Fabrication of Water Dispensing System Using Different Coins

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Abstract*— Automated coin based water dispensing system has advanced technology and these machines are used to the mankind by different coins. The machine is operated by microcontroller and sensor. The water dispensing system is works on sensor signal which is send to the microcontroller. The system use infrared sensor (IR) has a coin detector that is used to sense particular coin and send information to microcontroller about valid coins, then it starts the motor to pour water in glass using motor as long as certain quantity of water in the glass. Here we save some water in water dispenser system for feature. This type technology is also used for cool drinks and milk etc..

Keywords*— Water dispensing system, Water pump, Microcontroller, LCD & IR Sensor

I. INTRODUCTION AND LITERATURE REVIEW

Now a day's automatic water dispensing machines are used for drinking safe water which is operated by coins but my aim is coin based water dispensing machine is to be developed by using microcontroller which is operated by different coins of Rs. 1 & Rs. 5. Presently water has become the most commercial products in India and Scarcity of water also increased year by year from few decades. Increase of population and changing their lifestyle for water. In order to consider costs were taken into account, in rural areas are paying high amount for requirement of water than urban areas. In this system regulated power supply is designed to provide system with constant supply of 12 volts. The dispenser system will dispense of water only when the valid coins are inserted in the coin slot. The correctness of coin is detected by an IR sensor. If the coin is valid then the signal sends to the microcontroller and water pump will operated then pour the water in glass. Various studies on dispensing are discussed below. Rakshith N.et.al (2016): discus the coin operated water dispensing system is operated by pre-set of time using acceptable coins. This system has optional (or) float switch which detects the water level in the tank. I deshmukh et.al (2016): develop the automatic vending machine has been worked on arduino microcontroller for pouring low cost of water such way that to avoid wastage of water. This paper concluded the water vending machines are available and operated on only coins. D. A. Mhaske (2015): coin based water dispensing system. The coin is inserted in the coin slot then coin image was catch by camera using image processing of MATLAB code for coin detection. When coin signals is passed to ARM7 controller then the water will fall in glass. Aditi Mohan (2017): water dispensing machine dispenses water by detection of right coin using microcontroller. The system can be programmed for coins detection and for certain duration with the help of algorithm and programming in Arduino. This document is a template. For questions on paper guidelines, please contact us via e-mail.

II. FABRICATION OF MODEL

Coin based automatic water dispenser provides good quality of water for the human beings. We are showing our work as Fabrication of Water Dispensing System Using Different Coins of Rs. 2 & 5The following components are required for fabrication of model are listed below

1. Transformer
2. Rectifier
3. Regulator
4. Atmega328 Microcontroller
5. IR Sensors
6. LCD Display
7. Water pump

8. Resistors
9. Capacitors
10. Diodes.

Methodology it is a 'theoretical analysis of the different methods applied to field study for achieve desired object. Methodology described as a data collection from various reach papers about design and fabrication of dispensing system. In order to construct the hardware of the model consist of electrical and mechanical parts. Finally software develop and implementation in Atmega328 Microcontroller. Methodology structure for selected model is shown Fig. 2.1

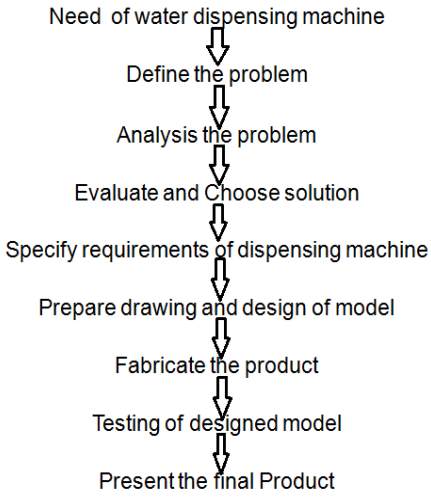

Fig. 2.1: Methodology

III. DESIGN OF WATER SUMP AND CASING

The water sump is store sufficient quantity of water which is designed as per considered measurement of 25 cm width and 15 cm height. The water sump can be developed by Galvanized Iron (GI) sheet. The Galvanized Iron (GI) sheet is cuts as per the required dimensions with help of sniper for designing the sump. Layout of sump is shown in Fig. 3.1

Fig. 3.1 Layout of Sump

Top and bottom of the sump can be covered with lid of dimensions are 45*45 cm as shown Fig. 3.2. The water pump is place in the water sump to lifting the water for dispensing in the glass. This water pump is connected to the motor relay which is tends to lift the water.

