H. M. SHEDD.

OSCILLATING MOTOR DRIVEN FAN.

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999,890.

Patented Aug. 8, 1911.

Fig. 1.

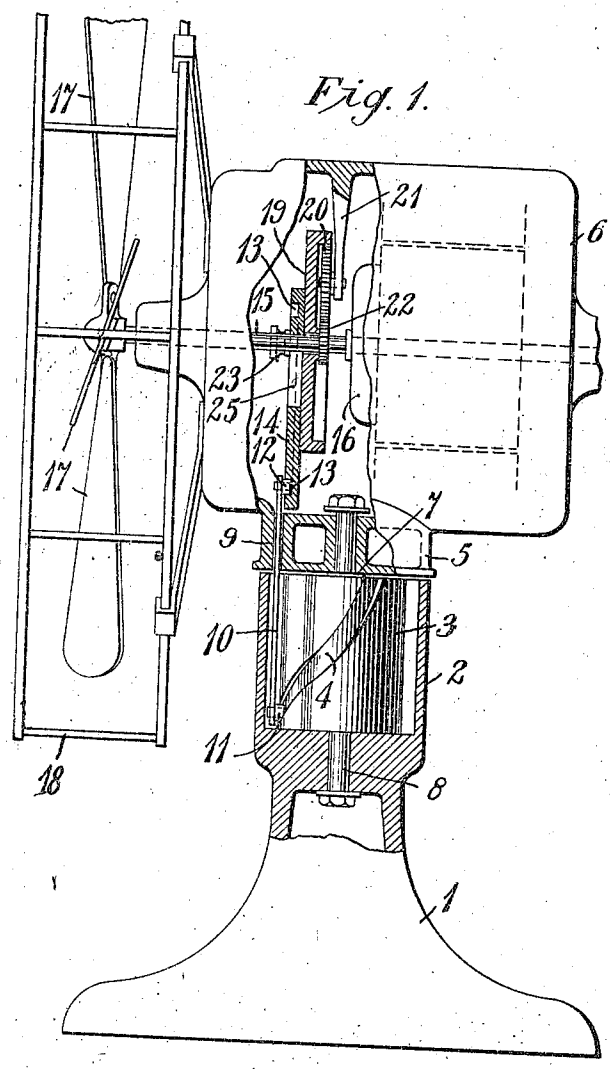
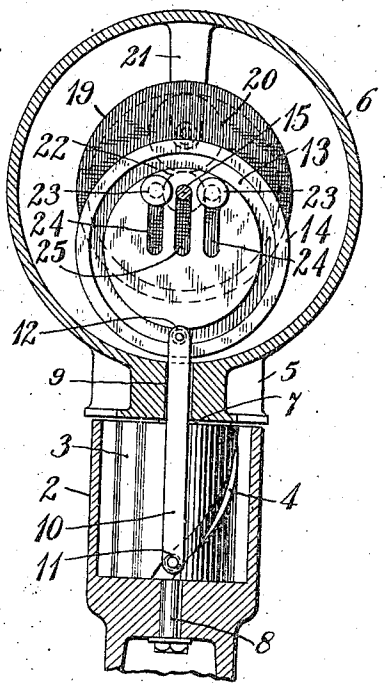


Fig. 2.



WITNESSES:

Fred. H. Miller

D. W. Mace

INVENTOR

Harry M. Shedd

BY

Harley & Earl

ATTORNEY

UNITED STATES PATENT OFFICE.

HARRY M. SHEDD, OF ROSELLE, NEW JERSEY, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

OSCILLATING MOTOR-DRIVEN FAN.

999,890. Specification of Letters Patent. Patented Aug. 8, 1911.

Application filed November 29, 1909. Serial No. 530,504.

To all whom it may concern:

Be it known that I, HARRY M. SHEDD, of the borough of Roselle, county of Union, and State of New Jersey, have invented a new and useful Oscillating Motor-Driven Fan, of which the following is a specification.

My invention relates to motor-driven fans and particularly to fans having oscillatory movements upon axes that are substantially perpendicular to the driving motor shafts upon which the fan blades are mounted.

The object of my invention is to provide a fan of the type above indicated that shall be simple and compact in structure and effective in operation, and the oscillatory movements of which shall be effected by the expenditure of a relatively small amount of power.

In the accompanying drawing, Figure 1 is a view, partially in side elevation and partially in section, of a fan embodying my invention, portions of the structure being also broken away. Fig. 2 is a sectional view of a portion of the structure shown in Fig. 1.

The upper portion 2 of the base 1 of the fan is of cylindrical or cup form and in it is located a cylindrical block 3 of less external diameter than the internal diameter of the cup, the block 3 being provided with an inclined guide here shown as a groove 4 of helical form, the respective ends of which are approximately 90° apart, though the form and length may be varied from what is shown, if desired.

The bottom portion 5 of the fan motor body 6 rests upon a suitable bearing member or shoulder 7 at the top of the cylindrical block 3 and is fastened in position by means of a bolt 8 which extends through a central opening therein and also through corresponding holes in the block 3 and the bottom of the cylindrical portion 2 of the base.

A hole 9 is provided at one side of the portion 5 of the fan motor casing through which projects a bar 10, the lower end of which is provided with a roller 11 to fit into the cam groove 4 in the cylindrical block 3. The upper end of the bar 10 is provided with a similar roller 12 which engages an annular groove 13 in the face of a disk 14, to be hereinafter more fully described.

