

AUTOMATIC WATER TANK CLEANER FOR ROUND OVERHEAD TANKS EMPLOYED IN HOUSES, INDUSTRIES AND MUNICIPALS

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Abstract - 3.4 million people die every year around world due to the water related issues some part of this cause is also because of drinking water stored in an uncleaned overhead tanks . Actually the water storing tanks are made of material which normally open to the atmosphere produce bacterial even though it is not harmful it contaminate water stored in overhead tanks it can be cleaned by a human but an effective cleaning can not be achieved and he may also affected by inhaling the gas out from bacteria produced, According to recent statistics from health organisation storing of water in tanks must be periodically monitored and kept cleaned . Majorly the municipal tanks storing water not even monitored and yearly cleaning is also not undertaken .The above points make reasons for this project.

Keywords - *Cleaning of water tanks, arm fixed, gear motor, gi pipe, nylon brush, ultra sonic depth sensor, suction pump.*

I. INTRODUCTION

According to survey done, says million people dies annually because of water related diseases. Were it seems drinking water storing tanks uncleanliness also a hidden issue. This project have been planned to construct an automatic tank cleaner similar to drill done over ground. This automatic cleaner can be adjustable according to the height and diameter of the tank using rack and pinion setup . There is an arm fixed contains a brush at the end. The arm fixed is rotatable (360⁰). When the arm rotates water from the inlet valve will splash the tank, at the same time brush starts rotating over the circumference of the tank where it simultaneously reciprocates After the process is over the water is exhausted through the suction pipe.

A. Problem Defined

People got illness even die every year around world due to the water related issues some part of this cause is also because of drinking water stored in an uncleaned overhead tanks . Actually the water storing tanks are made of material which normally open to the atmosphere produce bacterial even

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II. DESCRIPTION

A. Methodology

Automatic water tank cleaner can be adjusted according to the height and diameter of the tank. There is an arm fixed at the top contains a brush at the end and using coupling it is coupled in the frame. The arm fixed is rotatable (360⁰) and the rotation is obtained by using gear motor which can be operated to get both clockwise and anti clockwise motion . When the arm rotates water from the inlet valve will splash the tank which is mixed with ingredients as the arm is a hollow gi pipe it is easy to transfer to the nozzle fixed about the bottom surface and at the angle of 70 degree, at the same time brush starts brushing the circumference of the tank . When the brush reaches the bottom surface it is notified by using ultra sonic depth sensor it is connected to a digital board where the depth is displayed . After the process is over the water is exhausted through the suction pump.

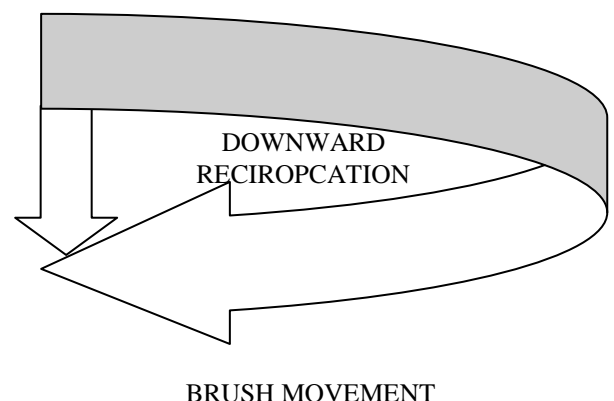
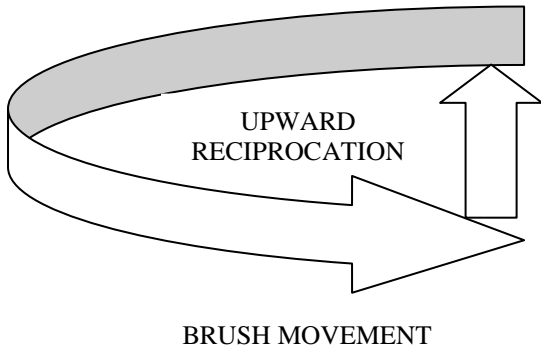


