

DESIGN AND FABRICATION OF OMNI MULTI AXIS CEILING FAN

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ABSTRACT

An Oscillating single ceiling fan is a dual axis gear system rotational fan that consists of a ceiling fan mounted to couple of gears which is mounted to a shaft that rotates the fan due to gear friction. In the current scenario the ceiling fan is mounted on the single shaft and the motor rotates the fan on a static position which enables the airflow just below and little area around the fan. The present concept relates to an oscillating single roof fan. It is a double hub outfit framework rotational fan that comprises of a roof fan mounted to couple of apparatuses which is mounted to a pole that turns the fan because of rigging rubbing. In the present situation the roof fan is mounted on the single shaft and the engine turns the fan on a static position which empowers the wind current just underneath and little territory around the fan. One of the real preferences of the having an Omni multi hub roof fan is that the outline is totally extraordinary, model and strategy is totally not the same as what we as of now have and the roof fan would not keep running on 360 degree even and in addition vertical pivot, instead of a static flat rotational fan. Omni multi hub roof fan can be utilized for family unit and also corporate reason and the fundamental ability of empowering the wind current every which way reliably and not simply having a steady wind stream in the inside or beneath the fan is the principle highlight and feature of this postulation.

Keyword: - Ceiling Fan, Oscillating Fan, Dual Axis Gear System, Universal Joint, Rotational Fan

1. Introduction

In the current scenario the ceiling fan is mounted on the single shaft and the motor rotates the fan on a static position which enables the airflow just below and little area around the fan. The solution of current problem is have to enable the airflow in all directions consistently and not just having a constant airflow in the center or below the fan. Roof fans can just spare vitality if clients raise indoor regulator set points amid cooling season and lower the indoor regulator set points in warming season.[1] In this manner an office that utilizations roof fans without changing set points can have higher vitality cost.

1.1 Problem Specification

The ceiling fan is mostly used for cooling purpose only. Now a days due to global warming the temperature remains comparatively high, so cooling is required to maintain it. Normally middle class families use fan for air circulation because they cannot afford AC, due to its high capital cost and high operating cost. So almost 80% of them uses fan. The disadvantage of existing ceiling fan is to cover small area of room, so cooling capacity will be decrease. A multi axis ceiling fan is a basically modification of existing ceiling fan.[2] Fan is normally used for cooling, drying, air circulation, etc .related with the fan which is used.

2. Description of Mechanism

Omni multi axis ceiling fan is that the design is completely different, model and methodology is completely different from what we currently have and the ceiling fan would not run on 360 degree horizontal as well as vertical rotation, rather than a static horizontal rotational fan. The purpose and the main capability of enabling the airflow in all directions consistently and not just having a constant airflow in the center or below the fan is the main feature and highlight of this.

The fan on a static position enables the airflow just below and little area around the fan. The solution of current problem is have to enable the airflow in all directions consistently and not just having a constant airflow in the center or below the fan. In many people are poor and cannot afford coolers or Air Conditioners as they consume very much electricity and difficult in installation. So they can use such multi axis ceiling fan which are cost effective and also saves power and water and are also easy in installation.

3. Design & Assembly of Components

.There are four main components within the setup of an Omni Multi Axis Ceiling Fan. These components include a motor so as to provide it with the sufficient amount of power. Due to this, operating the ceiling fan will become simpler. Next, are the blades which will provide the cooling effect i.e. the output of using the fan. There is also a downrod. With the help of downrod, one can bring the blades at a low level. In this manner, the user will be getting the sufficient amount of air. One can vary the size of fan as per their requirement. Our present research, provides the scope of having fans of different sizes as per the requirement and application.

3.1 Motor

There are two sorts of roof fan engines: those with fixed and greased up metal rollers and those with orientation that pivot in an oil shower. Engines with fixed direction require next to zero upkeep while engines with oil showers require infrequent administration, for example, including oil.

3.2 Blades

Cutting edges ought to be fixed from dampness to avert distorting, foaming, or peeling. Excellent edges are weighed and adjusted before shipment and come in manufacturing plant coordinated sets. Consequently, they can't be changed out with different fans.[3]

3.3 Down rod

Give careful consideration to the downrod length of a fan. A fan will give a more prominent breeze chill impact in the event that it is near inhabitants than if it is far away. Fans that mount ideal beside the roof (alleged hugger models) are frequently exceptionally wasteful in light of the fact that the fans experience issues acquiring air behind the sharp edges to push descending. Fans ought to be introduced so their sharp edges are no nearer than 8 crawls from the roof and 18 creeps from a divider.

