R. P. THOMPSON.

ELECTRIC FAN.

APPLICATION FILED JAN. 23, 1909.

956,229.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

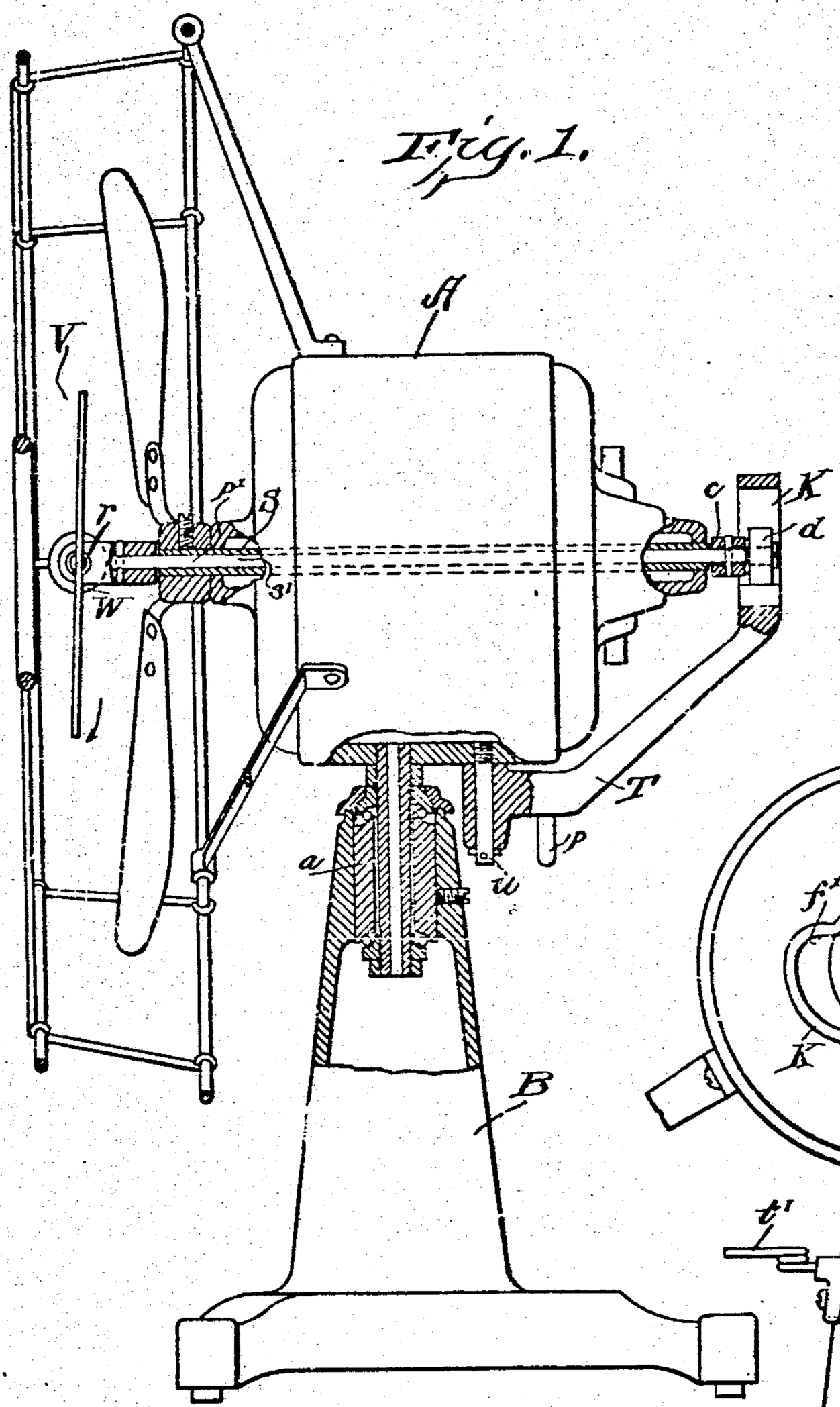
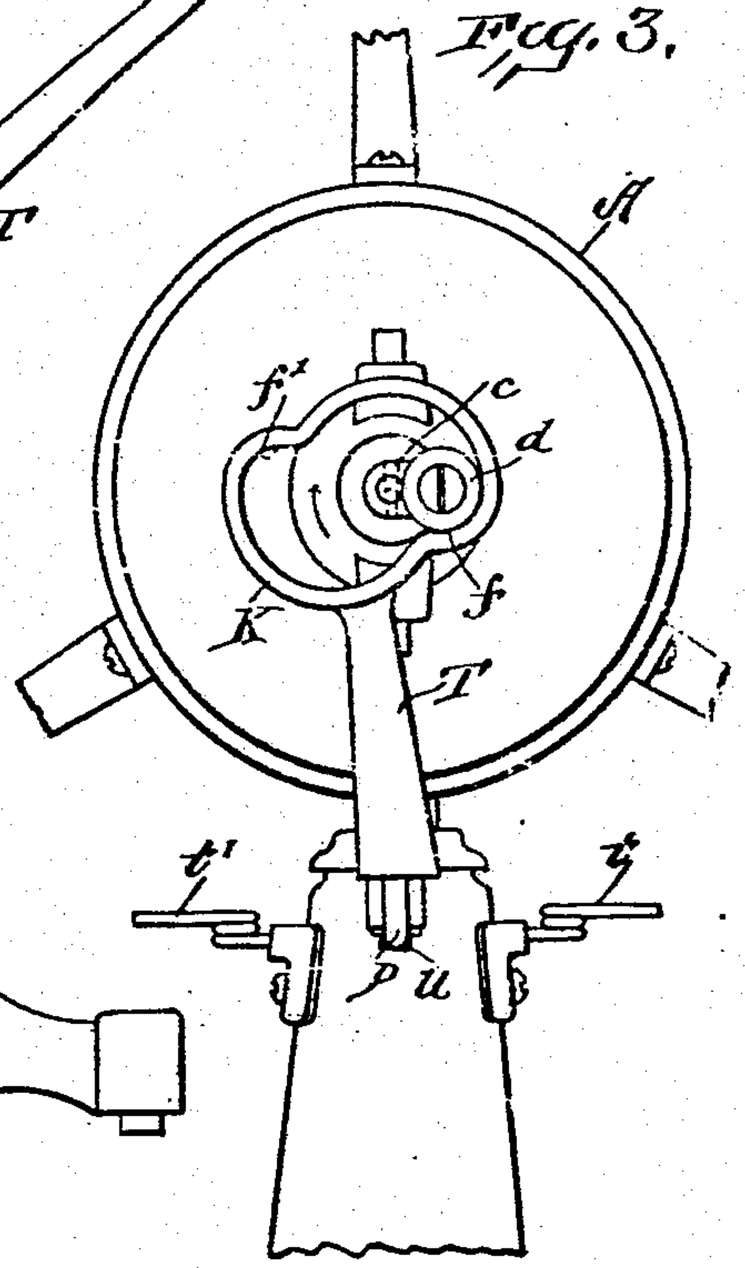



