

DUST AND SURFACE CLEANER

A Review paper on dust and surface cleaner

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Abstract: Surface cleaner is a system that enables cleaning of the floor by the help of highly stabilized and rapidly functionalized mechanical system. Current project work targets to use floor cleansing for large floor in commercial purposes and office floors.

The cleaning purpose is specifically carried out by continuous relative motion between a scrubber and the floor surface. During the cleaning and moving operation of vehicle a propulsion mechanism such as driven wheels and guide wheels for the dry tracking on the floor surface to be cleaned, suction of water is carried out by vacuum pump, scrubbing action is done by the scrubber directing water towards rear end. Preferably, a sweeper mechanism is mounted on the body forwarded by propulsion mechanism. It is a manually operated machine we and no power source other than mechanical force will be required to operate this machine.

1.0 INTRODUCTION

This is the floor dust & surface cleaning machine which will be used to clean the room, hall, industrial areas etc. It is a manually operated machine we add no power source other than mechanical force will be required to operate this machine. Cleaning is the essential need of the current generation. Basically, in hospital and commercial floors the floor has to be cleaned regularly. Different techniques are used to clean the different types of surfaces

1.1 Mechanical mechanisms

In this machine a dust cleaning flat brush roller and a flat wiper is used. Dust cleaner is used at the front portion of this machine, whereas the flat wiper is placed in middle of the machine. Two motorcycle gears are used for power transmission of mop and broom. These gears are connected to the rear wheels and pipe (which is further connected to the chassis).

1.2 Working process of machine

The surface cleaner machine will work on the principle of push system. We design it in such a manner that it can transmit its power from the wheel (generated from push) to the working part of the machine through power transmission system.

1.3 When we push the machine the will start

Evolving by their Revolution the cycle gear starts to move and the power is transmitted to the different part of machine to accomplish their respective purpose. Firstly we had installed roller surface cleaner, which revolves and collect all the solid objects (like naner leaf etc)

1.4 The revolution of roller is an anti-clockwise

Direction which allows it to collect all the garbage in the collecting box, the collecting box is placed just behind the roller so that the garbage will not fall out of it. After this the second stage of machine contains sprinkle, mop and the viper the Sprinkle is placed after the collecting box. •Which Sprinkle the water spray

on the surface to wet it after the spray there is a mop which is revolved by the transmission of power from wheel through the transmission system, which washes the floor and then a wiper is attached which wiper out the excessive water from the surface the water is in the sprinkle is stored in a water tank.

2.0 LITERATURE SURVEY

B. M. RANJITH KUMAR ET AL [2015]:-"Design and Analysis of Manually Operated Floor Cleaning Machine"- The authors has been designed and analyzed manually operated floor cleaning machine. From his research he concluded that the stress level in the manually operated machine is within the safe limit.

SAHIL BHARTI, S.R. SANDHAVE (2016) To develop an automated cleaning assistance this helps in cleaning flat surface with the ease of remote control with greater efficiency at work. The surface cleaning machine that is proposed in this project is the device that helps in cleaning of surface. There are many function that have to co-ordinate for the motion control".

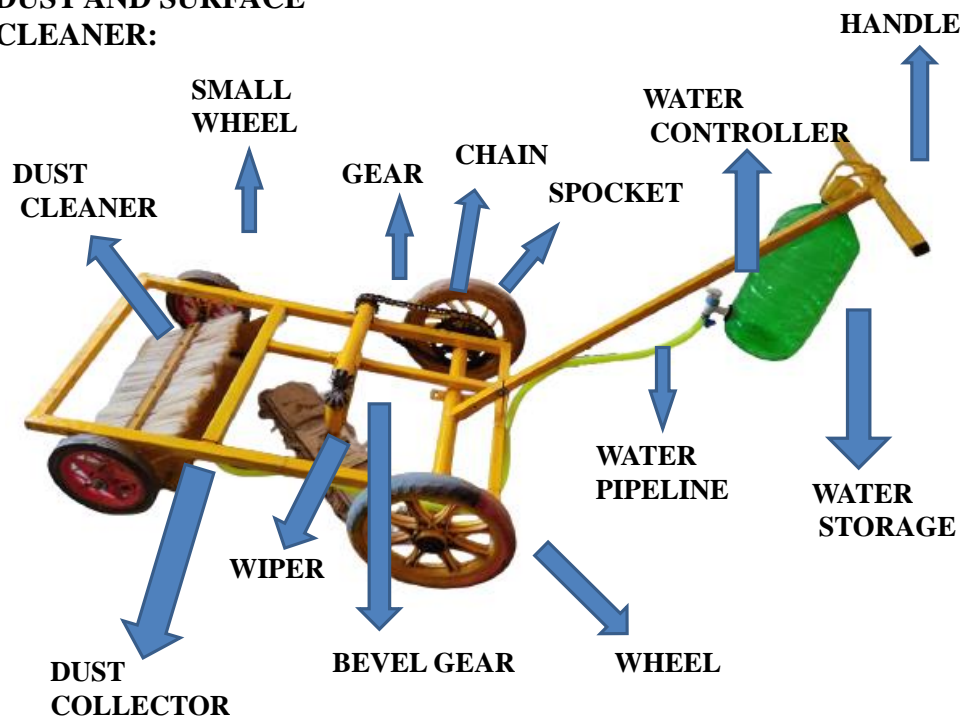
AKASH NAGTODE (2017): "Solar operated floor cleaning machine. He had made a project on cleaning system based on solar power. For this he has used Pv panel which convert particle of energy (photons) into electricity. He use this clean energy to power his cleaning machine."

