Fabrication of Road Cleaner Machine Model

Prof. Vidur Gundage[1], Mohamadsohail Maner[2], Shivani Karande[3], Harshada Takawle[4], AmdarThorat[5]
[1, 2, 3, 4, 5] College of Engineering Phaltan (Polytechnic)

Abstract- *The purpose of this project is to clean the road in colleges, hospitals, auditoriums, malls and workshops. The aim of this project work is to design and develop process for cleaning the road. It is very useful for cleaning the road and ground. In modern days interior decorations are becoming an important in our life cleaning of road is very important for our health and the road cleaning machine reduces the effort required for cleaning. Hence this project is very useful in our day to day life. It is very simple in construction and easy to operate and little bit cheap, anybody can operate this machine easily. The road cleaning machine consists of, broom and for reducing the cleaning time. The overall cost of this machine is also cheap. Such type of machines is widely used for this purpose but they are working under different principles and the cost is very high. In recent years, floor cleaning machines are getting more popular for cleaning large area in minimum time. However in India, which is a developing country requires large type of such machines to satisfy the cleaning needs.*

Keywords- Roadcleaner, road cleaning,etc

I. INTRODUCTION

Cleaning machine is very much useful in cleaning around us like road and ground and our college's campus and outside ground and public place etc. In modern days interior as well as outside cleaning are becoming an important role in our life. Cleaning of waste is a very important one for our health and reduces the man power requirement. Many of road cleaning machines are available but we developed machine is very simple in construction and easy to operate. Anybody can operate this machine easily. Hence it is very useful in cleaning the cricket ground, any large area space. The time taken for cleaning is very less and the cost is also very less. Maintenance cost is less. Much type of machines is widely used for this purpose. In our project we have made the machine to operate in a fully mechanical way with a little amount of electrical components. The Floor cleaner is of very simple construction and is very easy to operate; anyone can operate it without any prior training of any sorts with safety. Cleaning is essential need of this generation. Basically in colleges ground cricket ground and road for cleaning regularly different rotary motion on the floor which cleans the dirt or dust. The remaining water on the floor is wiping by the wiper present in end of the cleaning machine.

Now the project mainly concentrates on designing a suitable operating system. To maintain simplicity and economy in the design the locally fabricated unit has been used.

Our project achieves higher safety, reduces human effort, increases the efficiency, reduces the work load, reduces the fatigue of workers and reduces maintenance cost

II. PROBLEM STATEMENT

During the manual cleaning operation some dust and dirt particle may remain on the floor and due to the action of air the dirt and dust particle transfer from one surface to another surface which create the problems during cleaning which tends to increase manual effort. Due to which desire cleaning of the surface not gain and because of that it takes more time.

During the rainy season the muddy water are dump on the corner of the wall with the help of manual cleaning it cannot possible to remove all the water from the surface of the floor which creates sleepy surface and which may increase the chances of accidents also the water which remains on the corridor enter into the rooms. Due to uneven surface of the corridor or floor during the wet cleaning of the surface desired cleaning not obtained and backflow of the water occurs which tends to increase manual effort and it is difficult to clean uneven surface of the floor and takes more time for cleaning of the surface

III. OBJECTIVES

1. To fabricate a road cleaning machine that helps in easy and quick cleaning of roads by using bevel gear mechanism.
2. To provide the fast and effective alternative method for road cleaning than conventional cleaning.
3. To reduce human efforts and time using machine.
4. To reduce the cost anyone can use and easy to operate.
5. To remove grit and sand which scratch and wear down the surface of road.

IV. LITERATURE REVIEW

During literature survey we got that on many large places it hard to clean road properly. Like in collages, companies, around hospital etc. in this places the cleaning of road takes much time and men power this cleaning is done on large scale because the area to be covered to clean is so large and this places doesn't clean properly by manual cleaning.

DhananjayKudche and et, al., they presented to design and development of most effective machine that is manually operated mechanical pollution free road cleaner. The Road cleaner is used to keep our mother earth clean. So that we feel fresh while walking on streets. Generally, in era of modern technology, different devices such as electric motors, diesel engines and robots are being used to clean floor, road. These methods make much pollution, maintenance and very tough to carry out. The main objective of this paper is to spread this idea of our prototype road cleaner to each one which aims to. Hence, the present work is aimed to design and develop a manually operated road cleaning machine which is eco-friendly cost effective, portable and less maintenance.

Dhiraj M. Bankar and et, al., they presenteddesign of new products. In recent years, floor cleaning and fabrication of manually operated floor cleaning machine. The conventional floor cleaning and machines is most widely used in airport platforms, railway platforms, hospitals, bus stands, malls and in many other commercial places. These devices need an electrical energy for its operation 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. Hence it is a need to develop low cost, user friendly floor cleaning machine. In this project, an effort has been made to develop a manually operated floor cleaning machine so that it can be an alternative for conventional floor cleaning analysis of the floor cleaning machine was done using suitable commercially available software. The conventionally used materials were, considered for the components of floor cleaning machine.

Praveen H and et, al., they presented 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.

Dr. A. Muniaraj and et, al., they presented Cleaning has become a basic need for all human beings and it is unavoidable daily routine process. The conventional road cleaning machine is most widely used in railway stations, airports, hospitals, Bus stands, etc. also this machine needs electrical energy for its operation. It is not user friendly as well as

A V VMukesh and et, al., they presented A novel method of road cleaning application for Indian roads has been thought of and developed a -Simplified Road Cleaning Machine with Modified Technology Suitable to Indian Conditions‖. This equipment can be used for cleaning the long distances and wide width reduces the human effort, so that the cleaning can be done in a single drive. This system has been used to clean roads and could clean various forms of papers, covers, food beverages, smooth dust and unwanted waste noticed on the roads. It is seen at present that a human pushing machines and cleaning is doing with human effort, and it is always to be done when roads are operated without traffic. Large machines have been made to overcome this problem, but it is very costly. In order to make less effort and very efficient system we can use the scrubbing system. But scrubbing system is also not possible because of due to large roads, with running traffic. So, I am having an idea and design. In this design, collection of objects from 250GMS to fine dust can collect from roads with high efficiency. I hope that it will emerge as a future cleaning system.

