

## DESIGN AND FABRICATION OF AN AUTOMATED DRAIN-CLEANING SYSTEM

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**Abstract:** *Gutter and drain cleaning has never been easy. Given the amount of debris and chemicals present, cleaning gutters and drains appears unethical and puts workers at a greater risk of illness or poisoning. Additionally, dumping bottles, plastics, and other similar items in the gutters causes them to get smaller and finally become blocked. In many circumstances, this results in an overflow. In order to address these contemporary gutter jamming concerns, we have provided a fully automated drain gutter cleaning method. Our solution employs an automated gutter/drain cleaning system that allows liquids to pass through it while catching and storing large solid waste items like bottles and plastic. Therefore, rather than cleaning the entire gutter floors, gutter cleaners only need to clean these gutter cleaning systems that have been installed at specific locations. Our method has jaws with metal teeth that are waiting at the base of the mechanism. For the system to remain upright in the gutter, it is installed in a frame. The vertical frame bed is used to capture all solid waste while allowing liquid to flow. There is a filter basket on top of the mechanism. A motorised shaft that is linked to the jaws by a chain raises the mouth at predetermined intervals. When it reaches the top, it flips over to dump the solid waste. Now that the waste has been dumped, the motor turns once again to move the jaw back to the bottom position for additional waste collection. The system is a very efficient way to cleaning gutters & drains and also requires very low power since it will only rotate once or twice a day to dump the solid waste.*

**Keywords:** Dc Motor, Drain Gutter, Bearings, Shaft, Gears, Chain Sprocket.

### 1. INTRODUCTION

Water is a basic necessity of humans and all living beings. There is a plenty of water on earth but that is not suitable for human use. Clean water is more important if used for some purpose. The impurities present in water can cause hazardous and disease. As long as the draining system is considered the function of the main drainage system is to collect, transport and dispose of the water through an outfall or outlet. Impurities in drainage water can be only like empty bottles, polythene bags, papers.....etc. These impurities present in drainage water can cause blockage or the drainage system. The drainage system can be cleaned time to time manually or such a system can be designed that will automatically throw out wastages and will keep the water clean. This project is designed to keep clean the drainage system and helps the smooth working of the system. This project automatically cleans the water in the drainage system each time any wastage appears and this form an efficient and easy way of cleaning the drainage system and preventing the blockage. It also reduces labour and improves the quality of water that is cleaned. If the garbage are allowed to flow the will end up flowing down to recreational beaches used for tourism purposes making a scene not pleasurable to the eyes else these garbage flow to residential sites where they are burnt in a way of getting rid of them, thereby causing climate change. The drainage systems are cleaned when there is no water in them i.e. when it is not raining, but when it is raining the drainage systems cannot be cleaned because of the harsh conditions of the rain which no one would volunteer to endure to ensure garbage does not enter into the drainage systems.

Water is being used very fast in today. The significance of water is mainly used for cooking, cleaning and drinking in our lifestyle. The water used in the factory and the house comes from the drains and reaches in the rivers, in the ponds and in the oceans. In which more solid ingredients (polythene, bottles etc)along with water also reaches. We

have built Automated drain cleaning machine with the main purpose of removing these solid materials from drains.

This machine can be established at any point of drain very easily. It has been design in such a way that its lets water flow through it but collects all the solid substances and gives a group in the dustbin. This machine is able to do cleaning and moving process together on the drains/gutters.

The Drainage water cleaner system are used to clean wastes from water like polythene, bottles etc. present in water .This can be used to overcome the problem of filtration of wastes from water and it save the time and cost that spend on cleaning the drainage. As the industry setup increase in the environment the water coming from industries are full of wastes like polythene, bottles, and other materials and that water mix with the other water that are used by people and we know that that water is not good for the for health of people. So to overcome from these problems we can filter the water drainage water before it mix with other water. This type of filtration of water is called primary filtration. In this project we use DC or AC motor to run the system when power supply is available& the Equipment we used are motor, chain, driver, bucket, frame, wheel, sprocket gear, solid shaft etc. Water is a basic necessity of human and all living beings. There is a plenty of water on earth that is not suitable for human use. The impurities present in water can cause hazardous diseases. Waste water is defined as the flow of used water from homes, business industries, commercial activities and institutions which are subjected to the treatment plants by a carefully designed and engineered network of pipes. The biggest impact of cleaning the chemical wastes can cause respiratory diseases and it plays a challenging issue for the municipality officers. Water damage is classified as three types of contaminated water. They are clean water, gray water and black water.

