Nov. 28, 1944. W. A. SPEAR 2,363,907

ELECTRIC FAN

Filed April 26, 1943

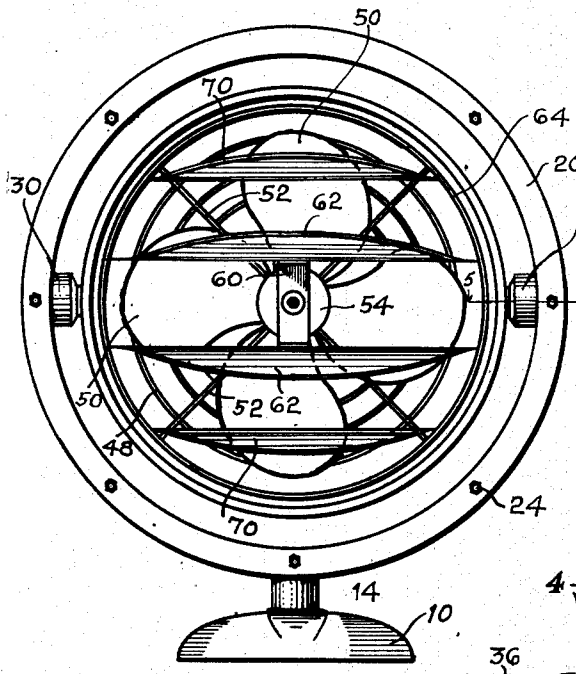


Fig.-1

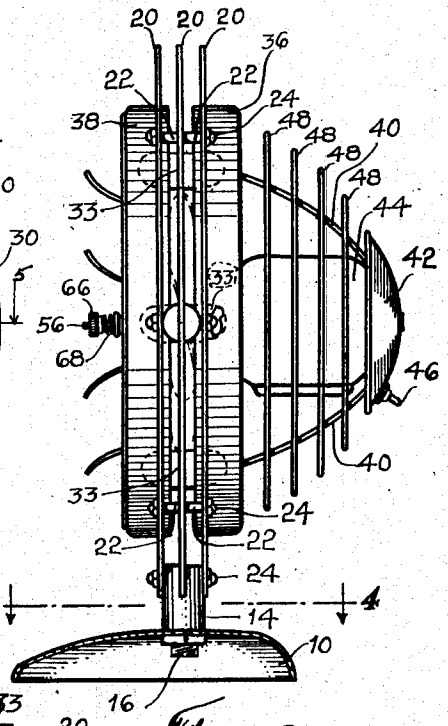


Fig.-2

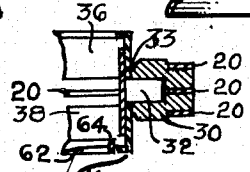


Fig.-5

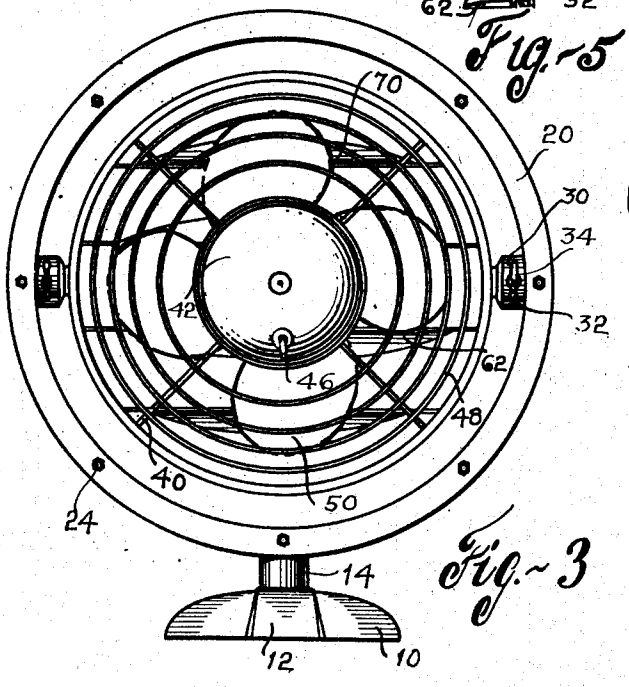


Fig.-3

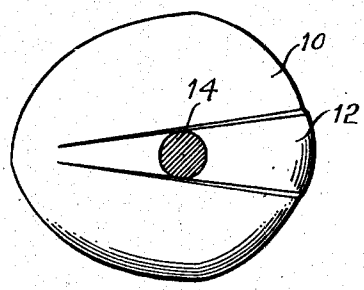


Fig.-4

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ELECTRIC FAN

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Application April 26, 1943, Serial No. 484,643

5 Claims. (Cl. 230—274)

This invention relates to electric fans and more particularly to portable electric fans.

