

# Fan

## **Technical Field**

The present invention relates to the technical field of household appliances, and in particular to a fan.

## **Background**

In order to improve a wind supply function of a fan, the fan is provided with a wind guide wheel. However, in a related technology, there are many parts used to assemble the wind guide wheel, and multiple screws are required, not only a production cost of the fan is increased, but also it is caused that the fan is complicated in structure and low in assembly efficiency.

In addition, the fan in the related technology may not achieve reliable anti-rotation of the wind guide wheel, so that a user may not reliably switch a wind supply mode of the fan by controlling whether the wind guide wheel is rotated, and the practicality of the fan is reduced.

## **Summary**

Some embodiments of the present invention provide a fan, as to solve problems in the related art that the fan is complicated in structure so that the assembly efficiency of the fan is low, and the existing fan may not achieve reliable anti-rotation of a wind guide wheel, so that the practicality of the fan is poor.

In order to achieve the above purpose, the present invention provides a fan, including: a housing assembly; a wind guide wheel assembly, the wind guide wheel assembly is pivotably disposed on the housing assembly, herein, the wind guide wheel assembly has a mounting hole, the housing assembly has an anti-rotation structure stretched into the mounting hole, and the anti-rotation structure has an avoidance space; and an abutting member, the abutting member is pivotably disposed on the housing assembly, while the abutting member is rotated, an abutting end of the abutting member is stretched into the avoidance space and abuts against the anti-rotation structure, the anti-rotation structure is deformed and abuts against a hole wall of the mounting hole, so that the wind guide wheel assembly stops rotating.

Further, the wind guide wheel assembly includes a wind guide wheel and a shaft

sleeve, the wind guide wheel is fixedly connected with the shaft sleeve, the shaft sleeve has the mounting hole, and the wind guide wheel is connected with the housing assembly by the shaft sleeve.

Further, the wind guide wheel is provided with at least one locking hole, the shaft sleeve includes a shaft sleeve body and at least one connection fastener disposed on the shaft sleeve body, the connection fastener passes through the locking hole, and is locked with a step structure in the locking hole.

Further, the mounting hole is formed on the shaft sleeve body, there are multiple connection fasteners, and the multiple connection fasteners are interval-disposed around a circumference of the mounting hole.

Further, the wind guide wheel is provided with an assembling hole, a hole wall of the assembling hole is provided with at least one anti-rotation gap, the shaft sleeve further includes at least one anti-rotation bulge disposed on the shaft sleeve body, the anti-rotation bulge is stretched into the anti-rotation gap.

Further, the housing assembly includes a front housing, the front housing includes: a front housing body; a connection cylinder, the connection cylinder is disposed on the front housing body; and multiple mounting fasteners, the multiple mounting fasteners are disposed on the front housing body, and interval-disposed around a peripheral side of the connection cylinder, the mounting fasteners are locked with the shaft sleeve after passing through the mounting hole.

Further, the front housing further includes multiple locking fasteners, the multiple locking fasteners are disposed on an end face, away from the front housing body, of the connection cylinder, and interval-disposed around a circumference of the connection cylinder, the multiple locking fasteners form the anti-rotation structure, and the avoidance space is surrounded by the multiple locking fasteners.

Further, an inner wall surface of the connection cylinder is provided with a first thread structure, the abutting member is a cap cover, the cap cover includes a cover plate and a mounting cylinder disposed on the cover plate, a peripheral wall of the mounting cylinder is successively provided with an abutting bulge and a second thread structure matched with the first thread structure along a direction away from the cover plate; and the abutting bulge forms the abutting end.

Further, the abutting bulge is ring-shaped and continuously disposed around the peripheral wall of the mounting cylinder.

Further, a position, opposite to the connection cylinder, of the front housing body

is provided with a chute, the abutting member is a cap cover, the cap cover includes: a cover plate; a mounting cylinder, the mounting cylinder is disposed on the cover plate; a limiting fastener, the limiting fastener is disposed on an end face, away from the cover plate, of the mounting cylinder, the limiting fastener passes through the chute, so that the abutting member is locked with the front housing; and an abutting cam, the abutting cam is disposed on a peripheral wall of the mounting cylinder, the abutting member is rotated so that the abutting cam abuts against the locking fastener, and the abutting cam forms the abutting end.

Further, there are multiple abutting cams, the multiple abutting cams are interval-disposed around the peripheral wall of the mounting cylinder.

Further, the housing assembly includes a front housing and a pressing cover, the front housing is provided with at least one spin groove, and the pressing cover includes: a pressing cover body, a first axial end of the pressing cover body is provided with a bulge flange; and a spin fastener, the spin fastener is disposed on an end face of a second axial end of the pressing cover body; after the pressing cover body passes through the mounting hole, the shaft sleeve is limited between the bulge flange and the front housing.

