

# Design And Fabrication Of Foot Board Accident Avoiding System In Public Transportation Vehicles

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**Abstract-** The Buses, School vans, Travel vans and other vehicles which are transporting the passengers to their desired destination. Here in India the passengers travelling in the foot boards of public vehicles are common during peak hours, it is observed that many accidents occur to the passengers travelling on the foot boards, the safety for them are so much important. It is essential to ensure the safety for them in all the circumstances. It is due to the fact that mostly in vehicles it is not possible to close the door for each and every time manually by clearing passengers on foot steps by vehicle in charges due to time constraints and so we have come up with this idea. Through this project we are fixing the system which will not allow the passengers to travel in the foot boards of the vehicle and, the vehicle will not move forward by applying brake and restricting the supply of fuel to the engine with the help of Arduino board

**Keywords-** Public Transporting vehicles, Safety, Doorsteps, Arduino

## I. INTRODUCTION

The Buses in India are not safe for the passengers at door steps. At least one person died every 10 days while travelling on footboard. Even after multiple accidents, passengers continue to travel on footboard of buses. However, the automatic door was introduced, there were some number of accidents keep on happening because of poor maintenance. Lack of adequate number of buses, especially during peak hours, is the major reason for footboard travel. So, we come up with the idea of Smart footsteps with automatic braking and automatic stoppage of fuel system to avoid this accident. According to official statistics One lakh fifty-one thousand one hundred and seventy-one persons were killed and four lakh sixty nine thousand were injured in road traffic crashes in India in 2018. So we should avoid these type of accidents happening in the country like India where the population rate is higher and we can completely avoid these accidents which holding in the doorstep of buses through our project.

## II. DESIGN

### 2.1 Arduino Uno

Arduino uno is a microcontroller board which contains 14 digital input /output pins, 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It will be powered by the usb cable by the computer and the program will be inserted into this board through this cable.

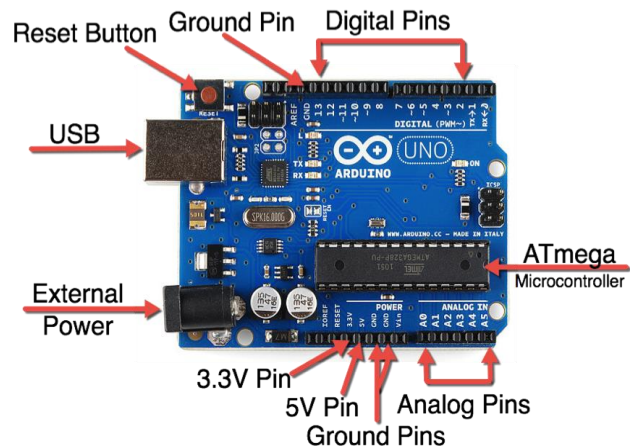


Fig.1

### 2.2 Spur Gears

Spur gears are commonly used for the speed reduction or increase, resolution. spur gears mate only one tooth at a time and it will make a high stress on the mating teeth and it will be a noisy operation. It has high efficiency; it transmits exact velocity ratio.

### 2.3 Dc Motor

DC Motor is a machine which converts the electrical energy into mechanical energy. Every DC motor consists of five principle components that is (i) Field system (ii) Armature core (iii) Armature winding (iv) Commutator (v) Brushes.

### 2.4 Bearing

A bearing is a device which permits a relative motion between two parts, typically rotation or linear movement. There are so many types of bearing available now a days.

**2.5 Relay**

A relay is an electrical switch in which the current flow through the coil of the relay creates a magnetic field which attracts the lever and changes the switch contracts.

**2.6 Water Solenoid Valve**

The water solenoid valve is used to control the flow of fluid. when the 12V DC is applied to the valve, the valve will be opened and the flow will be initiated and when the supply is cut, then it will be closed.

**2.7 Limit Switch**

Limit switch detects the physical motion of an object by direct contact with that object.

**2.8 Wheel**

Wheel is a rotational device which rotates in a particular axis.

**III. BLOCK DIAGRAM AND SOFTWARES**

**3.1. ARDUINO**

The opensource Arduino Software (IDE) makes it easy to write code and upload it to the Arduino board.

**3.2 Block Diagram**

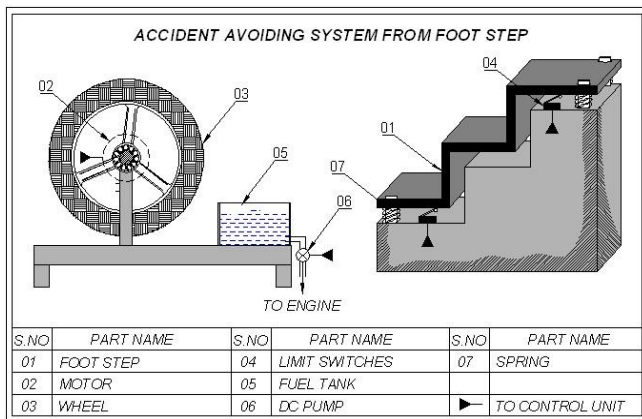


Fig.3

**IV. PROPOSED SYSTEM**

**4.1 System Flow**

The bus door steps will be inserted in the spring rod, in which at a particular space the limit switches will be fixed.

When the passengers stepped into the doorstep there will be the compression on the limit switch and it will be connected to the circuit board which controls the braking system and the fuel system of the vehicle. It is programmed to the Arduino that when there is a weight in the limit switch, the vehicle should not move forward and if, the accelerator is pressed the vehicle’s fuel supply will be cut and the vehicle’s braking system will be stopped.



Fig.2



Fig.4

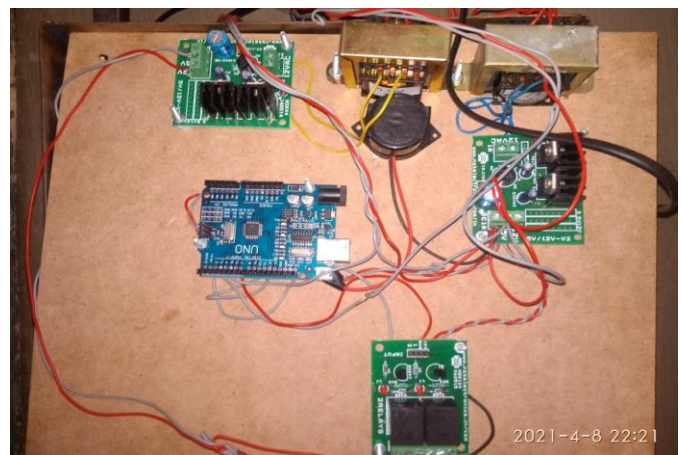


Fig.5



Fig.6

## V. CONCLUSION

This project is done in the interest of proving safety to the passengers while travelling in public transports. This project ensures that the vehicle will not move if someone is boarding on the foot boards which in turn reduces the accidents drastically. We enhanced this project with easiest and simplest way that make this project cost efficient and at the same time its highly reliable.

## REFERENCES

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