

# Ignition Switch Operated Parking Brake System

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**Abstract:** In this earth of mechatronics and automation different systems have been undergone growth just to get changed to other form the time and to do with man error. The made automatic braking system is a part of mechatronics. Presently the vehicle has danger sign system for supporting the safe distance between moving vehicle. When the vehicle gets too close to the thing, the danger sign is put into motion this gives suggestion to the person driving about a thing. But this point has many questions and is with a tendency to do with man error. We have brought the building by using the same sensor system but with the made automatic braking system which keeps inside limits the in the back direction motion of the vehicle. Our purpose is to design the system which can keep away from the error in changing back the weighty amount vehicles like trucks, buses and all the vehicles made up of pneumatic braking system. For this purpose, we have undergone growth a scaled copy which automatic braking for four-wheeler when lock the firing up get onto another line and giving when on the firing up get onto another line. Now the undertaking mainly gets, comes together at one point on designing a right operating system. To support simplex and interests, money, goods work in society in the design the locally made unit has been used.

**Keywords:** Handbrake, automation, safety.

## I. INTRODUCTION

The present invention gives the story of to a parking brake system for engine vehicles having a control part and at least 2 electromechanical 1 actuator 2 for producing a parking brake force at in each example one wheel of the engine vehicle. An electric parking brake control unit of an electric parking brake apparatus has an input part for letting in signs for giving effect to automatic putting in operation and deactivation, but does not have a keeping to one's purposes purpose, use and a way taken by electric current for inputting signs from different sensors 3, which are necessary to work out if to start the automatic activation/deactivation control. as an outcome of that, when used in a vehicle which does not have need of an automatic control purpose, use and has need of only a handbook control purpose, use, the electric parking brake control unit can be used one and only, with no sign put out line connected to the input part. When used in a vehicle which has need of both the automatic control purpose, use and the hands-controlled control purpose, use, the input part is connected to a second control unit that can output signs for giving effect to automatic putting in operation and Deactivation' whereby the electric parking brake Control unit operates in working together with the second control unit.

he present invention gives the story of to an electric parking brake apparatus able of putting in operation and deactivating a parking brake of a vehicle by use of electric private road suggests such as an electric motor 1. A parking brake system for a motor 1 vehicle has among its parts a control part and at least 2 electromechanical 2 actuators 3. Each electromechanical 2 actuator 4 is gave form for producing a parking brake force at one Wheel of the motor 1 vehicle. The electromechanical 2 actuators 3 are each on condition that with Wheel electronic systems.

The control part is connected via a brake controller to the Wheel electronic system of an electromechanical 1 actuator 2 by at least a sign put out line. The control part is connected via a brake controller to the Wheel electronic system of a second electromechanical 1 actuator 2 by a second sign put out line. At least a third sign put out line makes connection the control part directly to the Wheel electronic systems or to one of the electromechanical 1 actuators 3 to move a driver's request.

Now the project mainly concentrates on designing a suitable operating system. To maintain simplicity and economy in the design the locally fabricated unit has been used. Our project achieves higher safety, reduces human effort, increases the efficiency, reduces the work load, reduces the fatigue of workers and reduces maintenance cost.

The objectives of our project are

- [1] To understand the basic principle of our project.
- [2] To design a system which requires no human interference.
- [3] To design a system which is simple to implement and cheap also.
- [4] Describe the construction and working of various parts of our project.

## II. LITERATURE SURVEY

They have described that the hand brake is one of the most important components in vehicles. In traditional, the hand brake is operated manually in their project, they developed Automatic Hand Brake System for safety purpose and to avoid accidents. The hand brake engagement and disengagement are done with the help of proximity sensors and rack & pinion arrangement.[1]

This project entails the automatic handbrake release mechanism for safety purpose. This type of mechanism provides fully lever-less operation which reduce efforts and space of the vehicle, it is also known as an emergency brake, using it in any emergency whereas the footbrake is still operational is likely to disturb the brake balance of the car and largely increase the chance of loss of control of the vehicle.[2]

