L. J. PARKER.

MOTOR FAN.

APPLICATION FILED JAN. 6, 1917.

1,362,036.

Patented Dec. 14, 1920.

2 SHEETS—SHEET 1.

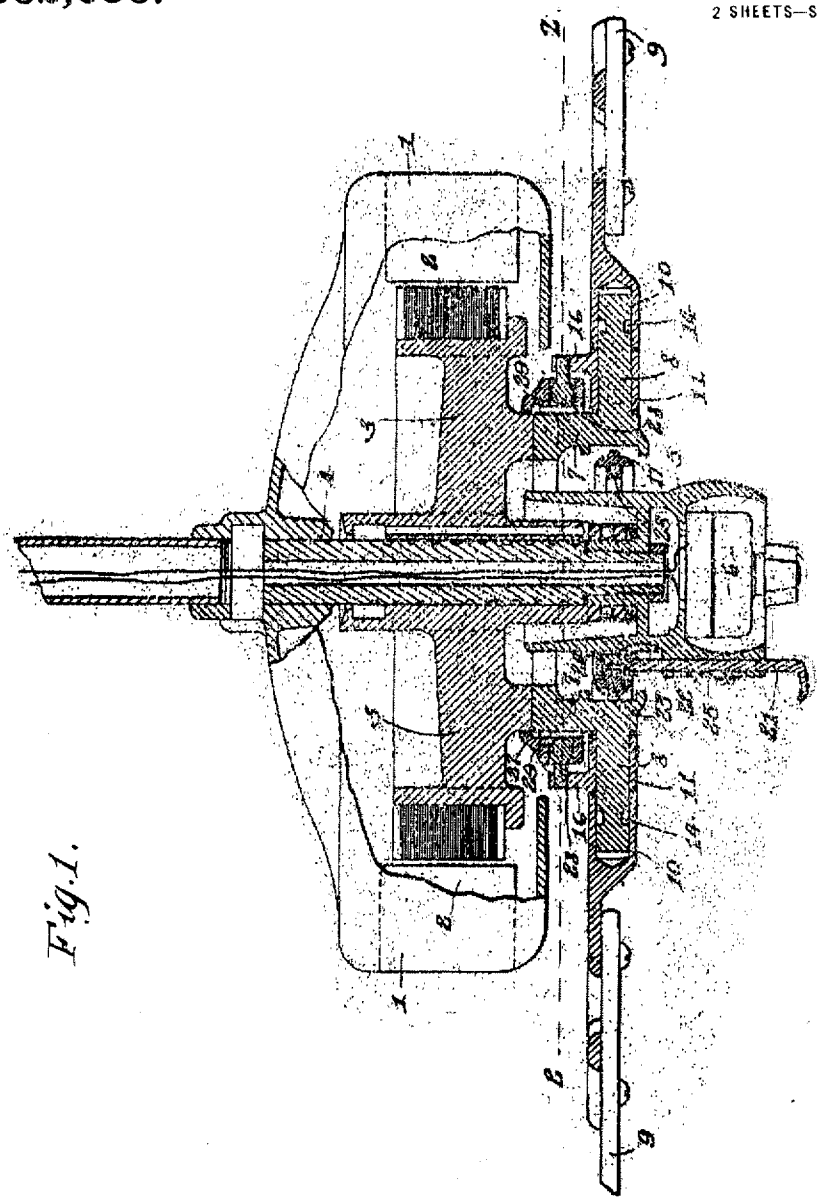


Fig. 1.