Further, the end face of the second axial end of the pressing cover body is provided with a connecting hole, the fan further includes a connector, the connector passes through the connecting hole, so that the pressing cover is fastened on the front housing.

Further, the anti-rotation structure includes multiple elastic fasteners, the multiple elastic fasteners are interval-disposed around a peripheral wall surface of the pressing cover body, and the avoidance space is surrounded by the multiple elastic fasteners.

Further, the front housing is provided with a connecting column, a peripheral wall of the connecting column is provided with a third thread structure; and the abutting member is a cap cover, the cap cover includes: a cover plate; a mounting cylinder, the mounting cylinder is disposed on the cover plate, an inner wall surface of the mounting cylinder is provided with a fourth thread structure matched with the third thread structure; and an abutting cylinder, the abutting cylinder is disposed on the cover plate, and sheathed at a peripheral side of the mounting cylinder, the abutting cylinder forms the abutting end.

A technical scheme of the present invention is applied, the wind guide wheel

assembly is mounted on the housing assembly, the housing assembly has the anti-rotation structure, the rotation or reliable anti-rotation of the wind guide wheel assembly is achieved by using the cooperation of the abutting member and the anti-rotation structure. Specifically, the abutting end of the abutting member is stretched into the avoidance space and abuts against the anti-rotation structure, the anti-rotation structure is deformed and abuts against the hole wall of the mounting hole of the wind guide wheel assembly, so that the wind guide wheel assembly stops rotating; and the abutting end of the abutting member exits from the avoidance space, the wind guide wheel assembly may be rotated relative to the housing assembly. In addition, the housing assembly of the present invention has the anti-rotation structure, and only the wind guide wheel assembly needs to be assembled on the housing assembly, the structure of the fan is simplified, and the assembly efficiency of the fan is improved.

### **Brief Description of the Drawings**

Drawings of the description for constituting a part of the present invention are used to provide further understanding of the present invention, and exemplary embodiments of the present invention and descriptions thereof are used to explain the present invention, and do not constitute improper limitation to the present invention. In the drawings:

Fig. 1 shows an exploded structure schematic diagram of a fan in Embodiment I in accordance with the present invention.

Fig. 2 shows a section view structure schematic diagram of an angle of the assembled fan in Fig. 1.

Fig. 3 shows an amplified structure schematic diagram of a part A in Fig. 2.

Fig. 4 shows a section view structure schematic diagram of another angle of the assembled fan in Fig. 1.

Fig. 5 shows an amplified structure schematic diagram of a part B in Fig. 4.

Fig. 6 shows an assembly structure schematic diagram of a wind guide wheel and a shaft sleeve of the fan in Fig. 1.

Fig. 7 shows an amplified structure schematic diagram of a part C in Fig. 6.

Fig. 8 shows a structure schematic diagram of the wind guide wheel in Fig. 6.

Fig. 9 shows a structure schematic diagram of the shaft sleeve in Fig. 6.

Fig. 10 shows a structure schematic diagram of a front housing of the fan in Fig.

1.

Fig. 11 shows a structure schematic diagram of an abutting member of the fan in Fig. 1.

Fig. 12 shows an exploded structure schematic diagram of a fan in Embodiment II in accordance with the present invention.

Fig. 13 shows a section view structure schematic diagram of an angle of the assembled fan in Fig. 12.

Fig. 14 shows an amplified structure schematic diagram of a part D in Fig. 13.

Fig. 15 shows a section view structure schematic diagram of another angle of the assembled fan in Fig. 12.

Fig. 16 shows an amplified structure schematic diagram of a part E in Fig. 15.

Fig. 17 shows a structure schematic diagram of a front housing of the fan in Fig. 12.

Fig. 18 shows a structure schematic diagram of an abutting member of the fan in Fig. 12.

Fig. 19 shows an exploded structure schematic diagram of a fan in Embodiment III in accordance with the present invention.

Fig. 20 shows a section view structure schematic diagram of the assembled fan in Fig. 19.

Fig. 21 shows an amplified structure schematic diagram of a part F in Fig. 20.

Fig. 22 shows a structure schematic diagram of a front housing of the fan in Fig. 19.

Fig. 23 shows a structure schematic diagram of an angle of a pressing cover of the fan in Fig. 19.

Fig. 24 shows a structure schematic diagram of another angle of the pressing cover in Fig. 23.

Fig. 25 shows a structure schematic diagram of an abutting member of the fan in Fig. 19.