### **1.1 Types of Water Cleaning System:**

Drinking water sources are subject to contamination and require appropriate treatment to remove disease-causing agents. Public drinking water systems use various methods of water treatment to provide safe drinking water for their communities. Today, the most common steps in water treatment used by community water systems (mainly surface water treatment) include:

#### **1.1.1 Coagulation and Flocculation:**

Coagulation and flocculation are often the first steps in water treatment. Chemicals with a positive charge are added to the water. The positive charge of these chemicals neutralizes the negative charge of dirt and other dissolved particles in the water. When this occurs, the particles bind with the chemicals and form larger particles, called floc.

#### **1.1.2 Sedimentation:**

During sedimentation, floc settles to the bottom of the water supply, due to its weight. This settling process is called sedimentation.

#### **1.1.3 Filtration:**

Once the floc has settled to the bottom of the water supply, the clear water on top will pass through filters of varying compositions (sand, gravel, and charcoal) and pore sizes, in order to remove dissolved particles, such as dust, parasites, bacteria, viruses, and chemicals.

#### **1.1.4 Disinfection:**

After the water has been filtered, a disinfectant (for example, chlorine, chloramine) may be added in order to kill any remaining parasites, bacteria, and viruses, and to protect the water from germs when it is piped to homes and businesses.

### 1.1.5 Ultraviolet:

Sunlight has long since been known to kill micro-organisms. The rays from the sun contain the UV spectrum used in Ultraviolet Water Treatment Systems – although at much lower intensities. It is also referred to as either the Germicidal Spectrum or Frequency. The frequency used in killing micro-organisms is 254 nanometers (nm). The UV lamps used are designed specifically to have the highest amount of UV energy at this frequency.

### 1.1.6 Distillation:

Is the process in which a liquid such as water is converted by heating, into a vapor state, and the vapor cooled and condensed to a liquid state and collected. It is the process of removing the liquid (water) from its constituents or contaminants; as compared to other processes where contaminants are removed from the water (liquid). Distilled water is water that has been purified by passing through one or more evaporation –condensation cycles and contains essentially no dissolved solids. Distillation requires a lot of energy to produce a small amount of purified water and we do not carry distillation systems.

## 1.2 Applications :

1. Minimal effort deplete off arrangement if depletes as of now exist.
2. Development materials are regularly locally accessible
3. Makes work (development and support)
4. It is Portable
5. These cleaners are easy cheapest way to fix drainage problems. Easy to operate as no special skill is required.
6. Reduction of labour oriented method of cleaning, thus upgrading dignity of labour.
7. Light weight and easily portable. Requires nearly 12-24 volts of power.
8. Large amount of garbage will collect which can be recycled.
9. It can be utilized as a part of BMC
10. It can be utilized to separate plastic, thermocol from sewage
11. It can be utilized as a part of plastic businesses
12. If we can fix this system on any boat then we use as “GANGA SEVA ABHIYAN”

## 2. LITERATURE REVIEW

Ganesh U L, showed the usage of mechanical drainage cleaner to replace the manual work required for drainage cleaning system. Drainage pipes are very dirty. Sometimes it is harmful for human life while it is need for cleaning drainage system. To overcome this problem, they implemented mechanical semi Automated drainage water cleaner and so the water flow is efficient because of regular filtration of wastages with the help of that project. Different kindsof environment hazards reduced with the help of Drainage system machine.