INVENTOR

Linus J. Parker

BY

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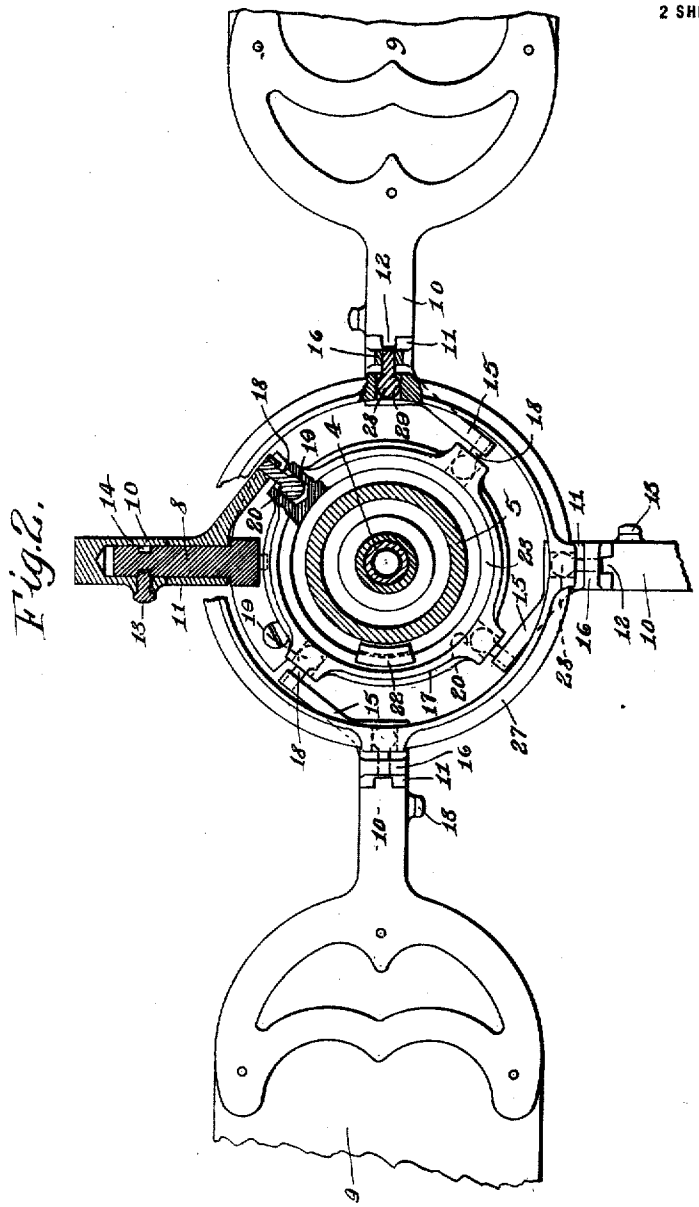


Fig. 2.

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UNITED STATES PATENT OFFICE.

LINUS J. PARKER, OF SYRACUSE, NEW YORK, ASSIGNOR TO HUNTER FAN AND MOTOR CO., OF FULTON, NEW YORK, A CORPORATION OF NEW YORK.

MOTOR-FAN.

1,362,036. Specification of Letters Patent. Patented Dec. 14, 1920.

Application filed January 6, 1917. Serial No. 140,947.

To all whom it may concern:

Be it known that I, LINUS J. PARKER, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Motor-Fan, of which the following is a specification.

This invention relates to motor fans having vanes shiftable to different angles, and has for its object a particularly simple and efficient anti-rattling vane shifting means; and the invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a longitudinal sectional view, partly broken away, of one form of fans embodying my invention.

Fig. 2 is a sectional view, partly in elevation, and partly broken away, taken on the plane of line 2—2 Fig. 1 looking downwardly.

This invention comprises, generally, blades or vanes shiftable about lengthwise axes to change the angle of inclination of the vanes, means for shifting the blades, and means for holding the blades in their shifted position.

1 designates the casing for the motor of an electric fan.

2 are the field magnets, and 3 is the rotor mounted upon a hollow central shaft 4.

5 is a frame element as a hub supported at the lower end of the shaft 4 and carrying the snap switch 6 which controls the actuation of the motor, the wires which are connected to the switch passing through the hollow shaft 4.

7 designates the vane carrier arranged concentric with the shaft 4 and the frame element 5 and spaced apart therefrom and suitably connected to the rotor 3 to rotate therewith. The carrier is here shown as provided with suitable outwardly or radially extending studs 8.

9 designates the vanes mounted upon the studs 8 to oscillate about their lengthwise axes to change the angle of inclination of the vanes, the vanes 9 being here shown as provided with suitable hubs or shanks 10 mounted or sleeved upon the studs 8. In the illustrated embodiment of my invention, the shanks 10 are formed in inner and outer sections, the inner section 11 being connected to the outer section by interlocking teeth as clutch teeth 12, Fig. 2, and the outer section being secured to its stud 8 in any suitable manner as by a key or screw 13 extending radially into an annular groove 14 formed in the stud 8.

The shanks 10 are provided with two sets of crank arms, that is, each shank is provided with two crank arms 15, 16 extending at a different angle to each other, these crank arms being provided on the inner sections 11 of the shanks and the means for shifting the vanes, and the means for steadying the same and holding the vanes in their shifted position are connected respectively, to these sets of crank arms.

As here shown, the arms 15 extend laterally or horizontally, from the inner ends of the shanks 11, and the arms 16 extend vertically and preferably upwardly. The cranks 15 are provided on the extreme inner ends of the shanks, and the cranks 16 between the ends of the shank.

The means for shifting the vanes to change the angle thereof is connected to the inner crank arms 15 and as here shown includes a floating ring 17 supported by the cranks 15 and spaced from the frame element 5 so as not to come in contact therewith and thus avoid rattling, the ring being connected to the cranks by ball-and-socket joints which also avoid rattling. Preferably, the cranks are provided with crank pins 18 having balls 19 thereon which fit into radial sockets 20 in the ring 17.

The ring 17 is shifted axially by a suitable operating member 21 extending vertically of the frame element 5 and connected at its upper end in any suitable manner, as by a wide fork, or segment of a ring 22 having a groove therein which receives an internal annular bead 23 on the inner side of the ring 17.

