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(54) CEILING FAN

DECKENVENTILATOR

VENTILATEUR DE PLAFOND

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention generally relates to a ceiling fan and, more particularly, to a ceiling fan with an improved cooling efficiency and a reduced axial height.

2. Description of the Related Art

[0002] A ceiling fan is fixed to the ceiling without occupation of the user's space while providing an excellent air-flowing effect, as is widely used by people. FIG. 1 shows a conventional ceiling fan 9 including a stator 91, a rotor 92, an assembly member 93 and a plurality of blades 94. The assembly member 93 includes a pivotal member 931 fit around a shaft 911 of the stator 91, as well as a positioning member 932 mounted on a hub 921 of the rotor 92. The positioning member 932 is provided with a plurality of blades 94 which is driven to rotate by the hub 921 rotating relatively to the shaft 911, thereby causing the flow of air through the blades 94.

[0003] However, the assembly of the ceiling fan 9 is time-consuming as it requires the positioning member 932 to be mounted on the hub 921 and then the blades 94 to be mounted to the positioning member 932. In addition, the assembly quality of the ceiling fan 9 is not stable. Furthermore, since each of the hub 921, the positioning member 932 and the blade 94 has a certain thickness, the height of the ceiling fan 9 is increased. As a result, the user standing under the ceiling fan 9 would feel oppressed.

[0004] US 2015/0198175 A1 discloses a ceiling fan including a motor, a bracket unit, a plurality of blades and a mounting unit. Each blade has a locking segment registered with a respective one of the blade-installation members and a covering wing registered with a respective one of the blade-installation members. The locking segment and the covering wing of each of the blades are registered with two adjacent ones of the blade-installation members. The mounting unit includes a plurality of fastener sets, each securing the locking segment of a respective blade to a corresponding blade-installation member, and having a bottom end that is covered by a corresponding covering wing.

[0005] WO 2014/190285 A1 discloses a ceiling fan comprising a motor (18) and a plurality of blades (12). The motor (18) includes a stator (22), a rotor (24), and a shaft (16) coupled with the stator (22). An outer face of the motor (18) includes a plurality of heat dissipating holes (O). The ceiling fan further comprises an intermediate transition member (14). The intermediate transition member (14) is coupled with the motor (18) and includes a body and a plurality of first coupling portions. The plurality of first coupling portions is integrally formed with the body and coupled with the plurality of blades (12). The body includes a central hole at a center thereof. The shaft (16) extends through the central hole. The plurality of first coupling portions extends away from the shaft (16) in a radial plane perpendicular o an axis of the shaft (16). An outer diameter of the body of the intermediate transition member (14) is smaller than an outer diameter of a top of the motor (18). The body of the intermediate transition member (14) is coupled with the top of the motor (18). Each of the plurality of heat dissipating holes (O) is located circumferentially between two adjacent ones of the plurality of first coupling portions in a regular distance to an adjacent one of the plurality of heat dissipating holes (O).

[0006] In light of this problem, it is necessary to improve the conventional ceiling fan.

SUMMARY OF THE INVENTION

[0007] It is therefore the objective of this invention to provide a ceiling fan which can not only improve the cooling efficiency and reduce the height of the ceiling fan, but also can improve the convenience and efficiency in assembly, thus reducing the cost.

[0008] In an aspect, a ceiling fan including a motor, an intermediate transition member and a plurality of blades is disclosed. The motor includes a stator, a rotor, and a shaft coupled with the stator. An outer face of the motor includes a plurality of heat dissipating holes. The intermediate transition member is coupled with the motor and includes a body and a plurality of first coupling portions integrally formed with the body. The body includes a central hole at a center thereof. The shaft extends through the central hole. The plurality of first coupling portions extends away from the shaft in a radial plane perpendicular to an axis of the shaft. An outer diameter of the body of the intermediate transition member is smaller than an outer diameter of a top of the motor. The body of the intermediate transition member is coupled with the top of the motor. The plurality of blades is coupled with the plurality of first coupling portions of the intermediate transition member.

[0009] In another aspect, a ceiling fan including a motor, an intermediate transition member and a plurality of blades is disclosed. The motor includes a stator, a rotor, and a shaft coupled with the stator. An outer face of the motor includes a plurality of heat dissipating holes. The intermediate transition member is coupled with the motor and includes a body and a plurality of first coupling portions integrally formed with the body. The body includes a central hole at a center thereof. The shaft extends through the central hole. The plurality of first coupling portions extends away from the shaft in a radial plane perpendicular to an axis of the shaft. An outer diameter of the body of the intermediate transition member is smaller than an outer diameter of a bottom of the motor. The body of the intermediate transition member is coupled with the bottom of the motor. The plurality of blades is coupled with the plurality of first coupling portions of

the intermediate transition member.

[0010] In a further aspect, a ceiling fan including a motor, an intermediate transition member and a plurality of blades is disclosed. The motor includes a stator, a rotor, and a shaft coupled with the stator. An outer face of the motor includes a plurality of heat dissipating holes. A peripheral wall of the motor includes an annular protruding portion extending radially. The intermediate transition member is coupled with the motor and includes a body and a plurality of first coupling portions integrally formed with the body. The body includes a central hole at a center thereof. The plurality of first coupling portions extends away from the shaft in a radial plane perpendicular to an axis of the shaft. A diameter of the central hole of the intermediate transition member is slightly larger than or equal to an outer diameter of the peripheral wall of the motor. The body of the intermediate transition member is coupled with the annular protruding portion of the motor. The plurality of blades is coupled with the plurality of first coupling portions of the intermediate transition member.

[0011] Based on this, the ceiling fan according to the invention includes an intermediate transition member having a body and a plurality of first coupling portions along with the arrangement of the plurality of heat dissipating holes, in which the plurality of first coupling portions is integrally formed with the body and extends away from the shaft while the second coupling portions of the plurality of blades respectively connect to the plurality of first coupling portions of the intermediate transition member. In this arrangement, the coupling strength can be increased, the thickness of the ceiling fan can be reduced to lower the oppression of the user, and the convenience and efficiency in assembly of the ceiling fan can be improved. As a result, the cost is reduced and an excellent heat dissipation effect is attained.

[0012] In an example, the connecting portions between the plurality of blades and the intermediate transition member are located outside of the outer diameter of the top of the motor. Thus, the axial height of the ceiling fan can be reduced.

[0013] In the example, the plurality of first coupling portions of the intermediate transition member extends radially beyond the outer diameter of the top of the motor. Thus, the axial height of the ceiling fan can be reduced.

[0014] In another example, the connecting portions between the plurality of blades and the intermediate transition member are located outside of the outer diameter of the bottom of the motor. Thus, the axial height of the ceiling fan can be reduced.

[0015] In the other example, the plurality of first coupling portions of the intermediate transition member extends radially beyond the outer diameter of the bottom of the motor. Thus, the axial height of the ceiling fan can be reduced.

[0016] In the example, each of the plurality of heat dissipating holes is located circumferentially between two adjacent ones of the plurality of first coupling portions in a regular distance to an adjacent one of the plurality of heat dissipating holes. Thus, uniform heat dissipation effect can be attained.

[0017] In the example, the intermediate transition member further includes a plurality of first fasteners, the body of the intermediate transition member includes a plurality of first positioning holes, and the plurality of first fasteners respectively extends through the plurality of first positioning holes to fix the body of the intermediate transition member to the motor. Thus, the intermediate transition member can be securely fixed to the motor.

[0018] In the example, each of the plurality of blades includes a second coupling portion coupled with a respective one of the plurality of first coupling portions of the intermediate transition member.

[0019] In the example, the intermediate transition member further includes a plurality of second fasteners, each of the plurality of first coupling portions includes a plurality of second positioning holes, and each of the plurality of second fasteners extends through a respective one of the plurality of second positioning holes to fix the second coupling portion of the each of the plurality of blades to a respective one of the plurality of first coupling portions of the intermediate transition member. Thus, the blades can be securely fixed to the intermediate transition member.

[0020] In the example, each of the second coupling portions of the plurality of blades is in a form of a channel, and each of the plurality of first coupling portions of the intermediate transition member extends through a respective one of the channels of the plurality of blades. Thus, convenient assembly can be provided.

[0021] In the example, each of the channels of the plurality of blades includes two ends intercommunicating with each other. Thus, the cooling effect can be improved.