James C. Conwell, G. E. Johnson proposed the design and construction of a new test machine configuration that offers same advantages over the traditional one. The new machine and attendant instrumentation provide more realistic chain loading and allow link tension and roller sprocket impact monitoring during normal operation. The incorporation of idle sprocket allows independent adjustment of test on length and preload.

S D Rahul Bharadwaj, proposed with the automatic cleaning of waste water in order to prevent global warming and melting of glaciers. The results emphasize the need of waste water treatment plants, through which the water is treated before

suspending in rivers. Firstly, power is generated and that power is used for waste water cleaning process.

Balachandra Patel, reviewed about drainage cleaning to replace manual work to automated system because manually cleaning system it is harmful for human life and cleaning time, is more so to overcome this problem they implemented a design “Automated drainage water pump monitoring and control system using PLC and SCADA”. PLC and SCADA were designed. In this project, to use efficient way to control the disposal of wastage regularly, treatment of disposal in different way toxic and nontoxic gases. PLC controller from Siemens was used in the treatment system of drainage wastewater control by the stepper motor, compressor, gas exhauster, pressure valve and the liquid level, flow and other analog variables to achieve Automated control of sewage waste water treatment.

Dr. K. Kumaresan explained manual work converted to automated system. Drainage pipe using for disposal and it may be loss for human life while cleaning the blockage in the drainage pipes. To overcome this problem, they implemented “Automated Sewage Cleaning System”. They designed their project different way clearance of gaseous substance are treated separately so the flow of water efficiently. This project may be developed with the full utilization of men, machines, and materials and money. They made their project economical and efficient with the available resources. They used automation technology related with his application of mechanical, electronics, computer-based systems to operate and control production.

R. Sathiyakala, explained E bucket (electronic bucket) use for drainage cleaning system because E-bucket lifted a sewage and used evaporation treatment for this sewage wet sewage was converted into dry matters, with the of ARM board (ARDUINO) this process was performed. After this process they were add this waste a government bank without any kind of affection of the bacteria.

Nitin Sall, explained flow of used water from homes, business industries, commercial activities are called waste water. 200- and 500-liters wastage water are ~ 409 ~ International Journal of Applied Research <http://www.allresearchjournal.com> generated each person every day. So, using waste water technology that removes rather than destroys a pollutant in a drainage system.

Ndubuisi. C. Daniels showed the Drainage system cleaner machine used to remove garbage and sewage automatically which helped to protect the environment from different kinds of environmental hazards. The drainage system cleaner has three major parts which are the Propeller, the Cleaner and the Pan all makes up for its effective functioning.

### 3. METHODOLOGY

Fabrication is an important industry that involves cutting, manipulating and assembling materials to produce desired structures. And while different fabrication companies use different techniques, most rely on three basic processes: cutting, bending and assembling.

#### 3.1 Three Basic Processes

##### 3.1.1 Cutting:

The first process of fabrication is cutting. During this process, the metal fabrication company cuts one or more pieces of raw metal for use in the creation of a new metal structure or product. Whether it's steel, aluminum, iron or any other

common type of metal, though, cutting metal requires special tools. Some metal fabrication companies use torches to cut metal, whereas others numerical control (CNC) machines involving lasers or water jets. When finished, the company will have clean, appropriate-sized sheets or sections of metal with which to work.

### **3.1.2 Bending:**

After cutting raw metal, metal fabrication companies must bend it. Again, there are different ways to bend metal after cutting it. Some metal fabrication companies hammer the metal sheets or sections into the desired shape. Hammering can be done by hand, or it can be done using a machine (power hammering). Recently, though, many metal fabrication companies have begun using press brakes to bend their metal. This heavy industrial machine automatically presses metal sheets and sections into a specific shape when engaged. It essentially clamps the metal between a punch die, forcing the metal into the desired shape.

### **3.1.3 Assembling:**

The third and final process of metal fabrication is assembling. As the name suggests, this process involves assembling the metal sheet or sections into the desired finished product. Assembling is typically performed via welding, though other steps may be included in the process as well. In addition to welding, for example, metal fabrication companies may crimp seams, apply screws or other fasteners, and apply glue. After assembling the metal, the company will finalize the product before shipping and selling it to its customers. Metal fabrication is a driving force behind the country's ever-growing manufacturing sector. Although there are countless machines and techniques used by metal fabrication companies, must rely on a three-step process that consists of cutting, bending, and assembling. These three processes allow metal fabrication companies to transform raw metal materials into new products.

