



159159

ELECTRIC FAN

The invention relates to an electric fan, more particularly to an electric fan with a pair of fan units, a motor with a motor casing, and a bracket secured to
5 two opposite end portions of the motor casing.

The object of the present invention is to provide an electric fan having a pair of fan units driven by a motor that is supported by a bracket which is capable of minimizing vibration of the electric fan during use.

10 Accordingly, an electric fan of this invention comprises a motor unit, a pair of opposite fan units, a bracket, a stand, and a rotation-enabling mechanism.

The motor unit includes a motor having two opposite output shafts, and a motor casing surrounding the motor casing and having a bottom side that has two opposite
15 end portions.

The fan units are coupled respectively to and driven by the output shafts.

The bracket is disposed below the motor unit, and
20 has two opposite securing portions that are respectively secured to the end portions of the motor casing, and a supporting shaft that is connected to and that is disposed between the securing portions of the bracket.

The stand is pivotally connected to the supporting
25 shaft.

The rotation-enabling mechanism includes a driving unit that is mounted on the bracket, and a linkage that



G00002

is connected pivotally to the stand and that is connected to and driven by the driving unit so as to be rotatable together with the bracket and the motor unit relative to the stand.

5 Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings, of which:

10 Fig. 1 is an assembled fragmentary partly sectional view of the first preferred embodiment of an electric fan according to the present invention;

 Fig. 2 is an assembled fragmentary partly sectional view of the second preferred embodiment of an electric fan according to the present invention; and

15 Fig. 3 is an assembled fragmentary partly sectional view of the third preferred embodiment of an electric fan according to the present invention.

 Before the present invention is described in greater detail with reference to the accompanying preferred
20 embodiments, it should be noted herein that like elements are denoted by the same reference numerals throughout the disclosure.

 Referring to Figure 1, the first preferred embodiment of an electric fan 100 according to the present invention
25 is shown to include a motor unit 10, a pair of opposite fan units 20, a bracket 30, a stand 40, and a rotation-enabling mechanism.

The motor unit 10 includes a motor 12 having two opposite output shafts 13, and a motor casing 11 surrounding the motor 12 and having a bottom side 16 that has two opposite end portions 161. A pair of protrusions 15 protrude respectively from the end portions 161 of the bottom side 16 of the motor casing 11.

The fan units 20 are coupled respectively to and driven by the output shafts 13.

10 The bracket 30 is disposed below the motor unit 10, and has two opposite securing portions 311 that are respectively secured to the end portions 161 of the bottom side 16 of the motor casing 11, and a supporting shaft 32 that is connected to and that is disposed between
15 the securing portions 311. In this embodiment, the bracket 30 includes a top plate 31 that has two opposite end portions which define respectively the securing portions 311 of the bracket 30, and a middle portion 312 that is disposed between the end portions of the top plate 31. The supporting shaft 32 extends downwardly
20 from the middle portion 312 of the top plate 31. The bracket 30 further includes an L-shaped plate 34 that has a vertical portion 341 extending downwardly from one of the end portions of the top plate 31, and a
25 horizontal portion 342 extending from the vertical portion 341 and cooperating with the vertical portion 341 to define a recess 343 therebetween. The securing

portions 311 of the bracket 30 are respectively secured to the protrusions 15 on the bottom side 16 of the motor casing 11 through fastening screws 33.

The stand 40 is formed with a stand hole 41 that receives the supporting shaft 32 therein. The stand 40 is thus pivotally connected to the supporting shaft 32.

The rotation-enabling mechanism includes a driving unit 50 having a controller 51 mounted on the horizontal portion 342 of the L-shaped plate 34 within the recess 343, and a linkage 53 that is connected pivotally to the stand 40 through a bolt 42 and that is connected to and driven by the driving unit 50. The driving unit 50 further includes a cam 52 that is connected pivotally to the linkage 53 so as to drive the linkage 53 together with the bracket 30 and the motor unit 10 to rotate relative to the stand 40. The controller 51 normally includes a motor and a speed-reduction gear set (not shown in the drawing). Since the components of the controller 51 and the operation the rotation-enabling mechanism are well known to those skilled in the art, they will not be detailed further for the sake of brevity.

