"Ceiling Fan Cleaner"

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ABSTRACT

The Ceiling Fan Cleaner is a simple and low-cost device designed to clean ceiling fan blades easily and safely without the need for ladders or removing the fan. Dust accumulated on fan blades can cause allergies, reduce air quality, and affect fan performance. This project provides a practical solution by using a motor-driven cleaning mechanism attached to a long handle.

The system consists of a motor, microfiber cleaning roller, power supply, switch, and supporting frame. When power is supplied, the motor rotates the cleaning roller, which gently removes dust from the fan blades. The soft microfiber material prevents damage and traps dust effectively.

The device is lightweight, portable, and easy to operate. It reduces manual effort, saves time, and improves hygiene. This mini project is suitable for homes, offices, schools, and hospitals, and demonstrates the basic application of motors and electrical control systems in daily life.

Keywords: □ Dust removal tool, Anti-dust cleaner, Home cleaning tool, Easy fan cleaning

I. INTRODUCTION

- Ceiling fans are commonly used in homes, offices, schools, and other buildings. Over time, dust and dirt collect on the fan blades. When the fan runs, this dust spreads into the air, causing health problems such as allergies and breathing issues. Cleaning ceiling fans is usually difficult and unsafe because it requires climbing on chairs or ladders.
- To solve this problem, the Ceiling Fan Cleaner mini project is designed. This device helps to clean fan blades easily, safely, and quickly from the ground level. It uses a motor-driven microfiber brush that gently removes dust without damaging the blades.
- The project is simple, low-cost, portable, and energy efficient. It demonstrates the practical use of electrical and mechanical components for household cleaning applications. This device can be used in homes, offices, schools, hospitals, and other public places.

II. LITERATURE REVIEW

Cleaning ceiling fans manually is unsafe, time-consuming, and causes dust to fall on the person. To overcome these problems, several researchers have proposed motorized fan cleaning systems.

Sharma et al. (2018) reported that manual fan cleaning using ladders increases the risk of accidents and is inefficient in large rooms.

Patel and Desai (2019) developed a rotating brush-based fan cleaner. Their design used a small AC motor to rotate soft brushes, which improved cleaning speed and reduced human effort.

Rao et al. (2020) designed a vacuum-assisted ceiling fan cleaner. Although effective, the system was costly and consumed more power.

Kumar et al. (2021) introduced a low-cost portable ceiling fan cleaner using a universal motor. The motor provided high speed and torque, making it suitable for rotating brush arms. The system was lightweight and affordable.

Singh and Verma (2022) improved safety by adding fuse protection and insulated handles, making the device safer for home use.

III. WORKING PRINCIPLE

Working of celling Fan Cleaner:

1. The device is connected to a 230V AC power supply using a 3-pin plug.
2. When the ON/OFF switch is turned ON, current flows through the fuse (safety) and then to the speed regulator.
3. The speed regulator controls the speed of the universal motor.
4. The motor shaft is connected to a rotating brush or microfiber roller.
5. When the motor rotates, the brush spins at controlled speed.
6. The spinning brush is brought close to the fan blades.
7. Dust from the blades is loosened and wiped off.
8. The dust falls into a collection tray or cloth fixed below.
9. After cleaning, the switch is turned OFF and the device is unplugged.