## **4. DESIGN CONSIDERATION**

Several structural design considerations should be considered for economical and efficient manufacturing. Many of these apply to other joining methods, and all apply to both subassemblies and the complete structure.

1. The device should be suitable for local manufacturing capabilities.
2. The attachment should employ low-cost materials and manufacturing methods.
3. It should be accessible and affordable by low-income groups and should fulfill their basic need for mechanical power.
4. It should be simple to manufacture, operate, maintain, and repair.
5. It should be as multi-purpose as possible, providing power for various agricultural implements and for small machines used in rural industry.
6. It should employ locally available materials and skills. Standard steel pieces such as steel plates, iron rods, angle iron, and flat stock that are locally available should be used. Standard tools used in machine shops such as hacksaw, files, punches, taps & dies; medium duty welder; drill press; small lathe and milling machine should be adequate to fabricate the parts needed for the dual-purpose bicycle.
7. It should make use of standard parts wherever possible.
8. The device should adapt easily No permanent structural modification should be made.
9. Excessive weight should be avoided, as durability is a prime consideration.

#### **4.1 DESIGN PROCEDURE**

1. Definition of problem.
2. Synthesis.
3. Analysis of forces.
4. Selection of material.
5. Determination of mode of failure.
6. Selection of factor of safety.
7. Determination of dimensions.
8. Modification of dimensions.
9. Preparation of drawings.
10. Preparation of design report.

#### **4.2 DESIGN CONSIDERATIONS**

- Strength.
- Rigidity.
- Reliability.
- Safety.
- Cost.
- Weight.
- Ergonomics.
- Aesthetics.
- Manufacturing considerations.
- Assembly considerations.
- Conformance to standards.
- Friction and wear.
- Life.
- Vibrations.
- Thermal considerations.
- Lubrication.
- Maintenance.
- Flexibility.
- Size and shape.
- Stiffness.
- Corrosion.
- Noise.
- Environmental considerations.

#### **4.3 AESTHETIC CONSIDERATIONS IN DESIGN**

- Appearance is an outward expression of the quality of the product and is the first communication of product with the user.
- Aesthetics is defined as the set of principles of appreciation of beauty. It deals with the appearance of the product.

##### **4.3.1 ASPECTS OF AESTHETIC DESIGN**

- Form(shape).
- Symmetry and shape.
- Continuity.
- Variety.
- Proportion.
- Noise.
- Contrast.
- Impression and purpose.
- Style.

- Material and surface finish.
- Tolerance.

#### **4.3.2 ERGONOMICS CONSIDERATIONS IN DESIGN**

- Ergonomics is defined as the study of the man - machine - working environment relationship.
- It aims at decreasing the physical and mental stresses to the user.
- Areas covered under ergonomics.
- Communication between man (user) and machine.
- Working environment.
- Human anatomy and posture while using the machine.
- Energy expenditure in hand and foot operations.

#### **4.4 MANUFACTURING CONSIDERATIONS IN DESIGN**

- Minimum total number of parts in a product.
- Minimum variety of parts.
- Use standard parts.
- Use modular design.
- Design parts to be multifunctional.
- Design parts for multiple use.
- Select least costly material.
- Design parts for ease of manufacture.
- Shape the parts for minimizing the operations.

#### **4.5 STANDARDIZATION**

- It is the process of establishing the set of norms to which a specified set of characteristics of a component or a product should conform.
- Example: Standardizing the shaft consists of specifying the set of shaft diameters and material.

##### **4.5.1 Objectives of standardization**

- To make the interchangeability of the components possible.
- To make the mass production of components easier.