Herein, the above drawings include the following reference signs:

10. Housing assembly; 11. Front housing; 110. Limiting block; 111. Front housing body; 112. Connection cylinder; 113. Mounting fastener; 114. Locking fastener; 115. First thread structure; 116. Chute; 117. Spin groove; 118. Connecting column; 119. Third thread structure; 12. Pressing cover; 121. Pressing cover body; 122. Bulge flange; 123. Spin fastener; 124. Elastic fastener; 125. Connecting hole; 20. Wind

guide wheel assembly; 21. Wind guide wheel; 211. Locking hole; 212. Assembling hole; 213. Anti-rotation gap; 22. Shaft sleeve; 221. Mounting hole; 222. Shaft sleeve body; 223. Connection fastener; 224. Anti-rotation bulge; 30. Abutting member; 31. Cover plate; 32. Mounting cylinder; 321. Second thread structure; 322. Fourth thread structure; 33. Abutting bulge; 34. Limiting fastener; 35. Abutting cam; and 36. Abutting cylinder.

### **Detailed Description of the Embodiments**

Technical schemes in embodiments of the present invention are clearly and completely described below in combination with drawings in the embodiments of the present invention. Apparently, the described embodiments are only a part of the embodiments of the present invention, not all of the embodiments. The following description of at least one exemplary embodiment is actually only illustrative, and in no way served as any limitation to the present invention and applications or usages thereof. Based on the embodiments of the present invention, all other embodiments obtained by those of ordinary skill in the art without creative work shall fall within a scope of protection of the present invention.

In order to solve problems in the related art that the fan is complicated in structure so that the assembly efficiency of the fan is low, and the existing fan may not achieve reliable anti-rotation of a wind guide wheel, so that the practicality of the fan is poor, the present invention provides a fan.

The present invention provides three embodiments, Embodiment I is shown in Fig. 1 to Fig. 11, Embodiment II is shown in Fig. 12 to Fig. 18, and Embodiment III is shown in Fig. 19 to Fig. 25.

#### **Embodiment I**

As shown in Fig. 1, a fan includes a housing assembly 10, a wind guide wheel assembly 20 and an abutting member 30, the wind guide wheel assembly 20 is pivotably disposed on the housing assembly 10; herein, the wind guide wheel assembly 20 has a mounting hole 221, the housing assembly 10 has an anti-rotation structure stretched into the mounting hole 221, and the anti-rotation structure has an avoidance space; and the abutting member 30 is pivotably disposed on the housing assembly 10, while the abutting member 30 is rotated, an abutting end of the abutting member 30 is stretched into the avoidance space and abuts against the anti-rotation structure, the anti-rotation structure is deformed and abuts against a hole wall of the

mounting hole 221, so that the wind guide wheel assembly 20 stops rotating.

In the present invention, the wind guide wheel assembly 20 is mounted on the housing assembly 10, the housing assembly 10 has the anti-rotation structure, the rotation or reliable anti-rotation of the wind guide wheel assembly 20 is achieved by using the cooperation of the abutting member 30 and the anti-rotation structure. Specifically, the abutting end of the abutting member 30 is stretched into the avoidance space and abuts against the anti-rotation structure, the anti-rotation structure is deformed and abuts against the hole wall of the mounting hole 221 of the wind guide wheel assembly 20, so that the wind guide wheel assembly 20 stops rotating; and the abutting end of the abutting member 30 exits from the avoidance space, the wind guide wheel assembly 20 may be rotated relative to the housing assembly 10. In addition, the housing assembly 10 of the present invention has the anti-rotation structure, and only the wind guide wheel assembly 20 needs to be assembled on the housing assembly 10, the structure of the fan is simplified, and the assembly efficiency of the fan is improved.

The fan provided by the present invention drives the wind guide wheel assembly 20 to be rotated by using a wind power driving mode, compared with a mode of using a motor to drive the wind guide wheel assembly 20 to be rotated, power consumption of the fan is reduced, thereby a use cost of the fan is reduced.

As shown in Fig. 1, Fig. 6 and Fig. 7, the wind guide wheel assembly 20 includes a wind guide wheel 21 and a shaft sleeve 22, the wind guide wheel 21 is fixedly connected with the shaft sleeve 22, the shaft sleeve 22 has the mounting hole 221, and the wind guide wheel 21 is connected with the housing assembly 10 by the shaft sleeve 22. In view of the wear of the wind guide wheel assembly 20 generated in cooperation with the anti-rotation structure in use, the wind guide wheel assembly 20 is detached and designed into the wind guide wheel 21 and the shaft sleeve 22 made of different materials, herein, the shaft sleeve 22 is made of a wear-resistant material.

In an unshown embodiment of the present invention, the shaft sleeve 22 and the wind guide wheel 21 are integrally formed.

