

MODIFIED HOVERBOARD WITH VACUUM CLEANER

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ABSTRACT

In this Modified hoverboard with vacuum cleaner which can be used for cleaning House Office College and platform. which no specific input energy or power is needed. This project consists of a Pressurized vapour Levitation air pressure. The main aim is to reduce the human effort for cleaning purpose. The hoverboard with vacuum cleaner machine, which runs on electric power and batteries. It is generally used on textured surface carpet, and is pushed over the surface sucking of dust and dirt as its goes the suction is created by air pump, a partial vacuum its create a different pressure between the inside of machine and the outside air and dirt and dust is taken in to the lower pressure zone. Friction on surface the carpet cases the dust to the remove from the carpet, or other surface .later on the first power cleaner develops by Hubert Cecile booth. Importance of this project lies in the very fact that it is green project and helps us to reduce our electricity need. Secondly, this vacuum cleaner can be used and transferred to our working place easily. This project concentrates on hover board with vacuum cleaner.

Keyword: *levitation; hover board; pressurize vacuum cleaner.*

I. INTRODUCTION

A hover board is a fictional levitating board used for personal transportation, first described by author [M. K. Joseph](#) in 1967. Hover board is science-fiction term that is given to a skateboard which has the capabilities to moving ground. A better way to understand it is to take a normal skateboard, remove the wheels from it and attach asystem that could make it move at around.

The basic idea that we aim to achieve with a Hover board is to create a whole new mode of cleaning, that is in contact with the ground but rather, it levitates above it. This paper proposes a way in which we can make Hover board a reality, using a new design and a new thought process for the working of a Hover board.

As with any other vehicle, I will be using rechargeable high energy density batteries And both of these substances are feasibly available at most of the places, electricity tocharge This paper first discusses the components required, the working of each component, the methodology and finally there's a review on how the Hover board would work.

A vacuum cleaner, also known as a sweeper or Hoover, is a device that uses an air pump (a centrifuge fan in all but some of the Very oldest models), to create a partial vacuum to suck up dust and dirt, usually from floors, and from other surfaces such as upholstery and draperies. The dirt is collected by either a dustbag or a cyclone for later disposal. Vacuum cleaners, which are used in homes as well as in industry, exist in a variety of sizes

and models—small battery-powered hand-held devices, wheeled canister models for home use, domestic central vacuum cleaner, huge stationary industrial appliances that can handle several hundred liters of dust before being emptied, and self-propelled vacuum trucks for recovery of large spills or removal of contaminated soil. Specialized shop vacuums can be used to suck up both dust and liquids.

II. LITERATURE SURVEY

2.1 Hover board

A hoverboard is a fictional levitating board used for personal transportation

Basic Components Specifications of overboard

- (a) Motor
- (b) Wheels
- (c) Motor controller
- (d) IMU (e) Power Source
- (f) Chassis

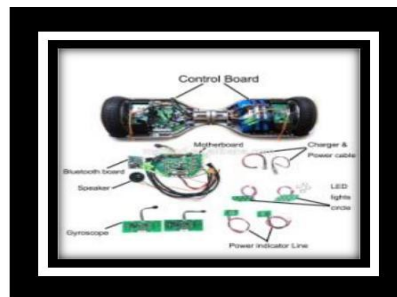


Fig-1: parts of hoverboard

2.2 Vacuum Cleaner

A handheld vacuum is a convenient household item that can be used to pick up a variety of particles such as dust, dirt or other small objects. The text will break down the components of a vacuum and describe how each part contributes to the overall purpose of a vacuum. Students with a background in a technical field will be able to understand the language used in the text.

- a. Trigger
- b. Battery
- c. Motor
- d. Fan
- e. Filter

III. METHODOLOGY

3.1 Triggering The Circuit

In order for the vacuum to be operational, there must be a trigger to turn it on. Usually located at a convenient location for the user, the switch closes a circuit at the source of power. The housing of the vacuum includes many wires linking the switch to the source of power .

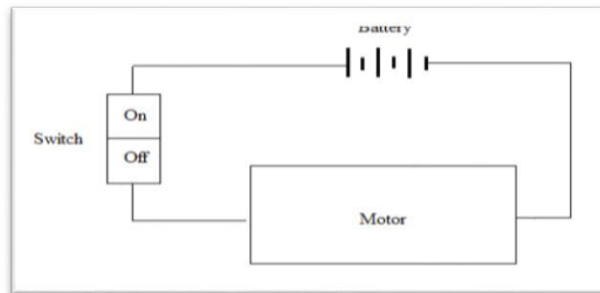


Fig-2: Typical electrical circuit inside the vacuum

When the “On” button is pressed, the small conductors inside the switch will connect and the circuit will be completed. A complete circuit will power the motor and ultimately cause suction into the vacuum. The “Off” button breaks the circuit. When pressed, the conductors inside the switch will no longer be in contact. Thus, the motor is no longer powered by the battery and stops the suction into the vacuum.

