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A Review Paper on Design and Development of Mechanically Operating Sweeping Machine

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Abstract: ***The primary objective is to design and develop a machine which is fully working on machine drives and clean the floor surface. Name of the project is Designing and Development of Mechanically Operating Sweeping Machine. After the Event of Swachh Bharat Abhiyan people have become more aware of cleanliness. In everyday life we generally use cleaning equipment's like groom, mops and other conventional method. If the area is larger like bus Stops, Railways Stations, Hospitals, school, colleges to clean such larger area by conventional method requires more efforts and also time consuming for sweeping operations. So, we have decided to develop a machine which cleans the surface requiring less effort less time with more efficiently covering larger area without the help of electricity, fuel, etc.***

Keywords: Mop, Bevel Gear, Hypoid Bevel Gear, Shaft.

I. INTRODUCTION

Effective cleaning and sanitizing help and protect the health of the human beings directly and indirectly. Also, cleaning and sanitizing prevents the pest infestations by reducing residues that can attract and support bees, pests etc. It also improves the shelf life of the floor, walls etc due to regular cleaning and maintenance. In recent years, most of the people prefer to use trains or buses for commuting and hence these places are littered with biscuits covers, cold drink bottles etc. Hence, it is necessary to clean the bus stands and railways stations at regular interval.

Thus, cleaning the floor utilizing the customary floor cleaning machines is troublesome without power. In this venture an exertion has been made to build up a physically worked floor cleaning machine so it can be an option for ordinary floor cleaning machines amid control crisis. A physically worked floor cleaning is produced with significant rundown of targets, one; to accomplish concurrent dry and wet cleaning in a solitary run, also to influence the machine to practical and thirdly to decrease the support cost of the physically worked floor cleaning machine beyond what many would consider possible.

II. LITERATURE SURVEY

A. M Ranjit Kumar and N Kapilan

The regular floor cleaning machines is most generally utilized as a part of airplane terminal stages, railroad stages, healing centres, transport stands, and shopping centres and in numerous other business places. These gadgets require an electrical vitality for its activity and not easy to use.

In India, particularly in summer, there is control emergency and the vast majority of the floor cleaning machine isn't utilized successfully because of this issue, especially in transport stands. In this work, demonstrating and investigation of the floor cleaning machine was finished utilizing appropriate financially accessible programming. From the limited component investigation, we watch that the feeling of anxiety in the physically worked floor cleaning machine is inside as far as possible.

B. Ritvick Ghosh, H R Vinay Kumar, Dattatraya, Pavan Kumar B. Hiremath, Prof. Pradeep Kumar

This paper expounds the plan and manufacture of a story cleaner which runs simply on mechanical power and furthermore has the capacity of being ridden at low speeds by the client. The system used to drive the cleaning component would be like the one utilized as a part of a turning mop generally known as an 'enchantment wipe'. The component works utilizing an incline adapt framework wherein rapid duplications can be gotten utilizing the correct apparatus determinations. The contribution to the framework would be in the shape a foot-pedal open to the client.

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C. Sandeep J. Meshram and Dr G.D.Mehta

This paper introduces the outline and manufacture of Tricycle worked road cleaning machine with the related hunt. At display we have few mechanized machines which are remote made and can be utilized as a part of our nation. This fundamentally prompts to thing for an elective component called Road cleaning process.

D. Manreet Kaur and Preeti Abrol

Manual work is assumed control over the robot innovation and a significant number of the related robot machines are being utilized widely moreover. Here speaks to the innovation that proposed the working of robot for Floor cleaning. This floor cleaner robot can work in any of two modes i.e. "Programmed and Manual".

III. WORKING PRINCIPLE

Water is sprayed by means of pipe placed in front of body, this helps in making the floor wet improving cleaning quality. The structure consists of 2 mops connected to the rear wheels by gear and shaft mechanism, 2 types of gears are used they are hypoid bevel gear and straight bevel gear 2 pairs each.

The whole mechanism is supported by hinge ball bearing and deep groove ball bearings. The mechanism works on the torque produced by rear wheels while in motion.

When the force is applied on the body by means of the external force the body will move with the help of wheels. The rear wheels are supported on the body frame and connected to each other with a shaft.

The shaft is mounted with hypoid gears, the gear is fixed in the shaft and the pinion is mounted horizontal to the base frame with the support of deep groove ball bearing.