[0022] In the example, a quantity of the plurality of first coupling portions of the intermediate transition member corresponds to a quantity of the plurality of blades. Thus, each of the first coupling portions can be coupled with a respective blade.

[0023] In the example, each of the plurality of first coupling portions extends outward of the body in a radial direction. Thus, the intermediate transition member can be coupled with the second coupling portions of the blades.

[0024] In the example, each of the plurality of first coupling portions extends outward of the body in a tangential direction. Thus, the intermediate transition member can be coupled with the second coupling portions of the blades.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] The present invention will become more fully understood from the detailed description given hereinafter and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention, and wherein:

FIG. 1 is a cross sectional view of a conventional ceiling fan.

FIG. 2 is an exploded, perspective view of a ceiling fan of a first embodiment which is not part of the invention.

FIG. 3 is a top view of the ceiling fan of the first embodiment which is not part of the invention.

FIG. 4 is a cross sectional view of the ceiling fan (including a plurality of blades) of the first embodiment which is not part of the invention.

FIG. 5 is a cross sectional view of a ceiling fan (including a plurality of blades) of a second embodiment which is not part of the invention.

FIG. 6 is an exploded, perspective view of a ceiling fan of a third embodiment according to the invention.

FIG. 7 is a top view of the ceiling fan of the third embodiment according to the invention.

FIG. 8 is a cross sectional view of the ceiling fan (including a plurality of blade and a safety element) of the third embodiment according to the invention.

FIG. 9 is another implementation of an intermediate transition member according to the invention.

[0026] In the various figures of the drawings, the same numerals designate the same or similar parts. Furthermore, when the terms "first", "second", "inner", "top", "bottom", "axial", "radial", "height" and similar terms are used hereinafter, it should be understood that these terms have reference only to the structure shown in the drawings as it would appear to a person viewing the drawings, and are utilized only to facilitate describing the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0027] FIGS. 2, 3 and 4 show a ceiling fan according to a first embodiment for illustrating the third embodiment of the invention only. The first embodiment itself is not according to the invention. The ceiling fan includes a motor 1, an intermediate transition member 2 coupled with the motor 1, and a plurality of blades 3 coupled with the intermediate transition member 2.

[0028] Referring to FIGS. 3, 4 and 5, the motor 1 includes a stator 11 and a rotor 12. The stator 11 is coupled with a shaft 13. The shaft 13 is hollow. The stator 11 is used to drive the rotor 12 to rotate. The motor 1 includes an outer face (including a top 1a, a bottom 1d and a peripheral wall 1b). The outer face includes a plurality of heat dissipating holes 14. As an example, the heat dissipating holes 14 extend through the top 1a, the bottom 1d or the peripheral wall 1b, permitting the heat in the motor 1 to be dissipated through the heat dissipating holes 14. In this embodiment, the plurality of heat dissipating holes 14 is formed on the top la of the motor 1.

[0029] Referring to FIGS. 2 and 3, the intermediate transition member 2 is coupled with the top 1a of the motor 1. The intermediate transition member 2 includes a body 22 and a plurality of first coupling portions 23 integrally formed with the body 22. An outer diameter D2 of the body 22 is smaller than an outer diameter D1 of the top 1a, such that the plurality of heat dissipating holes 14 of the motor 1 is uncovered. The body 22 includes a central hole 21 at a center thereof. The shaft 13 extends through the central hole 21. The body 22 further includes a plurality of first positioning holes 221. The plurality of first coupling portions 23 extends radially away from the shaft 13 in a radial plane perpendicular to an axis of the shaft (13), and each of the plurality of heat dissipating holes 14 is located circumferentially between two adjacent first coupling portions 23 in a regular distance to an adjacent heat dissipating hole 14. Each of the plurality of first coupling portions 23 includes a plurality of second positioning holes 231. Each of the plurality of first coupling portions 23 may extend outward of the body 22 in a radial direction, or may extend outward of the body 22 in a tangential direction inclined from the radial direction (FIG. 9, which is used for illustrating the third embodiment only. FIG. 9 itself is not according to the invention).

[0030] Referring to FIGS. 3 and 4, the intermediate transition member 2 further includes a plurality of first fasteners 24 and a plurality of second fasteners 25. The plurality of first fasteners 24 respectively extends through the plurality of first positioning holes 221 to fix the body 22 to the top 1a of the motor 1. The plurality of first coupling portions 23 of the intermediate transition member 2 extends radially beyond the outer diameter D1 of the top 1a of the motor 1 to reduce the height of the ceiling fan.

[0031] Referring to FIGS. 3 and 4, each of the plurality of blades 3 includes a second coupling portion 31 coupled with a respective first coupling portion 23 of the intermediate transition member 2. The second coupling portion 31 is preferably in the form of a channel 31a having two ends intercommunicating with each other to improve the cooling efficiency. Each of the plurality of first coupling portions 23 extends into the channel 31a. Then, each of the plurality of second fasteners 25 extends through a respective second positioning hole 231, fixing the second coupling portions 31 of the plurality of blades 3 to the plurality of first coupling portions 23 of the intermediate transition member 2.

[0032] Referring to FIGS. 3 and 4, the quantity of the plurality of first coupling portions 23 of the intermediate transition member 2 corresponds to the quantity of the plurality of blades 3. Since the plurality of first coupling portions 23 of the intermediate transition member 2 extends radially beyond the outer diameter D1 of the top 1a of the motor 1, the connecting portions between the plurality of blades 3 and the intermediate transition member 2 are located outside of the outer diameter D1 of the

top 1a of the motor 1, thus reducing the height of the ceiling fan.

[0033] Referring to FIGS. 3 and 4, based on the above structure, when the ceiling fan of the embodiment is in use, the shaft 13 may be fixed to a predetermined location of the ceiling (not shown) while connecting the ceiling fan to a power. After the stator 11 is electrified, the rotor 12 is driven to rotate. The rotor 12 drives the plurality of blades 3 to rotate. The intermediate transition member 2 includes a body 22 and a plurality of first coupling portions 23 integrally formed with the body 22. The outer diameter D2 of the body 22 of the intermediate transition member 2 is smaller than the outer diameter D1 of the top 1a of the motor 1, such that the heat inside the motor 1 can be discharged via the plurality of heat dissipating holes 14.

[0034] In addition, referring to FIGS. 3 and 4, since the intermediate transition member 2 is integrally formed, the plurality of first coupling portions 23 of the intermediate transition member 2 extends away from the shaft 13 while the second coupling portions 31 of the plurality of blades 3 connect to the plurality of first coupling portions 23 of the intermediate transition member 2. In this arrangement, the coupling strength can be increased, the thickness of the ceiling fan can be reduced to lower the oppression of the user, and the convenience and efficiency in assembly of the ceiling fan can be improved. As a result, the cost is reduced and an excellent heat dissipation effect is attained.

[0035] FIG. 5 shows a ceiling fan according to a second embodiment for illustrating the third embodiment of the invention only. The second embodiment itself is not according to the invention. The second embodiment is substantially the same as the first embodiment except for that the plurality of heat dissipating holes 14 is arranged on the bottom 1d of the motor 1 and that the intermediate transition member 2 is coupled with the bottom 1d of the motor 1. The plurality of first fasteners 24 of the intermediate transition member 2 respectively extends through the plurality of first positioning holes 221 to fix the body 22 to the bottom 1d of the motor 1. Furthermore, the second coupling portions 31 of the plurality of blades 3 couple with the first coupling portions 23 of the intermediate transition member 2, respectively. The outer diameter D2 of the body 22 of the intermediate transition member 2 is smaller than an outer diameter D1' of the bottom 1d of the motor 1 while the plurality of first coupling portions 23 of the intermediate transition member 2 extends radially beyond the outer diameter D1' of the bottom 1d of the motor 1. Thus, the connecting portions between the plurality of blades 3 and the intermediate transition member 2 are located outside of the outer diameter D1' of the bottom 1d of the motor 1, thus reducing the height of the ceiling fan.

[0036] Referring to FIG. 5, based on the above structure, the intermediate transition member 2 is mounted to the bottom 1d of the motor 1. Furthermore, in addition to easy detachment, the intermediate transition member 2 includes a body 22 and a plurality of first coupling portions 23 integrally formed with the body 22, and the outer diameter D2 of the body 22 of the intermediate transition member 2 is smaller than the outer diameter D1' of the bottom 1d of the motor 1. This permits the heat inside the motor 1 to be discharged via the plurality of heat dissipating holes 14. In this arrangement, the coupling strength can be increased, the thickness of the ceiling fan can be reduced to lower the oppression of the user, and the convenience and efficiency in assembly of the ceiling fan can be improved. As a result, the cost is reduced and an excellent heat dissipation effect is attained.