As shown in Fig. 6 to Fig. 9, the wind guide wheel 21 is provided with at least one locking hole 211, the shaft sleeve 22 includes a shaft sleeve body 222 and at least one connection fastener 223 disposed on the shaft sleeve body 222, the connection fastener 223 passes through the locking hole 211, and is locked with a step structure in the locking hole 211. In this way, the wind guide wheel 21 is

locking-connected with the shaft sleeve 22, thereby additional parts, such as a screw, are not required to be disposed, the assembly efficiency of the fan may be improved, and a situation that the screw is lost in a fan assembly process may also be avoided. After the wind guide wheel 21 is locking-connected with the shaft sleeve 22, axial relative movement generated between the wind guide wheel 21 and the shaft sleeve 22 may be prevented, namely it is a relatively static state between the wind guide wheel 21 and the shaft sleeve 22.

As shown in Fig. 9, the mounting hole 221 is formed on the shaft sleeve body 222, there are multiple connection fasteners 223, and the multiple connection fasteners 223 are interval-disposed around a circumference of the mounting hole 221. Through disposing the multiple connection fasteners 223, the connection stability of the wind guide wheel 21 and the shaft sleeve 22 is improved.

As shown in Fig. 8 and Fig. 9, the wind guide wheel 21 is provided with an assembling hole 212, a hole wall of the assembling hole 212 is provided with at least one anti-rotation gap 213, the shaft sleeve 22 further includes at least one anti-rotation bulge 224 disposed on the shaft sleeve body 222, the anti-rotation bulge 224 is stretched into the anti-rotation gap. In this way, after the wind guide wheel 21 and the shaft sleeve 22 are assembled, relative rotation between the wind guide wheel 21 and the shaft sleeve 22 is prevented, and the wind guide wheel 21 and the shaft sleeve 22 are synchronously rotated or synchronously stopped rotating.

As shown in Fig. 2, Fig. 3 and Fig. 10, the housing assembly 10 includes a front housing 11, the front housing 11 includes: a front housing body 111, a connection cylinder 112 and multiple mounting fasteners 113, the connection cylinder 112 is disposed on the front housing body 111, the multiple mounting fasteners 113 are disposed on the front housing body 111, and interval-disposed around a peripheral side of the connection cylinder 112, and the mounting fasteners 113 are locked with the shaft sleeve 22 after passing through the mounting hole 221. In this way, the front housing 11 is locked with the shaft sleeve 22, so the wind guide wheel 21 is rotatably disposed on the front housing 11 by the shaft sleeve 22. While the wind guide wheel 21 and the front housing 11 are assembled, the additional parts, such as the screw, are not required to be disposed, the assembly efficiency of the fan may be further improved, and the situation that the screw is lost in the fan assembly process may also be avoided.

As shown in Fig. 4, Fig. 5 and Fig. 10, the front housing 11 further includes

multiple locking fasteners 114, the multiple locking fasteners 114 are disposed on an end face, away from the front housing body 111, of the connection cylinder 112, and interval-disposed around a circumference of the connection cylinder 112, the multiple locking fasteners 114 form the anti-rotation structure, and the avoidance space is surrounded by the multiple locking fasteners 114. In this way, the abutting end of the abutting member 30 abuts against the locking fasteners 114, so the locking fasteners 114 are deformed and abut against a hole wall of the mounting hole 221 of the shaft sleeve 22 to generate interference, thereby the shaft sleeve 22 is prevented from being rotated relative to the front housing 11, correspondingly, the wind guide wheel 21 connected with the shaft sleeve 22 is prevented from being rotated relative to the front housing 11, the reliable anti-rotation of the wind guide wheel assembly 20 is achieved, a wind supply mode of the fan is switched, and the practicability of the fan is improved.

As shown in Fig. 10, the front housing 11 further includes multiple limiting blocks 110, the multiple limiting blocks 110 are disposed on the front housing body 111 and disposed around the circumference of the connection cylinder 112, and the limiting block 110 is positioned between two mounting fasteners 113, a fit clearance between a surface, away from the connection cylinder 112, of the limiting block 110 and the hole wall of the mounting hole 221 of the shaft sleeve 22 is smaller, thereby the shaft sleeve 22 is avoided from being radially moved in a larger distance relative to the front housing 11.

As shown in Fig. 10 and Fig. 11, an inner wall surface of the connection cylinder 112 is provided with a first thread structure 115, the abutting member 30 is a cap cover, the cap cover includes a cover plate 31 and a mounting cylinder 32 disposed on the cover plate 31, a peripheral wall of the mounting cylinder 32 is successively provided with an abutting bulge 33 and a second thread structure 321 matched with the first thread structure 115 along a direction away from the cover plate 31; and the abutting bulge 33 forms the abutting end. In Embodiment I of the present invention, the abutting member 30 is thread-connected with the front housing 11, Through controlling a screwing depth of the abutting member 30, the rotation or anti-rotation of the wind guide wheel assembly 20 is controlled, while it is screwed to a position in which the abutting bulge 33 is in contact with the locking fasteners 114 and the interference occurs, the abutting bulge 33 abuts against the locking fasteners 114 so that the locking fasteners 114 are deformed.

