C. I. HALL.

FAN MOTOR.

APPLICATION FILED DEC. 23, 1912.

1,156,901. Patented Oct. 19, 1915

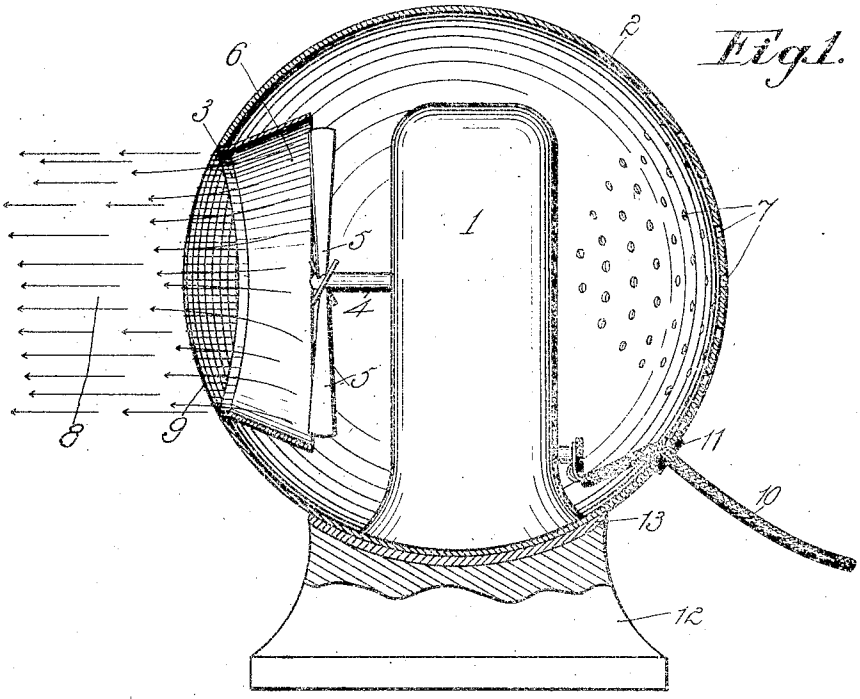


Fig. 1.

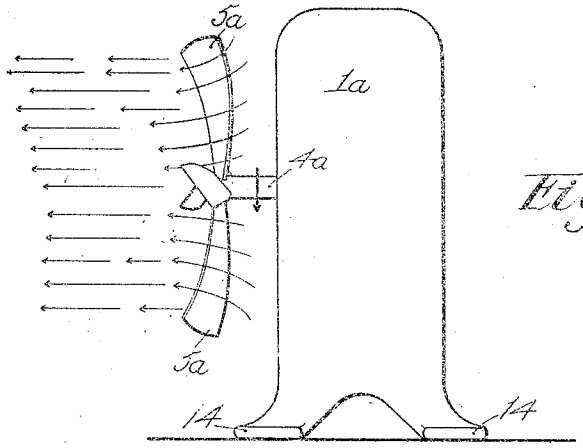


Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

CHESTER I. HALL, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHICAGO ELECTRIC METER COMPANY, A CORPORATION OF ILLINOIS.

FAN-MOTOR.

1,156,901. Specification of Letters Patent. Patented Oct. 19, 1915.

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To all whom it may concern:

Be it known that I, CHESTER I. HALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Fan-Motors, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to an improved form of fan motor in which the motor and fan are wholly inclosed, preferably in a spherical shell, and said shell is so mounted that it may readily be given any desired adjustment upon a supporting base so that the air driven from the fan may be projected at any desired angle, no mechanical devices being used to connect the shell and the supporting base. While the shell and base may be secured together if desired, in any well known manner, I prefer to construct these parts so that the shell rests upon the base without being attached thereto, any particular adjustment being retained wholly as a result of the weight of the shell and the parts contained therein. The shell in the preferred form of my invention is provided with a discharge orifice through which the air is projected by a deflecting nozzle so that the air leaving the fan assumes the form of a substantially parallel column, instead of being diffused over a wide area as is customary in connection with fan motors. The discharge orifice is preferably covered by a protecting screen to prevent accidents by engagement with the fan proper, although the mesh of the screen is not small enough to prevent the ready passage through the air delivered from the fan. The side of the shell opposite to the discharge orifice is preferably provided with a plurality of small intake openings as a result of which the air which is delivered from the discharge orifice first passes through and around the motor, thus serving to keep the same cool.

I do not limit my invention to a spherical shell and may employ other forms of shells, or the shell may be entirely dispensed with and the substantially parallel column of air delivered by the fan may result from a curved conformation of the fan blades rather than from the operation of a directing nozzle. My invention is particularly successful for small fan motors which may be used where a very limited circulation or draft by means of a column of air is desired, as, for instance, in offices where the requirement is that a mild stream of air be projected against the occupant of the office, as, for example, in warm weather, while at the same time, it is desirable to protect papers that may be upon the office desk from being thrown around by the breeze. My invention particularly meets this need since the parallel column of air is projected from the shell at a sufficient height to clear the papers that may be on the desk, and by directing the column slightly upward as is usually the case, the possibility of disarranging papers is avoided.

