DRAINAGE CLEANING SYSTEM

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ABSTRACT

Water is the basic need for the existence of life on earth. In spite of 70% water on earth majority of water is not suitable for drinking purpose. There is a huge demand of clean water as it is used for a variety of purpose such as drinking, bathing, cleaning, cooking etc. Impurities present in water can cause serious health issues that can damage the life of human beings. The chief function of the automatic drainage system is to collect, transport, as well as dispose the solid waste in the waste bucket by the help of claws. Solid waste in drainage water includes empty bottles, polythene bags, papers etc. Impurities in drainage water can lead to blockage of the drainage system. In order to avoid such situation these impurities are needed to be taken out time to time for the continuous flow of drainage water. Drain can be cleaned continuously by the help of model using the drive system to remove the solid waste and threw it into waste bucket. This project is designed with the objective to initiate the efficient working of system. This project automatically cleans the water in the drainage system each time any impurity appears, and claws which are driven by chain sprocket grasp the solid waste and threw it into the waste bucket to avoid blockage. It even reduces the cost of manual labour as well as reduces the threat to human life.

I. INTRODUCTION

Automatic Drainage Water Cleaning overcomes all sorts of drainage problems and promotes blockage free drains promoting continuous flow of drain water. In the modern era there have been adequate sewage problems where sewage water needs to be segregated to clean our surrounding environment. The waste and gases produced from the industries are very harmful to human beings and to the environment. Our proposed system is used to clean and control the drainage level using auto mechanism tech.

II. LITERATURE REVIEW

Abhishek ,Lingesh S , Sabin Khatri , Manoj M , Mohammed Saleem A Sayed

Design and Fabrication of Drainage Cleaning System

Nowadays even though automation plays a very important role in all industrial applications, the proper disposal of sewages from industries and commercials are still a challenging task. Drainage cleaning system is proposed to overcome the real time problems. With the continuous expansion of industries, the problems of sewage water must be urgently solved to minimize the increasing sewage problems from industries that effects the surrounding environment. The solid waste

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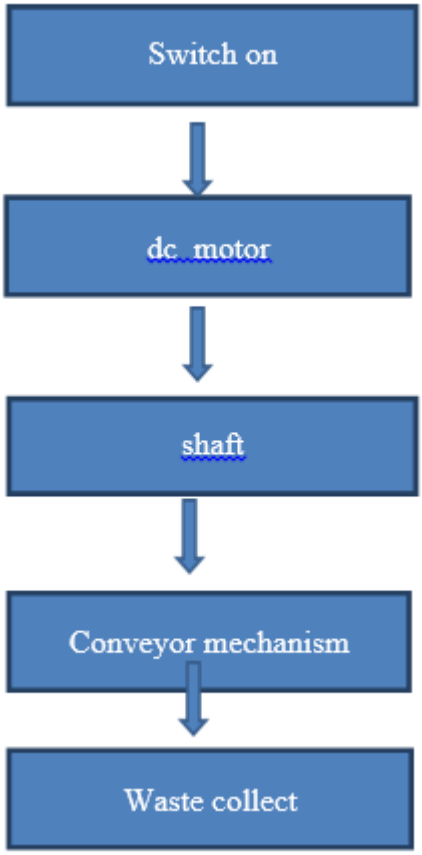
produced from the industries are very harmful to humans and to the environment

III. BLOCK DIAGRAM



IV. COMPONENTS

SHAFTS

Diameter-12mm,length-26inch. The shaft is supported on bearings and it rotates a set of gears or pulleys for the purpose of power transmission.

CHAINSPROCKET

Chain drive is a way of transmitting mechanical power from one place to another. It is often used to convey power to the wheels of a vehicle, particularly bicycles and motorcycles. It is also used in a wide variety of machines besides vehicles.Most often, the power is conveyed by a roller chain, known as the drive chain or transmission chain, passing over a sprocket gear, with the teeth of the gear meshing with the holes in the links of the chain. The gear is turned, and this pulls the chain putting mechanical force into the system.

DC MOTOR

A 12\V DC motor is adopted to meet the required torque and the varying loads. The motor is attached to a driving shaft, which gives motion to a conveyor system.

CONVEYOR MECHANISM

The motor is coupled to a shaft, which will be the driving shaft. The driving shaft is connected to a driven shaft via 2 sets of chains and 4 sets of sprockets, which acts as a conveyor mechanism. The forks are then linked to each set of chain drives o the either side, thus we obtain a conveyor motion for the forks.

BATTERY

Where high values of load current are necessary, the lead-acid cell is the type most commonly used. The electrolyte is a dilute solution of sulfuric acid (H_2SO_4). In the application of battery power to start the engine in an auto mobile, for example, the load current to the starter motor is typically 200 to 400A. One cell has a nominal output of 2.1V, but lead-acid cells are often used in a series combination of three for a 6-V battery and six for a 12-V battery.

SHEET METAL

Sheet metal is metal formed by an industrial process into thin, flat pieces. It is one of the fundamental forms used in metalworking and it can be cut and bent into a variety of shapes. Countless

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everyday objects are fabricated from sheet metal. Thicknesses can vary significantly; extremely thin thicknesses are considered foil or leaf, and pieces thicker than 6 mm (0.25 in) are considered plate.

Sheet metal is available in flat pieces or coiled strips. The coils are formed by running a continuous sheet of metal through a roll slitter.

V. DESIGN

Front view

VI. WORKING PRINCIPLE

The drainage cleaning machine helps us to clean small or big sewage through its mechanical design and working. This machine consists of parts such as motor, battery, shaft, lifter, collecting box etc. When we give power to this machine then motor starts working which rotates the shaft. Due to the rotation of shafts, the conveyor belt connected to the shafts rotates. As the conveyor belt rotates the two lifters which are connected to the conveyor at half length of the conveyor starts rotating as well. When one lifter completes one round from down to upward direction, it takes all the garbage material like waste bottles, plastics, tins, etc. and the grid drops it on the collecting box attached at the back. The collection rate of garbage will be continuing. This device is placed across drainage so that only water flow through lower grid, waste like bottles, plastics which are floating in drain are lifted by teeth of lifter which is connected to conveyor. This conveyor is attached to shafts driven by motor. When motor runs the conveyor starts to circulate making teeth to lift up. The waste materials are lifted by teeth and are stored in waste.

VII. ADVANTAGES

- ✓ Cost of production is low
- ✓ No need to purchase heavy machinery
- ✓ Reduces threat to human life
- ✓ Manual assistance is not required
- ✓ Working principle is quiet easy.
- ✓ Compact
- ✓ Portable.
- ✓ Highly Efficient

VIII. DISADVANTAGES

- ✓ Rust
- ✓ Flat solar panel
- ✓ Jerks in chain

IX. APPLICATION

- ✓ can be installed for domestic sewage treatment.
- ✓ It can be used for proper treatment of sewage as well as to avoid blockage of drains

X. CONCLUSION

After all the testing project was successful in representing the idea in practical way. The project works with ease and in an efficient way. The waste material was able to be fetched from the water and collect it in the garbage collector container. Hence this project can be applied in remote and slum areas with effectiveness. Since drains are linked with hygiene and in slum areas this is major problem and this project can be implemented in those areas and can safeguard health of the people

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