As shown in Fig. 11, the abutting bulge 33 is ring-shaped and continuously disposed around the peripheral wall of the mounting cylinder 32. In this way, it may be guaranteed that the abutting bulge 33 may reliably stably abut against the locking fasteners 114.

The fan provided in Embodiment I is applied, a user controls whether the wind guide wheel assembly 20 is rotated by tightening or loosening the cap cover, while the cap cover is downwards tightened to a certain extent, the abutting bulge 33 abuts against the locking fasteners 114, a locking relation is formed by the interference between the locking fasteners 114 and the hole wall of the mounting hole 221, at this moment, the wind guide wheel assembly 20 stops rotating; and while the cap cover is upwards loosened to a certain extent, namely the abutting bulge 33 is not in contact with the locking fasteners 114 or an abutting distance of the abutting bulge 33 to the locking fasteners 114 is less than the gap between the locking fastener 114 and the mounting hole 221, the locking relation is released, and the wind guide wheel assembly 20 starts to rotate under the driving of wind power of fan blades.

#### Embodiment II

As shown in Fig. 12 to Fig. 14, Embodiment II is the same as Embodiment I, the shaft sleeve 22 is locked with the wind guide wheel 21, and the front housing 11 is locked with the shaft sleeve 22, it is not repeatedly described here.

A difference between Embodiment II and Embodiment I is that the abutting member 30 is locking-connected with the front housing 11. Specifically, as shown in Fig. 17 and Fig. 18, a position, opposite to the connection cylinder 112, of the front housing body 111 is provided with a chute 116, the abutting member 30 is a cap cover, the cap cover includes: a cover plate 31, a mounting cylinder 32, a limiting fastener 34 and an abutting cam 35, the mounting cylinder 32 is disposed on the cover plate 31, the limiting fastener 34 is disposed on an end face, away from the cover plate 31, of the mounting cylinder 32, the limiting fastener 34 passes through the chute 116, so that the abutting member 30 is locked with the front housing 11, the abutting cam 35 is disposed on a peripheral wall of the mounting cylinder 32, and the abutting cam 35 forms the abutting end, as shown in Fig. 15 and Fig. 16, the abutting member 30 is rotated so that the abutting cam 35 abuts against the locking fasteners 114, the locking fasteners 114 are deformed and abut against the hole wall of the mounting hole 221, so the wind guide wheel assembly 20 stops rotating; and the abutting member 30 is continuously rotated, the abutting cam 35 is moved to

between two locking fasteners 114 and does not abut against the locking fasteners 114, thereby the wind guide wheel assembly 20 is freely rotated relative to the front housing 11.

In Embodiment II, the user only needs to rotate the abutting member 30 in a horizontal direction, the rotation or the stable anti-rotation of the wind guide wheel assembly 20 may be controlled, thereby the wind supply mode of the fan is switched, and the practicality of the fan is improved.

As shown in Fig. 18, there are multiple abutting cams 35, the multiple abutting cams 35 are interval-disposed around the peripheral wall of the mounting cylinder 32. Through disposing the multiple abutting cams 35, it is matched with the multiple locking fasteners 114 in one-to-one correspondence.

The fan provided in Embodiment II is applied, the user controls whether the wind guide wheel assembly 20 is rotated by rotating the cap cover in the horizontal direction, while the cap cover is counterclockwise rotated to a certain extent, the abutting cam 35 abuts against the locking fastener 114, a locking relation is formed by the interference between the locking fasteners 114 and the hole wall of the mounting hole 221, at this moment, the wind guide wheel assembly 20 stops rotating; and while the cap cover is clockwise rotated to a certain extent, namely the abutting cam 35 is not in contact with the locking fastener 114 or an abutting distance of the abutting cam 35 to the locking fastener 114 is less than the gap between the locking fastener 114 and the mounting hole 221, the locking relation is released, and the wind guide wheel assembly 20 starts to rotate under the driving of wind power of fan blades.

### Embodiment III

A difference between Embodiment III and Embodiment I is that the shaft sleeve 22 is not locking-connected with the front housing 11, but cooperated with the front housing 11 through the pressing cover 12, and the shaft sleeve 22 is limited between the bulge flange 122 of the pressing cover 12 and the front housing 11. Specifically, as shown in Fig. 19 to Fig. 25, the housing assembly 10 includes a front housing 11 and a pressing cover 12, the front housing 11 is provided with at least one spin groove 117, and the pressing cover 12 includes a pressing cover body 121 and a spin fastener 123, a first axial end of the pressing cover body 121 is provided with a bulge flange 122, the spin fastener 123 is disposed on an end face of a second axial end of the pressing cover body 121; and after the pressing cover body 121 passes

through the mounting hole 221, the shaft sleeve 22 is limited between the bulge flange 122 and the front housing 11.