The further desirable feature secured by my invention is the great reduction in the amount of power and energy required to drive the fan, which results in a proportional saving in the expense of operation of the fan.

The several drawings illustrating my invention are as follows:

Figure 1 shows the preferred form of my invention in elevation, the inclosing shell and a part of the base being in section to more clearly show the parts within the shell. Fig. 2 shows a modified construction in which the parallel direction given the air is determined by the conformation of the fan blades.

Similar numerals refer to similar parts throughout the several views.

As shown in Fig. 1 the fan motor 1 is mounted within a spherical shell 2 provided at its left-hand side with a circular discharge orifice 3. The shaft 4 of the motor has mounted upon its left-hand end a fan 5 by which air is projected into a converging nozzle 6 terminating at its left-hand end in the discharge orifice or aperture 3. The opposite side of the shell is provided with a plurality of small holes 7, which are of sufficient number to permit the air to enter the shell and be projected therefrom, by means of the fan. The air thus entering, circulates around and through the motor 1, before engaging the fan 5, by which it is projected into the nozzle 6. The nozzle or directing tube 6 is so formed that the air projected through it is delivered from the shell in a substantially parallel column 8, by which interference with papers or other

light articles which may be near the fan is avoided and the air is projected more effectively toward the point desired. The screen 9 is secured to the shell 2 over the discharge opening 3, so as to prevent injury by accidental contact with the fan 5, and the mesh of the screen is large enough to permit the ready passage of the air through it. The electric cord 10, used to supply electric current to the motor 1, is led through the shell by means of an insulating bushing. The standard or base 12 is preferably of metal so as to be stable and its upper concave surface is preferably lined with a material such as felt indicated at 13 to engage the outer surface of the shell 2 to hold it in any adjustment that may be given to it. As all of the parts of the fan motor are contained within the shell, the center of gravity of these parts is not far from the center of said shell, as a result of which there is little tendency for the shell to change its adjustment since the reactive effect of the fan 5 upon the air is small compared with the weight of the shell and the parts contained therein.

While I do not limit myself to any particular size of construction, it is to be understood that the structure which is described is particularly desirable for small size fan motors, such, for example, as those for which the inclosing shell may be made of from 5 to 6 inches in diameter. Motors of this size require but little care and therefore are not expensive to operate, and yet their effectiveness by means of the construction described is considerable as the air is converged and concentrated upon certain points rather than being widely distributed as is ordinarily the case in fan motor operation.

In the modified construction shown in Fig. 2, the motor 1^a is provided with feet 14 for resting upon the desk or other supporting surface and the shaft 4^a carries fan blades 5^a of such conformation that when the shaft is rotated in the direction indicated by the arrow, the air projected by the blades 5^a is thrown from the fan in a converging direction which results in producing a substantially parallel column of air which is concentrated upon the point of application in a manner similar to that described above in connection with Fig. 1. While this modification of my invention does not afford the same protection from stray air currents as that shown in Fig. 1, it may be employed with similar results under many conditions.

While I have shown my invention in the particular embodiments described above, I do not, however, limit myself to these particular constructions, as I may employ equivalent devices without departing from the spirit of my invention.

What I claim is:

1. In combination, a motor, a fan secured to the motor shaft and driven thereby, a spherical inclosing shell surrounding the fan and motor, a directing nozzle in the shell for projecting air through the shell and from the fan in a substantially uniform column, a protecting screen extending over the discharge end of the said directing nozzle, said shell having a plurality of intake holes formed through its side opposite to the directing nozzle, and a supporting base having a concave upper surface for engaging said shell, a friction pad on said base whereby the spherical inclosing shell may be positioned so as to direct a stream of air from said nozzle at any angle, including vertical.

2. In combination a substantially spherical hollow casing, a support for said casing, said support comprising a concave surface on which said casing rests, an opening in said casing, a motor mounted in said casing and fixed thereto and a fan operatively connected with said motor located within said casing arranged to project a stream of air through the opening in the casing, said casing being free to be turned on its support whereby the stream of air emitted from the opening in the casing may be directed as desired.

3. In combination a substantially spherical hollow casing, an opening in the casing, a motor fixed within the casing, a fan connected with said motor located within said casing adjacent said opening and arranged to project a stream of air from the casing, said spherical casing being adjustably mounted so that the stream of air emitted therefrom may be directed as desired.

In witness whereof, I hereunto subscribe my name this 16th day of December, A. D., 1912.

CHESTER I. HALL.

Witnesses:
ALBERT C. BELL,
LESLIE W. FRICKE.