARVEY HUBBELL, JR., OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO HARVEY HUBBELL, INCORPORATED, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT

ELECTRIC FAN

Application filed March 3, 1927. Serial No. 172,275.

This invention relates to fans, and particularly to an electric fan for circulating air in a room, and has for an object to produce a fan which is adapted to rest on a desk or table top and will throw the air substantially uniformly in all directions about the room to give a uniform and thorough circulation of air in all parts of the room.

It is also an object of the invention to provide a fan which will not direct a strong stream of air against a relatively small area, to thus do away with the objection of the common type of fan which, if directed toward a person, because of the concentrated stream of air therefrom, is liable to cause discomfort.

It is a further object of the invention to provide a fan which has a continuous circulation of air through the motor to prevent its overheating.

It is a still further object of the invention to provide a fan which will be neat and attractive in appearance and so protected that there is very little likelihood of one becoming injured by the fan blades, and to provide a convenient means for carrying the fan or moving it from place to place.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification. In this drawing,

Fig. 1 is a top plan view of the fan with a portion broken away to more clearly show the construction, and

Fig. 2 is a partial side elevation and partial section of the fan.

This improved fan comprises a hollow base 10 preferably of aluminum or some similar material so that it will be of relatively light weight, and this base is substantially conical in shape with suitable supporting means such as feet 11 on its lower larger end to rest on a table top 12 or similar support and hold the base a short distance above this surface for circulation of air as will be more fully described later. The upper end of this base has an inturned flange 13 provided with an opening therethrough, and mounted above this upper end to rotate about a vertical axis are the fan blades 14. It will thus be apparent that these blades rotate in a horizontal plane, and they are so inclined as to force the air downwardly, as indicated by the arrows, against the side walls of the conical base. It is preferred that these side walls be curved or somewhat concave, as shown in Fig. 2, so as to deflect the air laterally outwardly as it leaves the lower portion of these side walls.

The fan blades are rotated by means of an electric motor 15 mounted within the base. It is important that means be provided for preventing overheating of this motor, especially as it is enclosed within the conical base. Therefore, the casing of this motor is provided in its opposite ends with inlet openings 16 at its upper end and outlet openings 17 at its lower end, and as the fan blades rotate in a horizontal plane this motor will be mounted in an upright position so that its rotating shaft 18 is vertical. I provide a very simple and effective means for mounting this motor comprising upright supporting straps 19 extending inwardly under the shoulder 20 formed by the enlargement in the center of the motor casing and to which they are secured by suitable screws 21. These straps extend inwardly at their upper ends and are secured to the under side of the flange 13 by means of screws 22 and by which they are securely clamped to the under side of the flange, and thus securely mount the motor under the opening in this flange.

At one side of the enlarged base portion of the base 10 is mounted a segmental plate 23 carrying a switch and rheostat 24 for controlling the motor. A lever 25 extends downwardly through an opening 42 in the plate and projects outwardly under the edge of the base for easy manipulation.

I have provided a very strong attractive and effective guard about the fan blades so that there is very little likelihood of any one becoming injured thereby, and also one which will thoroughly protect these blades from injury. This guard comprises a base portion composed of heavy wire loops 26 extending outwardly and a pair of spaced rings 27 to which rings the loops are secured as by spot welding or soldering. Adjacent their outer ends the loops are similarly welded or sol-

dered to a ring 28. This base portion is secured to the upper end of the conical base 10 by means of the screws 22 extending between the two rings 27, and these rings are so spaced that the heads of the screws will clamp against the upper sides thereof. Therefore, these screws not only secure the motor to the base but also the guard.

