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Contactless Hand Sanitizer Dispenser Using Sensor

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ABSTRACT: In 21st century, everything is automated including the things we use daily such as washing machines, dishwashers, refrigerators, bus doors, air conditioner systems turning everything in a single click, etc. But from past 2 years we all are facing such a big problem called COVID-19 which has stopped our lives completely and made things so hard for us. We all are struggling through Pandemic .so our study helps us to fight against the COVID-19. Because of COVID-19 we need to follow guidelines given by government, 1. Maintain social distancing 2. Wear mask 3. Wash hands time by time 4. Avoid physical contact .we have a way to avoid physical contact and washing hands properly. By using various sensors we can build a machine that can avoid physical touch and used to maintain cleaning of hands .In this fast moving generation, the present study proposes the newer concept of sensor controlled devices. We need to develop devices with sensors in it .which has the ability to recognize the motion of the user and do its work. We will build a Contactless Hand Sanitizer Dispenser.

KEYWORDS: COVID-19; Hand Sanitizer; Contactless Dispenser; Pandemic; Government Guidelines

I. INTRODUCTION

In the wake of COVID-19 and changing a result for the problems arose due to it we've tried to contribute commodity to the society. The croakers and the other health care workers need to sanitize their hands constantly and its really important for them to do so. And it has been plant to be veritably excited in the current script to snare the sanitizer bottle, press the clump and entering it, or going to a big sanitizer dispenser every time. Both the cases requires multiple touching of effects which can be veritably murderous in case of COVID-19.

Corona Virus (COVID-19) is wreaking annihilation in the world. Nearly every country is suffering from the Corona Virus. WHO has formerly blazoned it a Epidemic complaint and numerous metropolises are under lockdown situations and changed our life. In this current script of the global outbreak, it's advised by WHO (world health association) to maintain Healthy Hand Wash and Sanitation Habits, but the main problem is the way we do it, that's by physical touch. Touching alcohol holders or hand sanitizers with infected hands can spread the contagion to the coming person. In this tutorial, we will make an automatic hand sanitizer dispenser that uses IR detectors to descry the presence of a hand and activates a pump to pour the liquid on the hand.

II. DESIGN

Resources required:

1. IR Sensor: - IR sensor is an electronic device that emits the light in order to sense some object of the surroundings. An IR detector can measure the heat of an object as well as detects the stir. Generally, in the infrared diapason, all the objects radiate some form of thermal radiation.

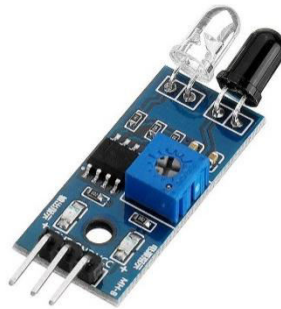


Fig.1. IR Sensor

2. Transistor: - A transistor works when the electrons and the holes start moving across the two junctions between the n-type and p-type silicon. The small current that we turn on at the base makes a big current inflow between the emitter and the collector.

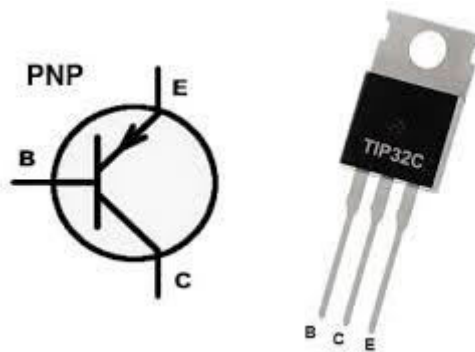


Fig.2. Transistor

3. Resistor: - A resistor works by restricting the flow of current, it can do this in one of three ways: firstly, by using a less conductive material, secondly by making the conductive material thinner and eventually by making the conductive material longer.



Fig.3. Resistor

4. Mini Submersible DC Water Pump: - It is a 12v DC water pump used to pump out sanitizer from the container. It turns on when sensor detects something and pours the sanitizer on hand. It is one of the most important component for this project.



Fig.4. DC Water pump

III. WORKING

The schematic is veritably simple and easy to understand. IR propinquity detector detects the presence of a hand and makes the OUT leg LOW. Typically OUT just keeps HIGH. When it goes low it turns on the PNP transistor and the pump becomes on. I used the TIP42c power transistor for the circuit. A 1K resistor is connected between detector OUT and the base of the transistor. It protects the transistor from burning out. Turn the potentiometer of the detector from the smallest perceptivity position, and slightly increase it to achieve your asked discovery range. Do NOT make it too sensitive because the pump might act spontaneously without any detector! For powering the circuit and the motor a 14500 Li-ion cell is used and it's connected with a USB charging circuit. For the sanitizer vessel, you can elect any analogous glass or plastic vessel, similar as a plastic coffee storehouse vessel. My named one is a glass vessel. An encloser for the circuit is designed according to the cap size and the train is attached.

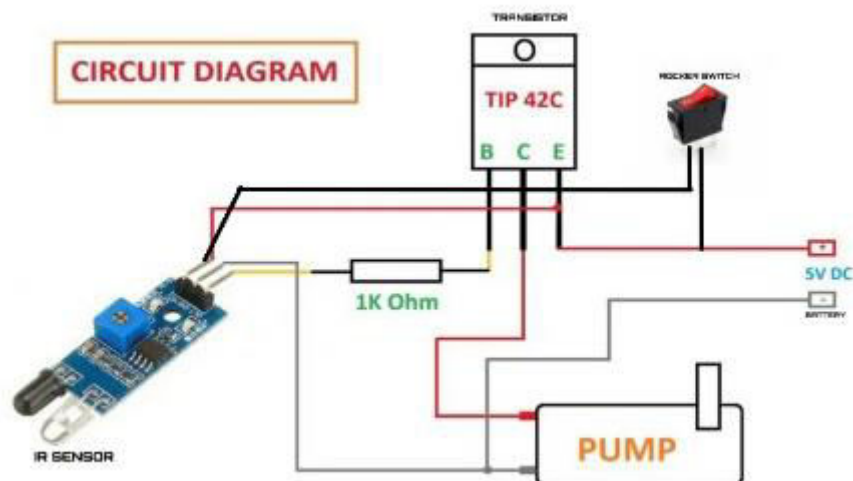


Fig.5. Circuit Diagram

IV. RESULT

At the end the system is working fine. It works as expected, the IR sensor sends the signal to the DC motor as it senses the hand ahead of it and the pump pours the sanitizer on the hands. We are glad it could help all the busy fields as they need to maintain their hygiene continuously. As you can see in the given Fig.6 that it has a durable structure and can be used for at least 2 years.



Fig.6.Actual Result

V. CONCLUSION AND FUTURE WORK

After completing this project we learned about Sensors and Machines How They Can be Useful to Us in a Day-To-Day Life. This Project Is Very Useful at all the medical fields and also in public areas where we need to maintain public hygiene.

In future it can also be upgraded as portable dispenser machine. We can limit the flow of sanitizer to be dispensed at once .we can also add display to show the level of sanitizer available in the Container so that it can notify the worker on field that the level of sanitizer is low in the container.

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