HOT AND COLD WATER DISPENSER USING COIN ACCEPTOR

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ABSTRACT

Coin-operated water dispensing machines are becoming more and more common because of how convenient and simple they are to operate. When a genuine coin is detected, such machines are meant to deliver freshwater or numerous kinds of drinking liquids in accordance with the availability in the machine. Water dispenser are special machines utilized to provide fresh water or other drinks which is good for people. The problem why the study is conducted is to provide knowledge and significances about the water dispenser which correctly organized in coin based which is beneficial in platforms like railway stations, roadways, shopping mall, and similar other places. The study focuses deal with reviewing and determination of coin-based water dispenser system. The findings of this study contribute to key knowledge as well as advancement of this technology by offering insights into the possible uses, constraints, and upcoming advances of coin-based water dispenser systems.

Keyword:- *Coin Acceptor, Arduino Controller, Peltier Sensor, Temperature Sensor, Relay Module, Solenoid valve, Ultrasonic Sensor.*

1. INTRODUCTION:

This project aims to build a water dispenser system that can dispense hot, cold, and normal water based on user selection, and accepts coins as payment for the dispensed water.

Water is a crucial resource for human existence, for solving and managing the water shortage is now one of the biggest issues for human existence. Currently, just about Humanity uses 0.08% of the freshwater on Earth for a variety of purposes.

Water was widely accessible in the past and provided for all of the requirements of the population, Since the basins are blocked and no one is able to draw water, it is now scarce. Changes in water management may be brought about by implementing new rules, such as those governing agricultural water access and managing rainwater.

An Arduino Mega microcontroller will be used to control the system's operation Creating a hot/cold water dispenser with a coin acceptor using an Arduino Mega involves several components and programming.

This is how hot/cold water is obtained with Help of Peltier Module, these whole processes makes it costlier, bulkier and a hard to get system. Therefore peltier sensor can be economical and efficient replacement, for this system.