##### **4.5.2 Objectives of the project**

1. To cater to the issue of competition in the mechanical industry the need for automation is assessed by all the industry.
2. To identify the key policy avenues considered to be appropriate to meet the challenge of sustainable manufacturing and packaging industry for the future.
3. To provide alternatives for industries aiming toward reducing human effort and improvement in material handling systems by implementing automation.
4. Sustainable and practical automation solutions for the future industrial environment.

##### **4.6 Objective of Work**

- To study ergonomics and problems of project
- To develop some concepts based on their needs.
- Different projects analysis and it's type and it's major uses.
- To achieve comfort and easy response concepts that satisfying most of the needs and which gives more suitable and also economical.
- To develop model of those concept.
- To evaluate the CAD model in real environment.

#### 4.7 Corresponding Author

Corresponding author should have an asterisk sign (\*) if possible, after the corresponding author's name. The Corresponding author (e.g., \*Corresponding Author) label should be appeared at the footnote section of the first page of the paper, Times New Roman in style and 10 in font size.

#### 4.8 Design drawings

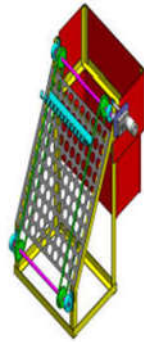


Fig 4.1 Isometric view

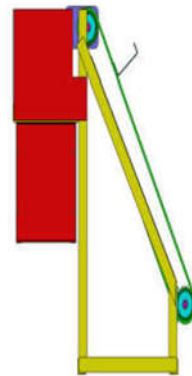


Fig 4.2 Side View

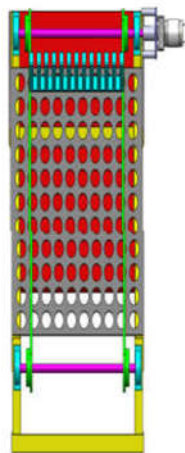


Fig 4.3 Front View

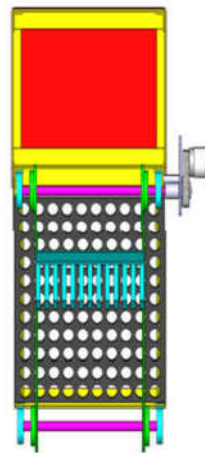


Fig 4.4 Top View

### 5. PARTS DESCRIPTION & COMPONENTS

#### Parts

1. Structure – L angles – 25x25mm Mild steel.
2. Drive shafts – dia – 12mm Mild steel (MS).



3. Bearing & housing – 10mm.
4. Sprocket.
5. Chain.
6. 12v dc Indian motor – 10rpm.
7. Indian motor mount – 4 mm MS.
8. Metal plates.

### 5.1 Parts description

1. DC Motor 12V – 30 rpm



Fig 5.1 DC Motor

#### Specifications:

|                        |                 |
|------------------------|-----------------|
| Operating Voltage      | 12 V DC         |
| No Load Current        | ≤220 mA         |
| No load Speed          | 10 RPM (at 12V) |
| Full Load Current (mA) | ≤1300           |
| Rated Current          | ≤4800 mA        |
| Rated Torque (Kg-cm)   | 90              |

### 2. Sprocket:

A sprocket is a fairly thin wheel with teeth projecting outwards from the rim, especially a wheel that drives or is driven by a chain.



Fig 5.2 Sprocket

|                         |       |
|-------------------------|-------|
| Sprocket Parameters     |       |
| No. of grooves/teeth:   | z=8   |
| Bore (mm):              | 6     |
| Steel:-                 | C43   |
| Weight (kg):            | 0.040 |
| Pitch diameter Dw (mm): | 20,91 |

|             |       |
|-------------|-------|
| Width (mm): | 12,00 |
| Material:   | Steel |

## 5.2 MILD STEEL PARTS

### 5.2.1 Mild steel linkages

It is used in fabrication service for any of metals such as steel (mild and stainless), aluminium and copper into table frames, chair frames, sign frames, all sorts of trolleys, point of display metalwork, benches, bench legs, office desk frames, cable management, partition screen feet, safety barriers and much more.