Fig. 3.

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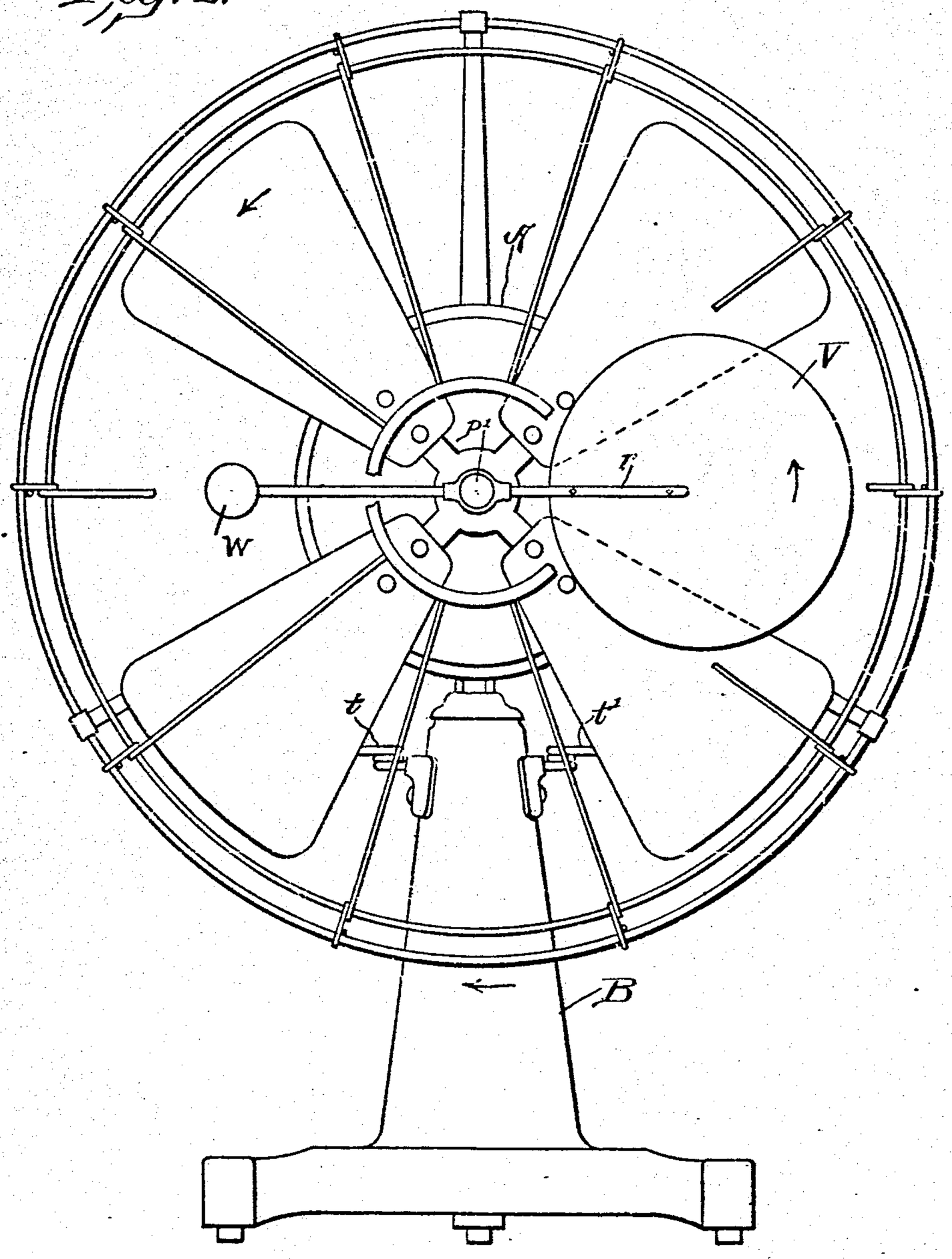
2 SHEETS—SHEET 2.

