

No. 819,630.

PATENTED MAY 1, 1906.

R. E. BARKER.  
OSCILLATING MOTOR FAN.  
APPLICATION FILED DEC. 10, 1903.

Fig. 1.

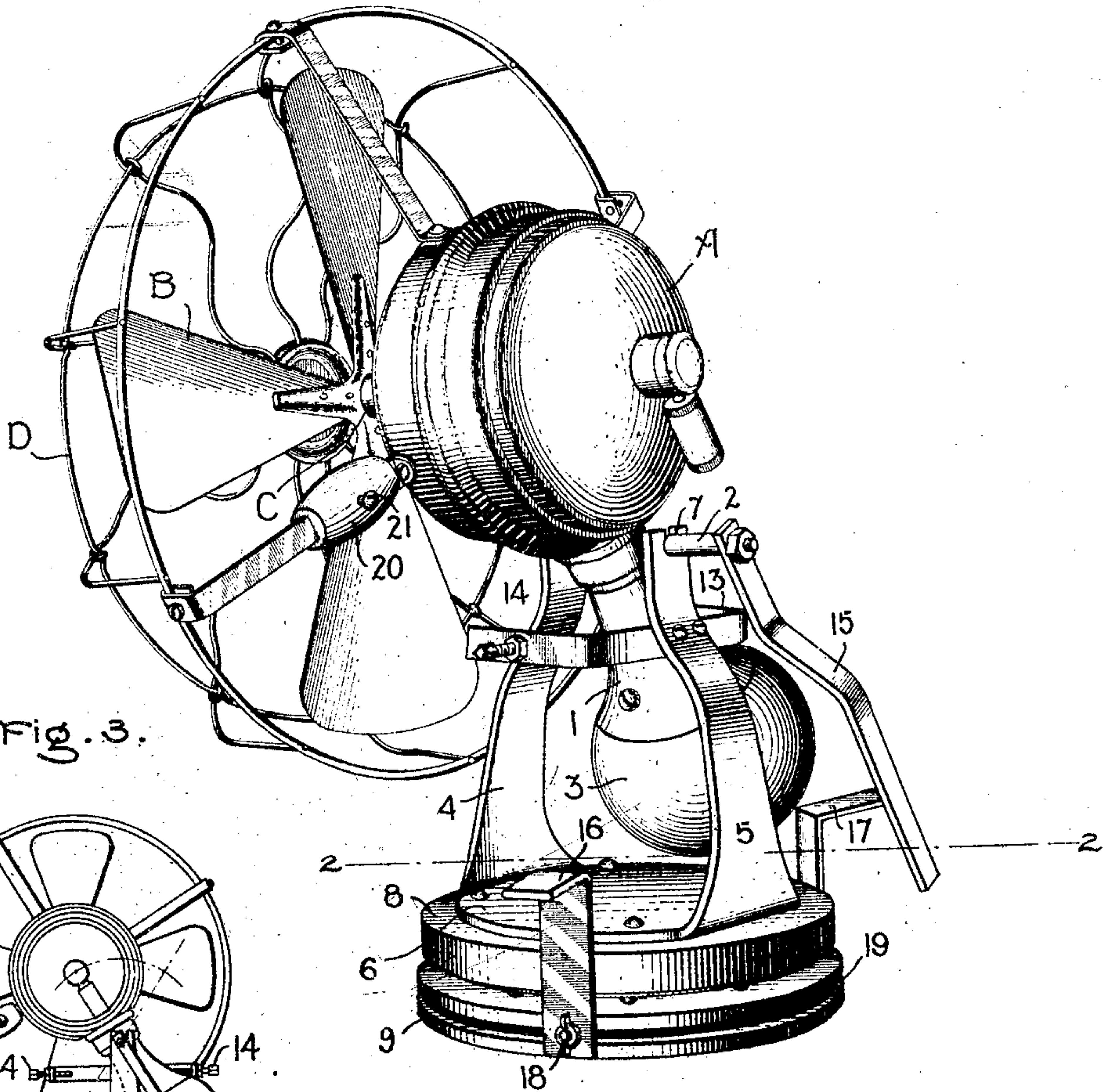


Fig. 3.