The guard also includes a portion comprising similar heavy wires extending vertically upward, as shown at 29, from a wire ring 30 to which they are secured at their lower ends by welding or soldering. At the top of these vertical portions of the wires they are similarly secured to a ring 31, and they then extend inwardly toward the center over the fan blades, as indicated at 32. These inward ends are all clamped together between plates 33 and 34, and the top plate 33 forms the base of a handle 35. Thus the mounting for the handle forms a means for securing these free ends of the guard wires together. This upper portion of the guard is detachably secured to the base portion of the guard by suitable clamps. These clamps are made in two parts, a hook portion 36 comprising an upright threaded part and a hook 37 extending around under the ring 28. The other portion of the clamp comprises a wire loop 39 bent to substantially U-shape and having the free ends of the sides thereof looped around the ring 30, as shown at 40. In applying the cover the body of the clamp 36 is extended through the loop 39 and they are clamped together by means of the knurled nut 41. It will be apparent that by loosening these nuts the hooks 37 may be detached from the ring 28 and the cover portion of the guard may then be easily removed to give access to the fan blades or to permit oiling of the upper bearing for the motor. It will also be apparent that this guard forms an effective protection for the fan blades or people using the fan, and with the handle a convenient means by which the fan as a whole may be easily carried.

In operation the fan blades are so rotated as to force air downwardly as indicated by the arrows, and it will be apparent that this air is deflected outwardly in all directions by the curved side walls of the conical base, thus giving a thorough and uniform circulation of air throughout all parts of the room. Also as the stream of air is not concentrated in any one direction the required movement of air is secured without discomfort to any one within the room. It will also be apparent that as this air from the fan blades moves outwardly off the lower outer rim of the conical base they will have a suction effect on the air beneath it and under this rim so that it will draw air outwardly from within the conical base and will cause a circulation of air through the motor, this air entering through the inlets 16 at the upper end of the motor casing and flowing out the outlets 17 at the lower end of the casing. This circulation of air is also assisted by the fan blades forcing air downwardly toward these openings. With this arrangement, therefore, I secure effective cooling of the motor and prevent its overheating.

Having thus set forth the nature of my invention, what I claim is:

1. An electric fan comprising an upright substantially conically shaped hollow base having an opening in the upper end thereof, a motor mounted within the base beneath said opening and having an upright shaft extending through said opening, fan blades mounted on said shaft to move in a horizontal plane and inclined to force air downwardly against the outer surface of said base, said motor including a casing having openings therein for flow of cooling air, and means at the lower larger end of the base to support it a short distance above a table top or similar support so that air flowing laterally off the lower outer surface of the base will draw air downwardly through the opening in the upper end of the base and through the motor to cool the motor.

2. A fan comprising fan blades mounted to rotate about an upright axis and arranged to force air downwardly, a hollow base below said blades provided with outer surfaces arranged to deflect the air laterally in substantially all directions and having an opening in the upper end thereof, an electric motor mounted within said base and including a shaft for driving said fan, said motor having a casing with openings in the opposite ends thereof to permit flow of cooling air through the casing, and means for mounting the motor with the openings in one end of the casing in alignment with the opening in the base to receive cooling air from the fan blades.

3. A fan comprising an upright substantially conically shaped hollow base constructed to rest at its larger end on a table or similar support, fan blades above said base mounted to rotate about an upright axis and arranged to force air downwardly against the outer surface of the base, the base being provided with an opening in its upper end surrounded by an inturned flange, a motor mounted within the base having driving connection with said fan blades, said motor including a casing having openings in its opposite ends for flow of cooling air, and supports connected to the casing and the base to hold one end of the casing against the under side of the flange and cause air flowing through the opening in the base to flow through the casing.

4. A fan comprising an upright hollow base constructed to rest at its lower end on a table top or similar support, fan blades above said base mounted to rotate in a substantially horizontal plane and arranged to force air downwardly, said base being provided with outer wall surfaces extending downwardly

and outwardly to deflect air from the fan laterally in different directions and having an opening in its upper end surrounded by an inturned flange, a motor in the base for operating the blades and including a casing, an open work guard enclosing the fan blades, upright supports secured to the casing and extending to the under side of said flange, and a common securing means for fastening the guard and said supports to the flange.

In testimony whereof I affix my signature.

HARVEY HUBBELL, JR.