[0037] FIGS. 6, 7 and 8 show a ceiling fan according to a third embodiment of the invention. The third embodiment of the invention is substantially the same as the first embodiment except for that the peripheral wall 1b of the motor 1 includes an annular protruding portion 1c extending radially. A diameter D3 of the central hole 21 of the intermediate transition member 2 is slightly larger than or equal to an outer diameter D4 of the peripheral wall 1b of the motor 1. The plurality of first fasteners 24 of the intermediate transition member 2 respectively extends through the plurality of first positioning holes 221, coupling the body 22 to the annular protruding portion 1c of the motor 1. In addition, the second coupling portions 31 of the plurality of blades 3 are coupled with the plurality of first coupling portions 23 of the intermediate transition member 2, respectively.

[0038] Referring to FIGS. 6, 7 and 8, since the intermediate transition member 2 is coupled with the annular protruding portion 1c of the motor 1, the plurality of first coupling portions 23 extends beyond the outer diameter D4 of the peripheral wall 1b of the motor 1. Thus, the connecting portions between the plurality of blades 3 and the intermediate transition member 2 are located outside of the outer diameter D4 of the peripheral wall 1b of the motor 1.

[0039] Referring to FIGS. 6, 7 and 8, based on the above structure, the diameter D3 of the central hole 21 of the intermediate transition member 2 is slightly larger than or equal to the outer diameter D4 of the peripheral wall 1b of the motor 1. Moreover, since the intermediate transition member 2 is coupled with the annular protruding portion 1c of the motor 1, the heat inside the motor 1 can be discharged via the plurality of heat dissipating holes 14. Furthermore, since the intermediate transition member 2 includes a body 22 and a plurality of first coupling portions 23 integrally formed with the body 22, the plurality of first coupling portions 23 of the intermediate transition member 2 extends away from the shaft 13 while the second coupling portions 31 of the plurality of blades 3 respectively connect to the plurality of first coupling portions 23 of the intermediate transition member 2. In this arrangement, the coupling strength can be increased, the thickness of the ceiling fan can be reduced to lower the oppression of the user, and the convenience and efficiency in assembly of the ceiling fan can be improved. As a result, the cost is reduced and an excellent

heat dissipation effect is attained.

[0040] To ensure a safe use of the ceiling fan, the ceiling fan according to the invention may further couple with a safety element 4 as shown in FIG. 8. The safety element 4 is in the form of a rope extending through the shaft 13. The safety element 4 includes an end fixed to the ceiling (not shown), as well as another end coupled with a connecting plate 15 under the stator 11 to prevent the ceiling fan from falling.

[0041] In summary, the ceiling fan according to the invention includes an intermediate transition member includes a body and a plurality of first coupling portions along with the arrangement of the plurality of heat dissipating holes, in which the plurality of first coupling portions is integrally formed with the body and extends away from the shaft while the second coupling portions of the plurality of blades respectively connect to the plurality of first coupling portions of the intermediate transition member. In this arrangement, the coupling strength can be increased, the thickness of the ceiling fan can be reduced to lower the oppression of the user, and the convenience and efficiency in assembly of the ceiling fan can be improved. As a result, the cost is reduced and an excellent heat dissipation effect is attained.

Claims

1. A ceiling fan comprising:

a motor (1) including a stator (11), a rotor (12), and a shaft (13) coupled with the stator (11);
a plurality of blades (3); and
an intermediate transition member (2), wherein the intermediate transition member (2) is coupled with the motor (1) and includes a body (22) and a plurality of first coupling portions (23), wherein the plurality of first coupling portions (23) is integrally formed with the body (22) and coupled with the plurality of blades (3), wherein the body (22) includes a central hole (21) at a center thereof, wherein the plurality of first coupling portions (23) extends away from the shaft (13) in a radial plane perpendicular to an axis of the shaft (13), wherein a diameter (D3) of the central hole (21) of the intermediate transition member (2) is slightly larger than or equal to an outer diameter (D4) of a peripheral wall (1b) of the motor (1), and
wherein the ceiling fan is **characterized in that** an outer face of the motor (1) includes a plurality of heat dissipating holes (14), wherein each of the plurality of heat dissipating holes (14) is located circumferentially between two adjacent ones of the plurality of first coupling portions (23) in a regular distance to an adjacent one of the plurality of heat dissipating holes (14), wherein the peripheral wall (1b) of the motor (1) includes an annular protruding portion (1c) extending radially, and wherein the body (22) of the intermediate transition member (2) is coupled with the annular protruding portion (1c) of the motor (1).

2. The ceiling fan as claimed in claim 1, **characterized in that** the intermediate transition member (2) further includes a plurality of first fasteners (24), wherein the body (22) of the intermediate transition member (2) includes a plurality of first positioning holes (221), and wherein the plurality of first fasteners (24) respectively extends through the plurality of first positioning holes (221) to fix the body (22) of the intermediate transition member (2) to the motor (1).

3. The ceiling fan as claimed in claim 2, **characterized in that** each of the plurality of blades (3) includes a second coupling portion (31) coupled with a respective one of the plurality of first coupling portions (23) of the intermediate transition member (2).

4. The ceiling fan as claimed in claim 3, **characterized in that** the intermediate transition member (2) further includes a plurality of second fasteners (25), wherein each of the plurality of first coupling portions (23) includes a plurality of second positioning holes (231), and wherein each of the plurality of second fasteners (25) extends through a respective one of the plurality of second positioning holes (231) to fix the second coupling portion (31) of the each of the plurality of blades (3) to a respective one of the plurality of first coupling portions (23) of the intermediate transition member (2).

5. The ceiling fan as claimed in claim 4, **characterized in that** each of the second coupling portions (31) of the plurality of blades (3) is in a form of a channel (31a), and wherein each of the plurality of first coupling portions (23) of the intermediate transition member (2) extends through a respective one of the channels (31a) of the plurality of blades (3).

6. The ceiling fan as claimed in claim 5, **characterized in that** each of the channels (31a) of the plurality of blades (3) includes two ends intercommunicating with each other.

7. The ceiling fan as claimed in claim 1, **characterized in that** a quantity of the plurality of first coupling portions (23) of the intermediate transition member (2) corresponds to a quantity of the plurality of blades (3).

8. The ceiling fan as claimed in claim 1, **characterized in that** each of the plurality of first coupling portions (23) extends outward of the body (22) in a radial direction.

9. The ceiling fan as claimed in claim 1, **characterized in that** each of the plurality of first coupling portions (23) extends outward of the body (22) in a tangential direction.

Patentansprüche

1. Deckenventilator, umfassend:

einen Motor (1), welcher einen Stator (11), einen Rotor (12) und einen Schaft (13), der mit dem Stator (11) gekoppelt ist, umfasst;
mehrere Blätter (3); und
ein Zwischenübergangselement (2), wobei das Zwischenübergangselement (2) mit dem Motor (1) gekoppelt ist und einen Körper (22) und mehrere erste Kopplungsabschnitte (23) umfasst, wobei die mehreren ersten Kopplungsabschnitte (23) integral mit dem Körper (22) gebildet und mit den mehreren Blättern (3) gekoppelt sind, wobei der Körper (22) ein mittiges Loch (21) an einer Mitte desselben umfasst, wobei sich die mehreren ersten Kopplungsabschnitte (23) von dem Schaft (13) weg in eine radiale Ebene senkrecht zu einer Achse des Schafts (13) erstrecken, wobei ein Durchmesser (D3) des mittigen Lochs (21) des Zwischenübergangselements (2) geringfügig größer oder gleich einem Außendurchmesser (D4) einer Umfangswand (1b) des Motors (1) ist, und
wobei der Deckenventilator **dadurch gekennzeichnet ist, dass** eine Außenfläche des Motors (1) mehrere Wärmeableitungslöcher (14) umfasst, wobei sich jedes der mehreren Wärmeableitungslöcher (14) umfänglich zwischen zwei benachbarten der mehreren ersten Kopplungsabschnitte (23) in einem regelmäßigen Abstand zu einem benachbarten der mehreren Wärmeableitungslöcher (14) befindet, wobei die Umfangswand (1b) des Motors (1) einen ringförmigen vorstehenden Abschnitt (1c) aufweist, der sich radial erstreckt, und wobei der Körper (22) des Zwischenübergangselements (2) mit dem ringförmigen vorstehenden Abschnitt (1c) des Motors (1) gekoppelt ist.

