

POST FLOOD INDOOR CLEANING VEHICLE

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Abstract Due to the over exploitation of nature, calamities are now become a part of our life. Flood happened all over the India in resent year. We Keralites also faced with two successive flood and landslide in consecutive years. The life and property of thousands were lost in a short period of time for reducing extent of damage we can't take any action other than preventive measures. These disasters leave a large cleaning work both indoor and outdoor. We have the earth excavators for outdoor cleaning of mud sedimented after flood. Indoor cleaning remains a heavy burden for everyone, to give some relief we introduce The POST FLOOD INDOOR CLEANING VEHICLE. It is a vehicle that everyone can use. Vehicle can enter through the doors of buildings to work indoor and can easily clean the mud and water that accumulates in the floor and walls.

Key Words: Cleaning, flood, bucket, floor cleaning, indoor cleaning.

INTRODUCTION

The post flood indoor cleaning vehicle is used to eliminate the accumulation of debris in buildings or areas that are prone to flooding such as plastics, timber and stones etc. The machine helps to clean up the soil that is accumulating mainly in homes. For that purpose, a bucket, pump and brush are installed in this machine. The bucket helps in removing the accumulated soil in the house. The pump is used to remove the mud water. And the brush is used to clean the floor.

Cleaning up flood prone areas and buildings requires several days of hard work, and this operation is very difficult. So, people get hurt. When flooded waters come down, it causes deadly disease. Sometimes snakes are found in flood-prone places, so it is danger for people to clean that place directly. Cleaning operation was very difficult for the above reasons. We invented this machine to solve these problems and to make things go smoothly.

The motive of the project is to reduce human effort in cleaning and for better cleaning.

PROBLEM STATEMENT

When natural disasters such as flood and fractures occur, a large number of people struggle to clean up waste. In

order to remove the waste (plastic waste, mud, the remains of tree, mud water etc.) caused by this people take more time. This causes a lot of health problems and deadly diseases. Sometimes snakes are found in flood-prone places, so it is danger for people to clean that place directly.

OBJECTIVES

COLLECTING DIFFERENT TYPE OF WASTE: Our product should not be restricted to collect only one type of waste. It must diversify its functions to accomplish the given task. The mechanism made for collecting waste should be tough enough to collect mud, dust water, plastic wastes, organic wastes which include crop debris, food wastes, remains of the wood, stones, etc.

LESS HUMEN INTERFERENCE: The very basic idea should be satisfied that is to avoid the interference of the operator. This will happen only by the adoption and sustained usage of technology in the work space.

COLLECT MORE AMOUNT OF WASTE: Very firstly it must collect around 5 kg of waste a time when it is being left to the floor.

EASY DISPOSAL OF WASTE: Another important thing is easy removal of wastes which are collected in the bucket.

SAFETY FOR THE USER: The product must be user friendly.

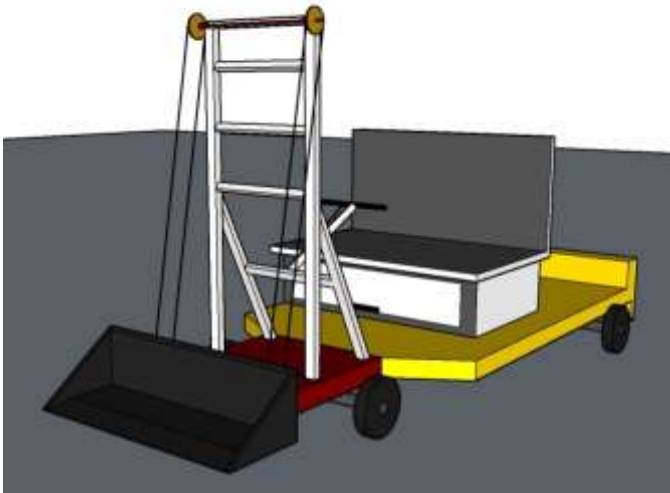
PRODUCT DEVELOPMENT PROCESS

This product "POST FLOOD INDOOR CLEANING MACHINE carried based on KARL .T. ULRICH' S product development process. [5]



Product development process

DESIGN OF PRODUCT



Cad drawing 3D

3. Battery
4. pump
5. Bucket
6. Motor control
7. Brush
8. Gear lever
9. Kicker
10. Seat
11. handle

CHASSIS

Chassis is the main part which carries the all other part of the machine. It carries engine, wheels, motor, pump, wiper steering, bucket etc. The work of the chassis is made with GI squire pipe and MS pipe. Chassis work is completed using welding.

ENGINE

The engine here we are used is 97.2 cc air-cooled **engine** which produces of power. The maximum power of the engine is 8000 rpm. And the maximum torque is 5000 rpm. This is using chain drive mechanism. The engine is start using kicker.

