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Fabrication of Automatic Water Tank Cleaning and Sediment Water Removing Mechanism

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ABSTRACT: As everyone knows the importance of water in day-to-day life of every creature in the world. Human uses more water in their day to day life for many other purposes rather than drinking. The water available on earth surface is under the ground, from river, lakes, dams on rivers, streams, etc. Due to this the water needs to be stored for few days for routine purposes. The water storing tanks are used for the same of different capacities according to use and availability of water. RCC tanks, plastic tanks, etc. are used for storing water in it on the top most floors of buildings. The tanks are placed on top most floors for supply of water to below floors by gravity force without any external machine to supply water (e.g. Pumps).

When there is excess sunlight reflection on the sides of water tank, the light that comes through cause algae to row on wall of tank. When algae grow in tank the water is harmful to health of human/creature. Due to this water tank cleaning is required to clear this algae formation. The traditional method of cleaning this tank wall is by hands and brushes/cloths which take a lot of time and is an exhausting job.

KEYWORDS: Plastic tanks, sunlight reflection, gravity force, algae formation.

I. INTRODUCTION

Water is a precious resource that is essential for life. It is used for various purposes, including drinking, washing, and agriculture. One of the most common sources of water is from water tanks. However, over time, water tanks can accumulate sediment, dirt, and other impurities, which can affect the quality of the water. In addition, the growth of algae and bacteria in water tanks can pose a health risk to humans and animals. Manual cleaning of water tanks is a labour-intensive and time-consuming process, which requires the tank to be emptied, scrubbed, and refilled with fresh water. This process can be particularly challenging in large tanks or those that are located in hard-to-reach areas.

The system is designed to automatically clean and remove sediments from water tanks, ensuring that the stored water remains clean and safe for consumption. The mechanism consists of a series of components including a motor, a pump, a filtration system, and a control system. The motor drives the pump, which is used to circulate the water within the tank. The filtration system removes sediments and other impurities from the water as it circulates, while the control system ensures that the entire cleaning process is automated and efficient. The system can be easily installed in existing water tanks, making it a cost-effective and practical solution for both residential and commercial properties. It also eliminates the need for manual cleaning, which can be time-consuming, labour-intensive, and potentially hazardous. To address these challenges, there is a need for an automatic water tank cleaning and sediment water removing mechanism that can efficiently remove sediment and other impurities from water tanks without the need for manual intervention.



The proposed mechanism would be designed to automatically clean and remove sediment from the water tank periodically, using sensors and actuators to detect the level of sediment in the tank and activate the cleaning mechanism as needed. This would help to ensure that the water remains clean and safe for use, while reducing the need for manual intervention and maintenance. Overall, the Automatic Water Tank Cleaning and Sediment Water Removing Mechanism is a reliable and efficient solution for maintaining clean and safe water storage tanks, ensuring that the water supply remains healthy and hygienic for consumption.

II. PROJECT IDEA

Many people face issues with the accumulation of sediment in their water tanks, which can lead to health hazards and reduce the quality of the water. Therefore, developing a solution that can automate the cleaning and sediment removal process can be highly beneficial. Manual cleaning of water tanks can be time-consuming and labour-intensive. By creating an automatic mechanism for cleaning and sediment removal, the process can become much more efficient and require less human intervention. Overall, the project on the fabrication of an automatic water tank cleaning and sediment water removing mechanism has the potential to be highly beneficial for both individuals and communities. It can address a common problem, improve efficiency, provide environmental benefits, and present a technical challenge.