3.2 Powering the Motor

Another important component of the circuit is the rechargeable battery. The power in the battery limits the amount of suction capable by the vacuum. Most handheld vacuums use battery packs of about 12 volts. The battery pack is usually detachable from the vacuum and is able to be recharged for further use. A rechargeable battery has a limited life for each use of the vacuum. Most handheld vacuums can create powerful suction for about 20 minutes.



Fig-3: Inside of a 12V battery pack

The 12 volt battery, in Figure- 3, uses thin slabs of metal to create a connection between consecutive battery pods. The pods are what are inside the battery pack. Connecting wires will link the battery pack to circuit shown in Figure

1. The purpose of the battery is to power a motor inside the vacuum housing. Ultimately, the battery is the source of power that the vacuum needs in order to create suction.

3.3 Stimulating air flow

An axial fan is used in vacuums to create suction. As seen in Figure-4, an axial fan has precise angles to optimize the amount of air it can displace. The fan has an opening in the

center of the blades. This opening is used to be press fitted onto the axial shaft of the motor. The press fit creates a strong and tight connection so that the assembly is rigid. The axial fan displaces air similar to ceiling fans or stand up fans. The fan creates a pressure difference. In Figure 6, the air in front of the fan is at a low pressure and the air behind the fan is at a higher pressure.

3.4 Rotating the Fan

The last component in the electrical circuit is the motor. The motor requires the switch and the battery to work in order to be functional. An aluminum shaft is connected axially to the inside of the motor. In Figure 4, the red and blue wire would connect the motor to the circuit. When the circuit is completed, the motor will function and the axial shaft will rotate.

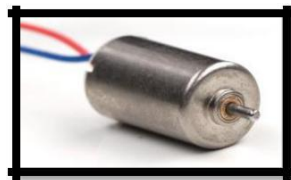


Fig-4: Electric motor that turns the axial shaft

The motor is essential to the suction of the vacuum. A fan that creates the suction is connected to the axial shaft. Therefore, the faster the shaft rotates, the more suction the vacuum will create. The motor must be properly lubricated to reduce friction between the shaft and the housing of the motor. The motor is the link between the electrical circuit and the fan that creates the vacuum's suction.

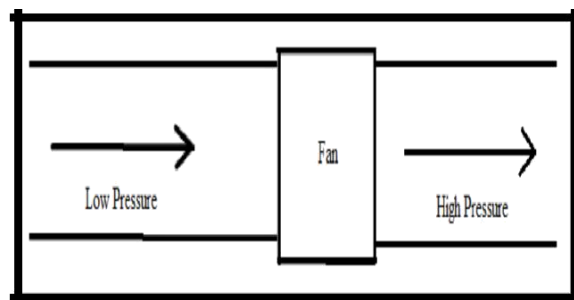


Fig-4: Pressure Difference causes air to flow from left to right

The difference in pressure causes air to flow from low pressure to high pressure. The air will flow in through the nozzle of the vacuum, pass through the fan and out through an air outtake vent. Before the air passes through the fan, a filter must catch particles of dirt in order to prevent damaging the fan.

3.5 Catching the particles

The bag filter inside the vacuum housing is where dirt particles and other objects get stored until they are discarded by the user. The filter is important in catching objects before they reach the fan or motor. Dirt and dust can ruin the effectiveness of the vacuum by causing friction in the motor or damaging the fan blades. Also, it is easier for the user to discard the vacuumed objects when they are placed in a single filter bag.



Fig-5: Filter bag catches vacuumed objects

The filter bag has a mesh lining to let air flow through easily but stops dust and dirt. The filter is easily detached from the vacuum and can be emptied. When the vacuum picks up too many items, the filter fills up the vacuum housing. This will make it difficult for air to flow through the vacuum housing and diminishes the effectiveness of the vacuum.

IV.RESULT

Through this project find out easy to personal transportation, and comfortable to cleaning to long area very easily, fastly, reduces time and human effort.

V.CONCLUSION

- 1 In this project we have modified hover board in its functioning. By this hover board we can do moving as well as cleaning operation.
- 2 By this project we are making this operation very easy, fast and efficient.
- 3 Along with moving, the vacuum cleaner which is attached with hover board also working. It collects the dust and clean the surface
- 4 This is portable Cleaning operation can be done very easily, fast and efficiently.

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