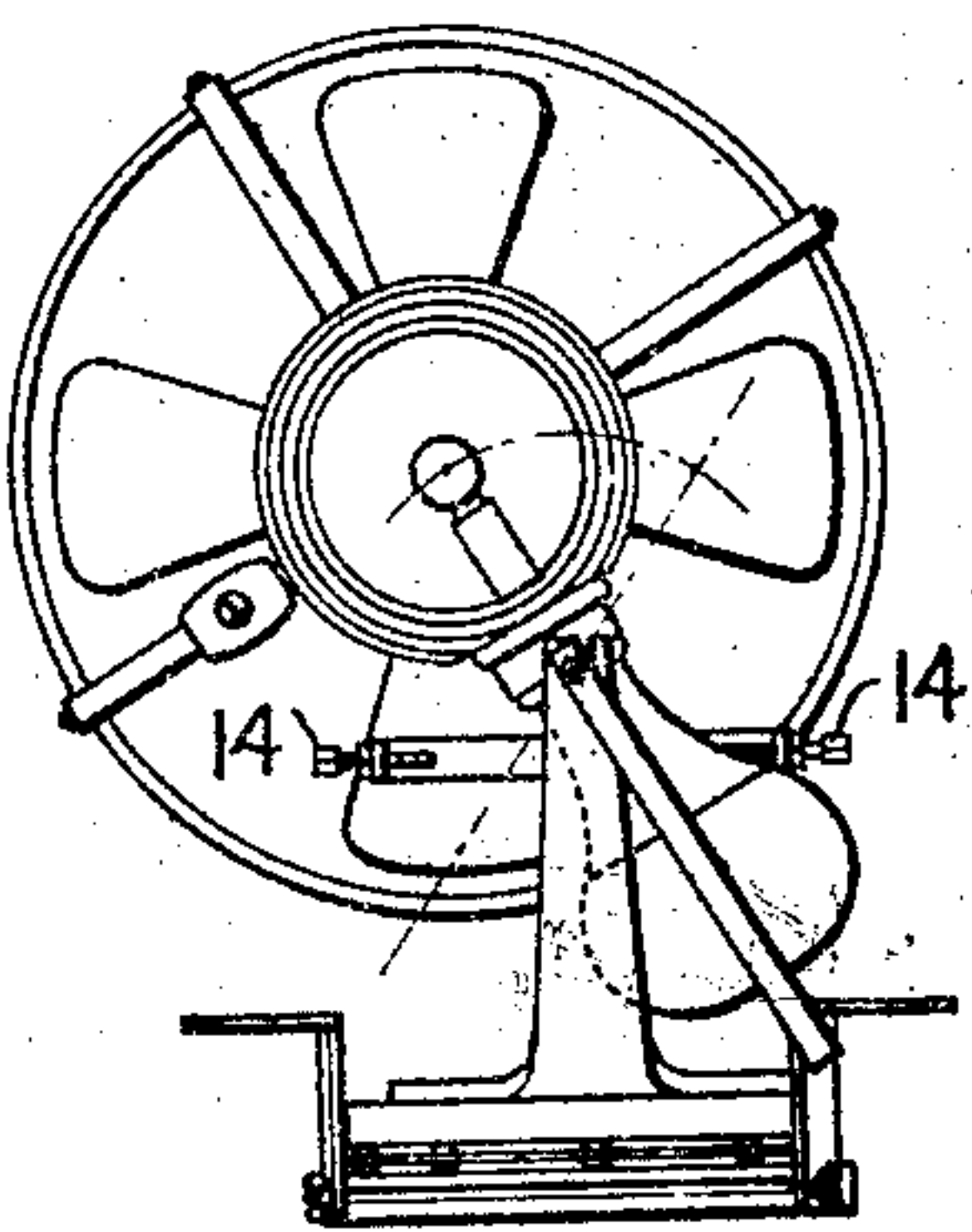