It is to be noted that it is involved in the present invention that the shaft sleeve 22 is limited between the bulge flange 122 and the front housing 11 after the pressing cover body 121 passes through the mounting hole 221, which refers to axial limiting, the completely assembled shaft sleeve 22 may be freely rotated relative to the front housing 11 and the pressing cover 12.

As shown in Fig. 24, the end face of the second axial end of the pressing cover body 121 is provided with a connecting hole 125, the fan further includes a connector, the connector passes through the connecting hole 125, so that the pressing cover 12 is fastened on the front housing 11.

Optionally, the connector is a screw, and the connecting hole 125 is a threaded hole.

As shown in Fig. 23, the anti-rotation structure includes multiple elastic fasteners 124, the multiple elastic fasteners 124 are interval-disposed around a peripheral wall surface of the pressing cover body 121, and the avoidance space is surrounded by the multiple elastic fasteners 124.

As shown in Fig. 22 and Fig. 25, the front housing 11 is provided with a connecting column 118, a peripheral wall of the connecting column 118 is provided with a third thread structure 119; and the abutting member 30 is a cap cover, the cap cover includes a cover plate 31, a mounting cylinder 32 and an abutting cylinder 36, the mounting cylinder 32 is disposed on the cover plate 31, an inner wall surface of the mounting cylinder 32 is provided with a fourth thread structure 322 matched with the third thread structure 119, the abutting cylinder 36 is disposed on the cover plate 31, and sheathed at a peripheral side of the mounting cylinder 32, the abutting cylinder 36 forms the abutting end.

In this way, while the fan is assembled, the wind guide wheel assembly 20 is placed on the front housing 11, after the pressing cover 12 passes through the mounting hole 221 of the shaft sleeve 22, it is screwed into the spin groove 117 by the spin fastener 123, and then the pressing cover 12 is fixedly connected with the front housing 11 by the connector, the abutting member 30 is rotated, so that the abutting cylinder 36 of the abutting member 30 is stretched into the pressing cover 12 and abuts against the elastic fastener 124, the elastic fastener 124 is deformed and abuts against the hole wall of the mounting hole 221, thereby the wind guide wheel

assembly 20 stops rotating; and the abutting member 30 is oppositely rotated, so that the abutting cylinder 36 does not abut against the elastic fastener 124, thereby the wind guide wheel assembly 20 may be freely rotated relative to the front housing 11 and the pressing cover 12.

The fan provided in Embodiment III is applied, the user controls whether the wind guide wheel assembly 20 is rotated by tightening or loosening the cap cover, while the cap cover is downwards tightened to a certain extent, the abutting cylinder 36 abuts against the elastic fastener 124, a locking relation is formed by the interference between the elastic fastener 124 and the hole wall of the mounting hole 221, at this moment, the wind guide wheel assembly 20 stops rotating; and while the cap cover is upwards loosened to a certain extent, namely the abutting cylinder 36 is not in contact with the elastic fastener 124 or an abutting distance of the abutting cylinder 36 to the elastic fastener 124 is less than the gap between the elastic fastener 124 and the mounting hole 221, the locking relation is released, and the wind guide wheel assembly 20 starts to rotate under the driving of wind power of fan blades.

It may be seen from the above descriptions that the above embodiments of the present invention achieve the following technical effects: the fan provided by the present invention is simple in structure, and has the fewer parts, the wind guide wheel assembly 20 is driven to be rotated without a motor, but driven by using the wind power. Compared with a fan in a related technology, the assembly efficiency is higher. Specifically, only 4 parts are required in Embodiment I and Embodiment II, only 5 parts are required in Embodiment III, and Embodiment I and Embodiment II do not require a screw for fixing, and Embodiment III only requires one screw, thereby the assembly efficiency of the fan may be improved, labor hours are effectively saved, labor costs are reduced, the situation that the screw is lost in the assembly process is avoided, and the wind guide wheel assembly 20 may be steadily rotated or stably stopped rotating, thereby the fan has the better wind guiding performance. The present invention designs a new-type wind guide wheel rotation adjusting structure, so that the wind guide wheel assembly 20 is rotated more stably, and the wind guiding performance of a whole machine is better.

It should be noted that terms used here are only used for describing specific implementation modes, and are not intended to limit the exemplary implementation modes according to the present invention. As used herein, unless clearly specified

otherwise in the context, a singular form is also intended to include a plural form. In addition, it should also be understood that when the terms "comprising" and/or "including" are used in the description, it is indicated that there are features, steps, operations, devices, components and/or combinations thereof.

