

FABRICATION of SEMI-AUTOMATIC DISH WASHER MACHINE USING TUMBLER MECHANISM

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Abstract- Dish washing work is done by hand. This paper discusses about reducing the human efforts, save energy and save water. It save the time of washing utensils and large amount of work can be done in lesser time. Automatic dish washing machine is more costly than semi-automatic dish washer machine and it is not affordable for middle class family. In conventional and automatic dish washing process large amount of water, electric energy and human power is used. In twenty first century work are going too fast, in our day to day life we can see that in marriage ceremony, restaurants, big hotels, and any big programs where large kitchen are used workers are clean the dishes by hands and lots of money is spend to complete the work. For reducing this entire semi-automatic dish washer machine is introduce to whole world.

Keywords-- Tumbler, Motor, Utensils rack, Regulator, V Belt Pully.

1. INTRODUCTION

The main purpose of fabrication of semi-automatic dish washer machine is to consuming time and save energy. By using this mechanism we clean the utensils very fast. This machine is manufactured at low cost as compare to automatic dish washing machine and it has low maintenance cost. By using this machine we consuming water and clean more dishes automatically. For washing dishes we used the chemical product such as detergent or soap and it is harmful for human skin. The semi-automatic dish washer machine is manufactured for solve all this problems. This machine needed less energy as compare to automatic dish washing machine because this machine has less no. of working parts. We can use this machine in big hotels, Restaurants, Marriage ceremony and big programs where more no. of dishes used. This machine is easy to operate and affordable to middle class and low class families. Our country is not getting enough benefits from automation and the reason behind this limitation is less Knowledge about automatic products. However this fear is not seen in the product which does not involves much Sensors, Complex Electronic Circuits, and simple easy User Friendly devices. This automatic dishwasher is used on mass scale in foreign countries however the same is rarely seen in our country.

1.1 NEED

As we whole realize that plate washing is adaily movement over the globe which includes a considerable measure of vitality to achieve physically or mechanically. Remembering this point we have to plan and manufacture a dish washer i.e. productive and simple to work. Additionally it is expected to lessen the cost and vitality utilizations, with the goal that this dish washer can without much of a stretch reasonable to ordinary citizens. In India dishwashing was generally done by house servants however in present day India, getting housemaids is ending up increasingly troublesome as the days pass by. So to answer the inquiry 'how great is a dishwasher in India?' or 'how compelling is dishwasher in India?', we need to state a dishwasher has now turned into a need instead of an extravagance for most by far of experts in India. A dishwasher for Indian cooking is exceptionally useful in light of the huge number of cooking pots and skillet utilized as a part of our Indian kind of cooking and furthermore the numerous dishes utilized for eating the numerous assortments of curries and chutneys. Dishwashers have been exceptionally effective in India with offers of dishwashers in India becoming exponentially finished the most recent quite a long while.

2. CONSTRUCTION

In this machine the tumbler based above the hub which is connected to driven pulley and AC motor is connected with driver pulley and both the pulleys are connected with v-belt. The lid placed above the tumbler and it hanged with the help of side rod which are mounted on the stand. Rack is connected with lid for supporting the dishes.



Fig.1:-Dish Washer Machine

3. WORKING PRINCIPLE

The utensils placed in the rack, stays still and the tumbler rotates with the help of induction motor because of which water and sponges are rotate inside the tumbler which cleans the utensils. This is how the project is works.After use of the machine we can drain the water from the tap which is connected to the bottom of the tumbler.

4. COMPONENTS

- a. AC Motor (induction motor)
- b. V belt pulley
- c. V belt
- d. Tumbler
- e. Regulator
- f. Driver pulley (Small Pulley)
- g. Driven pulley (Big Pulley)
- h. Stand
- i. Plate Rack

a) AC Motor

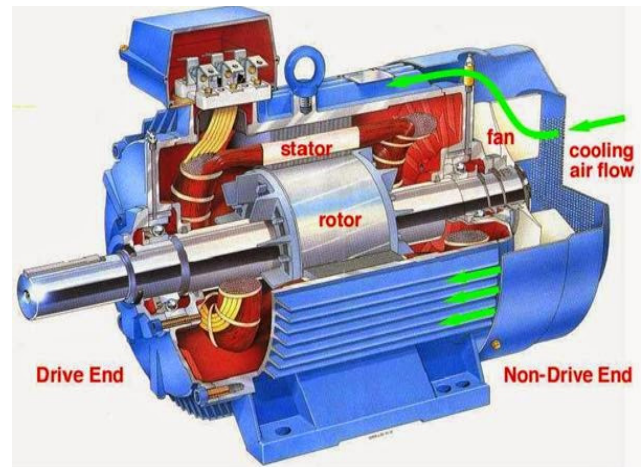


Fig.2:- AC Motor

A.C. and D.C. motor serve a similar capacity of changing over electrical vitality into mechanical vitality they are fueled, developed and controlled in an unexpected way. The most fundamental distinction is the power source. A.C. motors are controlled from rotating current (A.C.) while D.C. motors are controlled from coordinate current (D.C) for example, batteries, D.C. control supplies or an AC to DC control converter. D.C wound field motors are developed with brushes and accumulator which add to, as far as possible the speed and more often than not diminish the future of brushed D.C. motors. A.C. motors don't utilize brushes; they are exceptionally tough and have long futures. The last fundamental contrast is speed control

Properties of A.C. motors are as follows –

- Low support
- Longer life
- User-accommodating
- It is utilized for course mate
- Corrosion free
- Low support needs
- Corrosion free
- Low maintenance needs

b. V-Belt Pulley

A belt and pulley is portrayed by at least two pulleys in like

manner to a belt. This takes into account mechanical power, torque, and speed are transmitted crosswise over axles. On the off chance that the pulleys are in various distances across, a mechanical preferred standpoint is figured it out.