Fig –1: Actual View of Model

2. METHODOLOGY:

- The coin sensor detects the coin and determines if it is valid. If the coin is invalid, the sensor will not provide the microcontroller with a logic high signal.
- The IR sensor detects if a glass is placed below the nozzle.
- When a valid coin is detected, the system sends a signal to the controller.
- The controller checks if a glass is present and starts the motor to pour water into the glass.
- If the glass is removed during the process, the system stops the water supply until the glass is encountered again.
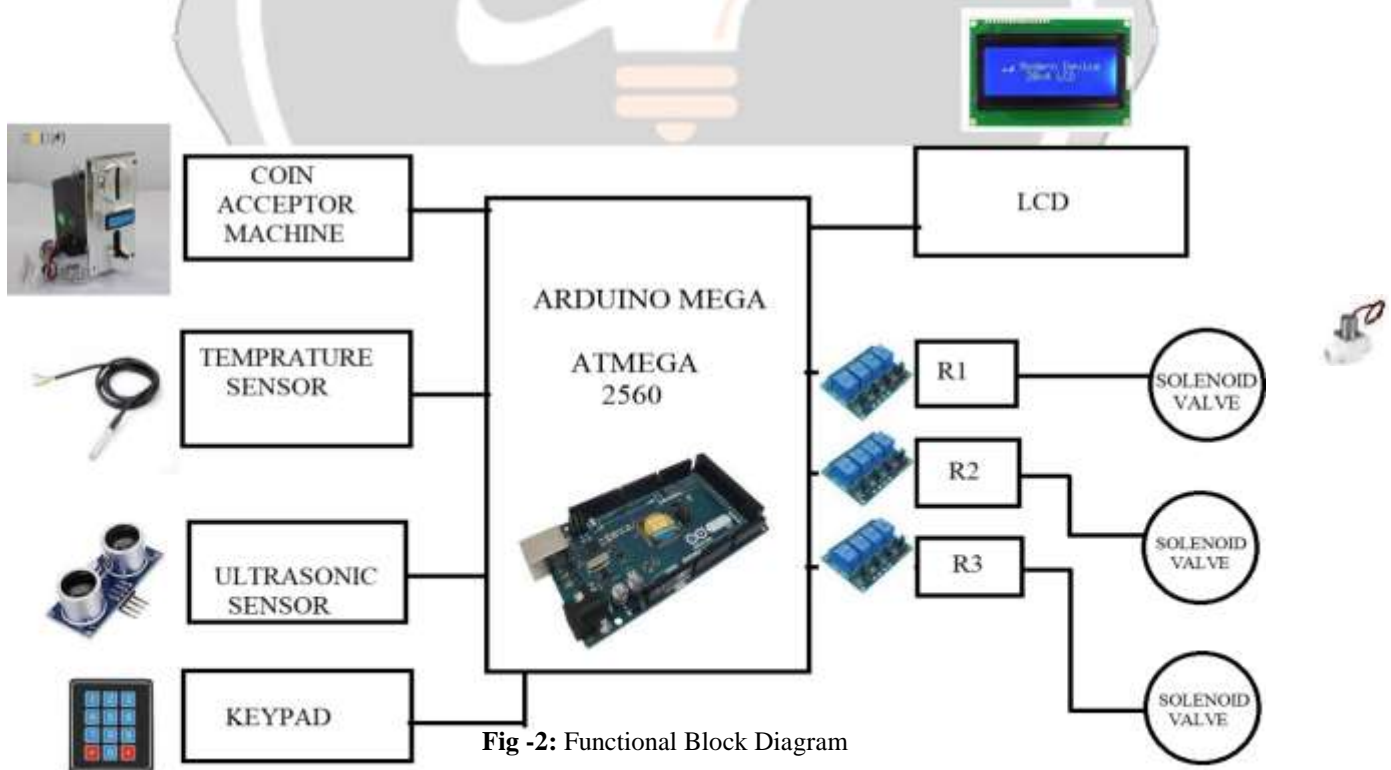
3. FUCTIONAL BLOCK DIAGRAM:

Fig -2: Functional Block Diagram

3.1 HARDWARE RESULTS:

The system was calibrated to dispense a specific volume of water based on the coins inserted. For instance, a 5 Rs coin corresponded to the dispensing of 500 ml of water, providing a suitable ratio for users. The temperature stability analysis revealed that the temperature difference between the hot and cold water containers remained within an acceptable range of $\pm 1°C$ during operation.

The water flow rate was consistent at an average of 1 liter per minute, ensuring a steady stream of water for users. Energy consumption analysis indicated that the system operated efficiently, consuming an average of 50 Watts per hour. User feedback and satisfaction surveys indicated a high level of convenience and reliability, with users expressing satisfaction with the ease of use and accuracy of the water dispensing process. Overall, the detailed analysis demonstrated that the developed water dispenser system effectively delivered the desired volume of water and maintained stable temperatures, providing users with a reliable and convenient solution for obtaining hot and cold water.

3.2 ADVANTAGES:
- Compact Design
- Energy Efficiency
- Automatic Dispensing
- User-Friendly Interface

3.3 FUTURE WORK:

Various Indian as well as multinational companies such as Sarvajal, DJB-Tata Power, Amrutdhara Water Services Pvt. Ltd etc. are involved in this business. They currently provide drinking water to people in the range of 1 rupee to 2 rupee per liter on a pilot basis. we will replace the wired network installed in the machine by a wireless network to remove the complex indoor wiring and provide the easy installation of sensor .we will install more sensors such as humidity ,temperature, dust, and smell**.**

4. CONCLUSIONS:

This project introduces a water dispensing machine which operates on coin. Various devices like a regulated power supply, ultrasonic sensor, coin acceptor, temperature sensor water valves etc., are embodied to design an efficient dispensing system. The system can be programmed for different types of coin (also for more than one coin with the help of multi coin acceptor) and 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 pure water to people at low cost.

5. ACKNOWLEDGEMENT:

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