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WATER TANK CLEANING MACHINE

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Abstract: - Today in urban area for water management water tanks are used. Today manual cleaning of water tank is carried out in urban area. Purpose of this project is to clean the domestic water tank with the help of mechanical system. The mechanical system consists of two main mechanisms which are gear mechanism and rack – pinion mechanism. Rack and pinion system which is used to reciprocating whole mechanical system up and down according to the height of domestic tank. External pipe is shrunk on internal shaft .One end of this shaft is connected to bottom brushes and another end is connected to motor through bevel gear. When A.C. motor is switch on the external pipe moves up and down at the same time main shaft rotates and due to its rotation brushes cleans the inner surface of tank. the achievement of this project is reduction of human effort and save the time. Because there will be harmful disease for the person who will go inside and it will affect the health as well as other human being who consumes water from tank.

Keywords :- A.C. motor, water tank, main shaft, brush, rack and pinion ,bevel gear.

I. INTRODUCTION

The ground water level is dipping every year. A lot of algae and metallic elements precipitate out and stick to the water tank. This can eventually clog pipes and results in accidents. Which results damages the skin and it will effect on the health.

This method is the traditional method of cleaning the water tank.Where a labour would get into water tank and scrub the wall. This method is time consuming and more effort to clean the water tank Water tank cleaner enables to save time and money.

Water tank cleaner is best suited for building install with water tank. Tank cleaner equipment cleans water tank within minutes. There are different type of water tanks are available in the market, each suitable for different set of requirement regarding material, functioning and size.

II. BASIC COMPONENTS

1) A.C. MOTOR

An electric motor this an electromechanically device that converts electrical energy into mechanical energy. It is single phase, single wiring, 220V, 2.5A and produces power of 0.5 HP and frequency of 50 Hz and rotates the shaft at the speed of 450 rpm.

Fig.1. A.C. Motor

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2) MAIN SHAFT

The shaft used is a solid shaft. The diameter of solid shaft is 20mm. The material used is mild steel. It is for transmitting torque and rotation to the shaft with the help of A.C. motor.

Fig. 2. Main shaft

3) BEVEL GEAR

Bevel gear is used for transmitting the power into perpendicular direction. It provides motion from motor to the main shaft. Two gears are meshing with each other which having 16 teeth.

Fig.3. Bevel gear

4) GEAR BOX

A transmission is a machine in a power transmission system, which provides controlled application of the power. Often the term transmission refers simply to the gearbox that uses the gears and gear trains to provide speed and **t**orque conversions from rotating power source to another device.

5) BRUSH

Brushes used in the equipment to clean the dirt presents on the walls of tank. Brushes used are of microfiber materials which are smooth for cleaning.

Fig.5. Brush

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III. PROCEDURE

First we make the support by using nut and bolts for water tank cleaning machine. Then whole mechanical equipment is inserted into the tank through the opening diameter of tank. After completion of whole arrangement the power supply is start from motor. Upper A.C. motor gives motion to the bevel gear and shaft starts rotating. Reduction gear box is used for increasing power of lower A.C. motor by using pulley type arrangement. Lower A.C.motor gives motion to the rack and pinion mechanism, due to that pipe moves up and down. Finally due to rotation of main shaft brushes which are connected to the shaft move away from shaft and rotates due to centrifugal action. By using forward reverse switch brushes completing cleaning from bottom to the top.

Fig.6.A. Water Tank Cleaning Machine

Fig.6.B. Cleaning of water tank

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IV. CONCLUSION

This project demonstrated the use of brush and gear mechanism to remove the dust and dirt from inside of the tank and prevent the water from contamination as well as human from illness. However there is still lot of research which can be carried out on this mechanism in the future to make it fully fledged solution for the purpose of water tank cleaning.

Thus from his project we can conclude that this machine can be used for the purpose of cleaning water tank to remove dust and dirt and can be used more effectively as compared to manual labour.

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