

OVERVIEW OF DESIGN & FABRICATION OF SWEEPING MACHINE

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ABSTRACT

Cleaning is the most important essential requirement for all individuals and it is required for every day. The street cleaning and ground cleaning appliance is nearly used by everyone used in lots of applications such as cases like roads, railway stations, airports, hospitals, Bus stands, in multi buildings, colleges etc. also this apparatus uses individuals power for its functioning.

It is a consumer pleasant as well as ecological. In our project we are expected to use simply obtainable resources with low price and it can be effortlessly made-up and easy to utilize and manage.

The manually operated Sweeping Machine can work very efficiently with respect to covering area, time and cost of road cleaning process compared with the existing machineries. Also it is economical to use.

Keyword: - Cleaning, street, ground, conventional, cost-effective, ecological.

1. INTRODUCTION

Cleaning has become a basic need for all human being, and it is unavoidable daily routine process. Some existing conventional cleaning machines are used for cleaning the bus stops and railway stations. There is no cleaning equipment for roads particularly. Manual cleaning is the one of the reasons for increase in pollution and also it is hazardous to human health. The road accidents are also happens because of road dust. To overcome these problems, we developed sweeping machine. This sweeping machine is a of mechanical devices. The main focus is being cleanliness with minimum utilization of resources available with us. The detailed design of the sweeper to meet the developed specification was carried out. The developed street sweeper includes the frame, Road brushes, dust collector and mop cleaner. All the components of the street sweeper have been fabricated successfully using standard specifications. The assembled sweeping machine has been tested for its working on the roads and found to be working satisfactorily. The primary objective of the present work to develop sweeper which is simple and cost effective has been met successfully. The use of the developed street sweeper results in a reduction of cleaning cost and drudgery involved in cleaning is completely eliminated. The developed sweeping machine is walking through type without traction at present.

2. LITRATURE SURVEY

Avinash Chahare (2022) With the increase in technology, researchers are giving better concentration to automatic ground cleaning plans in order to create mankind's existence more easy. The idea is gaining traction in urbanized countries, although it is still out of favor because to design intricacy, appliance costs,

and power tariff running costs. A physical ground cleaning appliance is planned in this task. Early in the day, a ground is cleaned with a broom that is controlled by a individual hand. This requires a constant movement of the person hand, which is very tiring and time challenging. The objective of this job is to give a updated practice for wet and dry ground cleaning. This apparatus is able to cleaning floors in both dry and wet situations. It also has a dust storage box. It was determined to make a trial product that uses a DC drive power-driven rotary brush with pneumatic controlled dirt shifting to help users in removing waste and maintaining a clean and hygienic surroundings, thus avoiding health inequalities and security concerns for both workers and the general public. [1].

CH. Divakar (2019) With the growth of information, automatic ground cleaning machinery are getting more attention of researchers to build life of mankind relaxed. The idea is rising in financial countries but the reasons for non-popularity is the design intricacy, price of machinery, and operational charges in terms of power tax. In this document, a physical ground cleaning mechanism is proposed. In early day a floor is clean by using a broom which is operated by human hand, in this a continuous movement of human hand is required which create fatigue and time consuming. The aim of this job is to build up and restructured procedure for cleaning the ground with wet and dry. This mechanism is competent of performing cleaning of ground in dry as well as wet situation, and it also have storage space to accumulate a dirt. This ground cleaning apparatus is intended by keeping the basic considerations for apparatus and efforts reduction, environment friendly and simple usage. The machine will work on solar power and there is no need of training to operate it. This work can be very useful to improve the life style of mankind. [2].

Samarth G. Gaikwad (2019) In today's current era, mankind is emphasizing the use of equipment in day-to-day actions which considerably decrease the time and effort required. ground cleaning has always been most lengthy and boring work as it is done physically. To defeat this complexity, automatic ground cleaning machinery can be utilized proficiently. The equipment are not yet well-liked due to high cost of equipment, complexities in design and in service price. Due to these reasons most of the small and intermediate size industries in India are still using conventional wipe and container system for ground cleaning. So, the main plan of this research job is to design and build up a multifunctional ground scrubber and cleaner which will considerably decrease the cleaning moment and price of the appliance Simultaneously, the ground cleaning apparatus should be capable of cleaning irregular as well as soft floors and unreachable corners efficiently. Through proficient project managing, aspects similar to minimization of manufacturing and operational price, visual and ergonomic considerations were taken into account. Eventually this machine will lead to hefty decrease in time, money and effort. [3]