A straight bevel gear is connected to the pinion of the hypoid gear for torque transmission to mop. The mop is placed vertically to base frame fixed to the straight bevel gear. As the wheels will rotate due to external force the whole mechanism will operate in specified function, the shaft will rotate and thus the gears connected to it will also rotate. Hence the mop connected with the help of vertical shaft will rotate and clean the floor.

The water storage tank mounted on the frame of the upper body which is connected to the sprinkler with the help of flexible pipes and valve. The water will be sprayed on floor which will help in good cleaning of the floor. Wiper fixed on the end of body will collect the remaining water to make the surface dry and clean.

IV. COMPONENTS

A. Wheels
1) 360^0 rotating wheels (front)
2) Disc wheel 12 inches (rear)
B. Shaft
C. Bevel gears
1) Hypoid bevel gear
2) Straight bevel gear
D. Bearings
1) Deep groove ball bearing
2) Mounted deep groove ball bearing
E. Water storage tank
F. Water sprinkler
G. Wiper
H. Mop cleaner
I. Body frame
1) Bottom frame
2) Handle bar
3) Water pipe fixings

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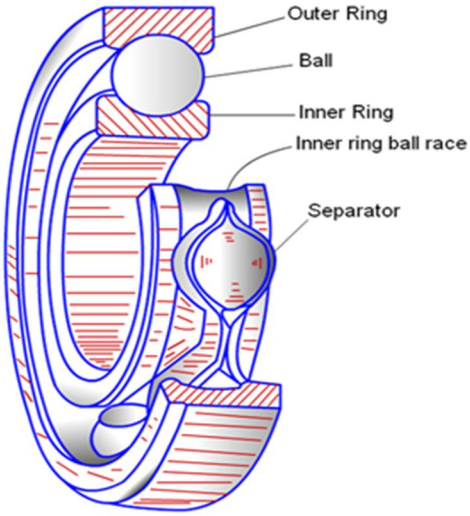


Fig1: Deep Groove Ball Bearing



Fig2: Hypoid Bevel Gear

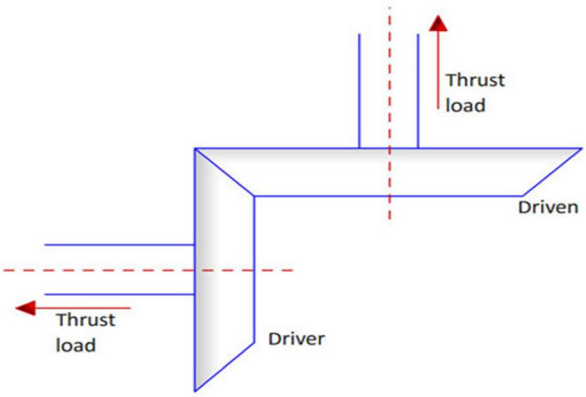


Fig3: Bevel gear mechanism



Fig4: Straight Bevel Gear



Fig5: Bearings

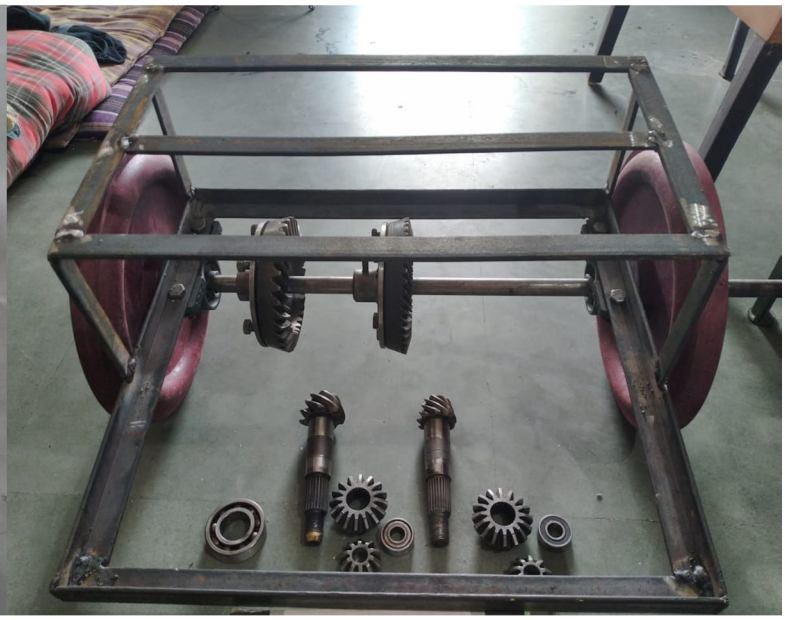


Fig6: Mechanism

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Fig7



Fig8

V. CONCLUSION

The principle thought process of the undertaking is to cover the parts of neatness in the general public. It centres around neatness of schools, doctor's facilities and different floors. The numerous applications give an extensive variety of capacities in which we expel tidy and earth from the floor. By use of basic designing innovation we learned in our building life we have collected such a machine which has numerous highlights being financially savvy in the meantime. The low spending venture is exceptionally helpful for the general public and being financially savvy and vitality productive can assume an imperative part in tidiness of India.