An object of this invention is to provide an adjustable electric fan that is adapted to direct the air flow from various angular directions and to divert or deflect the air stream intermittently.

Another object of this invention is to provide a unique support for the electric fan assembly wherein the breeze spreader, the electric motor, the guard, et cetera, are movable as a unit relative to the support.

Another object of this invention is to provide an air driven breeze spreader adapted for angular adjustment.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation as will become more apparent from the following description.

In the drawing, Figure 1 is a front elevational view.

Figure 2 is a side elevational view with the base shown in section.

Figure 3 is a rear elevational view.

Figure 4 is a cross sectional view taken substantially on the line 4—4 of Figure 2.

Figure 5 is a cross sectional view taken substantially on the line 5—5 of Figure 1.

The electric fan disclosed herein includes a pair of angular concentrically disposed supports, one of which is attached to the base and the other having supported therein the guard, a breeze spreader, an electric motor and the fan blades. The two supports are pivotally attached, so that the two supports have a relative movement with respect to each other, thereby permitting adjustment of the movable support with respect to the stationary support to change the direction of the air flow. One of the supports may be referred to as a Saturn ring or orbital ring support. The details of the structure will appear more fully in connection with the detailed description that follows.

Referring to the drawing, the base 10 forms a support for the fan assembly. This base may be oval and hollow. In order to enhance the appearance and to give the base rigidity, it may be provided with a raised portion 12, having a tapering appearance and vanishing towards the front of the base. The base is provided with an aperture receiving the reduced portion of a standard 14, held in position by a nut 16 on the under side of the base 10, as clearly seen in Figure 2. This standard 14 provides a support for a plurality of orbital or Saturn-like rings 20, held in fixed spaced relation at intervals by tubular spacing members 22 receiving bolts 24. The portion described thus far may be referred to as the stationary support.

Instead of a base 10 being used, the standard 14 could be attached to wall bracket or it could be suspended from a suitable support from the ceiling. Furthermore, the standard 14 could be attached to an extension so as to mount the fan at any desired height above the floor or the support for the base 10.

In the particular embodiment shown, the Saturn rings 20 have been secured together and are attached to the standard 14 by bolts 24. Instead of using bolts, the parts could be welded, riveted or attached in any suitable manner.

The Saturn rings 20 support a pair of bearing bracket members 30, each provided with an axial recess receiving a pintle or stubshaft 32 rotatably mounted in member 30. The pintle 32 may be locked in any adjusted position by suitable locking means, as for example, a wing screw 34. The pintles 32 are welded to links 33 that provide supports for the fan assembly, which will now be described.

A pair of rings or hoops 36 and 38 are welded or otherwise attached to the links 33. These rings or hoops have a substantially L-shaped cross sectional area. The rings 36 and 38 are arranged in spaced relation, as clearly shown in Figure 2. The ring 36 supports a plurality of arcuate bracket members 40, adapted to support a curved end plate 42, having attached thereto an electric motor 44. The end plate may also support a suitable switching mechanism 46 for controlling the motor. In order to guard the motor and the parts driven thereby, the arcuate bracket 40 supports a plurality of wire hoops or rings 48, forming a guard or shield. These rings 48, together with the arcuate bracket 40, cooperate with the end plate 42 to form a cage for the motor 44. The shaft of the motor 44 has mounted thereon conventional fan blades 50. The assembly for supporting the breeze spreader in adjustable position will now be described.

