

## AUTOMATIC DRAINAGE CLEANING MACHINE

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**Abstract—** Now a days automation plays vital role in industrial applications. Yet the proper disposal of sewage from industries is still a challenging task. Drainage pipes are been used for the proper disposal and unfortunately there may be loss of human life while cleaning the blockages in the drainage pipes. In order to overcome the problems and to the rivers from pollution we are implementing “Automatic Drain Cleaning Machine”.

**Keywords-** Automatic drainer, waste management..

### I. INTRODUCTION

Automatic drainage water cleaning and control system using auto mechanism proposed to overcome the real time problems. With the continued expansion of industries, the problem of sewage water must be urgently resolved due to the increasing sewage problems from industries of the surrounding environment. Our proposed system is to cleaning and control the drainage level using auto mechanism technique. 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.Second Important thing is waste management system by which worker can maintain all his health and work good through application maintain that reporting worker don't need to wait and get in to drainage. Smart Drainage Cleaning System proposed to overcome the real time problems. With the continued expansion of industries, the problem of sewage water must be urgently resolved due to the increasing sewage problems from industries of the surrounding environment. The waste and gases produced from the industries are very harmful to human beings and to the environment.

### II. LITERATURE REVIEW

IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE) published a paper in 2018. Titled “Design and Fabrication of Semi-Automatic Drainage cleaner”. This paper was published by Utkarsh P. Bhakare, Darshan A. Yatte, Dhananjay B. Kumbhare the study was made on handling the blockage of drain in effective manner. As whole system is providing solution over the total cleaning of drain line not only floating material but also waste accumulates at the bottom of drain. [1]

International conference on recent innovation in science and Engineering published a paper in April-2018. Titled “Automatic drain and gutter cleaning system”. This paper was published by prof. satyaprakesh, prof. Rahul Shrivastav, prof. Shatrudhan Kumar Yadav the study was made on design of the motor, roller chain and sprocket, lifter and the collecting bin and wheel to achieve automatic control of sewage waste water treatment also on the volume of running water with garbage and high velocity during heavy rains. (ISBN: 978-93-87793-15-6).[2]

International Journal of Scientific Research in Science, Engineering and Technology published a paper in 2018. Titled “A Review Paper On Automated Drainage Cleaning System ”. this paper was published by Harshvardhan Baria, Mackwan Akash, Nirav Makwana, Raj Parmar, Mr. Sharad chhantabar the study was made on design the mechanical drainage system.[3]

### III. PROBLEM STATEMENT

In today's era automation plays a very important role in all industrial applications for the proper disposal of sewage from industries and household is still a challenging task. Drain pipes are used for the adequate disposal of waste and unfortunately sometimes there may be a threat to human life during the cleaning of blockage in the drain pipes or it can cause serious health issues because of the pertaining problems like malaria, dengue, etc. In order to overcome this problem as well as to save human life we implement a design

### IV. COMPONENT DESCRIPTION

Motor: Motor is an 12v DC motor, 50 watt power, 500 rpm, foot mounted.



Figure.1.DC Motor (12V)

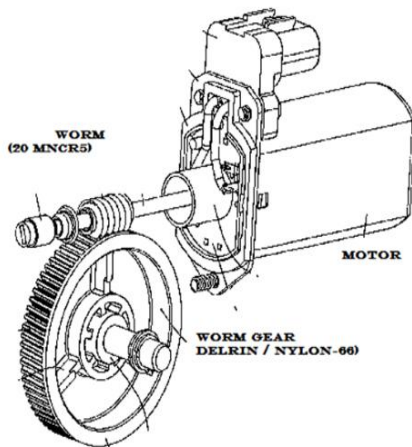
**Pinion shaft:** Pinion shaft is mounted at its square end on the worm gear box output side, whereas the pinion is held on the other side of the pinion shaft.

**Main shaft:** Main shaft is held at one end in ball bearing 6201zz in the main bearing housing which is welded to the base frame. Whereas the side stand is welded at other end of shaft.

**Holder bracket:** Holder bracket is a standard forged part which hinges the side stand at one end, and spring arrester pin-1 is welded at the other end. This pin holds one end of the helical tension spring. The holder bracket is welded to the boom.

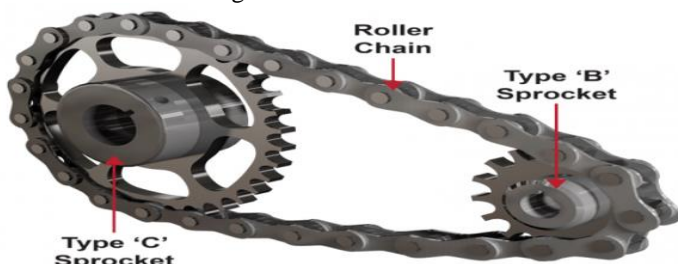
**Base Frame:** The Primary base frame is the base element provided with castor wheels. The primary base is made of mild steel square tube and mild steel plate. It supports the entire assembly of the drainage cleaner.