V. CONSTRUCTION AND WORKING

A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

A) Methodology

1. It consist of two wheels are connected with axle
2. On axle Bevel gears are mounted
3. The shaft connected between Bevel gears and metallic disc
4. When the two wheels are rotate.
5. Due to Bevel gears center shaft also rotates which are connected to metallic disc the broom are mounted on metallic disc gives the rotary motion then Clean the surface.

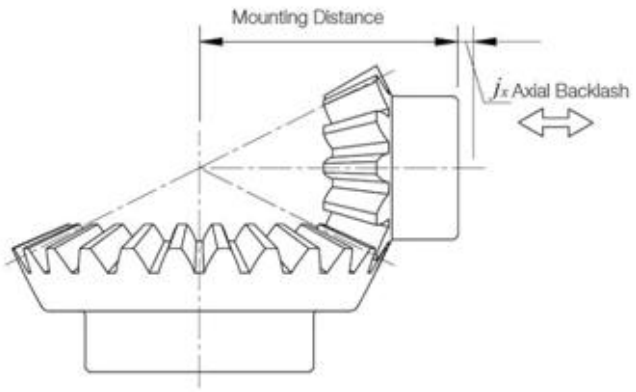

Figure 1: Bevel Gear Mechanism

Bevel gears are useful when the direction of a shaft's rotation needs to be changed. They are usually mounted on shafts that are 90 degrees apart, but can be designed to work at other angles as well.

The teeth on bevel gears can be straight, spiral or hypoid. Straight bevel gear teeth actually have the same problem as straight spur gear teeth as each tooth engages, it impacts the corresponding tooth all at once.Just like with spur gears, the solution to this problem is to curve the gear teeth. These spiral teeth engage just like helical teeth: the contact starts at one end of the gear and progressively spreads across the whole tooth.

On straight and spiral bevel gears, the shafts must be perpendicular to each other, but they must also be in the same plane. If you were to extend the two shafts past the gears, they would intersect. The hypoid gear, on the other hand, can engage with the axes in different planes. This feature is used in many car differentials. The ring gear of the differential and the input pinion gear are both hypoid. This allows the input pinion to be mounted lower than the axis of the ring gear. Figure shows the input pinion engaging the ring gear of the differential. Since the driveshaft of the car is connected to the input pinion, this also lowers the driveshaft. This means that the driveshaft doesn't intrude into the passenger compartment of the car as much, making more room for people and cargo.

Parts used in the project

Wheels
Bevel gear
Shaft
Disc plate
Broom

Diagram of the project

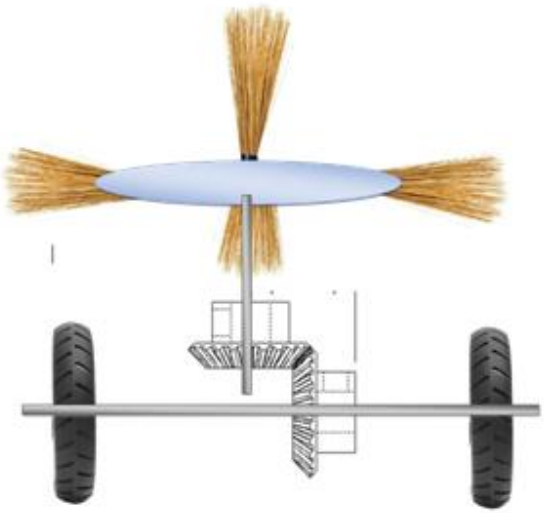

Figure 2: Road Cleaner model

Working of the project

When the model pulled by manual or some other force , tyre will rotate and model move forward when the tyre shaft will rotate bevel gears are attached to the shaft of hence the bevel shaft will rotate, due to the motion of bevel gears . it will rotate the brooms shaft , due to the motion of bevel gear all brooms will rotates in Circular direction as shown in design of model

VI. ADVANTAGES

1. Manual effort is reduced: This road cleaning machine has the mechanical work system that reduces themanual effort in the cleaning of surface.
2. Operating time is less: As we are using.
3. We can reduce the operating time and cleaning work can be done faster.
4. This machine requires low Maintenance cost.
5. In this machine Easy control of cleaning solution supply by controlling valve.
6. It can be used on various places other than rough surfaces like road and residential areas.
7. By further modification the drive or movement can be made automatic.

VII. CONCLUSION

1. We have fabricated a road cleaning machine using long broom which effectively cleans road using bevel gear mechanism.

2. This project is very helpful for the roads and grounds faster than conventional cleaning process.
3. As a whole this is a successful product developed that is used currently in our colleges and grounds and campus for effective time saving and human efforts are reduced.
4. The power saving and cost saving too mechanical road cleaning machine is designed and manufactured using less energy and limited worker who operate this.
5. Manufactured machine is flexible and effortlessly operated. Manual Sweeping done by man might not be that effective as it will not be picking up everything in as it is not in sight but using the road cleaner it can be done easily.A manually operated eco- friendly road cleaner is an alternative concept for avoiding such problems. The manually operated eco-friendly road cleaner can work very efficiently with respect to covering area, time and cost.

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