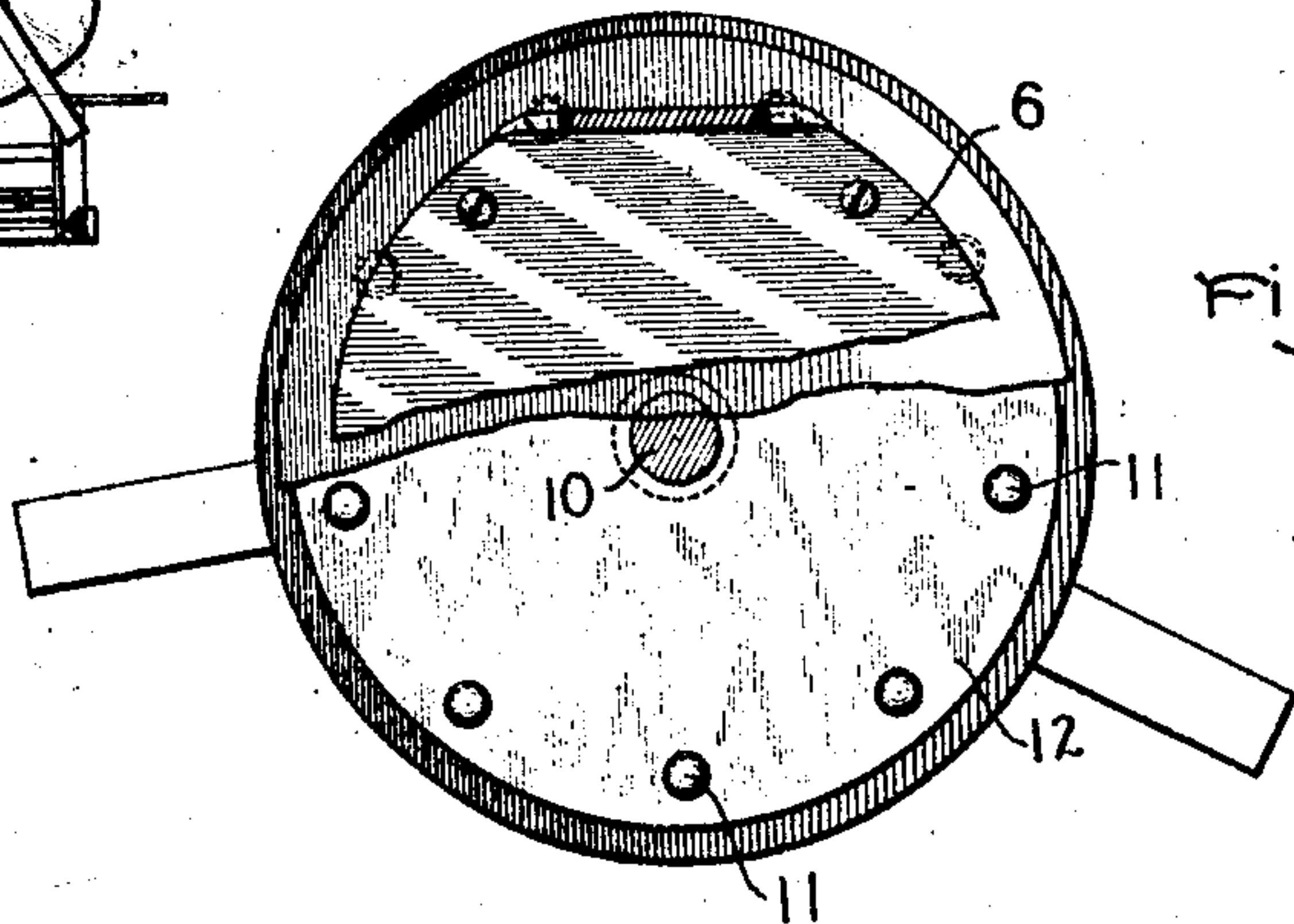