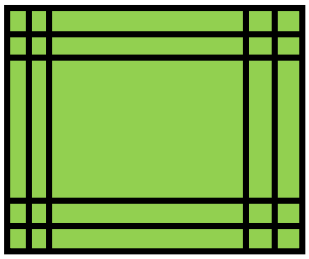

Fig. 3.2 Bottom and top Lid

The casing is fabricated for protecting the components of the system. Casing and water sump are used Galvanized Iron (GI) sheet. The components which are in involved in the system are connected as per the system required by using the soldering process and connecting the wires as per requirement. The block diagram consists of Micro controller, IR sensor, water pump (output), capacitor, LCD as shown in Fig. 3.3 The IR sensor connected to the microcontroller then the sensor will be produces the infrared rays when the coin passed through the sensor then the data will be send to Microcontroller. Now the pump will be start automatically. The LCD will display the time based on the selected coin.

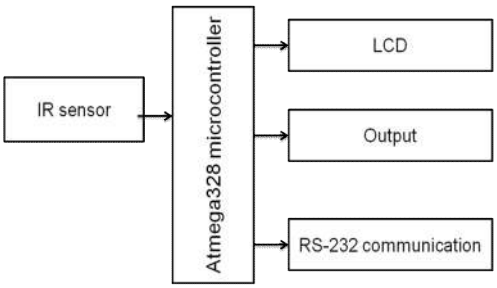

Fig. 3.3 Block diagram of Water dispensing system

When coins Rs. 2 or Rs. 5 are inserting in slot the IR sensor will detect the coin using the Atmega328 microcontroller, the controller will start the water pump automatically. Then IR sensor will activate and it will be passed coin signal to controller again controller to pump, then the pump will be switched ON, the water will fall in glass. Time is set for water pump, when the set time is over the pump is switched of automatically. After the completion water dispensing it will display “THANK YOU” message on LCD. Flow chart for water dispensing system as shown in Fig. 3.4 and final model of water dispensing system as shown in Fig. 3.5

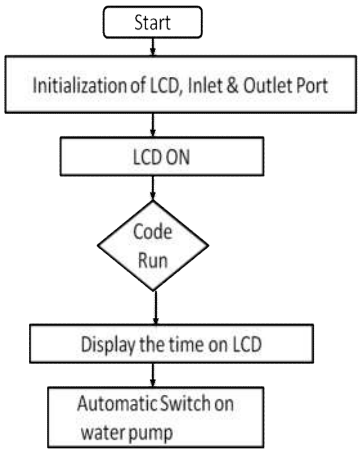

Fig 3.4 Flow chart

Fig 3.5 Final design of water dispensing system

IV. RESULTS AND DISCUSSION:

Initially LCD shows “Water Bottled dispensing system” when power supply start:

\ after that LCD shoes “Insert coin

Then the Rs. 2 or Rs. 5 coin is inserted the LCD shows “Don’t waste water & Filling time” of water in seconds. The next step of the system is giving instruction as don’t waste water and display filling time is 15 seconds required for Rs. 2 coin and display filling time is 24 seconds required for Rs. 5 coin

Finally the LCD shows "Thank You" after the water is completely filled. The overall cost of the machine is very low in comparison with other machines in the market. The design and development of the product is taught through so much that the maintenance is highly reduced. The machine uses RO safe components. Hence it is safe for drinking water purposes.

V. CONCLUSION:

In these paper we have develop low cost water dispensing system using arduino with Atmega328 microcontroller. This work has successfully done to provide good quality of water and there will be no wastage of water. This system can be programmed for accepting different types of coin as one and five rupees for certain duration with the help of algorithm and programming in Arduino. The dispenser can be installed on roads (highways), railway stations and other public places to provide water to people at low cost, and there is no man power required as like ATM machine.

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