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FABRICATION OF MECHANICAL OPERATED SWEEPING MACHINE

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Abstract:
The "Fabrication of Mechanically Operated Sweeping Machine" project focuses on designing and constructing a manually powered device aimed at simplifying and improving the process of surface cleaning. Unlike electrically operated sweepers, this machine relies on mechanical motion, making it cost-effective, eco-friendly, and suitable for use in areas without access to electricity. The sweeping mechanism operates through the rotation of wheels connected to a gear-driven brush system, which collects dust and debris into a container. This design emphasizes user-friendly operation, low maintenance, and enhanced mobility, making it ideal for use in public places, institutions, and smallscale industries. The project contributes to sustainable cleaning solutions by reducing reliance on electric power while maintaining efficiency and cleanliness.

Introduction

A sweeping machine is a mechanical device designed to automatically clean surfaces by removing debris, dirt, dust, and other unwanted materials from roads, streets, sidewalks, parking lots, and other public or industrial spaces. The need for efficient, large-scale cleaning solutions has grown with urbanization, where manual cleaning is not only time-consuming but also labor-intensive and often ineffective. Sweeping machines offer an automated, faster, and more effective alternative to traditional cleaning methods, making them an essential tool in urban maintenance, road upkeep, and industrial site management. These machines come in a variety of sizes and designs to suit different environments. Smaller, compact models are ideal for use in pedestrian zones, narrow streets, and indoor facilities, while larger, more powerful machines are used for heavy-duty street and road cleaning. In summary, sweeping machines are an indispensable innovation in urban and industrial cleaning, improving both efficiency and effectiveness while promoting cleaner, safer environments.

Figure 1: Fabrication Of Mechanical Operated Sweeping Machine

PROBLEM STATEMENT

1. Mechanical sweeping machine clean small surface area as compare to electric sweeping machine
2. In this mechanical sweeping machine there is no external source it will be work on human power.

PROBLEM IDENTIFICATION

4.2 AIM

1. Mechanical sweeping machine clean small surface area as compare to electric sweeping machine
2. In this mechanical sweeping machine there is no external source it will be work on human power

4.3 OBJECTIVES

1. Sweeping machine is environmentally friendly.
2. Easy to operate.

4.4 NEED ANALYSIS:

A need analysis for fabricating a mechanically operated sweeping machine focuses on identifying the target application, desired features, and user requirements. This analysis ensures that the machine is designed and built to effectively address specific cleaning needs, considering factors like size, power source, maneuverability, and cost-effectiveness.

Here's a more detailed breakdown of what a need analysis for such a machine would involve:
- 1. Defining the Target Application and Users:
Identifying Desired Features and Functionality
- For what purpose will we design it?

CONSTRUCTION WORKING AND ASSEMBLY

1. Pick up a 2 bicycle tires.
2. Choose a material for base of machine like Mild Steel
3. Take the dimension as requirement
4. Weld the square pipe in rectangular shape and attached to the tires
5. There is bevel gear is attached to tires rod which is horizontally mounted.
6. The another gear is mounted vertically with the support of rod
7. At the front side there is attach the small tire for turn the machine or it will be supported for take the smooth rotation
8. Mount the brush to vertical gear
10. At the end of machine weld the handle to use properly
11. Test your sweeping machine.
12. Lubrication is necessary for bevel gear.

WORKING PRINCIPLE OF FABRICATION OF MECHANICAL OPERATED SWEEPING MACHINE

An industrial floor sweeper is a wheeled machine for removing debris, coarse dirt and dust from the floor. By the action of rotating brushes, or by the combined action of one or more brushes and a vacuum system, a sweeper removes dry dirt and debris from the floor and collects it in a dedicated onboard debris hopper.. The sweeping machine is running with the help of tires the bevel gear is attached to the tires when the tires are rotating then the bevel gear is rotate horizontally and another gear is rotate with the help of first gear it will rotate vertically. The rotating brushes is mount to the vertical gear . When the vertical gear is rotate then brush is also rotate then the floor is clean.

6.1 **ADVANTAGES**

- Less maintenance cost.
- Easy to operate.
- It is use anywhere like industry, house, cantina, etc.
- Cost of the unit is very low.
- Easy to carry
- No electricity use

6.2 **DIS- ADVANTAGES**

- It requires more time for cleaning the surface.
- Size and Weight Constraints.

FUTURE SCOPE :

• Considering the Global Road Sweeping Machine manufacturing capabilities, it has been seen that the recent propeller manufacturing capabilities have increased with the technological integrations due to the changing climatic requirements and environmental regulations being brought into action. It has taken a performance and efficiency-based line of action towards better outreach in the market. Accident in the process.

INTERPRETATION OF BULL DIAGRAM:

The bull diagram is an expression of the need. Our need is "to reduce human work in forging process".

Sweeping Machine

This includes the **main sweeping mechanism**:

Brushes

Moff.

2. Conclusion

In conclusion, sweeping machines play a crucial role in maintaining cleanliness and hygiene in urban, industrial, and public spaces. Their ability to efficiently remove debris, dirt, and dust from roads,

streets, parking lots, and other surfaces helps keep environments clean, safe, and visually appealing. Through a combination of mechanical brushing, vacuum suction, and dust control systems, sweeping machines can handle a wide variety of debris types—ranging from large objects like leaves and branches to fine particles like dust and sand.. The manufactured sweeping machine offers efficient cleaning solutions for various settings, including homes, offices, and public spaces. With its advanced features and user-friendly design, it simplifies cleaning tasks, saves time, and promotes a healthier environment.

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