Fig. 2.



Witnesses

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Att'y



# UNITED STATES PATENT OFFICE.

RALPH E. BARKER, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## OSCILLATING MOTOR-FAN.

No. 819,030.

Specification of Letters Patent.

Granted May 1, 1906.

Application filed December 19, 1903. Serial No. 184,579.

*To all whom it may concern:*

Be it known that I, RALPH E. BARKER, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Oscillating Motor-Fans, of which the following is a specification.

This invention relates to motor-fans, and more particularly to that class in which the blast-producing member is automatically oscillated about an axis at right angles to its axis of rotation in order to deliver the full current of air periodically over a wide area and which are known to the trade as "oscillating" fans.

The object of my invention is to provide an attractive fan of this type in which the oscillatory movement is effected with an expenditure of a minimum amount of energy and by means which do not interfere with the blast of air produced and which are not easily disarranged or gotten out of order.

In carrying out my invention I mount upon a rock-shaft journaled in a support adapted to turn freely about a vertical axis a motor and rotary fan with their axis of rotation parallel thereto and counterbalance the motor and fan so that the center of gravity is but a short distance above the longitudinal rock-shaft, and in order to limit the movement of the motor and fan under the force of gravity away from the vertical position stops are provided upon the support in line with some projecting part of the motor, so that the normal position of the fan and its motor is to one side or the other of the axis of the pivotal support, and when in operation the back thrust of the fan will produce a turning movement of the system about the vertical pivotal axis. In order to automatically shift the position of the motor and fan from one side of the vertical to the other to produce a corresponding oscillation in the opposite direction the rock-shaft is provided with a crank-arm which engages one or the other of suitably-placed stops as the system approaches the end of each oscillation and causing the shaft and parts carried thereby to be partially rotated.

For a more complete understanding of the invention reference may be had to the following detailed description and the corresponding drawings forming a part of this specification, in which—

Figure 1 is a perspective view of the rear

end of an oscillating motor-fan embodying my invention. Fig. 2 is a broken plan view of the pivotal support and subbase with the stationary stops shown connected thereto; and Fig. 3 is a rear end elevation of the device drawn to a reduced scale, showing the fan in one of its normal positions.

The motor A, the rotary blade member B, mounted upon the motor-shaft C, and the guard D may be of the usual construction and accordingly need not be described here in detail.

The motor-frame is provided upon its lower side with a projection 1, having a rock-shaft 2 fixed therein near its point of union with the motor-frame parallel to the motor-shaft C and upon which the motor and parts carried thereby are supported for eccentric swinging movement in a vertical plane across the axis of the pivoted support. To the lower end of the projection 1 a weight 3 is secured, which is of a size to nearly counterbalance the weight of the motor and parts carried thereby, or so that the center of gravity of the system of these rigidly-connected parts is only slightly above the axis of the shaft 2.

The pivoted supporting-frame consists of two rigid arms 4 and 5, bent up from opposite sides of a circular plate 6 and provided at their upper ends with bearings 7, in which the shaft 2 is journaled with the projection 1 and weight 3 between the arms. The plate 6 is secured to a flat disk 8, pivotally mounted upon a subbase 9, consisting of a flat disk having a concentric stub-shaft 10 extending from its upper surface, about which the disk 8 is journaled at its center, and between the adjacent sides of the disks 8 and 9 is a series of antifriction-balls 11, held in place by a disk-retainer 12, concentrically journaled upon the shaft 10.

The means for limiting the eccentric movement of the motor A and parts carried thereby on the supporting rock-shaft 2 from side to side of the vertical position consists of a U-shaped yoke-piece 13, secured at its middle to one of the arms 5 of the pivotal support with its arms extending horizontally into the path of travel of the projection 1 and each provided with an adjustable set-screw 14, adapted to engage and vary the extent of swing of the projection 1 and parts connected therewith and thereby vary the rate of oscillation about the vertical axis.