**Motion system:** The motion system comprises of chain drive system operated using a gear drive. Gared motor drives the main shaft via gear system. Gear has teeth where as the motor pinion.

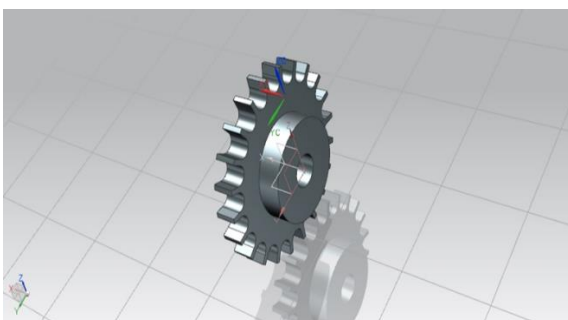


**Figure 2. Motion transmission arrangement**

**Chain drive:** Chain drive is 1/2 inch chain with 22 teeth sprocket wheel directly purchased from market. Chain drive is used to move the lifting mechanism.



**Figure 3. Chain Drive**



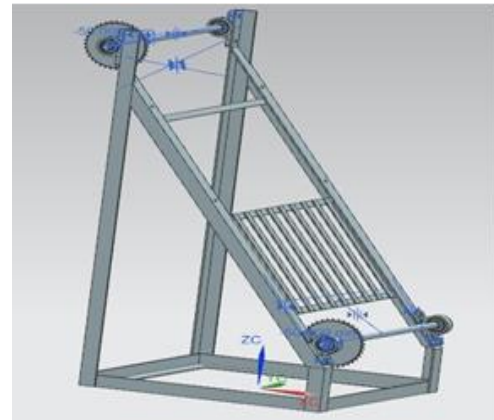
**Figure 4. Sprocket**

**Bearings:** Bearings are single row deep groove ball bearing.

**Dirt lifting tray:** the dirt lifting trays are made of aluminium.

**Control circuit:** DP / DT switch is used to operate the motor along with a push button.

**Frame:** This is base of the machine which enables transportation of the set-up or when applied with motorized motion can enable automatic translation while desired in motion.



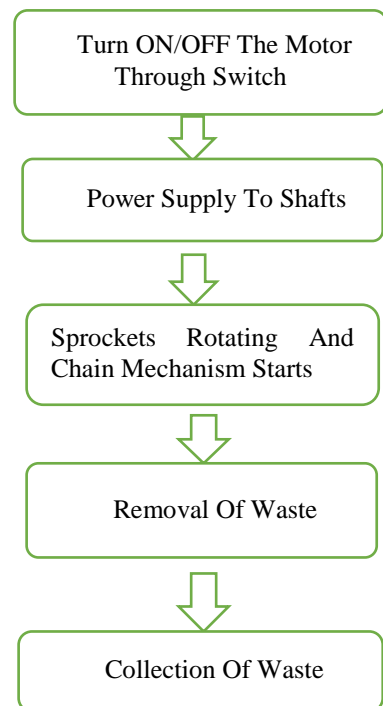
**Figure 5. Automatic Drainage System**

### V. WORKING

DP/DT switch has a central OFF position, when operated to one of the ON positions, the motor will rotate in clockwise direction, operating the worm gear box and thereby the pinion shaft. The pinion rotates to rotate the gear and thereby the main shaft and stand in clockwise direction taking the stand to close position.

When other ON position is operated the motor will rotate in counter clockwise direction, operating the worm gear box and thereby the pinion shaft. The pinion rotates to rotate the gear and thereby the main shaft and stand in counter clockwise direction taking the stand to open position. The trays move from top to bottom to carry the dirt from the drain to the collection bin at the end of the other side.

### VI. METHODOLOGY



## VII. FUTURE SCOPE

We gathered information and equipment required for the Automatic Drain cleaning system. Studied the construction and principle of ADCS.

To Fabricate the ADCS and to test its working. We hope that this will be among the most versatile and interchangeable in cleaning system.

## VIII. ACKNOWLEDGEMENT

With immense pleasure, we are presenting this research paper .we wish to thank all the people who gave the endless support right from the stage the idea was convinced.

We are heartily thankful to prof. S.S.Shirbhate whose encouragement, guidance and support from the initial to the final level enabled me to develop an understanding of the subject. This research paper would not be possible without help of our internet department and library department who helped me gathering the information from various sources.

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