FIG. 2.1. DURING CLOCKWISE MOTION



C. Flow chart

FIG.2.2 DURING ANTICLOCKWISE MOTION

B. Components

- FRAME
- COUPLING
- GEAR MOTOR
- THREADED GI- PIPE
- NYLON BRUSH
- NOZZLE SETUP
- ULTRASONIC DEPTH SENSOR

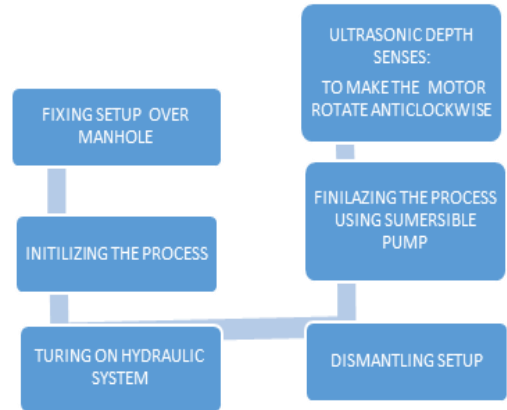


FIG 2.3. NYLON BRUSH



FIG.2.4. NOZZLE SETUP

III. MODEL

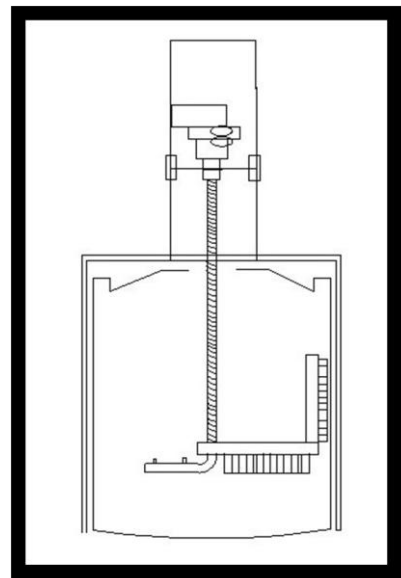
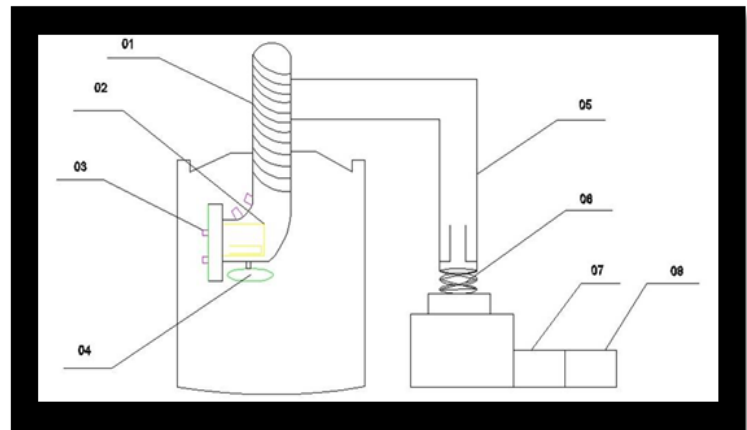


FIG 3.1. SCHEMATIC DIAGRAM

v. FUTURE WORK



FIG.3.2. REAL TIME IMAGE

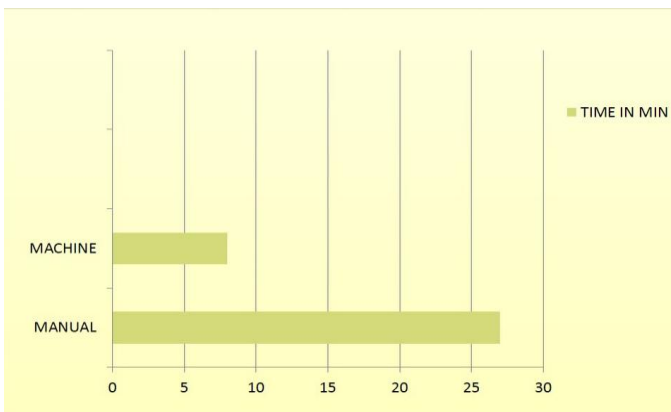


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|-----------------------|---------------------------------------|
| 01-Threading, | 05-Arm, |
| 02-Push rod, | 06-HydraulicJack, |
| 03-Water outlet pipe, | 07-motor, |
| 04-Cleaning Brush, | 08-Normalwater storage (for cleaning) |

VI. ADVANTAGES

- Simple construction
- Easily dismantlable parts ,
- Ease of transportation,
- Consumes less power for driving the whole system,
- Ease of cleaning ,
- Reducing of effort in cleaning.
- Prevent from inhaling harmful gas
- Low cost
- Replaceable parts
- Availability of parts in market

IV. GRAPHICAL REPRESENTATION



Graph has been drawn between the nature of cleaning with their respective time.

VII. APPLICATION

It is not mandatory to fix it to the tank it can be made as a mobile cleaning service

1. House hold overhead tanks
2. Industrial overhead tanks
3. Municipal tanks

VIII. MACHINE AND CLEANING COST

S.NO	DESCRIPTION	COST
1.	SYSTEM COST	5500
2.	CLEANING COST	550

IX. CONCLUSION

The aim of this system is to reduce the human effort involved in the concern. And it has been designed to perform the required task in shortest time available. The project states a simple construction and easily dismantlable parts, Ease of transportation, Consumes less power for driving the whole system, Ease of cleaning, Reducing of effort in cleaning.

It is not mandatory to fix it to the tank it can be made as a mobile cleaning service ultimate aim of the project to provide a clean and uncontaminated water to the environment.