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Sustainable Pavement Cleaner

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ABSTRACT: Our research shows that dirt sources other than the road itself are the primary culprits in unsightliness and accidents. A equipment that could semi-automatically clear roadside ditches had been developed by us. Cleaning our homes is something that we all do on a daily basis since it's just in our nature to do so. The conventional tools for cleaning roads and floors are still in use in numerous locations, including airports, hospitals, public transportation hubs and trains. Our plan is to employ level material that is inexpensive, easy to apply, and has good control. This option has the potential to enhance conventional machining. Manual road cleaning equipment is more cost-effective and less harmful to the environment than automated machinery, and it can cover more ground in less time. Also, the price is right. It is simple to use and doesn't harm the environment. A chain drive mechanism and spur gear are used to propel the roller brush of this road sweeper. The capacity to adjust the roller brush's contact with the floor to fit varied cleaning duties is one of the creative and user-friendly aspects of this road cleaning equipment. Slightly lowering the roller and using a scrubber will allow for a more complete cleaning of the roadside

area around the divider.

Keywords: Equipment such as scrubbers, roller brushes, spur gears, adjusters, and so on

INTRODUCTION:

Every living thing, from humans to apes, has an environment. That's why it's crucial to maintain it clean. Because polluted air brings terrible society, illness outbreaks, and other problems, we could all use some fresh air, and we certainly wish to see pollution levels reduced. Improving the nation's cleanliness has been a priority for a while now. In terms of efficacy and applicability, there is no silver bullet. The cleaning method, the equipment, and the kind of cleaning device all have a role in how well something is cleaned. Cleaning is a physically hard job, and there has to be a system in place to evaluate new products ergonomically. Due to a shortage of workers, floor and road cleaning robots have become more popular in recent years, especially among elderly and busy people. A less labor-intensive cleaning equipment is necessary, however, since unemployment is higher in India.



FUNCTION OF ROAD CLEANING MACHINE:

Function of road cleaning machine are mainly

- Remove the dust from road by the use of roller brush.
- Cleaning of dust and dirt by use of brush.
- Collecting the dust into collector tank.

PROBLEM STATEMENT:

It takes more time and the workers can't work continuously if they clean the road with super, therefore we need to think of additional ways to make it easier. The machine's cheap operating costs and the money saved on worker salaries more than offset the cost of installation, which is a major consideration in reducing traffic problems and

accidents. Within an hour to a year and a half, it may be restored. When using an environmentally friendly road cleaning equipment, the rubbing action between the road and the roller brush is the second most common issue. Our roller brush adjuster allows you to fine-tune your brushing technique to eliminate these issues.

MAIN OBJECTIVE OF THE PRESENT WORK:

To provide a different way of cleaning the streets, to save time, and to lessen the workload on humans.

COMPONENTS:

Scrubber: Scrubber is an important component of our cleaning machine and it is also connected to the soft and it is connected to a bevel gear which acts at a 90 degree. When soft starts rotate then it also starts to rotate.

Brush: The cleaning brush is located in between the wheels which are rotating. It is connected by the chain drive system. When wheels are rotate then it also start to rotate. It is made of polymer plastic. It is little hard plastic



Chain drive: It is made up of rigid links which are hinged together. Main function of chain drive is to transfer the power from one shaft to another shaft. It provides the

necessary
for wrapping around
driven wheel.

flexibility
the driving and

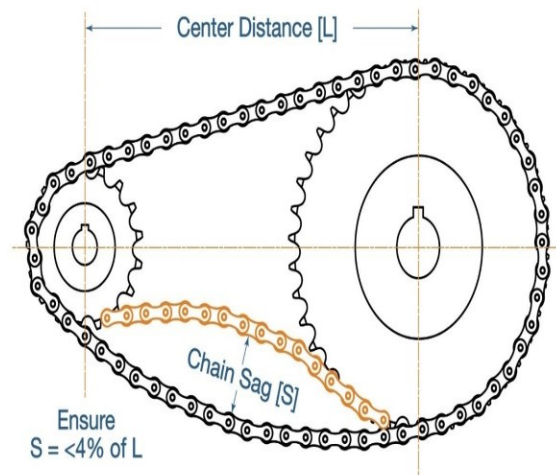


Fig.03 (Chain drives)

www.baartgroup.com

Gear: Gear pair is used to increase or reduce the speed of the shaft. It consists of two cylinders in contact with each other. There are various

types of gear available in the market but only spur gear is used.