The mild steel comes from the carbon steel which has a low carbon alloy. The mild steel is a combination of a low amount of chromium, and molybdenum with low carbon as well. Because of the low carbon alloy, it is more weldable, ductile rather than the carbon steel. The mild steel is created magnetic and has a high amount of ferrite and iron. Mild steel has various characteristics like affordability, easy to weld, machinability, etc.

The mild steel plates offer excellent corrosion resistance property in the server's environments. The mild steel plates provide high resistance to nitric and chloride corrosion in sulfide solutions. These plates offer high strength, tensile, yield, mechanical strength, ductility, hardness, toughness, etc. It is worked very easily in a high-temperature application and show excellent resistance to chloride crossing and cracking stress.

The applications of mild steel plate are this plate is used in chemical and petrochemical industry, oil and gas process, marine industry, seawater application, gas process, food process, etc. It is widely used in constructions, automobile, nuclear plant, thermal plant, power generation plant, and many more. The plates have the following application as well such as- offshore structure, oil drilling company, shipbuilding, beverage, pulp, and paper industry, etc. Before delivering our product we apply various tests to check the quality of mild steel plates such as- mechanical test, chemical test, hardness test, toughness test, eddy current test, impact test, micro test, flaring test, flattening test, etc. We are provided best packing to avoid rust.

### 5.2.2 Mild Steel Plate Grades Like :

- IS 2062 GR A PLATES.
- IS 2062 GR B PLATES.
- ASTM A 36 PLATE.
- SS 400.
- A283 GR.C.
- A285 GR.C.
- DSQ PLATES.

### 5.2.3 Mild steel pipe

Mild steel is untreated and usually hot or cold rolled or in the case of pipe extruded while molten. Low carbon content and rusts in humid weather and can be bent easier than other steel. Its not black pipe used for gas, its not case hardened with cyanide, its not galvanized with zinc plating, its not blued like used for guns, its not cast like for cast iron furniture. Its the most affordable type of steel.

Mild steel pipe refers to the content of less than 0.25% carbon steel because of its low strength, low hardness and soft. It includes most of the part of ordinary carbon steel and high-quality carbon structural steel, mostly without heat treatment used in engineering structures, some carburizing heat treatment and other mechanical parts required for wear.

|                                  |   |  |
|----------------------------------|---|--|
| <b>Dimension &amp; Tolerance</b> | : | Mild Steel Pipes Dimensions – IS: 1239 (Pt I) – 2004, Equivalent to BS – 1387 / 1985 |
| <b>Specifications</b>            | : | IS – 1239 (Part -1) 2004, Equivalent to BS – 1387 / 1985                             |
| <b>Surface Finish</b>            | : | Black  |
| <b>Features</b>                  | : | High Strength, Corrosion Resistant, High Toughness and Deformability                 |
| <b>Length</b>                    | : | As per customer’s requirement (Maximum upto 7 meters)                                |
| <b>Features</b>                  | : | High Strength, Corrosion Resistant, High Toughness and Deformability                 |

#### 5.2.4 Mild Steel Pipes Application Industries

- Off-Shore Oil Drilling Companies.
- Power Generation.
- Petrochemicals.
- Gas Processing.
- Specialty Chemicals.
- Pharmaceuticals.
- Pharmaceutical Equipment.
- Chemical Equipment.
- Sea Water Equipment.
- Heat Exchangers.
- Condensers.
- Pulp and Paper Industry.

#### 5.2.5 Material Testing

Testing required ensure that all our materials go through strict quality tests.

- Mechanical Testing Such as Tensile of Area.
- Hardness Test.
- Chemical Analysis – Spectro Analysis.
- Positive Material Identification – PMI Testing.
- Flattening Test.
- Micro and Macro Test.
- Pitting Resistance Test.
- Flaring Test.
- Intergranular Corrosion (IGC) Test.