Unless otherwise specified, relative arrangements, numerical expressions and numerical values of the components and steps described in these embodiments do not limit a scope of the present invention. At the same time, it should be understood that, for ease of description, sizes of the various parts shown in the drawings are not drawn according to actual proportional relations. Technologies, methods, and devices known to those of ordinary skill in the art may not be discussed in detail, but in the appropriate case, the technologies, methods, and devices should be regarded as a part of the authorized description. In all examples shown and discussed herein, any specific values should be explained as merely exemplary and not served as limitation. Therefore, other examples of the exemplary embodiment may have different values. It should be noted that: similar reference signs and letters represent similar items in the following drawings, therefore, once a certain item is defined in one drawing, it does not need to be discussed further in the subsequent drawings.

In the description of the present invention, it should be understood that orientation or position relations indicated by orientation words such as "front, back, up, down, left, right", "crosswise, vertical, perpendicular, horizontal" and "top, bottom" and the like are usually based on the orientation or position relations shown in the drawings, and are only used to conveniently describe the present invention or simplify the description. Unless otherwise specified, these orientation words do not indicate or imply that a referred device or element must have a specific orientation or be constructed and operated in the specific orientation, therefore it may not be understood as limitation to a scope of protection of the present invention; and the orientation words "inside and outside" refer to the inside and outside relative to an outline of each component itself.

For ease of description, spatially relative terms such as "on", "over", "on an upper surface", "above" and the like may be used herein to describe a spatial position relationship between one device or feature as shown in the figures and other devices or features. It will be appreciated that the spatially relative terms are intended to comprise different orientations of the device in use or operation in addition to the orientation of the device described in the figures. For example, if the device in the

figures is turned upside down, the device described as "over other devices or configurations" or "on other devices or configurations" will be positioned "below other devices or configurations" or "under other devices or configurations". Thus, the exemplary term "over" may include both "above" and "below". The device may also be positioned in other different manners (rotated for 90 degrees or at other orientations), and the spatially relative descriptors used herein are interpreted accordingly.

In addition, it should be noted that the use of terms such as "first" and "second" to define the parts is only for convenience of distinguishing the corresponding parts. Unless otherwise specified, the above terms have no special meaning, therefore it may not be understood as the limitation to the scope of protection of the present invention.

It should be noted that the terms used here are only used for describing the specific implementation modes, and are not intended to limit the exemplary implementation modes according to the present invention. As used herein, unless clearly specified otherwise in the context, the singular form is also intended to include the plural form. In addition, it should also be understood that when the terms "comprising" and/or "including" are used in the description, it is indicated that there are features, steps, operations, devices, components and/or combinations thereof.

It should be noted that the terms "first", "second", and the like in the specification and claims of the present invention and in the above drawings are used to distinguish similar objects and are not necessarily used to describe a specific sequence or order. It will be appreciated that the data used in this way may be interchanged where appropriate, so that the implementation manners of the present invention described herein may be implemented in an order other than those illustrated or described herein.

The foregoing descriptions are merely preferred embodiments of the present invention and are not intended to limit the present invention. For those skilled in the art, the present invention may have various changes and modifications. Any modifications, equivalent replacements and improvements made within the spirit and principle of the present invention shall fall within the protection scope of the present invention.

**What is claimed is:**

1. A fan, comprising:  
a housing assembly (10);  
a wind guide wheel assembly (20), wherein the wind guide wheel assembly (20) is pivotably disposed on the housing assembly (10),  
wherein, the wind guide wheel assembly (20) has a mounting hole (221), the housing assembly (10) has an anti-rotation structure stretched into the mounting hole (221), and the anti-rotation structure has an avoidance space; and  
an abutting member (30), wherein the abutting member (30) is pivotably disposed on the housing assembly (10), while the abutting member (30) is rotated, an abutting end of the abutting member (30) is stretched into the avoidance space and abuts against the anti-rotation structure, the anti-rotation structure is deformed and abuts against a hole wall of the mounting hole (221), so that the wind guide wheel assembly (20) stops rotating.
2. The fan as claimed in claim 1, wherein the wind guide wheel assembly (20) comprises a wind guide wheel (21) and a shaft sleeve (22), the wind guide wheel (21) is fixedly connected with the shaft sleeve (22), the shaft sleeve (22) has the mounting hole (221), and the wind guide wheel (21) is connected with the housing assembly (10) by the shaft sleeve (22).
3. The fan as claimed in claim 2, wherein the wind guide wheel (21) is provided with at least one locking hole (211), the shaft sleeve (22) comprises a shaft sleeve body (222) and at least one connection fastener (223) disposed on the shaft sleeve body (222), the connection fastener (223) passes through the locking hole (211), and is locked with a step structure in the locking hole (211).
4. The fan as claimed in claim 3, wherein the mounting hole (221) is formed on the shaft sleeve body (222), there are multiple connection fasteners (223), and the multiple connection fasteners (223) are interval-disposed around a circumference of the mounting hole (221).
5. The fan as claimed in claim 3, wherein the wind guide wheel (21) is provided with an assembling hole (212), a hole wall of the assembling hole (212) is provided with at least one anti-rotation gap (213), the shaft sleeve (22) further comprises at least one anti-rotation bulge (224) disposed on the shaft sleeve body (222), the anti-rotation bulge (224) is stretched into the anti-rotation gap (213).
6. The fan as claimed in any one of claims 2 to 5, wherein the housing assembly

