Design and Fabrication of Road Cleaning Machine
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Abstract— Cleaning is the main basic need for all human beings and it is necessary for daily routine process. The conventional road and floor cleaning machine is most widely used in many applications such as example roads, railway stations, airports, hospitals, bus stands, in multi buildings, colleges etc. Also this machine uses human energy for its working operation. It is a user friendly as well as eco-friendly. In our project we are aimed to use easily available materials with low cost and it can be easily fabricated and easy to use and control. It is the better alternative for conventional machine. The manually operated eco-friendly road and floor cleaner 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.

Keywords: Cleaning, Road, Floor, Conventional, Economic

I. INTRODUCTION

Cleaning machine is very much useful in cleaning floors and outside ground in hospitals, houses, auditorium, shops, bus stands and public places etc. Many of floor cleaning machines are available but we developed machine is a very simple in construction and easy to operate. Anybody can operate this machine easily. Hence it is very useful in hospitals, any large area space. The time taken for cleaning is very less and cost is also very less. Maintenance cost is less. In our project we have made the machine to operate in a fully mechanical way. The floor cleaner is very simple in a construction and very easy to operate, anyone can operate it. Without any prior training of any sorts with safety.

The system is fixed with pair of wheels which are connected with the help 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 which can handle is provided to move. The handle can be adjusted for a required height and provided three adjusting holes for it. A chain drive is connected to the wheels and gear at both sides. The chain is moved according to the wheel and gear. The brush moving opposite direction of the wheels move and the brush brooms the waste present on the road also it dumps the waste into the waste collecting box. The waste collecting box is removed to dump the waste into desired places.

II. COMPONENT AND ITS DESCRIPTION

A. Wheel:

Use two wheels each wheel having diameter of 609.6mm. a ring-shaped component that surrounds a wheel’s rim to transfer a vehicle’s load from the axle through the wheel to the ground and to provide traction on the surface over which the wheel travels. Most tires, such as those for automobiles and bicycles, are pneumatically inflated structures.

B. Chain Mechanism:

Total chain length used 1219mm of 75 numbers The chains are made up of rigid links which are hinged together in order to provide the necessity flexibility for wrapping around the driving and driven wheel. The wheels have projecting teeth and fit into corresponding recesses. The wheels and the chains are thus constrained to move together without slipping and ensure the perfect velocity ratio. The toothed wheels are known as sprocket wheel.

C. Brush:

Brush having a length of 480mm long and outer diameter of 250mm and inner diameter of 20mm. The cleaning brush is located at outside of the machine and it is mounted on the shaft which is rotated with the help of chain and sprocket unit. The main work of the brush is to push the Garbage into storage tank.
D. Bearings:
Bearings having an outer diameter of 60mm and inner diameter of 50 mm. The most common material used to produce bearing is chrome steel. A ball bearing is a sort of rolling detail bearing that makes use of balls to hold the separation among the bearing races.

E. Collecting Box:
The function of the collecting box is to collect the waste up to some quantity after that remove box and dump the waste. The dimensions of the collecting box measures length of 546 mm and width 233 mm.

F. Final Assembly of Machine:

III. APPLICATION
1) It is used for road cleaning purpose.
2) It is used for ground cleaning.
3) To clean bus stand areas.
4) To clean railway station areas.
5) Suitable to all location.

IV. FUTURE SCOPE
Floor washing machine ideal for small & medium size Super-markets. Floor washing machine ideal for hospitals because of the low noise level. Essential tool for maintaining high level of hygiene for Hotel - kitchens and restaurants Safety feature includes pedal to secure the handle intact. Floor Washing’s easy maneuverability and easy to reach beneath the furniture. No tools required to change brushes.

V. CONCLUSION
The manually operated eco-friendly road and floor cleaner is successfully designed, and fabricated. 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 works with a human simple effort. Manual cleaning may causes shoulder problem due to continuous sweeping. The manually operated road cleaning machine is alternative concept for avoiding such problems. It works very efficiently with respect to covering area. It is very economical to use. The manually operated eco-friendly road and floor cleaner 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. It was seen while testing of machine, that the cleaning is less effective where the road seem every rough and damaged. It can provide job to the uneducated person who is in need for such jobs as human energy is needed to drive the machine. Maintenance of machine is less and it is easy to control and clean it having health benefits and it mainly protects environment pollution.
REFERENCE