2. Deckenventilator nach Anspruch 1, **dadurch gekennzeichnet, dass** das Zwischenübergangselement (2) ferner mehrere erste Befestigungselemente (24) umfasst, wobei der Körper (22) des Zwischenübergangselements (2) mehrere erste Positionierungslöcher (221) umfasst, und wobei sich die mehreren ersten Befestigungselemente (24) jeweils durch die mehreren ersten Positionierungslöcher (221) erstrecken, um den Körper (22) des Zwischenübergangselements (2) an dem Motor (1) zu befestigen.

3. Deckenventilator nach Anspruch 2, **dadurch gekennzeichnet**, das jedes der mehreren Blätter (3) einen zweiten Kopplungsabschnitt (31) aufweist, der mit einem jeweiligen der mehreren ersten Kopplungsabschnitte (23) des Zwischenübergangselements (2) gekoppelt ist.

4. Deckenventilator nach Anspruch 3, **dadurch gekennzeichnet, dass** das Zwischenübergangselement (2) ferner mehrere zweite Befestigungselemente (25) umfasst, wobei jeder der mehreren ersten Kopplungsabschnitte (23) mehrere zweite Positionierungslöcher (231) umfasst, und wobei sich jedes der mehreren zweiten Befestigungselemente (25) durch ein jeweiliges der mehreren zweiten Positionierungslöcher (231) erstreckt, um den zweiten Kopplungsabschnitt (31) eines jeden der mehreren Blätter (3) an einem jeweiligen der mehreren ersten Kopplungsabschnitte (23) des Zwischenübergangselements (2) zu befestigen.

5. Deckenventilator nach Anspruch 4, **dadurch gekennzeichnet, dass** jeder der zweiten Kopplungsabschnitte (31) der mehreren Blätter (3) in Form eines Kanals (31a) vorliegt, und wobei sich jeder der mehreren ersten Kopplungsabschnitte (23) des Zwischenübergangselements (2) durch einen jeweiligen der Kanäle (31a) der mehreren Blätter (3) erstreckt.

6. Deckenventilator nach Anspruch 5, **dadurch gekennzeichnet, dass** jeder der Kanäle (31a) der mehreren Blätter (3) zwei miteinander kommunizierende Enden umfasst.

7. Deckenventilator nach Anspruch 1, **dadurch gekennzeichnet, dass** eine Anzahl der mehreren ersten Kopplungsabschnitte (23) des Zwischenübergangselements (2) einer Anzahl der mehreren Blätter (3) entspricht.

8. Deckenventilator nach Anspruch 1, **dadurch gekennzeichnet, dass** sich jeder der mehreren ersten Kopplungsabschnitte (23) in einer Radialrichtung nach außerhalb des Körpers (22) erstreckt.

9. Deckenventilator nach Anspruch 1, **dadurch gekennzeichnet, dass** sich jeder der mehreren ersten Kopplungsabschnitte (23) in einer Tangentialrichtung nach außerhalb des Körpers (22) erstreckt.

Revendications

1. Un ventilateur de plafond comprenant :

un moteur (1) comprenant un stator (11), un rotor (12) et un arbre (13) couplé avec le stator

(11) ;
une pluralité de pales (3) ; et
un élément de transition intermédiaire (2), dans lequel l'élément de transition intermédiaire (2) est couplé avec le moteur (1) et comprend un corps (22) et une pluralité de premières parties de couplage (23), dans lequel la pluralité de premières parties de couplage (23) est formée intégralement avec le corps (22) et couplée avec la pluralité de pales (3), dans lequel le corps (22) comprend un trou central (21) au niveau de son centre, dans lequel la pluralité de premières parties de couplage (23) s'étend à l'opposé de l'arbre (13) dans un plan radial perpendiculaire à un axe de l'arbre (13), dans lequel un diamètre (D3) du trou central (21) de l'élément de transition intermédiaire (2) est légèrement supérieur ou égal à un diamètre externe (D4) d'une paroi périphérique (1b) du moteur (1), et
dans lequel le ventilateur de plafond est **caractérisé en ce qu'**une face externe du moteur (1) comprend une pluralité de trous de dissipation de chaleur (14), dans lequel chacun de la pluralité de trous de dissipation de chaleur (14) est positionné de manière circonférentielle entre deux parties adjacentes de la pluralité de premières parties de couplage (23) à une distance régulière par rapport à un trou adjacent de la pluralité de trous de dissipation de chaleur (14), dans lequel la paroi périphérique (1b) du moteur (1) comprend une partie en saillie annulaire (1c) s'étendant de manière radiale, et dans lequel le corps (22) de l'élément de transition intermédiaire (2) est couplé avec la partie en saillie annulaire (1c) du moteur (1).

2. Le ventilateur de plafond selon la revendication 1, **caractérisé en ce que** l'élément de transition intermédiaire (2) comprend en outre une pluralité de premières fixations (24), dans lequel le corps (22) de l'élément de transition intermédiaire (2) comprend une pluralité de premiers trous de positionnement (221), et dans lequel la pluralité de premières fixations (24) s'étend respectivement à travers la pluralité de premiers trous de positionnement (221) afin de fixer le corps (22) de l'élément de transition intermédiaire (2) sur le moteur (1).

3. Le ventilateur de plafond selon la revendication 2, **caractérisé en ce que** chacune de la pluralité de pales (3) comprend une seconde partie de couplage (31) couplée avec une partie respective de la pluralité de premières parties de couplage (23) de l'élément de transition intermédiaire (2).

4. Le ventilateur de plafond selon la revendication 3, **caractérisé en ce que** l'élément de transition intermédiaire (2) comprend en outre une pluralité de secondes fixations (25), dans lequel chacune de la pluralité de premières parties de couplage (23) comprend une pluralité de seconds trous de positionnement (231), et dans lequel chacune de la pluralité de secondes fixations (25) s'étend à travers un trou respectif de la pluralité de seconds trous de positionnement (231) afin de fixer la seconde partie de couplage (31) de chacune de la pluralité de pales (3) sur une partie respective de la pluralité de premières parties de couplage (23) de l'élément de transition intermédiaire (2).

5. Le ventilateur de plafond selon la revendication 4, **caractérisé en ce que** chacune des secondes parties de couplage (31) de la pluralité de pales (3) se présente sous la forme d'un canal (31a), et dans lequel chacune de la pluralité de premières parties de couplage (23) de l'élément de transition intermédiaire (2) s'étend à travers un canal respectif des canaux (31a) de la pluralité de pales (3).

6. Le ventilateur de plafond selon la revendication 5, **caractérisé en ce que** chacun des canaux (31a) de la pluralité de pales (3) comprend deux extrémités inter-communiquant entre elles.

7. Le ventilateur de plafond selon la revendication 1, **caractérisé en ce qu'**une quantité de la pluralité de premières parties de couplage (23) de l'élément de transition intermédiaire (2) correspond à une quantité de la pluralité de pales (3).

8. Le ventilateur de plafond selon la revendication 1, **caractérisé en ce que** chacune de la pluralité de premières parties de couplage (23) s'étend vers l'extérieur du corps (22) dans une direction radiale.

9. Le ventilateur de plafond selon la revendication 1, **caractérisé en ce que** chacune de la pluralité de premières parties de couplage (23) s'étend vers l'extérieur du corps (22) dans une direction tangentielle.