Fig. 2.

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## ELECTRIC FAN.

956,229. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed January 23, 1909. Serial No. 473,325.

*To all whom it may concern:*

Be it known that I, RALPH P. THOMPSON, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented a new and useful Electric Fan, of which the following is a specification.

My invention relates to that type of electric fans known as oscillating fans, being so named from the fact that a bearing is provided upon the stationary part of the fan, and upon which the body may turn from side to side, as the fan rotates, for the purpose of distributing the air current that is projected from the fan blades.

The object of my invention is to provide means, by the use of which an oscillating fan, which uses the air current as the motive power for the oscillating movement, may become self-starting. I accomplish this by applying a constant pressure upon the movable reversing vane, of either air pressure, or by frictional contact with the armature shaft, the pressure being so applied that it always moves the reversing vane into the opposite operative position when the reversing vane is released by the releasing mechanism.

In the accompanying drawings, which form a part of these specifications, Figure 1 shows a side elevation of the fan and in which certain parts are broken away to better show the construction. Fig. 2 is a front elevation of the fan. Fig. 3 is a rear view of the fan body and upper part of the fan base, with the guard and blades removed.

Fig. 1 shows a sectional view of the fan in which the body A is supported on an anti-friction bearing *a* in the base B, and upon which the fan body may turn from side to side through an arc of a circle which is limited by the stops *t* and *t'*, Fig. 2 and Fig. 3, which come in contact with the striker pin *p* located on the arm T.

The vane V, Figs. 1 and 2, is the reversing vane, and is supported by the arm *r*, Fig. 1 and Fig. 2. The arm *r* is attached to a spindle *s'* Fig. 1, which has a bearing in the armature shaft S which is in the form of a tube. The spindle *s'* forms a pivot for the arm *r* at *p'*, Fig. 1 and Fig. 2, around which the reversing vane V, and its counter weight W which is attached to the arm *r*, may revolve. The vane V is set at an inclination to the plane in which it revolves, which angle of inclination is in the same direction as the angle of the blades themselves.

The spindle *s'* has fixed upon its opposite end a short crank *c*, which in turn carries a roller *d*, Fig. 1 and Fig. 3. On the body of the fan a stud *u* is fastened, Fig. 1, and upon this stud is journaled an arm T that carries the striker pin *p* and passing beyond, is bent up and formed at its top into an escapement device K, Fig. 1 and Fig. 3. The escapement K is provided with two surfaces *f* and *f'* which act as stops to the roller *d*.