A suitable packing 24 to prevent looseness, lines the groove of the fork and this

is the only point that any anti-rattling material is employed.

The operating member 21 may be acted upon by a friction spring 25.

The means for steadying the blades and holding them in their shifted position also includes a floating ring 27 connected to the crank arms 16 and located outside the portions of the carrier carrying the studs 8, said ring being connected to the cranks by ball-and-socket joints consisting of balls 28 on the cranks 16 and sockets 29 on the ring. This ring being supported by the crank arms is anti-rattling. Said ring also acts as an equalizer on the vanes.

In use, during the actuation of the member 21 in one direction or the other, the shifting ring 22 moves vertically.

By the use of the floating rings, and their arrangement, rattling of the fan is avoided without the use of packing or other material subject to wear.

What I claim is:

1. A motor fan comprising a rotating carrier, vanes mounted on the carrier and shiftable about lengthwise radial axes to change the angle of the vanes, a floating ring connected eccentrically to the vanes and being supported thereby, and means independent of said ring for shifting the vanes to change the angle thereof, substantially as and for the purpose described.

2. A motor fan comprising a rotating carrier, vanes mounted on the carrier and shiftable about lengthwise axes to change the angle of the vanes, a floating ring connected eccentrically to the vanes by ball and socket joints and being supported by the vanes at said joints, and means independent of said ring for shifting the vanes to change the angle thereof, substantially as and for the purpose specified.

3. A motor fan comprising a rotating carrier, vanes mounted on the carrier and shiftable about lengthwise axes to change the angle thereof, equalizing means supported by the vanes and connecting the same and tending to hold the vanes in their radially adjusted positions, and means independent of said equalizing means for shifting the vanes about their lengthwise axes, substantially as and for the purpose set forth.

4. A motor fan comprising a rotating carrier, vanes mounted on the carrier to rock about axes radial to the axis of the carrier, each having cranks projecting therefrom at different angles, a ring connected to one set of cranks, a second ring connected to the other set of cranks, and manual means for shifting one of the rings, substantially as and for the purpose specified.

5. A motor fan comprising a rotating carrier, vanes mounted on the carrier and shiftable about lengthwise radial axes, each vane having a crank arm projecting therefrom and a floating ring connected to the crank arms and supported thereby, and means independent of said ring for shifting the vanes about their radial axes, substantially as and for the purpose set forth.

6. A motor fan comprising a rotating carrier, vanes mounted on the carrier and shiftable about lengthwise radial axes, each vane having crank arms projecting at different angles therefrom and provided with eccentric pins having balls thereon, a floating shifting ring having sockets for receiving the balls of one set of crank arms and a floating ring having sockets for receiving the balls of the other set of crank arms, and means for shifting one of the rings, substantially as and for the purpose specified.

7. A motor fan comprising a carrier rotatable about a vertical axis, vanes mounted on the carrier and shiftable about horizontal axes to change the angle of the vanes, the vanes having two sets of eccentric portions arranged in different radii, one set projecting in a horizontal direction and the other in a vertical direction therefrom, floating rings supported by the sets of eccentric portions and connected thereto by ball-and-socket joints, and means for shifting one of said rings, substantially as and for the purpose set forth.

8. A motor fan comprising a frame element, a carrier rotatable around the frame element, vanes mounted on the carrier to rock about lengthwise axes, and means for shifting the vanes comprising a floating ring encircling the frame element and spaced therefrom, the ring being carried by the vanes and connected eccentrically thereto, and means acting on the ring to shift the same, substantially as and for the purpose set forth.

9. A motor fan comprising a frame element, a carrier rotatable around the frame element, vanes mounted on the carrier to rock about lengthwise axes, and a floating ring arranged concentrically with the frame element and spaced therefrom and connected eccentrically to the vanes, and shiftable in an axial direction, substantially as and for the purpose described.

10. A motor fan comprising a frame element, a carrier rotatable around the frame element, vanes mounted on the carrier to rock about lengthwise axes, a floating ring arranged concentrically with the frame element and spaced therefrom and connected eccentrically to the vanes, and means for shifting the vanes about their axes, substantially as and for the purpose specified.

11. A motor fan comprising a frame element, a rotor movable about the frame element, a vane carrier carried by and arranged concentric with the rotor, a ring encircling

the frame element within the carrier and spaced from the carrier and the frame element and connected eccentrically to the vanes, a floating ring located outside the carrier and connected eccentrically to the vanes, the eccentric connections of the rings being arranged in different radii of the vanes, and means for shifting the inner ring, substantially as and for the purpose set forth.

In testimony whereof, I have hereunto signed my name at Syracuse in the county of Onondaga and State of New York, this 13th day of December, 1916.

LINUS J. PARKER.