During assembly, the top plate 31 is first fixedly mounted on the bottom side 16 of the motor casing 11 through engagement of the securing portions 311 of the bracket 30 and the end portions 161 of the bottom side 16 of the motor casing 11. Next, the rotation-enabling mechanism 50 is mounted on the L-shaped plate 34. Then,

the L-shaped plate 34 is mounted to a lateral side of one of the end portions of the top plate 31. In operation, when the motor 12 is started for driving the fan units 20, and when the fan units 20 rotate relative to the stand 40, a vibration force generated thereby will be distributed uniformly over the bracket 30.

Referring to Figure 2, the second preferred embodiment of this invention is similar to the first preferred embodiment, except that the bracket 30 includes a U-shaped portion 312 that is disposed between and that is connected to the securing portions 311 of the bracket 30, and that the L-shaped plate 34 is mounted on a lateral side of the U-shaped portion 312.

Referring to Figure 3, the third preferred embodiment of this invention is similar to the first preferred embodiment, except that the bracket 30 includes a U-shaped portion 34 having two opposite ends connected respectively to the securing portions 311 of the bracket 30, and defining a recess 343 therein. The supporting shaft 32 extends downwardly from the U-shaped portion 34, and the driving unit 50 is mounted in the recess 343 in the U-shaped portion 34 of the bracket 30.

By virtue of the bracket 30, vibration resulting from rotation of the fan units 20 and the motor unit 10 can be reduced.

CLAIMS:

1. An electric fan characterized by:

a motor unit including

a motor having two opposite output shafts, and

5 a motor casing surrounding said motor and having
a bottom side that has two opposite end portions;

a pair of opposite fan units coupled respectively
to and driven by said output shafts;

10 a bracket disposed below said motor unit and having
two opposite securing portions that are respectively
secured to said end portions of said motor casing, and
a supporting shaft that is connected to and that is
disposed between said securing portions;

a stand pivotally connected to said supporting shaft;

15 and

a rotation-enabling mechanism including a driving
unit that is mounted on said bracket, and a linkage that
is connected pivotally to said stand and that is connected
to and driven by said driving unit so as to be rotatable
20 together with said bracket and said motor unit relative
to said stand.

2. The electric fan as claimed in Claim 1, characterized
in that said bracket includes a top plate that has two
opposite end portions which define respectively said
25 securing portions of said bracket, and a middle portion
that is disposed between said end portions of said top
plate, said supporting shaft extending downwardly from

said middle portion of said top plate, said bracket further including an L-shaped plate that has a vertical portion extending downwardly from one of said end portions of said top plate, and a horizontal portion extending from said vertical portion and cooperating with said vertical portion to define a recess therebetween, said driving unit being mounted in said recess.

3. The electric fan as claimed in Claim 2, further characterized in that said driving unit includes a controller that is mounted on said horizontal portion of said L-shaped plate and that is received in said recess, and a cam that is connected pivotally to said linkage.

4. The electric fan as claimed in Claim 1, characterized in that said bracket further has a U-shaped portion that is disposed between and that is connected to said securing portions of said bracket, said supporting shaft extending downwardly from said U-shaped portion of said bracket, said bracket further including an L-shaped plate that has a vertical portion secured to said U-shaped portion, and a horizontal portion extending from said vertical portion and cooperating with said vertical portion to define a recess therebetween, said driving unit being mounted on said horizontal portion within said recess.

5. The electric fan as claimed in Claim 1, characterized in that said bracket further has a U-shaped portion having

two opposite ends which are respectively connected to said securing portions of said bracket, and defining a recess therein, said supporting shaft extending downwardly from said U-shaped portion of said bracket, said driving unit being mounted in said recess in said U-shaped portion.

6. The electric fan as claimed in Claim 1, characterized in that said motor casing is formed with a pair of protrusions that protrude respectively from said end portions of said bottom side of said motor casing, said securing portions of said bracket being respectively secured to said protrusions.

7. The electric fan as claimed in Claim 6, further characterized by fastening screws for securing said securing portions of said bracket to said protrusions on said end portions of said bottom side of said motor casing.