UNIVERSITI TEKNOLOGI MARA

DESIGN AND FABRICATION OF FAN CLEANING MACHINE

BALQIS SAFIYYAH BINTI OTHAMAN

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ABSTRACT

Fan Cleaning Machine is a machine that can ease the process of cleaning top and bottom of ***ceiling fan blades*** with implementation of mechanical movement. Additionally, catch dust from spreading on the floor. Common method that peoples use nowadays is time consuming and exhausting. It also has tendencies to lead to injuries. Moreover, people that have allergies to dust can also lead to serious health concern. To overcome the problem and achieve the objectives, first research must be done before proceeding with designing, engineering analysis and engineer calculation to check the safety and stability of the project. These steps must be prepared before fabricating the prototype. By completing all of these processes, prototype is able to complete. Finding the correct material and design is aided by research. When creating the prototype, the design in SOLIDWORKS will serve as a guide. Simulation helps in examining the material's stability and endurance. Engineering calculations can be used to determine the suitability of a DC motor and the battery's lifetime. As a result, the prototype can clean both the top and bottom parts of the ceiling fan at the same time, catching dust in the process. It can also extend up to 5 feet. In conclusion, the project is able to achieve the objectives. However, recommendation for future work is decreasing the weight by using only 1 motor and add other mechanism like belt.

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CHAPTER ONE
INTRODUCTION

1.1 Background of Study

A Ceiling fan is a device or tool that works to provide comfort to the surrounding by rotating the blades on fan to increase the airspeeds. Ceiling fan is commonly used in most Southeast Asia and largely used in Malaysia [1]. Many different types of fans have been developed. Deca Kronos, for example. This ceiling fan has 5 blades with a diameter of 142 cm. There are five speeds on this ceiling fan. The fan is silent and has a longer lifespan. It also comes with remote control for changing the fan speed. Eco Breeze EB6016 is another option. This ceiling fan features three 142 cm diameter brass blades. It has five speeds and is more durable and stealthier than other models [2]. Almost every house and building are filled with ceiling fans in each room.

However, after operating for almost 24-hours ceiling fans will collect a tremendous amount of dust. This occurs because dust particles have an electrical charge that attracts them to one other. As a result, a dust ball is formed. When the blade of a ceiling fan is ‘rubbed' against the air, frictional forces are created, which knock electrons loose, causing the blade to accumulate net charges. After that, the charged dust particles adhere to the blades' surface [3]. The amount of time people spend indoors is up to 90% [4]. Therefore, keeping your house clean is very important, especially the cleanliness of the ceiling fan which most people always ignore. Ceiling fan dirt is more than just a cosmetic problem. It can cause issues such as squeaky fan action and even motor harm. Especially towards people that have family members who suffer from allergies or respiratory ailments, dust accumulation will aggravate their symptoms [5].

In addition, A ladder is a climbing structure made up of two long side parts connected by rungs or steps at regular intervals. It is vital to choose the appropriate tool for the work, which includes ladders. Ladders come in a variety of shapes and sizes to fit various applications. When using a ladder, it is essential to use strict caution, as a fall from a ladder can result in serious injury and even death [6]. Fan cleaning machine objective is to help solve this problem since the process of cleaning fan ceiling includes usage of ladder.

Problems that occur in the process of traditional cleaning fan methods such as