III. METHODOLOGY

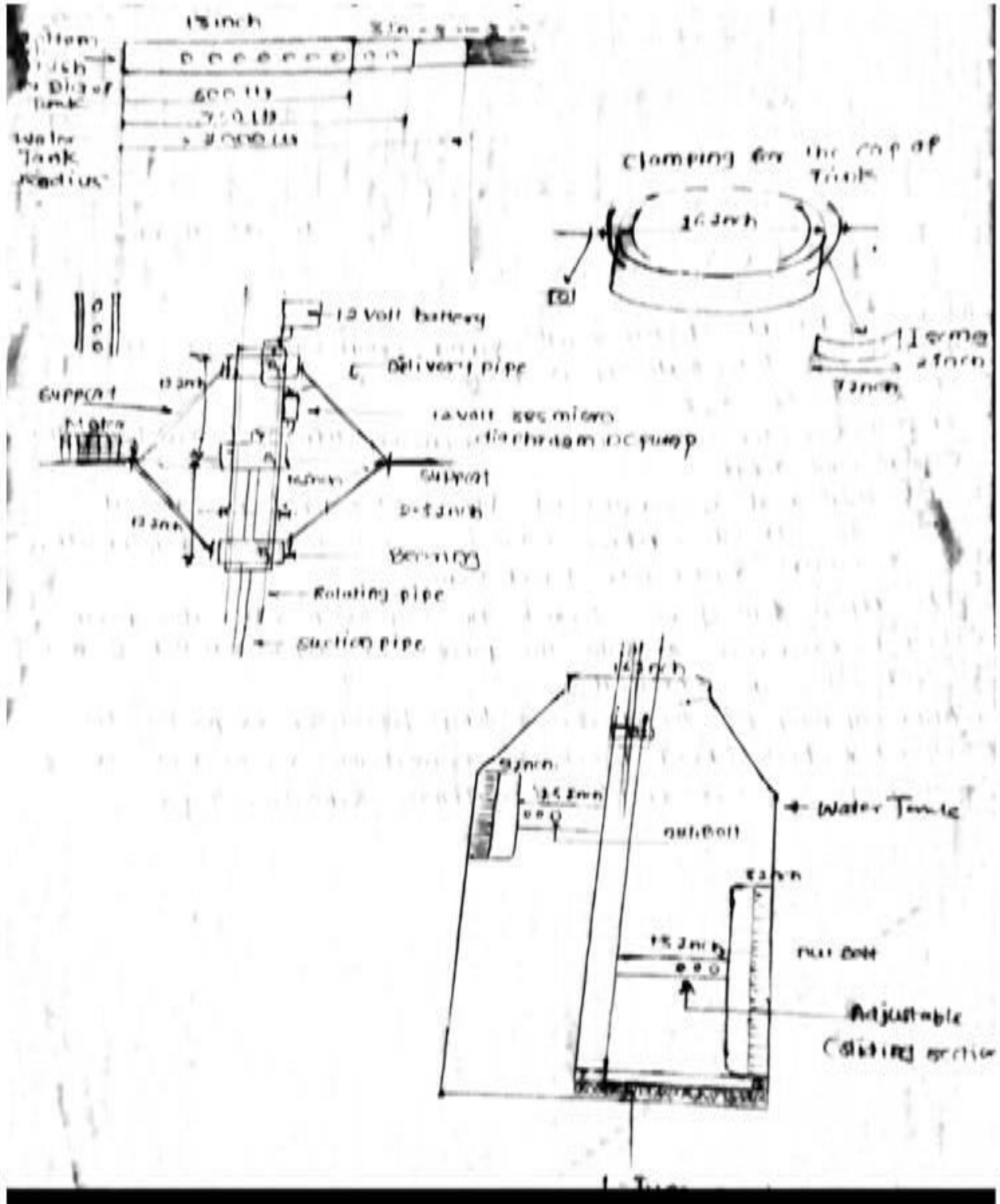
Firstly whole water is removed from the tank. Detergent powder is then sprayed on the inner wall of the tank for easy removal of dirt. The whole system is inserted in retracted position into the tank. The four bar linkage mechanism is then adjusted according to tank diameter in such a way that brush at the end of the shaft touches the bottom of tank. Now the motor is switched on, the four bar linkage starts rotating along with the shaft. This causes scrubbing of inner walls of tank by the brush attached to ends of linkage. For cleaning upper portion of tank the whole mechanism is reciprocated along the guide ways with the help of handle connected to rack and pinion arrangement. In this way the tank gets cleaned within minimum time. Vacuum pump which is fitted with mechanism used for removing contaminated water from tank after cleaning process.

WORKING

The working of a system is shown as seen in the above methodology, the very first step is the removal of water. The water is removed from the tank to initiate the process. After the water is removed, the machine is inserted into the tank. The machine should be carefully inserted and check whether it is placed properly inside the tank. Now when the machine is inserted and placed properly, one should open the folding and start cleaning the tank. It has to open in such a way that the brushes are in contact with the surfaces of the tank. After the tank is cleaned properly, close the folding and remove the machine from the tank. Remove the dirty water which was being cleaned from the tank. After purification, fill purified water with inside the tank and then clean the tank cleaning machine once more properly. Repeat the same method a few times. Vacuum pump which is fitted with mechanism is used for removing contaminated water from tank after cleaning process.



IV. CONSTRUCTIONAL DIAGRAM





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V. RESULT

In this project, An AC motor of approximately 0.35HP operates at 75 RPM is used to rotate the shaft at a fixed speed. The Shaft is installed at the motor & T-fashioned pipe the motor is connected to the pinnacle of the tank, after the whole configuration, the motor rotates alongside the brushes the internal surface of the tank walls. Hence the automated tank cleansing system works with inside an equal manner as a wall cleaner .Finally the water drainer through the opening of the tank through the usage of a pipe.

VI. CONCLUSION

In this work, the automatic water tank cleanser become efficiently evolved to clean the water tanks with the usage of rotating brushes. This approach is more powerful and more secure than the traditional techniques of cleaning which takes much less time and human effort. Water splashes anywhere alongside the dividers within the tank and the rotating brushes clean the external separators. The water tank cleaner becomes used to clean the water tanks through the usage of rotating brushes. This technique becomes extra powerful and secure than the traditional methods. This technique is successful to clean water tanks with much less time and human effort. The superior version for tank cleaning systems is cleaning the tanks for that reason making the operation user-friendly. The running prototype is promising each in terms of supplying cleanliness and avoiding excess manpower. The destiny scope of the mission is to increase it with an auto-feeding mechanism through which the manpower involved in feeding receives removed.

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