PUMP

Centrifugal pumps are used to transport fluids by the conversion of rotational kinetic energy to the hydrodynamic energy of the fluid flow. The rotational energy typically comes from an engine or electric motor. They are a sub-class of dynamic axis symmetric work-absorbing turbo machinery. The fluid enters the pump impeller along or near to the rotating axis and is accelerated by the impeller, flowing radially outward into a diffuser or volute chamber (casing), from which it exits.

BUCKET

This bucket is made to remove the accumulated waste. It is made up of using sheet metal. Its movement is accompanied by motor assistance. The bucket is placed in the front of the vehicle.

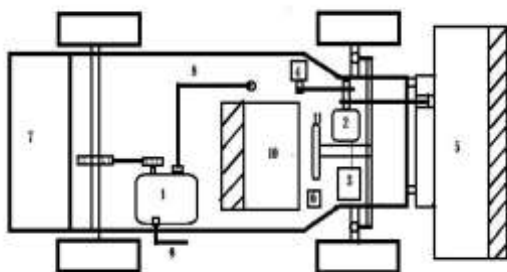
BRUSHES

Cleaning brushes use bristles, wire, or other filaments to dust, scrub, and remove deposits from objects and surfaces. They are commonly used to scrub and clean kitchens and bathrooms, spot dust and clean, and remove metal, paint, and residue from equipment.



Design of product

DESIGN ASPECTS



Orthogonal view

1. Engine
2. Motor

DC MOTOR

The DC motor is a machine that transforms electric energy into mechanical energy in form of rotation. Its movement is produced by the physical behavior of electromagnetism. DC motors have inductors inside, which produce the magnetic field used to generate movement. An electromagnet, which is a piece of iron wrapped with a wire coil that has voltage applied in its terminals. If two fixed magnets are added in both sides of this electromagnet, the repulsive and attractive forces will produce a torque.

WHEELS

The wheel and axle, a form of simple machine, applies effort and resistance to lift or move objects and people. The lifting and moving is performed by multiplying speed or force. A wheel has to have some external power source in order to move. The engine is the power source for the wheels on a vehicle. The wheel gains its mechanical advantage because it reduces friction.

HANDLE

They are also known as North Road or Upright handlebars. Due to its extreme sweep, these types of bars allow the rider to control the vehicle while sitting completely upright. Superb comfort - The position of the handlebars puts the wrists in the most natural position while riding. Vehicles have a dropped handlebar that allows your hands a variety of positions, which helps relieve pressure.

BEARING

The bearing is pressed smoothly to fit into the shafts because if hammered the bearing may develop cracks. Bearing is made up of steel material and bearing cap is mild steel. A ball bearing usually consists of four parts: an inner ring, an outer ring, the balls and the cage or separator.

To increase the contact area and permit larger loads to be carried, the balls run in curvilinear grooves in the rings. The radius of the grooves is slightly larger than the radius of the ball, and a very slight amount of radial play must be provided. The bearing is thus permit to adjust itself to small amounts of angular misalignment between the assembled shaft and mounting.

COLLECTING MECHANISM

The accumulated waste collecting mechanism of this machine is simple. It is a simple concept that a bucket is rotating on a chain due to up and down movement. The bucket is connected on the chassis. When the driver is operating the bucket due to the movement of machine.

The bucket is moving by the help of chain and socket. Here the chain is rotated by a motor (wiper motor).

ADVANTAGES AND DISADVANTAGES

The advantages of post flood indoor cleaning machine is, Easy and fast cleaning, Only one worker is required, Safety to human life, Less cost, Easy to control, It can be accessed inside the room, It reduce human effort. The disadvantages of post flood indoor cleaning machine is, sometimes, it damaging the tiled surface, it has no rivers gear.

FUTURE SCOPE

We designed and fabricated a model of mud cleaning machine and expect the following future expansion suggestion will be use full. Brush for cleaning each side, Store water for cleaning, Sliding type wheel, Hydraulic system for bucket.

CONCLUSIONS

While concluding this work, we got fill lots of practical experience during the manufacturing schedules of the work. We are happy that our knowledge has been used for social welfare. With the help of proper guidance and hard work we were able to achieve our objectives. The choice of proper raw materials helped us in machining of the various components to very close tolerance and thereby minimizing the level of balancing problem. We will do efforts during machining, fabrication and assemble and fabricated in accordance so it can provide flexibility in operation. This innovation is easy and less costly and has lot of room to grow more economical. This project POST FLOOD INDOOR CLEANING VEHICLE is designed with the hope that it is very much economical and helpful to floor and ground cleaning after flood.

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