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DESIGN AND FABRICATION OF GROUND AND ULTILITY DISINFECTOR ROBOT

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ABSTRACT

It is idea of designing and fabricating of ground and utility disinfector robot. The world is facing global pandemic due to the outbreak of corona virus, and this virus has been spread widely around the globe, to control the spread of corona virus we have fabricated a robot which will employ automatically on remote control and travel to sanitize the required places automatically.

INTRODUCTION

- The world is facing global pandemic due to the outbreak of Corona virus and this virus has been spread widely around the globe, due to which the people are forced to stay inside their homes. With the development in the field of robotics, human intrusion has become less and robots are being widely used for safety purpose and right now
- The Corona virus can live for hours on the surfaces like door knobs, hallways and lots of other surfaces but this virus can be killed by the sanitizing the area which is usually done by humans, it means there is possibility of human contact.
- There are various other methods to sanitize the place but they all are manually performed which may increase the risk of human contact.
- There are other big machines as well which are used to sanitize the places but due to large in size they cannot be used in compact area of hospitals and schools etc.
- So for such activity we require robotic machine which are remote controlled and small in size with minimum cost.

- But by using the Ground and Utility Disinfector there are less chances of human contact. It will be the moving prototype which disinfects the Corona virus on surfaces like walls, corridors, windows by spraying disinfector on It.
- This Ground and Utility Disinfector is an advanced project use for safety purpose. This project incorporates RC technology for remote operation. Robotics is the best possible way to guard human lives, wealth and surroundings.
- It is specially can be used in School, Colleges or Hospital to sanitize.

Working Priciple

The sanitization robot is the one of the important need in today's market. Chain drive mechanism is used as base, Wheels of robot vehicles are being connected to DC motor and gear box is being used to control the speed of the wheels and being controlled via remote control system. DC water pump will be connected to the tank and nozzle is attached to generate the required pressure for spraying the sanitizer. It will drive the water from the storage tank to the nozzle and the storage tank will be filled with sanitization liquid and chemical which will be used for spraying and our robot can travel and spray the sanitizer in required places without human help.

LITERATURE REVIEW

Dr. Jennifer H. Han in 1990, author "manuscript"developed the cleaning of hard surfaces in hospital rooms for reducing health care associated infections but this technique was quite slow and manual in which human contact was possible which takes more time and cost much to disinfect the required locations.

Chadwick's seminal "Report on an inquiry into the sanitary condition of the labouring population of Great Britain".

Jon Otter The importance of the hospital environment in patient care has only recently been recognized widely in infection prevention and control (IPC). Explained in Antimicrobial Resistance & Infection Control 2018 7:132.

The manually operated sanitizing requires more labour/man power, usage of week disinfectants may lead to unsatisfied cleaning.

Chemicals used erlier may have adverse effect on human body.

To improve this conditon the system needs to be automated and improved. In order to take sanitization and disinfection drive in a faster and more effective way,the Delhi government introduced 20 high tech Japanese machines.

This technology is also very flexible as its length is adjustable, therefore it can easily enter narrow lanes along with broader.

These sanitization machines spray the disinfectants in a way that can kill the germs and virus at any solid surfaces.

Delhi Jal Board (DJB) started using specialized Japanese machines for Sprinkling disinfectants in containment zones across the city to prevent Coronavirus. This Machines which are essentially a Fertilizer and Pesticide Sprinklers can disinfect the area of 20,000 square Meter per hour.

Alexandra Peters, in Antimicrobial Resistance & Infection Control Article number: 132 (2018), Keeping hospitals clean is a crucial patient safety issue. The importance of the hospital environment in patient care has only recently been recognized widely in infection prevention and control (IPC).

In addition to a vast array of detergents and cleaning/disinfecting equipment, common chemicals used for disinfection include: alcohol, chlorine and chlorine compounds, formaldehyde, glutaraldehyde, hydrogen peroxide, iodophors, ortho-phthalaldehyde, peracetic acid, phenolics, and quaternary ammonium compounds. Which are ultimately not safe because it include human contact.

