

Manual modular floor cleaning machine

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ABSTRACT:

This project deals with the design 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.

KEYWORDS: Floor cleaning machine, Design and Fabrication, Analysis.

1. INTRODUCTION

Floor cleaner is very much useful in cleaning floors in hospitals, houses, auditorium, shops, computer centers etc; it is very simple in construction and easy to operate. Anybody can operate this machine easily. It consist of moisture cotton brush, the brush cleans the floor and dried with aid of small blower. Hence it is very useful in hospitals, houses, etc. 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. But they are working under different principles and the cost is also very high.

Good well-maintained entrance matting can dramatically reduce the need for cleaning. For public and office buildings about 80 to 90% of the dirt is tracked in from outside. Installing a total of 15 feet of matting consisting of both indoor and outdoor sections will remove about 80% of

this. Thus about two-thirds of the dirt can be removed at the entrance

Reasons for cleaning floors

The principal reasons for floor cleaning are:

- To prevent injuries due to tripping or slipping. Injuries due to slips and trips on level floors are a major cause of accidental injury or death. Bad practice in floor cleaning is itself a major cause of accidents.
- To beautify the floor.
- To remove stains, dirt, litter and obstructions.
- To remove grit and sand which scratch and wear down the surface.
- To remove allergens, in particular dust.
- To prevent wear to the surface (e.g. by using a floor wax or protective sealant).
- To make the environment sanitary (e.g. in kitchens).
- To maintain an optimum traction (e.g. for dance floors).

Methods of floor cleaning

The treatment needed for different types of floors is very different. For safety it is most important to ensure the floor is not left even slightly wet after cleaning or mopping up.

Sawdust is used on some floors to absorb any liquids that fall rather than trying

to prevent them being spilt. The sawdust is swept up and replaced each day. This was common in the past in pubs and is still used in some butchers and fishmongers.

It used to be common to use tea leaves to collect dirt from carpets and remove odours. Nowadays it is still quite common to use diatomaceous earth, or in fact any cat litter type material, to remove infestations from floors.

There are also a wide variety of floor cleaning machines available today such as floor buffers, automatic floor scrubbers and sweepers, and carpet extractors that can deep clean almost any type of hard floor or carpeted flooring surface in much less time than it would take using a traditional cleaning method.

Wood flooring

Wood flooring should be treated completely differently depending on whether it waxed or oiled, or whether it has a polyurethane coating. It is important to determine the type of finish of a wood floor and always treat it the appropriate way, for instance it is difficult to clear wood floor wax from a polyurethane floor. Simple cleaning instructions:

1. Clear the floor of any furniture that's easy to move.

2. Sweep or vacuum all loose dirt and debris.
3. Mop the floor, going along with the grain. If your floors are polyurethaned, dampen a mop with water and a few drops of dishwashing liquid. Be sure to ring out the mop thoroughly before using it on the floor. Run the mop back and forth, going with the grain of the wood in smooth strokes. If your floors are lacquered or shellacked, don't use water, which can stain the wood and cause buckling.
4. Buff the floor with a soft cloth to remove any soapy residue. Cloth diapers work well for buffing, because they're very soft and absorbent.

Tile and stone floors

Nowadays many modern kitchens, stairs, and bathrooms have tile flooring that can be cleaned in three simple steps:

1. Dirt or dust should first be removed with a vacuum cleaner or a broom.
2. Have a floor cleaning solution or spray bottle for the appropriate floor. If you are cleaning stone floors (marble, granite, travertine, etc.), make sure the cleaning agent states that it is for stones. An acidic tile

cleaning solution can be used on ceramic and porcelain floors

3. After spraying the tile or stone floors in a small area, use a mop to clean and scrub floors.

Reducing the need for cleaning

Good well-maintained entrance matting can dramatically reduce the need for cleaning. For public and office buildings about 80 to 90% of the dirt is tracked in from outside. Installing a total of 15 feet of matting consisting of both indoor and outdoor sections will remove about 80% of this. Thus about two-thirds of the dirt can be removed at the entrance.

