

A POWERFUL, MANUALLY OPERATED, POWERLESS VACUUM CLEANER DESIGN FOR CLEANING VAST FLOORS

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ABSTRACT

Cleaning the floors in colleges, hospitals, auditoriums, shopping centres, and workshops is the goal of this endeavour. This project's goal is to create and implement a cleaning procedure for floors with wet and dry surfaces. It is excellent for cleaning both dry and wet floors. The importance of interior design is growing in the modern world, but maintaining clean floors is still crucial for our health, and this floor cleaning equipment makes cleaning easier. As a result, this initiative is quite helpful in our daily lives. Anyone may use this machine easily because it is very simple to run and build. A damp cotton mop, swiping brushes, wipers, and vacuum cleaners are included in this floor cleaning apparatus 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 floor area in minimum time. However in India, which is a developing country requires large type of such machines to satisfy the cleaning needs.

KEY WORDS: Floor Cleaning Machine, Vacuum Cleaner, Wiper

1: INTRODUCTION

Cleaning is a generational necessity. In general, there are more users in colleges, businesses, and hospitals, thus regular floor cleaning is necessary. The various surface types are cleaned using various methods. The reasons for cleaning floors are.

- 1) Accidental injuries could happen as a result of slipping on the floors.
- 2) To adorn the floor.
3. It is necessary to eliminate debris and impediments.
- 4) Dusts and allergens must be eliminated.
- 5) It is best to prevent surface wear.
- 6) To sanitise the environment (kitchens).
- 7) Maintaining the best possible traction is necessary to prevent slippage.

The front two brushes scrape any dust or wetness that may be on the floor. The vacuum cleaner collects this water and dust and the detergent water is sprayed on the floor the mope present in the middle section of the chassis perform rotary motion on the floor which cleans the dirt or dust. The remaining water on the floor is wipe by the wiper present in end of the cleaning machine.

2: OBJECTIVES OF PRESENT WORK

1. Objective of this project is to make manually operated floor cleaning machine.
2. Reduce the overall cost.
3. Reduce the air and noise pollution.
4. To increase the effectiveness of floor cleaning.

3: MATERIALS AND METHODS

This part portrays the materials required, manufacture technique and the exploratory systems pursued for their portrayal. It displays the subtleties of the portrayal and tests which the composite examples are exposed to crude materials utilized in the present research work are

- Wheels
- Frame
- Collector Bin
- Sprockets
- Chain
- Handle
- Scrubber
- Supporting Frame
- Mounts And Joints
- Screws And Bolts
- Shaft

3.1 .Fabrication techniques and assembled mode

Fabrication process is carried out by using following operation as given below.

Welding, , drilling and cutting these process are performed as shown in the following figures



Fig.1.Welding



Fig.2.Drilling

The manual operating floor cleaning machine uses two separate rods, in this one is connected at the front of the machine and another one is connected at the back of the machine. The rod connected which is below having one dry mat cloth which having a function to clean the dust, and sweeps dust.

Another one back congaing a wet cloth which function a to clean floor at a maximum extent length, here we cover about 5 foot length having maximum area of cleaning.

When coming to the function of a floor cleaning, when manually move the machine with the help of hand, machine starts moving when moving starts front and back having a cleaning rods it starts moving in forward direction first rod work in sweeping a dust on a floor and back rod work to clean the floor with wet cloth it covers a maximum area of cleaning.

CONCLUSION

The environmentally friendly floor cleaner that is manually operated has been successfully designed and made. This project uses a manually powered, environmentally friendly road cleaner to clean the roads, saving money, time, and labor. During a power outage, it is the ideal replacement for an automatic road cleaning machine. It is discovered that the currently in use road cleaning equipment operates with minimal human effort. Due to the constant sweeping involved in manual cleaning, shoulder problems may develop. An alternative idea for preventing such issues is the manually operated road washing machine. In terms of area covered, it performs extremely well. It is incredibly cost-effective to use. 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. It was seen while testing of machine, that the cleaning is less effective where the road seems to be very rough and damaged. It can provide job to the uneducated person who is in need for such jobs as human energy is needed to drive the machine. Maintenance of machine is less and it is easy to control and clean it having health benefits and it mainly protects environment pollution.

REFERENCES

1. Mohsen Azadbakht, Ali Kiapey, Ali Jafari- “Design and Fabrication of a tractor powered leaves collector equipped with suction blower system” - September, 2014Agric Eng Int: CIGR Journal Open access at <http://www.cigrjournal.org> Vol. 16, No.3.
2. M.Ranjith Kumar, N.Kapilan- “Design and Analysis of Manually Operated Floor Cleaning Machine” -International Journal of Engineering Research &Technology (IJERT) ISSN: 2278-0181 IJERT IS040912 [www.ijert.org] Vol. 4 Issue 04, April-2015.
3. Sandeep. J. Meshram, Dr. G.D. Mehta - “Design and Development of Tricycle Operated Street Cleaning Machine” - Journal of Information, Knowledge And Research In Mechanical Engineering ISSN 0975 – 668X|Nov 15 To Oct 16 | Volume– 04, Issue- 01.