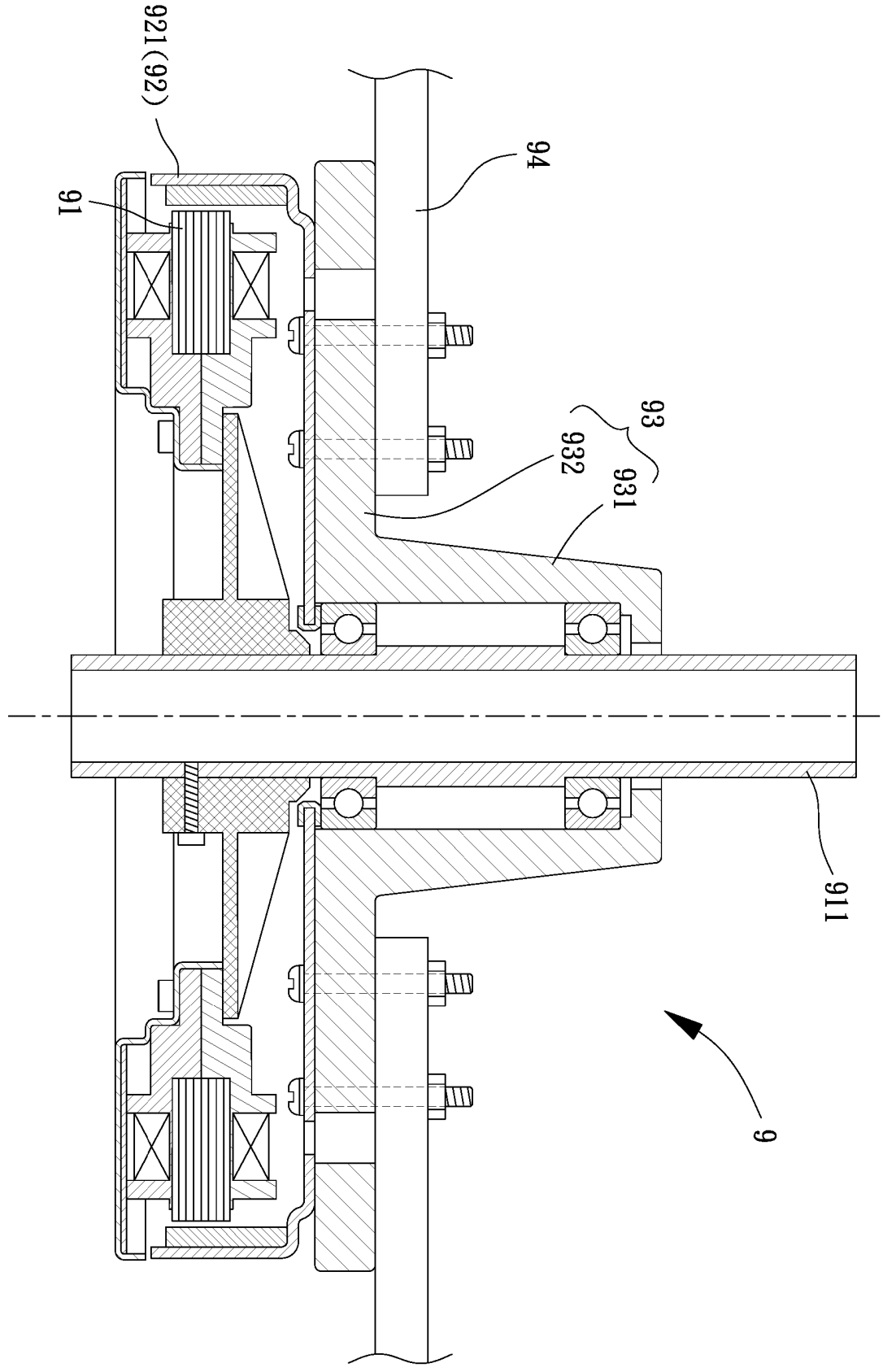


FIG. 1
PRIOR ART

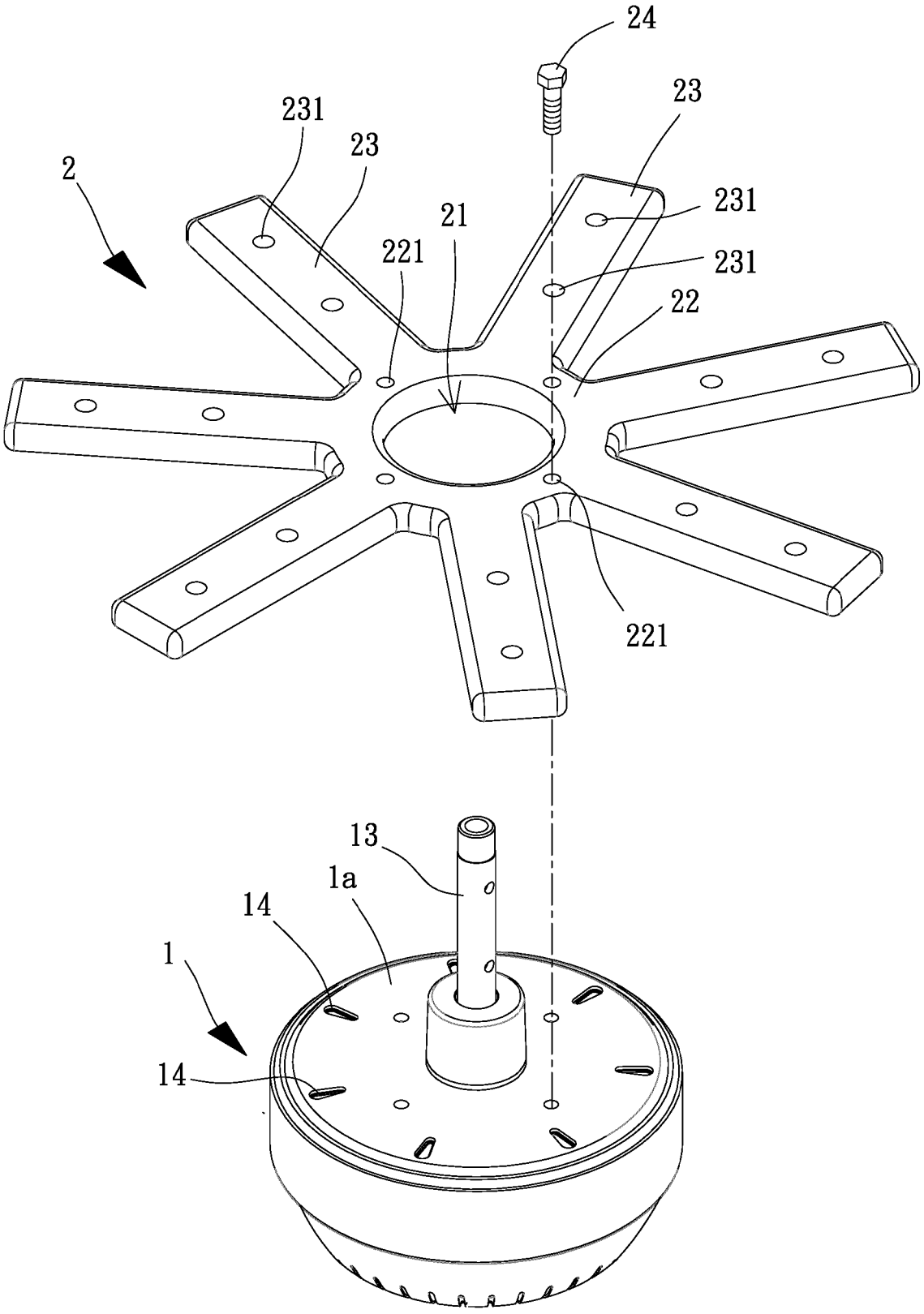