(10) comprises a front housing (11), the front housing (11) comprises:

a front housing body (111);

a connection cylinder (112), wherein the connection cylinder (112) is disposed on the front housing body (111); and

multiple mounting fasteners (113), wherein the multiple mounting fasteners (113) are disposed on the front housing body (111), and interval-disposed around a peripheral side of the connection cylinder (112), the mounting fasteners (113) are locked with the shaft sleeve (22) after passing through the mounting hole (221).

7. The fan as claimed in claim 6, wherein the front housing (11) further comprises multiple locking fasteners (114), the multiple locking fasteners (114) are disposed on an end face, away from the front housing body (111), of the connection cylinder (112), and interval-disposed around a circumference of the connection cylinder (112), the multiple locking fasteners (114) form the anti-rotation structure, and the avoidance space is surrounded by the multiple locking fasteners (114).

8. The fan as claimed in claim 7, wherein an inner wall surface of the connection cylinder (112) is provided with a first thread structure (115), the abutting member (30) is a cap cover, the cap cover comprises a cover plate (31) and a mounting cylinder (32) disposed on the cover plate (31), a peripheral wall of the mounting cylinder (32) is successively provided with an abutting bulge (33) and a second thread structure (321) matched with the first thread structure (115) along a direction away from the cover plate (31); and the abutting bulge (33) forms the abutting end.

9. The fan as claimed in claim 8, wherein the abutting bulge (33) is ring-shaped and continuously disposed around the peripheral wall of the mounting cylinder (32).

10. The fan as claimed in claim 7, wherein a position, opposite to the connection cylinder (112), of the front housing body (111) is provided with a chute (116), the abutting member (30) is a cap cover, the cap cover comprises:

a cover plate (31);

a mounting cylinder (32), wherein the mounting cylinder (32) is disposed on the cover plate (31);

a limiting fastener (34), wherein the limiting fastener (34) is disposed on an end face, away from the cover plate (31), of the mounting cylinder (32), the limiting fastener (34) passes through the chute (116), so that the abutting member (30) is locked with the front housing (11); and

an abutting cam (35), wherein the abutting cam (35) is disposed on a peripheral

wall of the mounting cylinder (32), the abutting member (30) is rotated so that the abutting cam (35) abuts against the locking fastener (114), and the abutting cam (35) forms the abutting end.

11. The fan as claimed in claim 10, wherein there are multiple abutting cams (35), the multiple abutting cams (35) are interval-disposed around the peripheral wall of the mounting cylinder (32).

12. The fan as claimed in any one of claims 2 to 5, wherein the housing assembly (10) comprises a front housing (11) and a pressing cover (12), the front housing (11) is provided with at least one spin groove (117), and the pressing cover (12) comprises:

a pressing cover body (121), wherein a first axial end of the pressing cover body (121) is provided with a bulge flange (122); and

a spin fastener (123), wherein the spin fastener (123) is disposed on an end face of a second axial end of the pressing cover body (121);

after the pressing cover body (121) passes through the mounting hole (221), the shaft sleeve (22) is limited between the bulge flange (122) and the front housing (11).

13. The fan as claimed in claim 12, wherein the end face of the second axial end of the pressing cover body (121) is provided with a connecting hole (125), the fan further comprises a connector, the connector passes through the connecting hole (125), so that the pressing cover (12) is fastened on the front housing (11).

14. The fan as claimed in claim 12, wherein the anti-rotation structure comprises multiple elastic fasteners (124), the multiple elastic fasteners (124) are interval-disposed around a peripheral wall surface of the pressing cover body (121), and the avoidance space is surrounded by the multiple elastic fasteners (124).

15. The fan as claimed in claim 14, wherein the front housing (11) is provided with a connecting column (118), a peripheral wall of the connecting column (118) is provided with a third thread structure; and the abutting member (30) is a cap cover, the cap cover comprises:

a cover plate (31);

a mounting cylinder (32), wherein the mounting cylinder (32) is disposed on the cover plate (31), an inner wall surface of the mounting cylinder (32) is provided with a fourth thread structure (322) matched with the third thread structure (119); and

an abutting cylinder (36), wherein the abutting cylinder (36) is disposed on the cover plate (31), and sheathed at a peripheral side of the mounting cylinder (32), the

abutting cylinder (36) forms the abutting end.