### 5.3 BEARINGS:

A bearing is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts. The design of the bearing may, for example, provide for free linear movement of the moving part or for free rotation around a fixed axis; or, it may prevent a motion by controlling the vectors of normal forces that bear on the moving parts. Most bearings facilitate the desired motion by minimizing friction. Bearings are classified broadly according to the type of operation, the motions allowed, or to the directions of the loads (forces) applied to the parts. Rotary bearings hold rotating components such as shafts or axles within mechanical systems, and transfer axial and radial loads from the source of the load to the structure supporting it. The simplest form of bearing, the plain bearing, consists of a shaft rotating in a hole.

## 6. WORKING

The devices are placed across drains in order that solely water flow through lower grids, waste like bottles, etc. floating in drains are upraised by teeth that are connected to a chain. This chain is connected by gear driven by motor. Once the motor runs, the chain starts to flow into creating teeth to raise up. The waste materials are upraised by teeth and are kept in a waste vessel. The lower shaft and wheel arrangement is placed for transporting the machine from one place to a different place, likewise, a gutter to a different gutter. The higher shaft and wheel arrangement helped for moving the machine throughout the cleansing method. This gutter and drain cleaner clean and move along for higher cleansing of gutter. Reduce, reuse, recycle. Reducing the amount of waste that has got to be transported and disposed of ought to be a primary goal of all municipal solid waste management programs. Waste ought to be recovered at the supply, throughout transport or at the disposal website. The sooner the separation, the cleaner the fabric, and, in the end, the upper its quality and its price to users. Incentives that integrate and foster the involvement of the informal sector—*itinerant collectors, microenterprises, cooperatives*—can be essential to improved waste diminution.

Floating in drains are lifted by a lifter which is attached with a screen. The screen is connected to the shaft which is driven by a chain with the help of a DC motor. When the motor runs, the chain starts the circulation, making the screen with the lifter to lift up waste, further it is connected to a horizontal screening and waste stored in a container. When the current is supplied to the motor, the motor starts to rotate. Rotary motion of the shaft is transferred to the sprocket by the help of a chain. By the help of the upper sprocket, the rotary motion is transferred to the lower sprocket using a chain. The lifter is used to lift the plastic waste from the drainage. They are placed between two chains. When the motor is switched on, the two shafts start to rotate, thus the lifter also starts to rotate. The lifter enters into water and lifts the plastic waste from the water along it. It carries the waste and drops the waste on another assembly of sprocket, chain, and shaft which moves horizontally. The horizontally assembly stores the waste to the container from where the plastic waste can be removed by labour.



Fig 6.1 Working Model

## 6.1 RESULTS

This system is Designed, Fabricated successfully and also tested. It works satisfactorily. We hope that this will be done among the most versatile and interchangeable one even in future. Thus we can able to obtain following through Automated Gutter Cleaning system.

## 7. CONCLUSION

In the treatment system of drainage, waste water control by the machine and the collecting bin to achieve automatic control of drain/gutter cleaner treatment. Drainage from domestic and industries is treated through this project to meet the national emission standards, with stable operation, low cost and good effect.

The cleaner functions more effectively during the heavier rains which has more volume of running water with

garbage and high velocity. Risk of Labours catching infections or poisoning due to large amounts of waste and

chemicals will be reduced. Automation is a technology concerned with his application of mechanical, electronic and computer based systems to operate and control production. This system is used To Operate Automated Gutter Cleaning System.

This project may be developed with the full utilization of men, machines, and materials and money. Also we have followed thoroughly the study of time motion and made our project economical and efficient with the available resources.

The problem of drainage blockage due to plastic waste and other solid waste can be eliminated by using of ADCS system. Cleaning of drains/gutters has always been a problem. Labours cleaning gutters & drain seems unethical and also leads to a high risk of them catching infections or poisoning due to large amounts of waste/chemicals in them. So here we provide a fully automated drain gutter cleaning mechanism to tackle these modern day gutter jamming issues. Our system uses an automated gutter/drain cleaning system that lets fluids flow through it but catches large solid waste like bottles & plastic and accumulates it. So gutter cleaners need to just clean these gutter cleaning systems installed at points instead of cleaning entire gutter floors.

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