In operation, the reversing vane V being held in front of the blades with the arm *r* extending in a horizontal position with the roller *d*, Fig. 1 and Fig. 3, normally resting on one of the flat surfaces of the escapement K, the unbalanced reaction of the air current will cause the fan to turn upon the bearing *a*. The reversing vane V, having the surface which is presented to the action of the air current set at an angle to the plane in which it revolves, has a tendency to travel along with the blades as the puffs of air from the blades strike the vane and react in the direction of the small arrow at edge of vane, Fig. 1. The friction of the spindle *s'* in the shaft S also tends to turn the reversing vane in the same direction. The reversing vane is resisted from turning upon the pivotal point *p'* by the roller *d* which normally rests on one of the faces *f* or *f'* of the escapement K. In the views shown, the movement of oscillation is to the left as indicated by the arrow at bottom of guard Fig. 2. The roller *d* is shown resting on the surface *f* of the escapement K, Fig. 3. As the movement continues the striker *p* upon the arm T Fig. 1 and Fig. 3, will come in contact with the stop *t* and a movement of the arm T and escapement K will take place, which will free the roller *d*. At the same time the surface *f'* is brought into the path of the roller *d* as it revolves in the direction of the arrow, Fig. 3, and the roller *d* through its solid connections with the reversing vane will bring the reversing vane V into opposite operative position when the roller *d* comes to rest on the surface of the escapement K. The force of the air current constantly applied to the reversing vane tends to revolve it from one operative position to the opposite, and if unrestrained would finally cause the reversing vane to revolve almost as fast as the blades themselves. On the other hand the

friction of the spindle *s'* in the shaft S could be increased until the reversing vane would travel with the blades, even if its inclination to the plane in which it travels were reversed.

In the preferred form shown in Figs. 1, 2, and 3, I have taken advantage of both the air current, and frictional contact, to give motion to the reversing vane, and have adapted an escapement mechanism to obtain the intermittent movement of the reversing vane which is necessary in order to establish an oscillating movement of the fan. When the fan is started the escapement mechanism will be brought into contact with the stops with sufficient force to move the escapement and cause the reversing vane to take the opposite operative position, and it is therefore self-starting at all times.

Other forms of this invention than those shown are attainable in which friction alone, or air pressure alone, may be used as the constantly applied force for moving the reversing vane from one operative position to the opposite. I therefore do not confine myself to the forms shown herewith, but desire to secure Letters Patent on the following:

1. In an oscillating fan in which the reaction of the air current is used as the propelling power for causing the oscillating movement, a vane interposed in the path of the air current, and upon which the air current impinges thereby unbalancing the reaction of the air current in relation to the bearing of oscillation, a rotatable spindle and an arm attached thereto and extending radially therefrom, said arm adapted to hold said vane in operative position in front of the fan blades and at one side of a plane central of the fan, and an escapement mechanism operated by stops on the stationary part of the fan, said escapement mechanism being adapted to release said rotatable spindle and again arrest its movement, when the deflector or vane has been moved into opposite operative position.

2. In a reaction type oscillating fan, the combination with a rotatable reversing mechanism for unbalancing the reactionary force of the air current in relation to the bearing of oscillation, a deflector attached to said rotatable reversing mechanism, said deflector acted upon by the air current from the fan, and adjusted to cause a constant pressure tending to move the rotatable reversing mechanism from one operative position to the opposite, a device for retaining said rotatable reversing mechanism in either operative position, and a releasing mechanism operated by a trip on the stationary part of the fan and adapted to release the reversing mechanism to cause it to move under the influence of the air current to the opposite operative position.

3. In a reaction type oscillating fan the combination with a rotatable reversing mechanism for unbalancing the reactionary force of the air current in relation to the bearing of oscillation, frictional contact between said rotatable reversing mechanism and the armature shaft, a device for retaining said rotatable reversing mechanism in either operative position, and a releasing mechanism operated by a trip on the stationary part of the fan and adapted to release the reversing mechanism to cause it to move under the influence of the frictional contact to the opposite operative position.

4. The combination in an oscillating fan, having fan blades carried by a motor, and which motor is adapted to oscillate upon a bearing on a stationary member, of a revoluble friction driven reversing vane mounted upon the oscillating part of the fan, and means upon the said stationary member, adapted to act upon the revoluble reversing mechanism for the purpose of controlling the stroke of oscillation of the motor upon its bearing upon the said stationary member.

5. In an oscillating fan, the combination of an intermittently operated reversing mechanism, adjusted to receive air pressure from the fan blades constantly applied to said reversing mechanism to effect the movement of said reversing mechanism, means for arresting the movement of said reversing mechanism and retaining it in operative position against the constantly applied air pressure, and means for releasing said reversing mechanism, thereby effecting its movement into the opposite operative position under the influence of the constantly applied air pressure.

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