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MEC 299

AUTOMATIC DRAIN CLEANER

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ABSTRACT

In this research study, a mechanical drain cleaner is offered as a replacement for human drainage cleaning. Cleaning drain using the usual tool like drain hoe and rubbish pickers is not an effective way and can pick up rubbish in a small amount. Furthermore, people or labours also easy to catch infections due to the large amount of waste in drain. Therefore, the objective of this product is to design a product that can pick up rubbish from the drain using SolidWorks software and to fabricate an automatic drain cleaner. In this product system consists of metal teeth jaws that wait at the bottom of the mechanism. After a particular time intervals the jaw lifts up using a motorized shaft which is connected using a chain to the jaws. The jaws then reach at the top and the waste will dump into the basket. In conclusion, this automatic drain cleaner is way more effective than the usual one and can prevent the high risk of infections.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Cleaning the drain is always been a problem. People or labours cleaning the drain without any tool seems unethical and also leads to high risk of them catching infections. Also, many of rubbish like bottle and plastics can leads to narrowing of drain and eventually blockage the gutter flow. This automatic drain cleaner is designed to automatically catches the waste and more amount of waste can be collect than usual. So, this product helps people faced the problem that related with blockage drain. It also to ease the way to clean the drain and helps the smooth working of the drain system. This product is way more efficient compared to the manual work that using the tools that can pick little waste. Elangovan K., et al.[1] reviewed the topic of drainage cleaning because manually cleaning systems is damaging to human life, automated systems should be used to substitute manual effort. This project effectively disposes of waste that has been dumped into the drainage system that is poisonous or contains harmful gases. Automatic control of sewage waste water treatment was achieved using a Siemens PLC controller in the treatment system of drainage wastewater control by the stepper motor, compressor, gas exhauster, pressure valve, and the liquid level, flow, and other analogue variables. Auto mechanism is the major controlling unit and the drainage level a monitor by municipal. In this system we used hand wheel, chain, driver, bucket, frame. Overall, this automated drain cleaner is manufactured to easy the usage of cleaning the drain and also prevent the blockage of it.

1.1 Overview of Project

Blocked drains are one of the problems people will face if lacked taking care of surrounding or left the waste out of ignorance. Blocked drain usually the result from foreign materials and dirt accumulating in the pipe that carries and dumps waste water. These materials might be food waste, plastic bottles, boxes, and pieces of some other miscellaneous junk. Thus, this project is produced to collect the rubbish from the drain automatically. This automatic drain cleaner also produced to prevent from people catches infections due to the large amount of waste.

This drain cleaner has been emphasized from different aspect to make it more useful than the usual one to tackle these modern-day jamming issues. The system of this automated drain cleaner is let fluid flow through it but catches large solid waste. Hence, this cleaner needs to collect that type of rubbish instead of the entire drain floor. This product consists of metal teeth jaw that collects the rubbish and the jaws will wait at the bottom of the product. After a particular time, these jaws will lift using a motorized shaft connected using a chain to the jaws. This product consists of a filter basket to collect the rubbish into it. The jaws will lift the rubbish up and throw it into the basket. Now, after dumping the waste, the motor rotates again to bring the jaw again to the bottom position to collect more waste. Another function of this drain cleaner is that after the filter basket is full, people can manually push the pusher, to compress the trash. More rubbish can fill up the filter basket. This example has proven that this project has been enhanced compared to the product that currently exists in the market.

After all of this product has been completed, post mortem has to be done to check deficiency of the product that customers will get in the future by discussion to prevent from dissatisfied from customers. This product will be designed in SolidWorks software which is a 3D simulation.

1.2 Problem statement

Blocked drain has been a problem for several people that left the waste out of ignorance. It will be worse if the drain is not cleaning regularly. People also seem to be a bit scared of catching infections or poisoning due to abundant of chemicals in the drain. Throwing a plastic bottle or other objects leads to the drain narrowing and eventually blockage the drain flow. Other than that, product can only fill up several trash and the basket will be full. So, the first trip of basket need to throw it first to collect another trip of rubbish.

1.3 Objective

1) To design and fabricate an automatic drain cleaner that can pick up rubbish from the drain using SolidWorks software

2) To testing a product which is automatic drain cleaner that can pick up and collect more rubbish.