FIG. 2

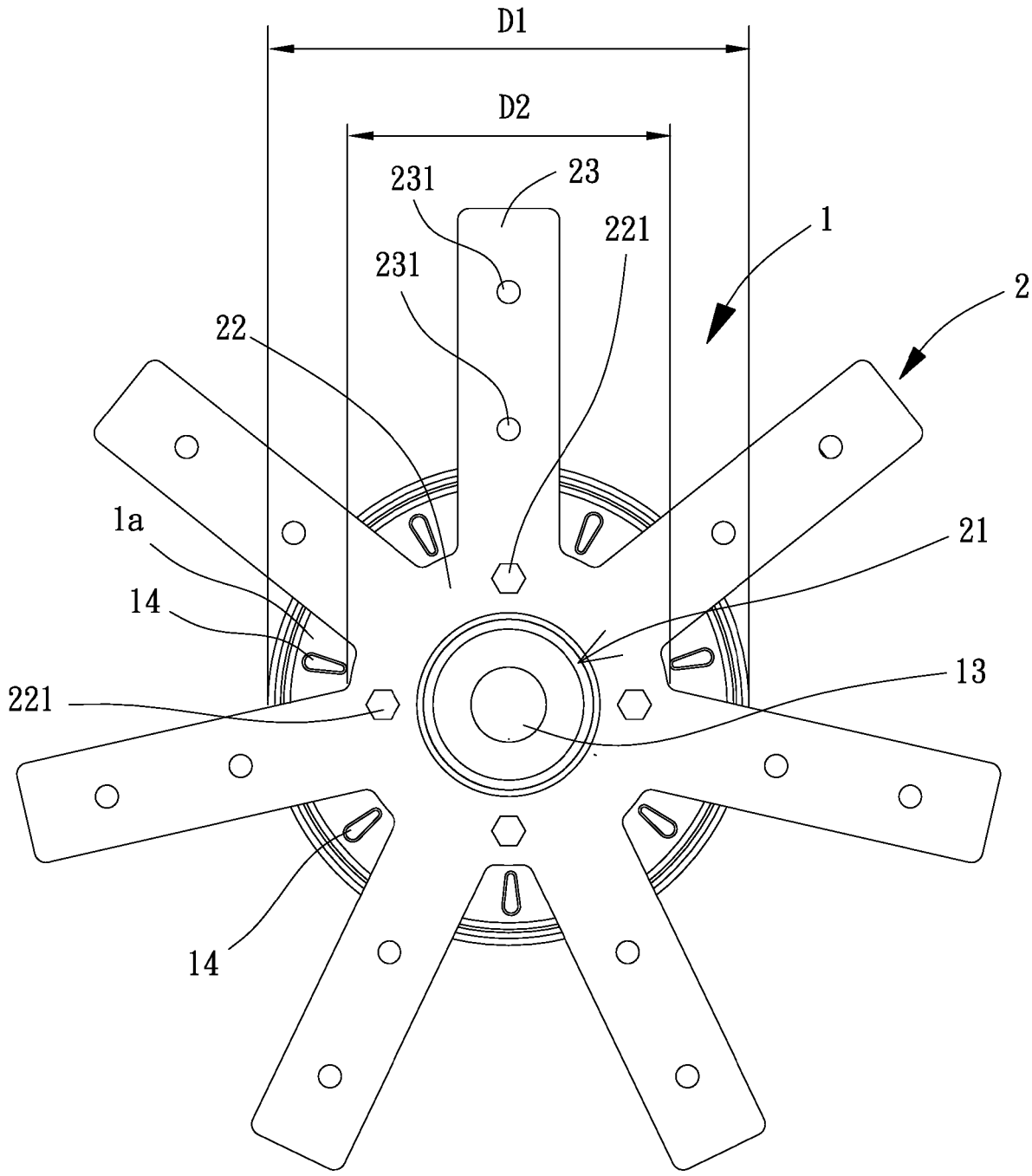
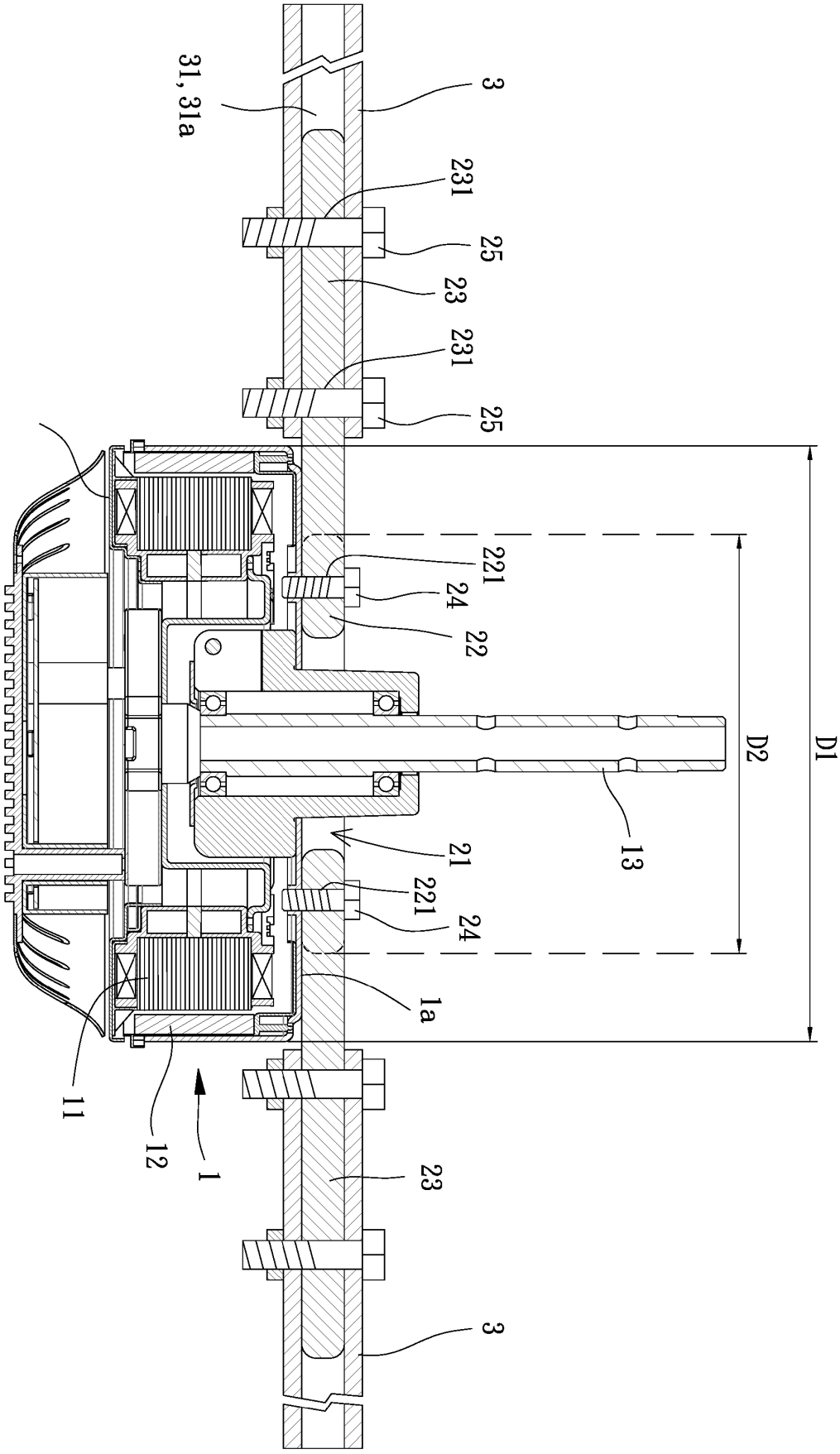