The ring 38 supports a plurality of radially disposed rods or wires 52 held together at the center by an annular disc 54. The annular disc 54 supports a threaded bolt 56 having mounted thereon the breeze spreader including a bracket 60, supporting a pair of deflector blades or vanes 62, having the ends attached to an annular ring 64. A nut 66, threadedly engaging the bolt 56, tensions a helical spring 68 seated upon the bracket 60, so as to exert a pressure thereon, as will be explained more fully later. The hoop or ring 64

supports an additional pair of deflector blades **70**. The bracket **60**, the deflector blades or vanes **62** and **70**, together with the ring **64** are mounted for rotation upon the bolt **56**.

No mechanical drive is provided for the deflector blades and the parts associated therewith. Instead, the vortex formed by the air stream projected by the fan blades **50** exerts a twisting or rotational force upon the deflector blades, so as to rotate these in the same direction as the direction of rotation of the fan blades; but at a slower speed. The speed of rotation of the deflector blades or vanes is governed by the adjustment of the nut **66**, changing the tension of the spring **68**, which exerts a pressure upon the bracket **60**.

As far as the arrangement of the deflector blades and the rotation thereof is concerned, this per se forms no part of this invention, as the deflector blades and the mode of operating same is fully disclosed and claimed in my Patent No. 1,723,953. However, the association of the deflector blades with the stationary support and an adjustable support therein, is a new combination, in that it is possible to adjust the fan blades, together with the motor, to direct the air stream in various directions and to deflect the air stream intermittently in these various adjustable positions without the use of an oscillatory type of mounting for the motor.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. An electric fan assembly of the breeze spreader type including a standard, a plurality of concentrically disposed parallel Saturn rings, a pair of diametrically disposed supporting members fixedly attached to the Saturn rings, electric fan means pivotally attached to the supporting members, said electric fan means including a pair of parallel housing rings, a cage supported by one of the housing rings, an electric fan and motor mounted in the cage, a breeze spreader, means for rotatably attaching the breeze spreader to the other of said housing rings, said means supporting the breeze spreader for rotation in response to the vortex generated by the fan blades, said housing rings, cage, electric motor and breeze spreader being mounted for bodily adjustment with respect to the Saturn rings so as to change the direction of the effective range of the fan with respect to the Saturn rings.

2. An electric fan assembly of the breeze spreader type including a standard, a plurality of concentrically disposed parallel Saturn rings, a pair of diametrically disposed supporting members fixedly attached to the Saturn rings, electric fan means pivotally attached to the supporting members, said electric fan means including supporting means, an electric motor supported by said supporting means, a fan driven by the motor, and a breeze spreader mounted in front of the fan blades for rotation about an axis substantially parallel to the axis of rotation of the fan blades, said breeze spreader being driven by the vortex generated by the fan blades, said electric fan means being mounted for bodily adjustment with respect to the Saturn rings so as to change the direction of the effective range of the fan with respect to the Saturn rings.

3. An elecric fan assembly of the breeze spreader type including supporting means, a pair of supporting members fixedly attached to said supporting means, said supporting members being axially aligned on a horizontal axis, electric fan means fixedly attached to the supporting members, said electric fan means including a pair of parallel housing rings, a cage supported by one of the housing rings, an electric fan and motor mounted in the cage, a breeze spreader, means for rotatably attaching the breeze spreader to the other of said housing rings, said means supporting the breeze spreader for rotation in response to the vortex generated by the fan blades, said housing rings, cage, electric motor and breeze spreader being mounted for bodily adjustment with respect to the supporting means so as to change the direction of the effective range of the fan with respect to the supporting means.

4. An electric fan assembly of the breeze spreader type including a standard, a plurality of concentrically disposed parallel Saturn rings, each having a substantially rectangular long narrow cross sectional area, the length of the cross sectional area being disposed in a plane normal to the axis of the rings, a pair of diametrically disposed supporting members fixedly attached to the Saturn rings, and electric fan means pivotally attached to the supporting members, said electric fan means including a breeze spreader mounted for rotation in response to the vortex of the air generated by the electric fan means.

5. An electric fan assembly of the breeze spreader type including a base, a standard mounted on the base, a plurality of concentrically disposed parallel Saturn rings mounted in vertically disposed parallel planes, a pair of supporting members fixedly attached to the side of the rings, electric fan means attached to the supporting members, a breeze spreader pivotally mounted for rotation in response to the vortex of the air currents generated by the electric fan means, and means for supporting said breeze spreader.

WALTER A. SPEAR.