N. MANYA JAIN [2017]:"Automatic Floor Cleaner". This research facilitates efficient floor cleaning. Since in project the floor cleaner is incorporated with different devices like DC motor(s), ultrasonic sensors

3.0 METHODOLOGY & FABRICATION

Floor cleaning is achieved by different technique which, might be of different kinds. Different types of floor need different type of treatment. The floor should be totally dry after the cleaning process. Otherwise it may result in hazard. On some floors sawdust is used to absorb all kind of liquids. This ensures that there will no need of preventing them from spill of the sawdust has to be swept and replaced every day. Household cleaning is a repetitive task carried out by number of people every day. Therefore cleaning machine is very much useful in cleaning floor in houses. Many of floor cleaning machines are available but this 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 time taken for cleaning is very less and cost is also very less. Our floor cleaner will save huge cost of labor in future. This machine mainly consists of dc motor, vacuum cleaner, water pump, circular & roller brush, mop, SMPS, and hot air blower. The whole assembly is mounted on a frame made up of mild steel as it is cheap and easily available. In the front side, circular brush is mounted at both the ends and roller brush is at the center. In this machine a dust cleaning flat brush roller and a flat wiper is used. Dust cleaner is used at the front portion of this machine, whereas the flat wiper is placed in middle of the machine. Two motorcycle gears are used for power transmission of mop and broom. These gears are connected to the rear wheels and pipe (which is further connected to the chassis).

**DUST AND SURFACE
CLEANER:**

COMPONENTS

**Wheels:**

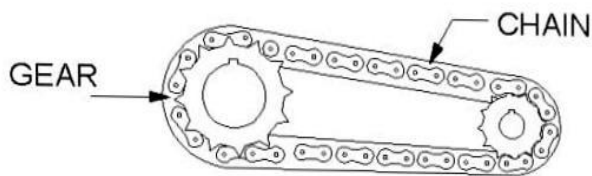
- A wheel is a disc or circle shaped mechanical device.
- Its main purpose is to allow things to roll.
- In other words (the wheel spin and object on the wheel moves more easily along the ground).

CHASSIS:



- It is the back bone of the system. All the systems and parts are attached to it. The solidity of the system is greatly affected by the chassis.
- Support or bear the load of the vehicle or machine
- body, providing the space and mounting of various part of machine.

CHAIN DRIVE



CHAIN DRIVE:

Chain transmits power from one big sprocket to smaller one. It is often used to convey power to the wheels of a vehicle, particularly bicycles and motorcycles.

- The power is conveyed by a roller chain, known as the drive chain, passing over a sprocket gear. The gear is turned, and this pulls the chain putting mechanical force.

Bush:

- A bush is used in a similar way like a bearing.
- The main purpose of bush is to enhance the rotation of steering rod



Garbage & Dust cleaning brush:

- The cleaning brush are used to clean the dust particles, paper, garbage etc. in the surface.



BEVEL GEAR:

Bevel gears are gears where the axes of the two shafts intersect and the tooth-bearing faces of the gears themselves are conically shaped. Bevel gears are most often mounted on shafts that are 90 degrees apart, but can be designed to work at other angles as well. The pitch surface of bevel gears is a cone, known as a pitch cone. Bevel gears transfer the energy from linear to vertical power, making it very useful in machines widely used in mechanical settings.



Garbage collector:

- Collect the dust particles & garbage in garbage (dust)collector.



Flat wiper:

- A wiper generally consist of a metal arm are end pivot, the other end has a long rubber blade attached to it.



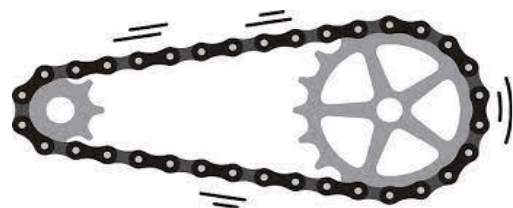
Water tank system:

- It stores the water in it. While doing wet cleaning it provides water as per the requirement.
- A water tank is a container for storing water and spreading water in floor .



Sprocket set:

- Sprockets are sturdy wheels with teeth that lock onto a chain.
- As the sprocket spins, the teeth grab onto the chain and move other parts that interlock with the chain.



PURPOSE

- 1) No fuel consumption.
- 2) Manually operated which might help in exercising too.
- 3) Dust is being collected at one place and will be easy to dump the remaining waste.
- 4) Floor can be cleaned precisely & fast.
- 5) Reducing the cleaning cost.
- 6) Easily operate (skilled operator not required).

APPLICATION

- 1) Industries
- 2) Big halls
- 3) Grounds like basketball ground
- 4) Education institute like school & college
- 5) Hospitals
- 6) Commercial building
- 7) Shopping malls
- 8) Railway station
- 9) Airports

4.0 ESTIMATING & COSTING INR

S.NO.	Name of Components	Qty.	Cost(Rs.)	Amount
1	Wheels (2big and 2 small rotating)	4	500	2000
2	Chassis (1×1rectangular pipe)	1	1000	1000
3	Chain sprocket set	1	1000	1000
4	Steering rod	2	1000	2000
5	Bevel gear	2	500	1000
6	Bush	6	60	360
7	Dust cleaning brush and flat wiper	1	600	600
8	Garbage collector	1	1000	1000
9	Water tank	1	500	500
10	Nut-Bolt , paint , shaft and other		1000	1000
Total				12000+

5.0 CONCLUSION

The foremost aim of this project is to bring a user friendly cleaning device at which any unskilled person can operate easily. Then for the motive, cost is very much reduced by placing scrubber and vacuum at one place for sufficient cleaning. Number of labors can be reduced by replacing them with this device. Time is comparatively saved as of it can clean large area at the same time. Large space can be cleaned very much quicker. It can be used in public places like railway station, bus stand platforms, hospitals etc.

REFERENCE

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