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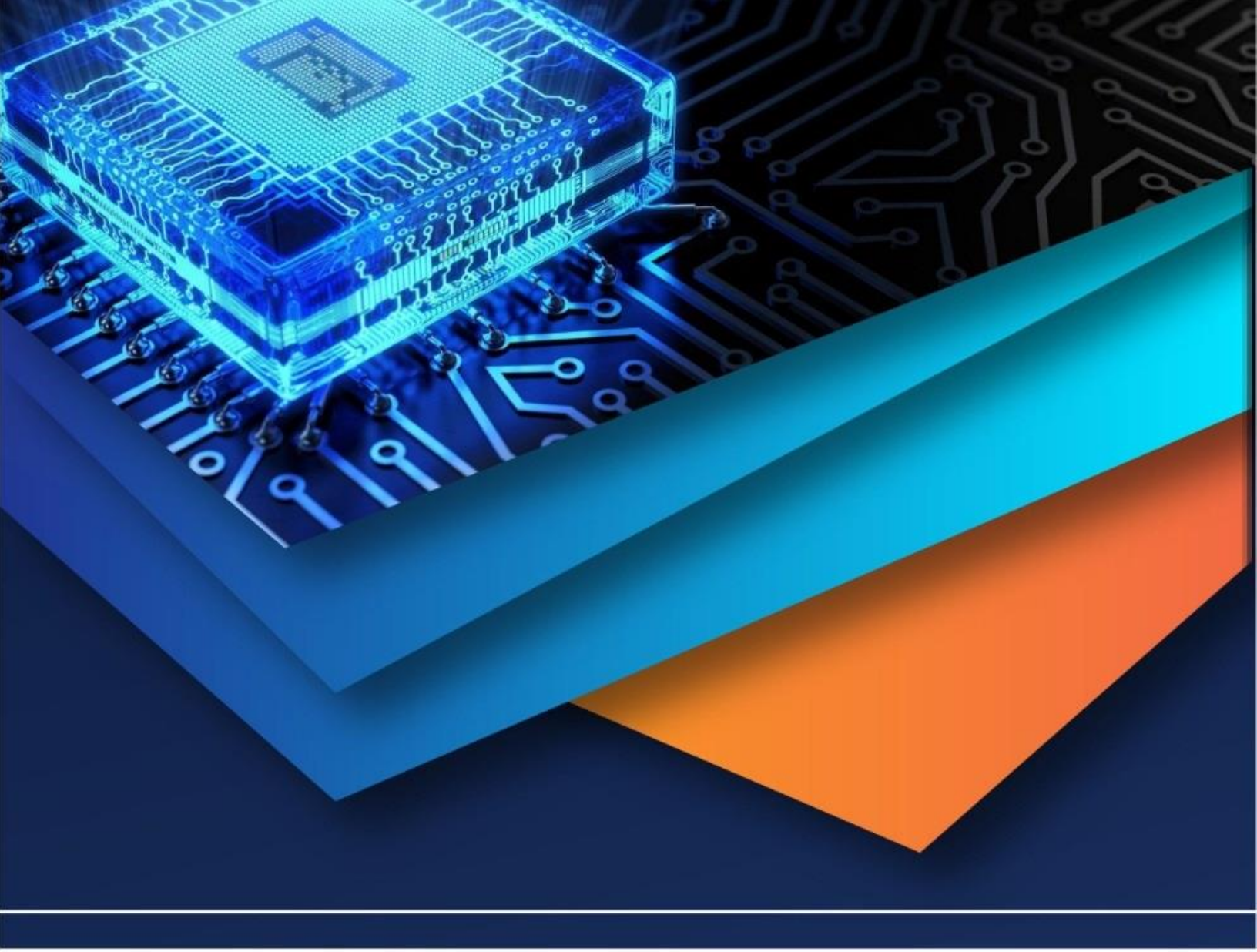
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