Fabrication

Assembly of chain drive mechanism associate the 4 wheels and other related and required component to the chassis and linked them to the body.Equate the electronic wiring used which will be used to connect the motor.Bracket the DPDT switch on the edge of the chassis to maintain a proper distance and at comfortable and easy position Distinct position is left for the motor to get attached Compact and locked space is provide for sanitizer container with respect to centre if gravity of the mechanism that it should not fall to any side of the model and should to stable.

OBJECTIVES

According to the increasing competition in automobile industry making vehicle user-friendly depending on the interest of automation and making it hybrid can make it more reliable in use and causing in increasing in market demand and scope.

Objectives behind this project is to nominate the amounts of the drawbacks and maximizing the amount of automation due to which we can complete the market demand and satisfaction of customer could be possible.

BODY DESIGN FROAND REAR VIEW

COMPONANTS

1. DC motor

DC motors are the most simple motors to use. They can reach a high rotational speed that is dependent on the input voltage. However, it can not handle the position as one would with a servomotor or a stepper motor. Finally, to change the torque of a DC motor, it is necessary that to use gearbox.

2. GEARBOX FOR DC MOTOR

Commonly gears are used to reduce the speed of a motor. When they reduce the speed, the torque of the output axle increases. Common types of gears as used inRobots are explored below. Each type of gear is used for different purposes and it has both advantages and disadvantages.

3. NOZZLE

A spray nozzle is a precision device that facilitates dispersion of liquid into a spray. Nozzles are used for three purposes: to distribute a liquid over an area, to increase liquid surface area, and create impact force on a solid surface. A wide variety of spray nozzle applications use a number of spray characteristics to describe the spray. Spray nozzles can be categorized based on the energy input used to cause atomization, the breakup of the fluid into drops.Spray nozzles can have one or more outlets; a multiple outlet nozzle is known as a compound nozzle.

4. AIR FAN WITH DC MOTOR

Fan is a powered machine used to create flow within a fluid, typically a gas such as air. A fan consists of a rotating arrangement of vanes or blades which act on the air. The rotating assembly of blades and hub is known as an impeller, a rotor, or a runner. Usually, it is contained within some form of housing or case. This may direct the airflow or increase safety by preventing objects from contacting the fan blades.

6. DC WATER PUMP

The Motor. Smaller electric water pumps, such as the kinds used in homes, usually have small DC motors. The DC motor is contained in a sealed case attached to the impeller and powers it through a simple gear drive.... Through a series of pushes, the rotor continues to spin, driving the impeller and powering the pump.

5. DPDT SWITCH

A Double Pole Double Throw (DPDT) switch is a switch that has 2 inputs and 4 outputs; each input has 2 corresponding outputs that it can connect to. Each of the terminals of a double pole double switch can either be in 1 of 2 positions. This makes the the double pole double throw switch a very versatile switch. With 2 inputs, it can connect to 4 different outputs. It can reroute a circuit into 2 different modes of operation. A Double Pole Double Throw Switch is actually two single pole double throw (SPDT) switches.

7. STORAGETANK

A plastic storage tank is used to store the sanitizer which will be placed on the train chain

drive connects to the pipe which will spray the sanitizer through the nozzel.

8. TRACK CHAIN DRIVE

Chain drive is a way of transmitting mechanical power from one place to another. It is often used to convey power to the wheels of a vehicle, particularly bicycles and motorcycles. It is also used in a wide variety of machines besides vehicles.

CONCLUSION

- In future this robot can be fully automatically controlled by using the guide path method or map method. so there is no need of the human to control this.
- In future we can make the storage tank for sanitizer big and lots of small and big changes can be done.
- And when the pandemic is over and when there is no need of sanitizer then we can replace sanitizer by water can used as Fire Fighting Robot.
- Till now lots of money has been given to the labours and spend on the kits but by using this robot there will be huge difference in money can be possible.
- There will be less human contact so there are less chances of harming the human health and can sanitize the compact and closed places.
- Time for sanitizing will reduce which will contribute to control the spread of the disease

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