FIG. 3

FIG. 4



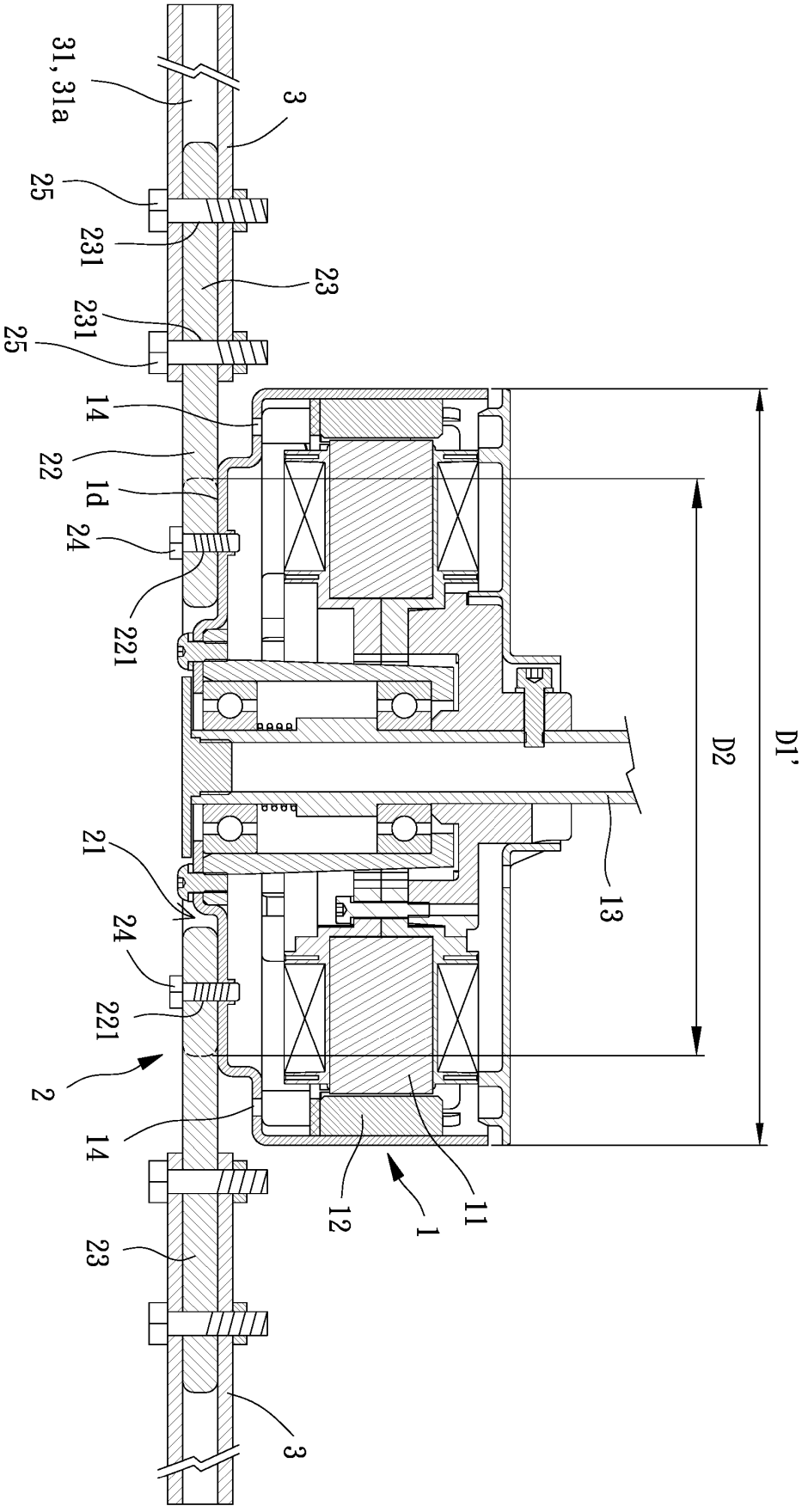

31, 31a
3
25
231
23
231
25
14
22
1d
24
221
21
24
221
2
14
23
3
12
1
11
13
D2
D1'