3.4 Fan

Counsel with lighting architects, fashioners, and roof fan maker to abstain from meddling with lighting or causing inhabitant inconvenience. Bigger roof fans can move more air than littler fans. A 36-or 44-inch distance across fan will cool rooms up to 225 square feet, while fans that are 52 inches or more in measurement ought to be utilized as a part of bigger rooms.[4]

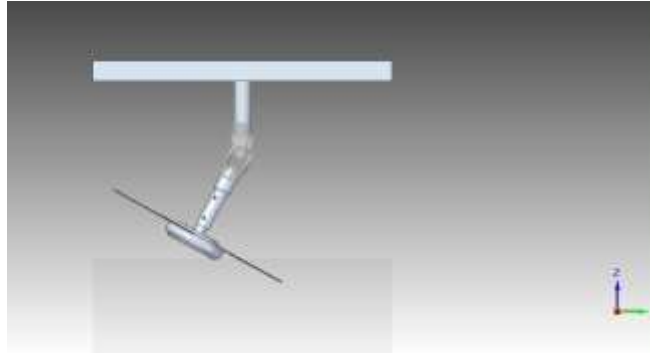


Fig - 1: Side View of Fan

Here is the side view of a fan. As the figure depicts, because of the use of a universal joint, one can tilt the fan as per their requirement. In this way, the air from fan will reach the corners, wherever the user wants.

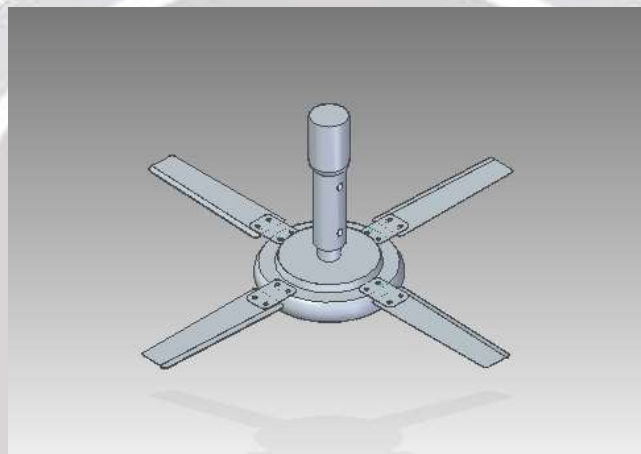


Fig - 2: Fan Model

The model of the fan as shown here, is having 4 blades. It describes the pre-assembly stage of the fan.



Fig - 3: Universal Joint

The universal joint is the component with the use of which one can connect the fan with the downrod. It also makes it possible to rotate the fan at any given axis.

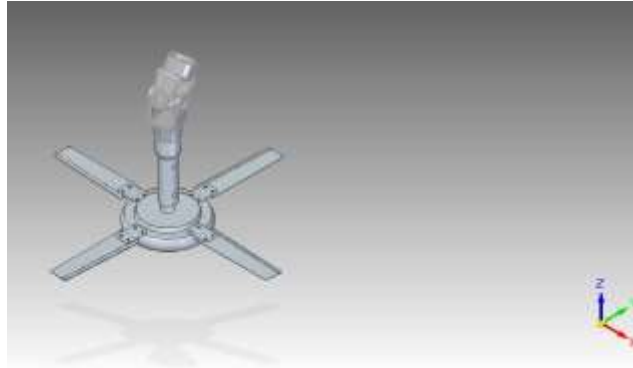


Fig - 4: Assembly Model

This is how the Omni Multi Axis Ceiling Fan will appear after the assembly. One can get a better idea regarding the operational parameters with the help of this figure.[5]

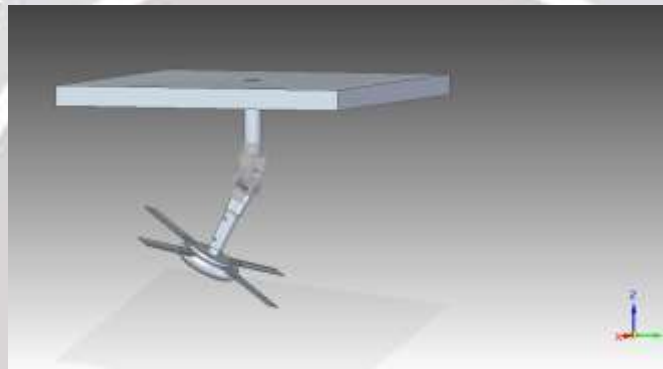


Fig - 5: 3D View of an Omni Multi Axis Ceiling Fan

With the 3D View of an Omni Multi Axis Ceiling Fan, one can determine the exact working procedure of the fan. As shown in figure, one can tilt the fan as per their desire.

4. CONCLUSIONS

The present research relates to a multi axis ceiling fan as a using a universal joint is a gadget which will give all the more air circulation with less cost contrasted. A multi axis ceiling fan is a basically modification of existing ceiling fan. A fan mounted overhead for universal adjustment of the air flow direction. It consists of a gear mechanism and AC & DC motor. Multi axes ceiling fan will cover large area of room compare to existing fan. It will rotate about more than one axis. The present research clearly depicts that the design is more complex, so it will take time to make working model. Moreover, fan will also rotate on high-speed, a heavy base frame will be enough so as to absorb vibration.

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