DESCRIPTION

BRUSHLESS DC MOTOR

TECHNICAL FIELD

[0001] The present disclosure relates to a brushless DC motor provided on a ceiling fan.

BACKGROUND ART

[0002] A brushless DC motor including a stator has been known. For example, PTL 1 describes a stator of an electric motor. The stator includes a stator core covered with a covering member made of an insulating resin, a coil wound around the stator core from above the covering member, and a jumper wire housing provided on one end face of the covering member in an axial direction and extending in a circumferential direction in which a jumper wire of the coil is housed. A jumper wire introduction notch for introducing the coil jumper wire from the coil to the jumper wire housing is provided in the covering member. The stator is manufactured by integrally molding resin on the stator core.

Citation List

Patent Literature

[0003] PTL 1: Unexamined Japanese Patent Publication No. 2003-204645

SUMMARY

[0004] In a ceiling fan on which the brushless DC motor is mounted, it is desirable to provide a height of a blade from a floor surface at a high position from the viewpoint of dispersing an air flow in a wide range. Thus, when a ceiling height is determined, it is advantageous that a housing of the ceiling fan is vertically short. In order to shorten a vertical length of the housing, it is necessary to reduce a thickness of the brushless DC motor incorporated in the housing.

[0005] In order to reduce the thickness of the motor, it is conceivable to reduce a thickness of the resin provided in the stator core. However, in the stator described in PTL 1, since a core is integrally molded with the resin, when the resin covering the stator core is thinned, there is a problem that the resin is easily cracked due to a difference in thermal expansion between a steel plate of the core and the resin, and it is disadvantageous for

thinning the motor.

[0006] Alternatively, it is conceivable to reduce the height of the resin provided in the stator core in order to reduce the thickness of the motor. However, in the stator described in PTL 1, since three or more jumper wires are housed in parallel to the jumper wire storage, a jumper wire storage side wall needs to have a predetermined height or more, and it is disadvantageous in reducing the thickness of the motor.

[0007] Embodiments of the present disclosure provide a brushless DC motor capable of reducing a thickness of a ceiling fan.

[0008] A brushless DC motor according to an aspect of the present disclosure is a brushless DC motor provided on a ceiling fan. The brushless DC motor includes a stator core that has a plurality of teeth extending in a radial direction, and a plurality of slots provided between the plurality of teeth, a plurality of insulating sheets that are provided in the plurality of slots, and have sheet protrusions protruding from end faces of the teeth, and insulating members that each have an annular base and an advancing portion extending in a radial direction along the end faces of the teeth from the base and advancing between adjacent two sheet protrusions.

[0009] A brushless DC motor according to another aspect of the present disclosure is a brushless DC motor provided on a ceiling fan. The brushless DC motor includes a stator that has a stator core constructed by connecting a plurality of teeth extending in a radial direction in an annular shape, and coil bodies wounded around the stator core, a shaft that is fixed to a central portion of the stator core, and a rotor that has a magnet surrounding the stator core. The stator includes an insulating member that secures insulation between jumper wires connecting the coil bodies to an end in an axial direction, the insulating member includes a disk plane positioned closer to the stator core than an end of the coil body in an axial direction on an inner peripheral side of the coil body, and the jumper wires are wired along the disk plane.

[0010] The expressions of the present disclosure among methods, devices, systems, recording media, and computer programs are also effective as aspects of the present disclosure.

[0011] According to the present disclosure, it is possible to provide the brushless DC motor capable of reducing the thickness of the ceiling fan.