Shubham Khade (2017) With the improvement of knowledge, automatic ground cleaning machinery are getting more attention of researchers to create life of mankind relaxed. The idea is developing in economic countries but the reasons for non-popularity is the design complexity, cost of machines, and operational charges in terms of power tariff. In this document, a ground cleaning apparatus is planned. This is able of performing cleaning of flooring and corners successfully, semi-automatic water spray, cleaning of byre, dry as well as wet cleaning jobs. This ground cleaning apparatus is planned by keeping the vital considerations for apparatus and operational price fall, efforts diminution, atmosphere pleasant and simple usage. The machine will work on electricity. This work can be very useful to improve the life style of mankind. [4]

Akanksha Vyas (2020) Automatic floor cleaner is an automated machine that facilitates the user to keep their place clean and hygienic. Numerous industries are functioning in the automation area to make autonomous cleaners. This document deals with the improvement in automatic ground cleaner. At present main importance is given on the area of robotics for decreasing individual efforts. Our plan is to build a ground cleaner which will be completely automatic providing dry and wet cleaning as well as UV sterilization. The current market is occupied by cleaners with only one or two functionality. For its cost reduction and simplicity, we are using Arduino. The cleaner will be a step for providing comfortable life by resolving problems in traditional floor cleaning methods. [5]

Dr. Shailesh Dhomne (2020) With the advancement of technology, automated floor cleaning machines are getting more attention of researchers to make life of mankind comfortable. The idea is on the rise in money-making countries but the reasons for non-popularity is the design difficulty, price of equipment, and operational charges in terms of power tax. In this document, a physical ground cleaning apparatus is planned. In early day a floor is clean by using a broom which is operated by human hand, in this a continuous movement of human hand is required which create fatigue and time consuming . The mean of this job is to build up and restructured procedure for cleaning the ground with wet and dry. This apparatus is able to performing cleaning of ground in dry as well as wet situation, and it also have storage space to store a dirt. This floor cleaning machine is designed by keeping the basic considerations for machine and efforts

reduction, environment friendly and easy handling. The apparatus will work on electrical energy and there is no need of teaching to manage it. This work can be very useful to improve the life style of mankind. [6]

3. OPERATING PRINCIPLE

Avinash Chahare This equipment is capable of cleaning floors in both dry and wet conditions. It is a trial product model that uses a DC drive powered rotating brush through pneumatic controlled dirt shifting to help users in removing waste and maintaining a dirt free and hygienic environment, thus avoiding fitness inequalities and protection concerns for both employees and the universal.

Dr. Shailesh Dhomne developed a floor cleaning machine which is designed by keeping the basic considerations for machine and efforts reduction, environment friendly and easy handling. The apparatus will work on electrical energy and here is no requirement of teaching to run it.

Raja Kumar developed a arrangement which is mounted with a couple of existing wheels that rotates with the assist of a shaft. The shaft and wheels are joined together. The wheels provide power to the gear through the chain mechanism, and the bevel gears are connected perpendicularly. The help of bevel gear rotates the brush. The revolutions begin to travel as we apply forces on this mechanism manually. As the wheel starts spinning, it becomes straightforward to move it forward or backward, and as the lower end of the machine is installed with a brush, the brush starts working, cleaning the plane where it is interacting.

4. OBSERVATION AND DISCUSSION

The structure is preset with couple of wheels which are attached with the aid of shaft. The shaft makes the wheels connected to one and other. The wheels are moved for a desired position with a help of manual force with the handle which is provided to move. The lever can be adjusted for a necessary height and provided three adjusting holes for it.

A chain drive is joined to the wheels and gear at both sides. The chain is moved according to the wheel as well as gear. The brush moving in opposed track of the wheels move and the brush brooms the waste nearby the street also it dumps the waste into the waste collecting container. The waste collecting container is detached to dump the waste into preferred spaces.

5. REASERCH OBJECTIVE

- To reduce the pollution.
- To provide the alternative method for road cleaning
- To reduce human effort, cost and time
- To avoid skidding of the vehicle, there by accidents.
- To reduce the health hazardous caused to human beings.

6. REASERCH METHODOLOGY

- Using Chain drive rotary motion of rear wheels is transmitted to front wheels i.e. brush which collects the waste or dust.
- Using Chain drive and bevel gear rotary motion of rear wheels is transmitted to bloom which sweeps the floor.
- Using manual force i.e. single motion of vehicle both waste collecting and seeping operation takes place which reduces human efforts.

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