The shaft 15 of the armature 16 of the fan motor has suitable bearings at the ends of the casing 6 and upon its front end are mounted fan blades 17, a suitable guard 18 being attached to the front end of the casing 6, as is usual in such devices. Loosely mounted upon the shaft 15, within the casing and between the front end of the armature 16 and the fan blades, is a gear wheel 19 having a recessed rear side, the periphery of the recess being provided with gear teeth to be engaged by a gear wheel 20 that is rotatably supported upon a suitable bracket 21 with which the casing 6 is provided. The gear wheel 20 also meshes with a pinion 22 that is rigidly mounted upon a shaft 15, the gear members 19, 20 and 22 being of such relative proportions that the motor may drive the member 19 at such reduced speed as may be desired.

The disk 14 is adjustably attached to the front face of the gear member 19 by means of thumb screws 23 and coöperating slots 24, an intermediate slot 25 being provided in the disk to receive the shaft 15. The disk 14 may be adjusted along the face of the gear member 19 to bring it into concentric relation therewith, or it may be adjusted to any degree of eccentricity, between the extreme position shown in the drawing and the point of concentric relation, by loosening the thumb screws 23 and moving it until the desired adjusted position is attained, when the thumb screws may be tightened.

When the parts are in the positions shown in the drawings, and the motor is in operation, the fan blades will be revolved at high speed and, by reason of the reducing gearing 19, 20 and 22, the disk 14 will be turned at a greatly reduced speed. As the disk is turned, it will reciprocate the bar 10 longitudinally through a range which is dependent upon the degree of eccentricity to which it is adjusted, and, as sidewise movement of the bar is prevented by the opening 9 in which it loosely fits, the helical groove 4 will cause the motor and fan to turn upon a vertical axis through such an angle as will be determined by the character and extent of the cam groove and the eccentricity of the disk 14, first in one direction and then in the other and thus insure a relatively wide distribution of the air currents which are produced by the revolution of the fan blades.

It will be understood that any well known and desired types of bearings may be employed for the rotatable parts; that the speed-reducing gearing between the motor shaft and the disk 14 may be modified as desired and that the cam elements pertaining to the parts 2, 3, 10 and 14 may be modified in form and dimensions (as by substituting projections for recesses and vice versa) without departing from my invention, it being merely essential that an eccentric operating surface shall be so combined with an inclined guide surface, by means of a connecting reciprocatory member, that such parts shall cooperate to effect oscillatory movements of the fan motor and the fan blades that are driven thereby.

I claim as my invention:

1. In a motor-driven fan, the combination with a motor, an eccentrically mounted disk having an annular operating surface and an intermediate speed-reducing gearing, of a base having a helically curved cam surface and a reciprocatory member interposed between said annular operating surface and said cam surface to effect oscillatory movements of the fan body.

2. In a motor-driven fan, the combination with a stationary base having a helical cam surface, of a fan motor pivotally mounted on said base, a disk eccentrically mounted upon the said motor and having an annular operating surface, speed-reducing gearing between the motor shaft and said disk and a longitudinally movable bar interposed between the annular operating surface on said disk and the helical cam surface of said base.

3. In a motor-driven fan, the combination with a base having a cylindrical part provided with a helical cam groove, of a fan motor pivotally mounted upon said base, an eccentrically mounted disk having an annular groove, speed-reducing gearing between said disk and the motor shaft and a reciprocatory bar interposed between said cam groove and the helical groove in said base.

4. In a motor-driven fan, the combination with a base having a cup-shaped recess in its top and a cylindrical block mounted in said recess and provided with a helical cam groove, of a fan motor pivotally mounted upon said base, speed-reducing gearing, a disk having an annular groove and adjustably mounted upon the slow-speed member of said gearing, and a longitudinally movable bar having projections at its ends to respectively engage the groove in said disk and the helical cam groove in said base.

5. In a motor-driven fan, the combination with a base having a helical cam surface in its upper portion, of a fan motor pivotally mounted upon said base, a disk having an annular bearing surface, a connecting bar mounted to permit longitudinal movement only and having its ends respectively provided with means to engage said annular groove and said cam surface, speed-reducing gearing between said disk and the shaft of said motor and means for adjusting the eccentricity of said disk with reference to said motor shaft.

6. In a motor-driven fan, the combination with a base having a cylindrical part provided with an inclined guide surface, of a fan motor pivotally mounted upon said base, speed-reducing gearing driven by the shaft of said motor, a disk member eccentrically mounted upon the slow-speed member of said gearing and having an annular operating surface, and a longitudinally movable bar, the respective ends of which make operative engagement with said guide surface and said annular operating surface.

7. In a motor-driven fan, the combination with a base having a cylindrical part provided with an inclined guide surface, of a fan motor pivotally mounted upon said base, speed-reducing gearing driven by the shaft of said motor and having an operating cam surface upon its slow-speed member and a longitudinally movable member the respective ends of which make operative engagement with said inclined guide surface and said operating cam surface.

Signed at Roselle, New Jersey, this 27th day of November, 1909.

HARRY M. SHEDD.

Witnesses:

PETER L. UGHATTA,

JNO. H. DE GROFF.