Fig.04 (Spur gear)

www.motioncontroltips.com

IMPORTANT DIMENSION OF THE ROAD CLEANING MACHINE:

In this work there are various components which are reused as the following way

Wheels: There are two wheels are used having dimension of 630 mm as shown in figure. **Shaft:** The soft length is 750 mm and its diameter is 25 mm.

Chain: Total chain length

which are used in 850 mm off 75 mm

number. **Supporting wheel:**

Diameter of wheel is 200 mm.

Handle: In our project we used a suitable handle which are beneficial and comfortable. According to the workers it is neither small nor long.

Gears: Used two pair of wires and smaller gear diameter is 26 mm and larger gear diameter is 85 mm.

Brush: Brush having length of 500 mm long and Circular dia of 250 mm and rod diameter is 20 mm. **Collecting box:**

The function of collecting box used to collect the waste up to some quantity after that remove box and dump the waste.

Adjustments: There are adjuster which is used to separate the contact between roller brush and ground. It is most important factor.

WORKING PRINCIPLE OF ROAD CLEANING MACHINE:

Road cleaning machine is a type of eco friendly machine because in operation of this machine there is no requirement of any types of fuel by which it can produce

harmful gases. We can say that it is an eco friendly road cleaning machine because by using this machine, not require of any types of fuel and it is a pollution free device and major advantage is that we are not removing the employment. It is human operated road cleaning machine and only human power is required when any person employs pushes the machine then it moves forward and by which wheels are rotated and on the wheel soft chain driver is to be mounted and it also starts the rotating and now it is also have a free wheel which is placed half some distance and both are connected by the chain and as well as start rotating it also starts to move and it rotates the roller brush now then it tries to throw the dust particle into dust collector chamber.

ROAD CLEANING MACHINE:

The road cleaning machine is operated by the human and it uses two rods which are connected to the front of the shaft. When we applied force on the handles, it exerts a force on wheel by which wheel will rotate and moves forward. This road cleaning machine also useful to clean floor and street. It is a big advantage of this machine. It can be easily used for multipurpose work. This machine can easily move backward and forward. In this we find that when an employee moves this machine then if roller and road contact is much more than rubbing action will occur by which roller brush can be damaged that's why to reduce this problem we will provide the adjuster and by using this employee can set the roller according to its own convenience.

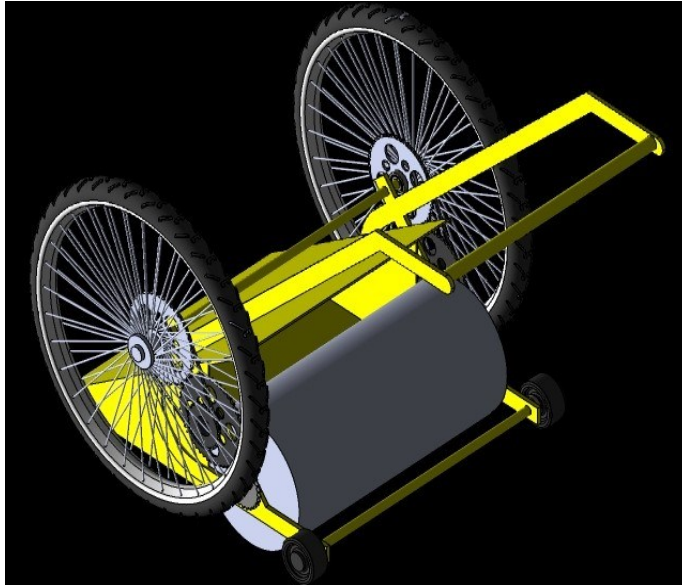


Fig.05(Roadcleaningmachine)www.grabcad.com

CONCLUSION:

The road and floor cleaner that is operated manually has been created and manufactured with success. In order to clean the roads more efficiently and with less human labour, this initiative is using a manually driven environmentally friendly road cleaner. In the event of a power outage, it is the most effective substitute for an automatic road cleaning system. A road cleaning equipment can be operated with the minimum amount of human labour. Manual Debris removal leads to shoulder discomfort as a result of ongoing sweeping, it is necessary to develop such a machine that simplifies the task and cuts down on time.

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