IV. BASIC COMPONENT

1. Universal motor -230v,800-1200 RPM

2. AC Power plug -3 pin,230v

3. On/Off Switch -6A,230

4. Fuse (Glass cartridge Fuse) -2A,250v AC

5. Fuse Holder

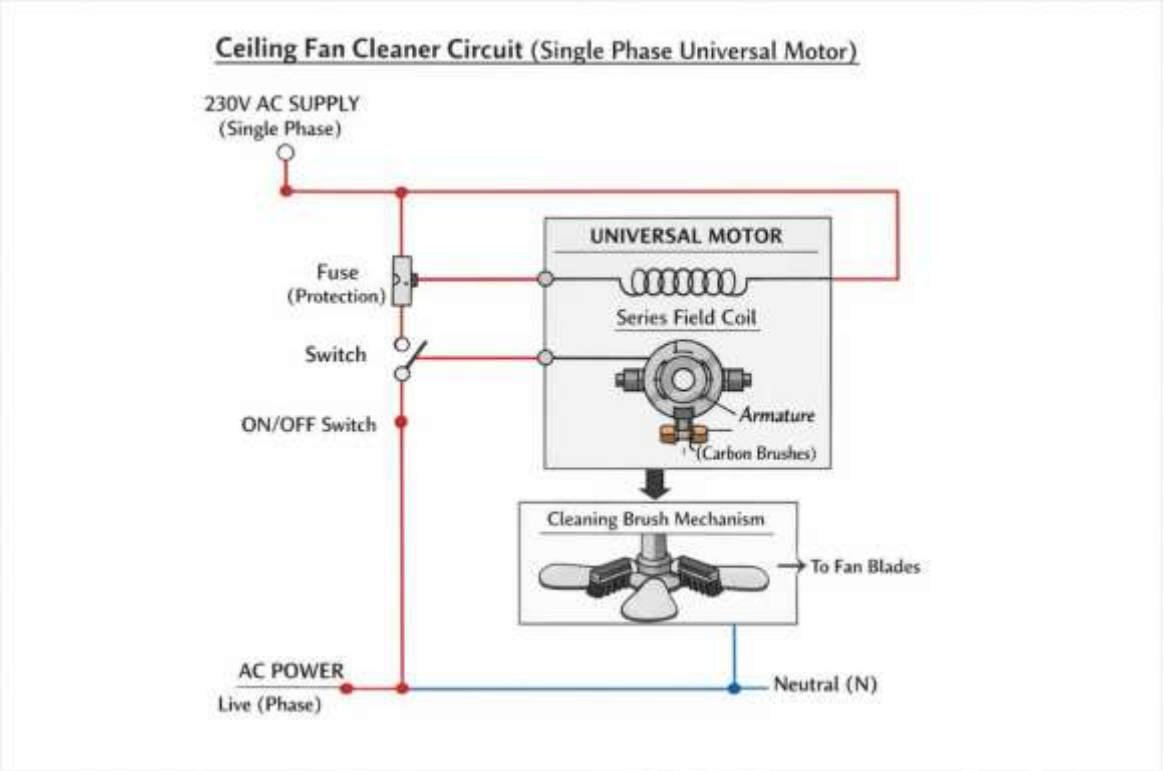
6. Connecting wires -Heat resistant

7. PVC Pipe

8. Terminal Block

9. Earthing Wire

V. Circuit diagram



VI. ADVANTAGES

1. Safety: Eliminates the need to climb on ladders or chairs, reducing the risk.
2. Time-Saving: Cleans ceiling fans quickly compared to manual wiping.
3. Efficient Dust Removal: Rotating brush ensures thorough cleaning of blades.
4. Easy to Operate: Simple ON/OFF switch and speed control make it user-friendly.
5. Cost-Effective: Uses a small motor and lightweight materials, inexpensive to make.
6. Portable: Lightweight design allows easy handling and storage.
7. Low Maintenance: Simple components like motor, switch, and brushes require minimal maintenance.
8. Educational Value: Demonstrates the application of electrical and mechanical principles in real-life cleaning solutions.
9. Hygienic: Collects dust in a tray or cloth, preventing it from spreading into the room.

VII. APPLICATION

1. Home Use – Quickly clean ceiling fans in houses without climbing on ladders.
2. Offices and Schools – Maintain dust-free fans in workplaces, classrooms, and auditoriums.
3. Hotels and Restaurants – Keep fans hygienic for customers.
4. Industrial Spaces – Clean large ceiling fans in factories and workshops safely.
5. Hospitals and Clinics – Ensure dust-free fans to maintain a clean environment.

6. Automated Cleaning Solutions – Can be adapted into semi-automatic or motorized fan cleaning devices.

7. Demonstration / Educational Purpose – Shows practical use of electrical and mechanical principles for students.

VIII. CONCLUSION

The Ceiling Fan Cleaner Mini Project is a simple, safe, and cost-effective device designed to clean ceiling fans efficiently without the need for ladders or manual climbing. By using a universal motor and a rotating brush, the device removes dust from fan blades quickly and safely.

This project demonstrates the practical application of electrical and mechanical principles in everyday life. It is portable, easy to operate, and low-maintenance, making it suitable for homes, offices, schools, and industrial spaces. Overall, this project not only saves time and effort but also enhances hygiene and safety, making it a useful innovation for daily life.

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