COMPONENTS REQUIRED

1. Brushes
2. Gear
3. Bearing
4. Water
5. Frame

II. LITERATURE REVIEW

M RANJIT KUMAR (2016) "The regular floor cleaning machines is most generally utilized as a part of airplane terminal stages, railroad stages, healing centers, transport stands, and shopping centers 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 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, watch that the feeling of anxiety in the physically worked floor cleaning machine is inside as far as possible".

SANDEEP. J. MESHRAM ET AL [2016]
"Design and Development of Tricycle Operated Street Cleaning Machine" He has developed the street cleaning machine by tricycle operated. it this research article. He framed a model especially for rural area. He concluded that the cleaning is less effective in streets"

MOHSEN AZADBAKHT ET AL [2014]
"Design and fabrication of a tractor powered leaves collector machine equipped with suctionblower system" "The authors explained about the fabrication of leaves collector machine by tractor powered blower. He has frame the machine by using chassis, pump, blower, gearbox, hydraulic jack. They concluded total power consumption of that machine is around 14634 W which can cover up to 20m range in distance

WORKING PRINCIPLE

The cleaning liquid is mixed in proper proportion and it is poured into the reservoir through the top way. The cleaning liquid is poured until the tanks are filled. Actuating the lever opens the valve. Cleaning liquid from the tank spills on the brush. After the required amount is delivered, the lever is released and the machine. The brush gets drive from frame through gears and shaft. The brush applies pressure on the floor, when the adjuster rod is unscrewed and the handle is moved in the required direction to clean the sufficient area. Again the lever is operated to supply cleaning liquid whenever required. This process is repeated, so floor is cleaned well. The cotton brush prevents the damages on the mosaic, marble floors and gives smooth surface finish and shining.

ADVANTAGES

- Manual effort is reduced.
- Operating time is less.
- Cleaning and polishing can be done at same time.
- It consumes less cleaning liquid.
- Power consumption is less.
- Design is very simple.
- Easy fabrication.
- It occupies less floor area.
- Net weight is less.
- Maintenance cost less.

- Easy control of cleaning solution supply.
- It can be used in various floors.
- Smoother operation.
- By further modification the drive or movement can be made automatic.

APPLICATIONS

- Domestic purpose
- Hospitals
- Computer centers
- Auditoriums
- Cultural centers
- Schools
- Colleges
- Large scale industries
- Medium scale industries
- Theatres
- Educational institutions

RESULT, CONCLUSION AND FUTURE SCOPE

From the observation, we mainly conclude with the following results:

- Given the intensity be constant, the efficiency of a parabolic trough collector changes inversely with that of the flow rates. We see an increase of 50-70% in efficiency when the flow rates is decreased by 33%
- Mirror reflecting surface gives better efficiency compared to that of aluminium reflecting surface.

• We mainly see the change in the solar intensity from the morning to the evening as the intensity rises in the morning hours and reaches its peak value between 12:30 PM and 1:30 PM then again decreases in the evening hours. • The efficiency of a parabolic trough collector mainly depends on Solar Intensity, type of fluid used, Reflecting Surface and flow rates. Conclusion We mainly conclude through the findings of our project how different flow rates play a major role in the working of a solar parabolic trough collector. As the efficiency shown by a parabolic trough collector is more than that of a flat plate collector, there is a scope for wider use as to increase the outcome of such. But there is a short disadvantage of parabolic trough collector as there needs to be a tracking device so as to check the functioning of the parabolic trough type collector. We further see that nature of reflecting surface also plays a major role in the output of the working of a solar collector. As the renewable sources of energy is a prime concern in the fulfilment of energy supply in today's world, technical upgradation in the field of design of such technology is a must to gather maximum output. The solar parabolic trough collector is indeed a better alternative to the flat plate solar collector which is widely used today to extract solar energy, modification of the same will surely boost for a better yield. Future Scope Floor washing machine is ideal for small & medium size Super- markets. Floor washing machine ideal for hospitals because of the low noise level. Essential tool for maintaining high level of hygiene for Hotel - kitchens and

restaurants Safety feature includes pedal to secure the handle intact. Floor Washing's easy maneuverability and easy to reach beneath the furniture. No tools required to change brushes.

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