DESIGN AND FABRICATION OF ROAD CLEANING MECHINE

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ABSTRACT

Our study shows that dirt besides the roadcauses uncleanness and accident problems.We had developed a semiautomatic road side cleaning machine that insures that dust and dirt in sides of road should be clean. Our design proposes and successfully implemented the use of scrubber and brush that will remove the dust and collect it in to the storage box in which the scrubber is driven by engine which removes the dust and throws it into the path of brush. This brush is driven by speed amplification mechanism which consist of chain and gear drive separately. The motion of brush allow to push the removed dust into the storage box.

Keywords: Vacuum pump, Motor, Storage box

I.INTRODUCTION.

Environment is a place where humans as well as plantsand animals live. Keeping it clean and neat is our responsibility. It is necessary to keep our environment clean because we get fresh air, reduce pollution etc. An unclean environment leads to a bad condition of a society, arrival of diseases and many more. In recent years cleanliness is becoming an important factor for the betterment of the nation and so, to support the cause we have conducted a study, prepared a design and working of a Semiautomatic Road Cleaning Machine. The cleaning machine is an approach to deliver easy and time efficient cleaning of roads, by reducing human efforts.

There are in numerous functions of the road cleaning machine mainlycleanliness is becoming an important factor for the betterment of the nation and so, to support the cause we have conducted a study, prepared a design and working of a Semiautomatic Road Cleaning Machine. The cleaning machine is an approach to deliver easy and time efficient cleaning of roads, by reducing human efforts.

II .PROBLEM STATEMENT

Now, workers are hired to do this stuff but it is impossible to work continuously for workers. So this is time consuming and also costly process because of workers salary. The important factor is eliminating traffic problem because of less manpower as well as accident

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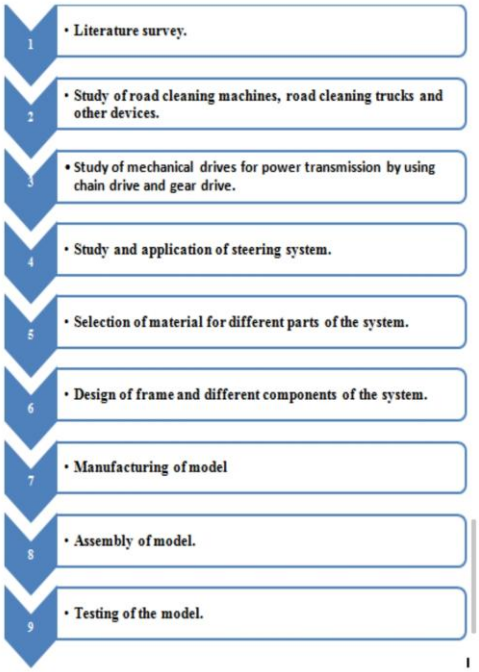
III.DESCRIPTION.

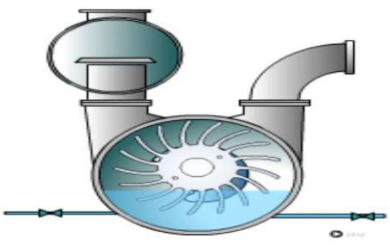
Mechanical sweeper for industrial/ professional cleaning and sweeping requirements better. The action of the brooms throws the dust and the debris into a large capacity hopper. Heavy Duty Machines. High Pressure Machine.

IV. METHODOLOGY



V. COMPONENTS USED

VACUUM PUMP



A vacuum pump is a device that draws gas molecules from a sealed volume in order to leave behind a partial vacuum. The job of a vacuum pump is to generate a relative vacuum within a capacity. The first vacuum pump was invented in 1650 by Otto von Guericke, and was preceded by the suction pump, which dates to antiquity

WIPER MOTOR

Wiper Motor, the power source of the wiper blade, is the core of the whole wiper system. Therefore, the quality of the wiper motor must be guaranteed to ensure its performance. The wiper motor is a permanent-magnet direct current (DC) one. It is equipped on the front windscreen glass with the mechanical parts of the worm gear. The worm gear functions to slow down and increase torque. Its output shafts spur four-bar linkage, by which the movement is changed from rotary to swinging.

BATTERY

An electric battery is a collection of one or more electrochemical cells in which stored chemical energy is converted into electrical energy. The principles of operation haven't changed much since the time of Volta. Each cell consists of two half cells connected in series through an electrolytic solution. One half cell houses the Anode to which the positive ions migrate from the Electrolyte and

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the other houses the Cathode to which the negative ones drift.

VI. STEP ACTIVITIES.

This system consists of a vacuum pump, air flow pipes, motor and battery.The vacuum pump functions by removing the molecules of air and other gases from the vacuum chamber (or from the outlet side of a higher vacuum pump if connected in series). While the pressure in the chamber is reduced, removing additional molecules becomes exponentially harder to remove the absorbent materials and collect in storage box

VII. CONSTRUCTION AND WORKING

For a vacuum pump, the air is induced inside from inlet and exhausted outside from the exhaust outlet. Exhaust Valve- On the creation of low pressure, the valve opens to induce air outside. Stator- It forms the outer part of the pump where the compressor is placed

VIII ADVANTAGES

- Greater sweeping speedcompared to a suction sweepe
- The collection of heavy and large-sized waste thanks to side brushes and the depression created inside the container.
- Possibility to operate with little or even no water.
- Possibility to operate on wet surfaces. Collected dust remains in container

IX CONCLUSION

Using this Simplified Road Cleaning Machine with Modified Technology, Suitable for Indian Conditions, because of its reliability and expendability. Due to total cost of the system is very low and only one time investment has to be made for reducing labor charges. It will reduce human efforts drastically and very helpful to clean roads even in traffic. Due to these benefits, usage of this system helps in cleaning roads. I think there may be chance of using this machine in future of India

REFERANCES

1. Abhishek Chakraborty, Ashutosh Bansal, “Design of dust collector for rear wheel of four-wheeler”, International Journal of Emerging Technology and Advanced Engineering,ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 3, Issue 7, July 2013
2. Prathmesh Joshi, Akshay Malviya, PriyaSoni,”manual driven platform cleaner”,International Journal of Emerging Technology and Advanced Engineering, ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 3, Issue 8, August 2013.
3. Aman khan, Anurag Pannase, Amol Sharnagat, Prof. Gaurav Gohane,”study of miultipurpose road cleaning machine”, International Research Journal of Engineering and Technology,Volume: 04 Issue: 02 , Feb - 2017
4. Alireza SHIRNESHAN, “design of vacuum section of leaf collector macine”, international journal of engg,year 2012

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