

STREET SWEEPER

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Abstract

The main aim of our project is to help the GHMC sweepers. Sweepers play an important role in maintaining the health and hygiene within the cities. Sweepers are the vulnerable segment of our community and suffering from different occupational health problems due to limited education, lack of knowledge on occupational health hazards. The problems include the hand pain, back pain, shoulder pain etc. So, to overcome this problem we our team planned to help those workers by introducing the machine called street sweeper. This machine is very helpful to them which reduces their time, energy and make their work simple and in an easy manner. This machine is easy to handle and affordable by them. The street sweeper Machine is hardware-based project. The cleaner solves the problem of dusty roads, choked pipelines and manholes, removal of metal particles from road and also obstacles. In this project an efforts has been made to develop a mechanically operated eco-friendly road sweeping machine so that it can be used for small space cleaning without pollution. On other hand in rural area the road cleaning is done by an manual operated which can be hazards to health like asthma, bronchitis etc to the worker. the cost of mechanically operated sweeping machine is less as compare to electric operated sweeping machine and the machine is economical and comfortable for operating in rural area and it is suitable on small spaces, it is eco-friendly to user. our motive is to present a detailed qualitative study of cleaning system using the cleaner, the main focus being cleanliness with minimum utilization of resources available with us.

1. INTRODUCTION

A street sweeper or street cleaner may refer to either a person's occupation, or a machine that cleans streets. A street sweeper cleans the street, usually in an

urban area. The Street sweepers have been employed in cities since sanitation and waste removal became a priority. A street sweeping person would use a broom and shovel to clean off litter, animal waste that

accumulated on streets. 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 Street Sweeper that is operated manually. The Street Sweeper 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 mainly Cleaning of dust and dirt by use of brush and collecting the dust into the collector tank. Street Sweeper is very much useful in cleaning Streets, roads and surroundings. It is very simple in construction and easy to operate. Anybody can operate this machine easily. It consists of brush, the brush bristles clean the roads and streets. The cleaning is done by the rotation of wheels. The time taken for cleaning is very less and the cost is also very less. Maintenance cost is less. Such type of machines is widely used for this purpose. Street sweeper reduces the health issues faced by the people while sweeping. The people face back pain, neck pain and many other. The Street Sweeper Machine is hardware-based project which is simple and easy to daily sweepers and it can be affordable, it is very helpful and makes their work easier.

2. RELATED WORK

The conventional floor cleaning machines is most widely used in airport platforms, railway platforms, hospitals, bus stands, and malls and in many other commercial places. These devices need an electrical energy for its operation and not user friendly. In India, especially in summer, there is power crisis and most of the floor cleaning machine is not used effectively due to this problem, particularly in bus stands. In this work, modeling and analysis of the floor cleaning machine was done using suitable commercially available software. From the finite element analysis, we observe that the stress level in the manually operated floor cleaning machine is with in the safe limit. The floor cleaner which runs purely on mechanical power and also has the capability of being ridden at low speeds by the user. The mechanism used to drive the cleaning mechanism would be similar to the one used in a spinning mop commonly known as a 'magic mop'. The mechanism works using a bevel gear system wherein high-speed multiplications can be obtained using the right gear specifications. The input to the system would be in the form a foot-pedal accessible to the user.

3. IMPLEMENTATION

The daily sweeping people in the public places are facing problems like hand pain, back pain,

Legs pain. They are facing a lot of problems in day to day life. So to overcome this effect or

problems we are introducing the new machine called street sweeper, which is very easy to handle and do their work. A “STREET SWEEPER” is a machine which helps the daily sweepers to do their work easily and smart way. The machine is very simple to design it with the hardware parts.

This machine is composed with the wheels, plastic bristles, metal sheets, iron rods. This street sweeper will help the sweepers of road side and in schools, colleges, etc. The sweeper can easily do their work as usual but in a smart way to just by walk. The street sweeper is very affordable by the normal people, this will help them in their physical health, where they are facing difficulties while sweeping at daily work.

This machine is operated manually. The street sweeper machine is fixed with a pair of wheels which are connected with the help of Galvanized iron rod. The rod makes the wheels connected to each other. The GI rod is drilled and filled with the plastic bristles. The wheels are moved to the desired position with the help of manual force, at which the handle is

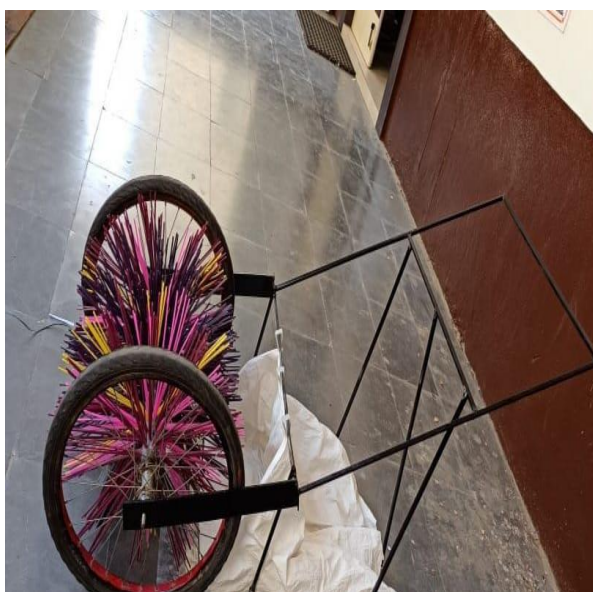
provided to move. The bristles moving the alternate direction of the wheels move and the bristles brooms the waste present on the road and dump the waste into the dust pan. The waste collection bag is removed to dump the waste into the desired places. Sweeping machines are both hugely versatile and immensely practical. They can be used for removing anything from broken glass, leaves, grass, metal shavings, paper, cigarette butts and small stones from either out door or indoor surfaces. Street sweeper is used for the GHMC people. People taking a lot of strain and pressure on their body to clean all the areas. This street sweeper helps the people to reduce the work pressure and to make the work simple and easy. Street sweeper is eco-friendly which can be made easily with small requirements. Street sweeper does not consume electricity, petrol, and diesel. Street sweeper works based on the mechanical energy.

4. EXPERIMENTAL RESULTS

In this section we are presenting our modified design. Based on the grounds of our previous

literature survey. In this design we added the one more rotary brush on either sides of the vehicle. To make more efficient cleaning. The previous design does not consist the front and rear scrubbers, so the

cleaning in between the two brushes is remain the same. So, with the help of this Bristles the complete pan of the vehicle body and sides are covered. Bristles are rotated with the help of the wheels. For the rotation of the scrubbers we have two provisions - 1) Brush Bristles, 2) Wheels, 3) Rods.



Prototype

5. CONCLUSION

A mechanical setup is designed with synergies of pneumatics and mechanical systems to provide efficient cleaning, the road surfaces. This project works implements the manually operated eco-friendly road cleaner for road cleaning that reducing the cost, human efforts as well as time. It is the best alternative for automated road cleaning machine during power crisis. It is found that the existing road cleaning machines uses petrol and diesel. It can cause pollution and also the vibration produced in the machine causes noise pollution. The machine is economical. Manual cleaning may cause shoulder problem due to continuous sweeping. The simple mechanism employed in this system makes the vehicle easier for operation. The modified model that is present in report can be optimized as much as possible. The changes that can be made of Chassis can be built on Plastic bristles that will reduce overall weight of system. The system can be made automated by using wheels, GI rods. The systems run with manual interventions.

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