FIG. 5

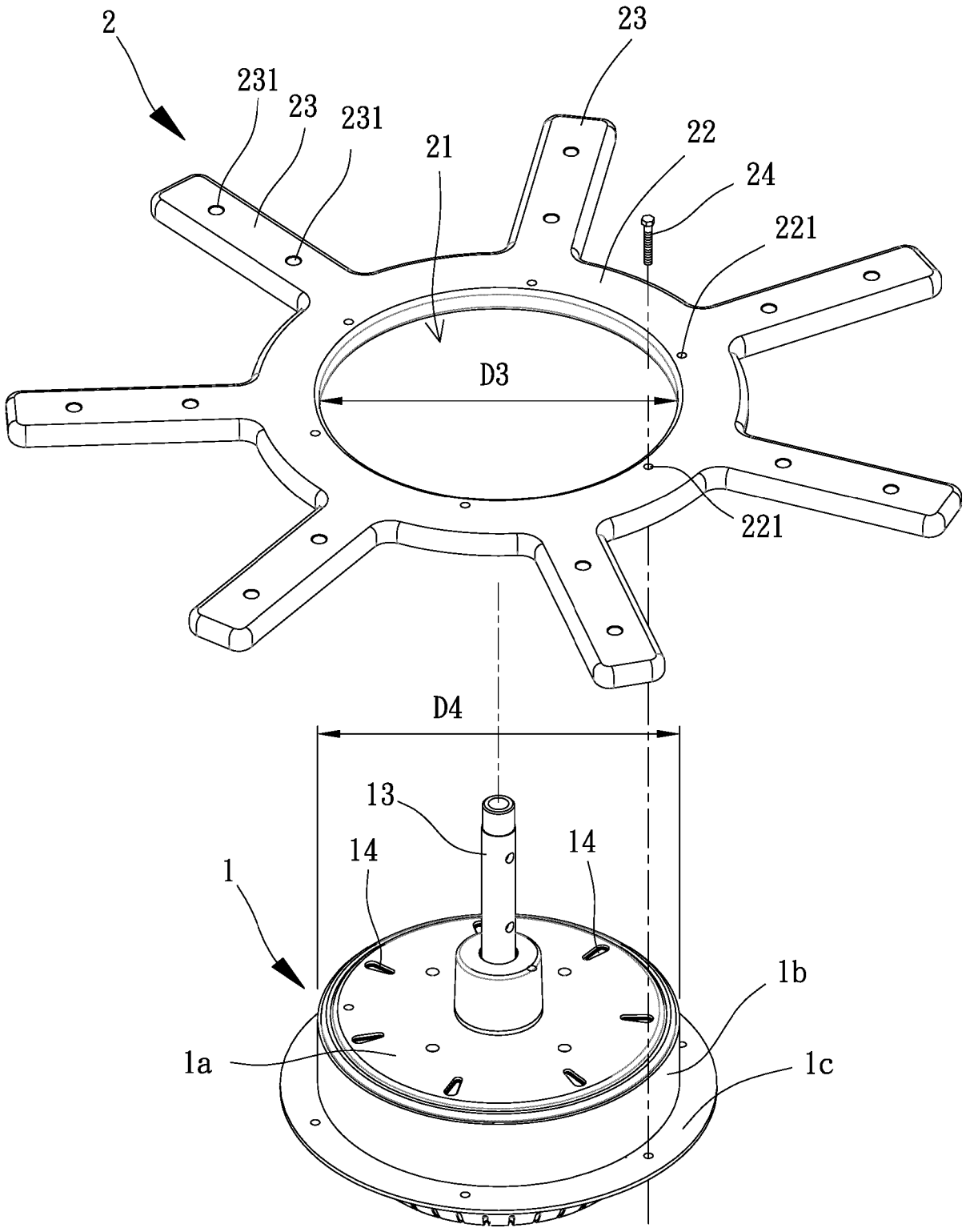


FIG. 6

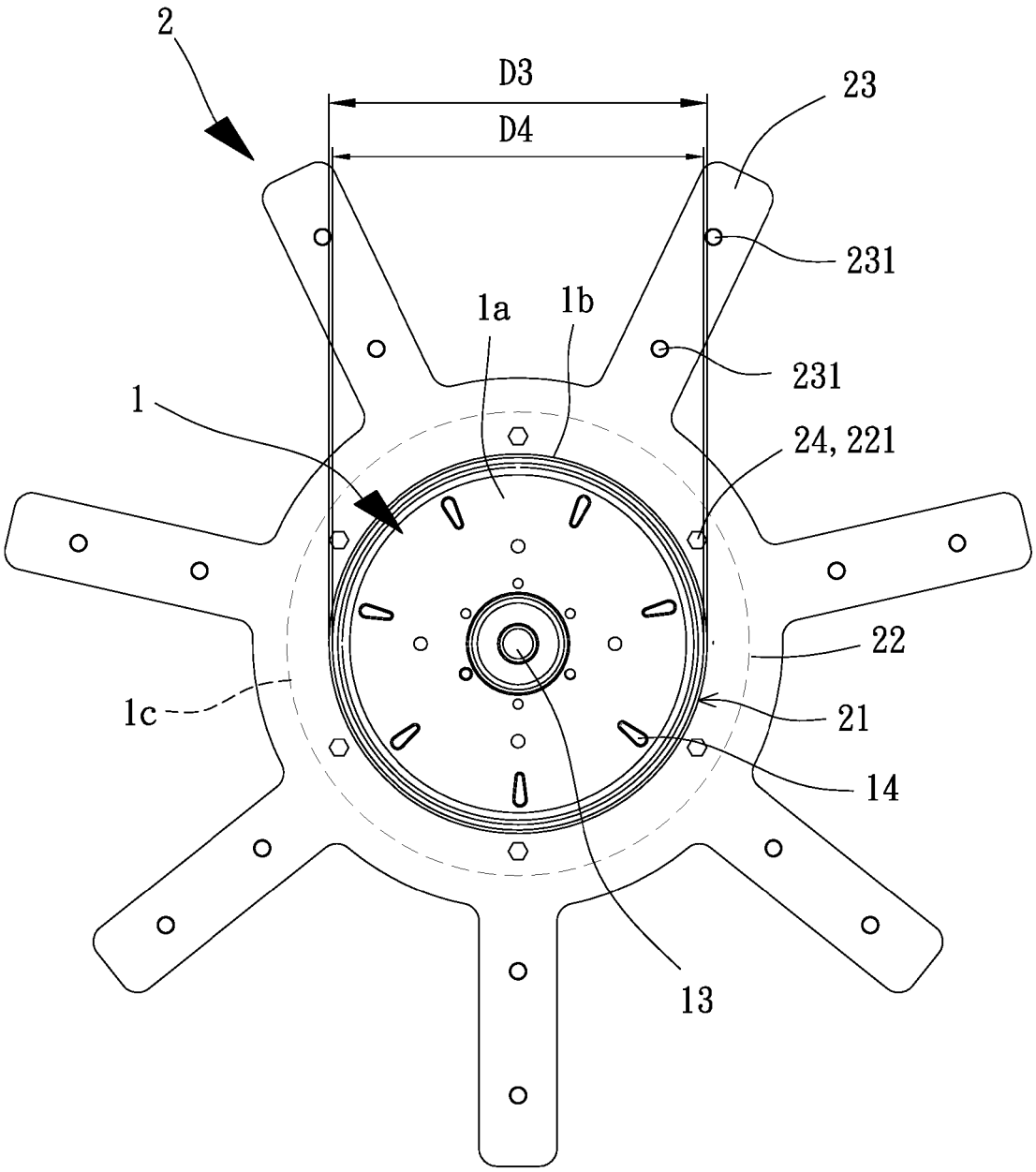


FIG. 7

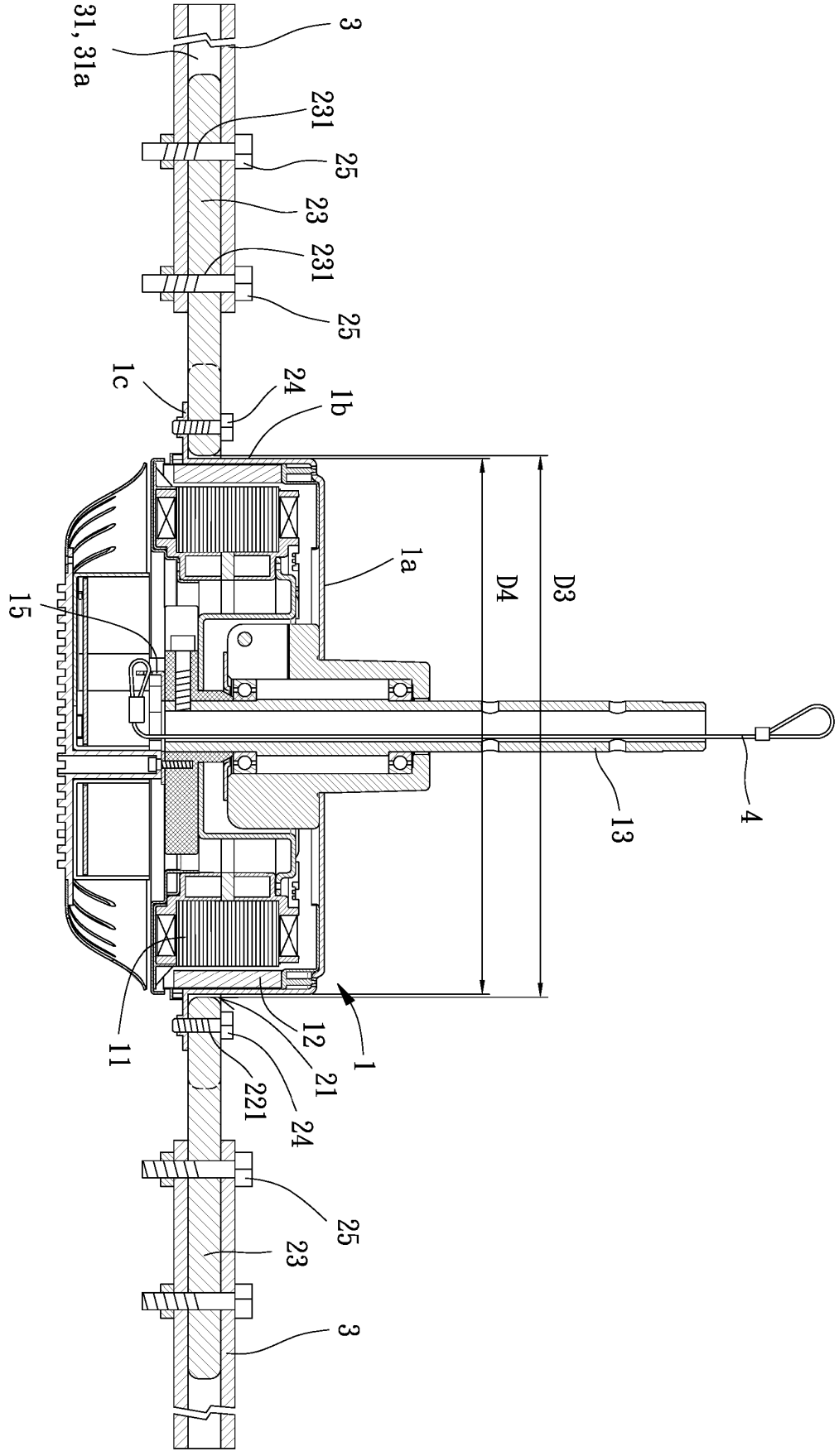

31, 31a
3
231
25
23
231
25
1c
24
1b
1a
D4
D3
15
13
4
11
12
21
1
221
24
25
23
3

FIG. 8

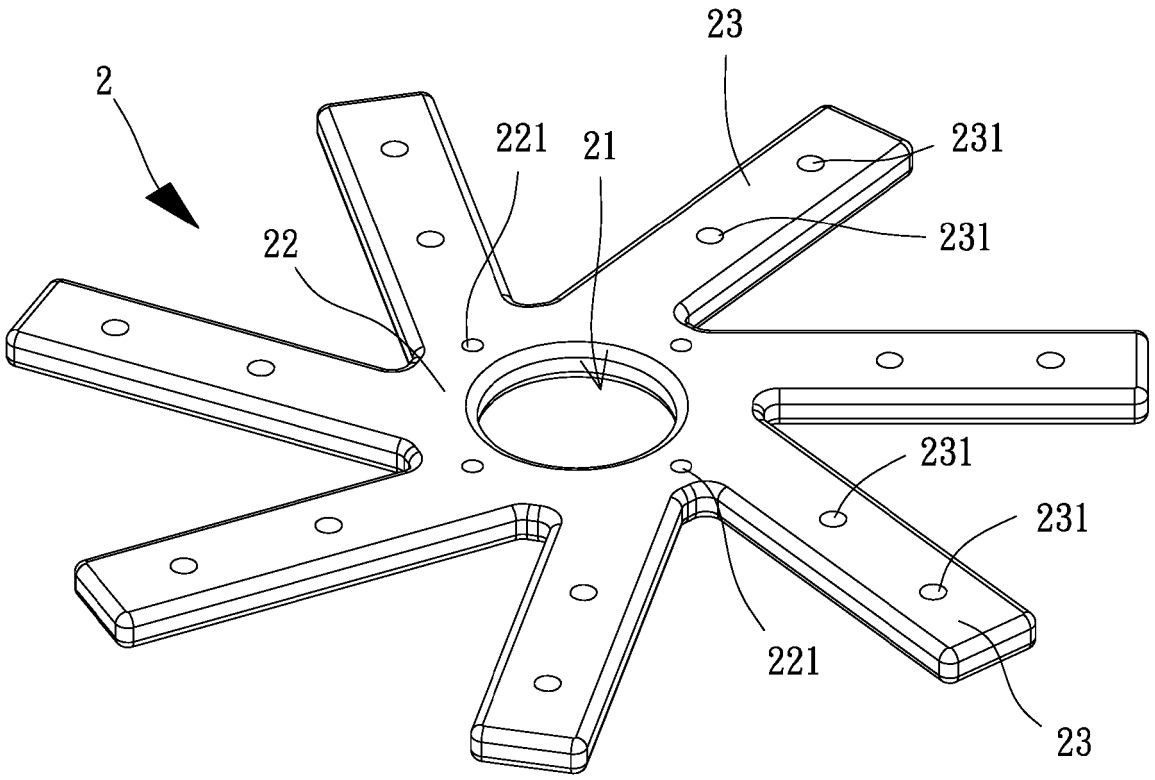


FIG. 9

REFERENCES CITED IN THE DESCRIPTION

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- WO 2014190285 A1 **[0005]**