Fig.3:- V-Belt Pulley



Fig.4:- V-belt

c) v-belt

A belt is of versatile calfskin material used to interface no less than two turning shafts mechanically, which are parallel. Belts can be used as a wellspring of development, to transmitted power capably or and to track relative advancement. Belts are hovered on completed pulleys and it may have a turn between the pulleys, and the posts no ought to be parallel. Between two pulley structure, the belt can drive the pulleys routinely one way the same if on parallel shafts

d)Tumbler

It is a main part of project a conical shape used for rotating the water and spinaches. The size of tumbler of upper diameter is 49(cm) and bottom (39).



Fig.5:-Tumbler

e)Regulator

The fundamental motivation behind a present controller is to gives variety of speed and control the speed. In programmed control a controller is a gadget which has the capacity of overseeing or keeping up a scope of qualities in a machine. The quantifiable property of a gadget is overseen intently by indicated conditions or a proper set esteem; or it can be a variable as indicated by a foreordained course of action.



Fig.6:- Regulator

f)Big pulley

A pulley is a wheel on a hub or shaft that is intended to help the tumbler on which it serves to pivots the tumbler.



Fig.7:-Big pulley

g) Stand

The stand is used for supprt the motor ,tumbler and pulley they are mounted on it.



Fig.8:-Stand

h)Plates rack

In the rack the number of plates are installed



Fig.9:-Plates rack

5. LIERATURE REVIEW

1. .Hook D. Parker, HermelinkA. American Council for an Energy Efficient Economy, Washington, DC, August 2008. This Diary helps for estimations of three late vintage

dishwashers are altogether different efficiencies demonstrating that while they generously more proficient than more seasoned dishwasher machines, those tried will in any case utilize electric protection components for supplement warm ,notwithstanding when provided by sun based water warming framework delivering boiling water.

2. .Shilpa N.Dehedkar- “Design of basic model of Semi-Automatic Dishwasher machine”. (2016):This paper gives investigation of the Self-loader Dishwasher machine. It likewise expresses that system fused in this model for procedure of washing the dish. In this exploration the dishwashers work with help of DC (Direct Current) engine, widespread engine, Transport line for time delay.

3. Shaila S. Hedaoo- “Design and Fabrication of Semi-Automatic Dish and Utensil washing machine. ". This paper is discusses about the target of Self-loader Dishwashing machine is to lessen the cost of completely programmed dishwashing machine and giving great execution. It requires least vitality and less water utilization.

4. PranaliKhatake- “Design of gears in semiautomatic dishwashing machine”. This paper talks about outline of apparatus in self-loader dishwashing machine. The outcome demonstrate that in India self-loader dishwashing machine are utilized than completely programmed dishwashing machine as it is modest, ideally equips are utilized as a part of this self-loader dishwashing machine with the belt drive for better life and high proficiency.

5. Dhale A. D.-“Design and Development of semiautomatic dishwasher”.This paper examine about the plan, and assessment of dishwashing machine. The limit of machine was 21 plates for every min (i.e. 1880 plates for each hour). The outline dishwasher is exceptionally productive and simple to work.

6. J. G. Gochran- “Dishwashing machine”. This paper gives brief thought portray about enhancing of dishwashing machine. It is identified with change in machine washing a dishes in which nonstop stream of either cleanser pop or clean water is supply to case holding the rack or confine high temp water is provided to box is pivot in order to bring the more noteworthy part there of submerged.

7. International Journal for Scientific Research and Development Vol.4,2016 | ISSN (online): 2321-0613. This diary clarify that utilizing Electrifies press material for internal and external part, the general weight of the gathering is likewise decreased. The limit of machine is to wash 24 bits of supper set at once by utilizing two rotational fly controlled by single pump utilizing parallel association.

8. International Journal for Scientific Research and Development| Vol. 3, Issue 11,2016 | ISSN (online):2321-0613. This Diary speaks to the adjusted plan of utensils programmed washer machine. In this, the movable

transport containing utensils has a tendency to pivot, and passing these utensils under three area scouring, water sprinkler and more clean. The dishwasher has made cleaning and drying dishes much effectively and all the more proficiently. Transport is turned by utilizing engines. This prompts improving the plan more straight forward than the present dishwashers.

6. CONCLUSION

This utensils washer can be utilized to wash most likely any sort of utensils neatly and without breaking a sweat As the engines chose devour significantly less power so it will be the power compelling. Additionally there is a need of a machine which washes the utensils naturally. Physically washing is normally finished with icy water while an utensils washer utilizes heated water to wash the utensils; this executes unsafe germs amid the washing cycle.

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