The means for effecting the swinging movement of the motor to change its eccentricity consists of an arm 15, rigidly connected to one end of the supporting-shaft 2 by a nut and  
 5 extending downwardly into the plane of two abutments or stops 16 and 17. These stops are made adjustable in order to vary the angle of oscillation of the fan about its pivotal axis and consist of short angle-irons secured  
 10 at their lower ends to the subbase 9 by means of thumb-screws 18 engaging a slot 19 in the periphery of the base.

When the parts are in the position indicated in Figs. 1 and 3, the back thrust due to  
 15 the action of the rotating member upon the column of air set in motion thereby exerts a turning movement to the left of the vertical axis tending to revolve the system in a counter-clockwise direction about the vertical  
 20 axis, bringing in the course of its travel the arm 15 into engagement with the right-hand stop 17, which upon further revolution of the system effects a rotation of the shaft 2 and the parts carried thereby until the vertical  
 25 position is passed, whereupon the action of gravity continues the turning movement upon shaft 2 until the projection 1 is arrested by engaging the opposite stop-screw 14, with the motor-shaft C in the position, as indicated  
 30 in dotted lines, Fig. 3, to the right of the vertical axis, so that the back thrust exerts a tendency to revolve the system in a clockwise direction about the vertical axis until the position of the motor relative to the vertical axis  
 35 is again shifted by the arm 15 engaging the left-hand stop 16.

It has been found in practice that with the parts carefully constructed and symmetrically arranged there is a sluggishness about  
 40 the shifting of the motor in one direction with respect to the vertical position and an acceleration in the opposite movement due to effect of the torque of the armature upon the motor-frame. In order to overcome this  
 45 torque effect, I provide upon one of the radial arms of the guard D a balancing weight 20, adapted to be moved toward and away from the axis of the motor and to be secured in adjusted position by a binding-screw 21.

50 I do not desire to restrict myself to the particular form of construction of parts herein described and shown for it is apparent that they may be changed and modified without departing from my invention.

55 What I claim as new, and desire to secure by Letters Patent of the United States, is —

1. The combination of a pivoted support, a

rotary fan eccentrically mounted thereon, and means for automatically changing the eccentricity thereof. 60

2. The combination of a pivoted support, a rotary fan eccentrically mounted thereon, and means for periodically changing the eccentricity thereof.

3. The combination of a pivoted support, a 65 rotary fan eccentrically mounted thereon, and means for shifting the position of the fan from side to side of the axis of the pivoted support.

4. The combination of a pivoted support, a 70 rotary fan eccentrically mounted thereon with its axis in a plane at right angles to the axis of the pivoted support, and means for shifting the position of the axis of the fan from side to side of the axis of the pivoted 75 support.

5. The combination of a pivoted support, a rock-shaft carried thereby, a rotary fan mounted upon said rock-shaft, and means to automatically rock said fan from side to side 80 of the axis of the pivoted support.

6. The combination of a pivoted support, a rotary fan mounted thereon to oscillate about an axis parallel to its axis of rotation, and means to automatically rock said fan from 85 side to side of the axis of the pivoted support.

7. The combination of a pivoted support, a rock-shaft journaled therein at right angles to the axis of the support, a rotary fan mounted on said rock-shaft with its axis parallel there- 90 to, and means for periodically rocking said fan from side to side of the axis of the pivoted support.

8. The combination of a pivoted support, a rock-shaft journaled therein, a rotary 95 fan counterbalanced thereon, oppositely-disposed stops for limiting the movement of said fan from the vertical, and means for rocking said fan from one stop to the other.

9. The combination of a pivoted support, 100 a counterbalanced motor-fan swingingly mounted thereon about a transverse axis, an arm secured to said motor-fan, and stationary abutments located in the path of travel of said arm and adapted to act thereon to rock 105 the motor-fan from side to side of the pivoted support.

In witness whereof I have hereunto set my hand this 7th day of December, 1903.

RALPH E. BARKER.

Witnesses:

DUGALD McK. McKILLIP,  
 JOHN A. M'MANUS.