According to study hand brake engagement and disengagement using a combination of rack and pinion arrangement and microcontroller. Traditional handbrake system works using a ratchet locking mechanism that will remain engaged till the release button is pressed. Driver inaccuracy can cause accidents in which handbrake is not engaged. The microcontroller switch checks either the ignition is ON or OFF, in order check the gear is in neutral position and checks the signal from proximity sensor to sense if the wheel is in motion. If satisfied then, a signal is given to motor. As the motor rotates the pinion, it causes the rack to move linearly occurs the engagement of handbrake. When we turn on the ignition switch then automatically release the hand brake and when we turn of ignition switch it automatically engages the hand brake.[3]

In this system they have reduce the human effort which is necessary to apply the hand brake while parking of vehicle. Human life is gets engaged and more complex due to their work and growth. In current generation the normal steering system is changed by power steering system for decreasing several human efforts and providing enjoyable drive as compare to typical system.[4]

## III. CONSTRUCTION

It consists of mainly;

### 3.1. Frame:

The frame is of MS material. The frame of our machine is basically used to support the all components of system.

### 3.2. Hand Brake Lever:

Hand Restriction is used to alimony the vehicle stationary and, in many cases moreover perform an emergency stop. Hand restriction on older vehicles often consist of a subscription unfluctuating to two-wheel brakes at one end and the other end to a pulling mechanism which is operated with the driver's hand or foot. The mechanism may be a hand-operated lever, at floor level abreast the driver, or a straight pull handle located near the steering column, or a (foot-operated) pedal located abreast the drivers' leg. In most automobiles the hand restriction operates only on the rear wheels, which have reduced traction while braking. Some automobiles have the hand restriction operate on the front wheels.

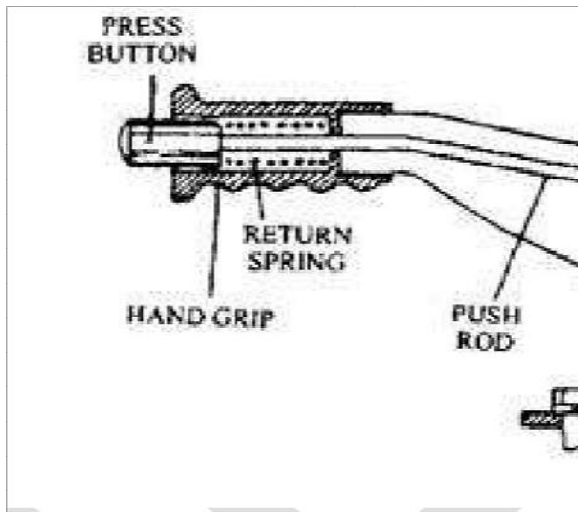


Fig.3.1. Hand Brake Lever.

### 3.3. Motor:

A dc relies on the fact that like magnet poles attract each other. A coil of wire with a current running through it generates an electromagnetic field aligned. The motor is used to drive the Hand brake Lever. The source of current is obtained from the 12 V dc battery from the car.

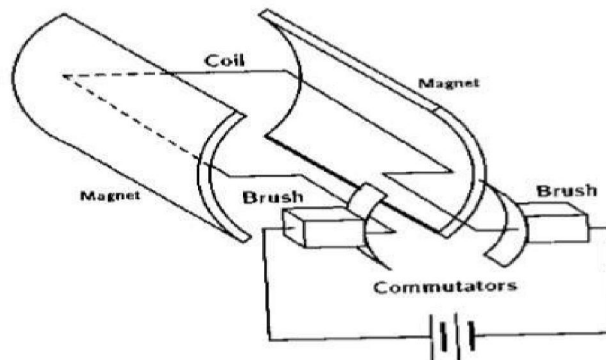


Fig.3.2.DC Motor.

### 3.4. Battery:

A Battery is used to provide energy for ignition. It works as storage of energy and is charged by dynamo, which is driven by engine. It converts chemical energy to electric energy. Two types of battery are used in spark ignition system, lead acid battery and alkaline battery. The first one is used in light duty commercial vehicle and the other one is used in heavy duty commercial vehicle. It is housed in primary side of ignition coil.

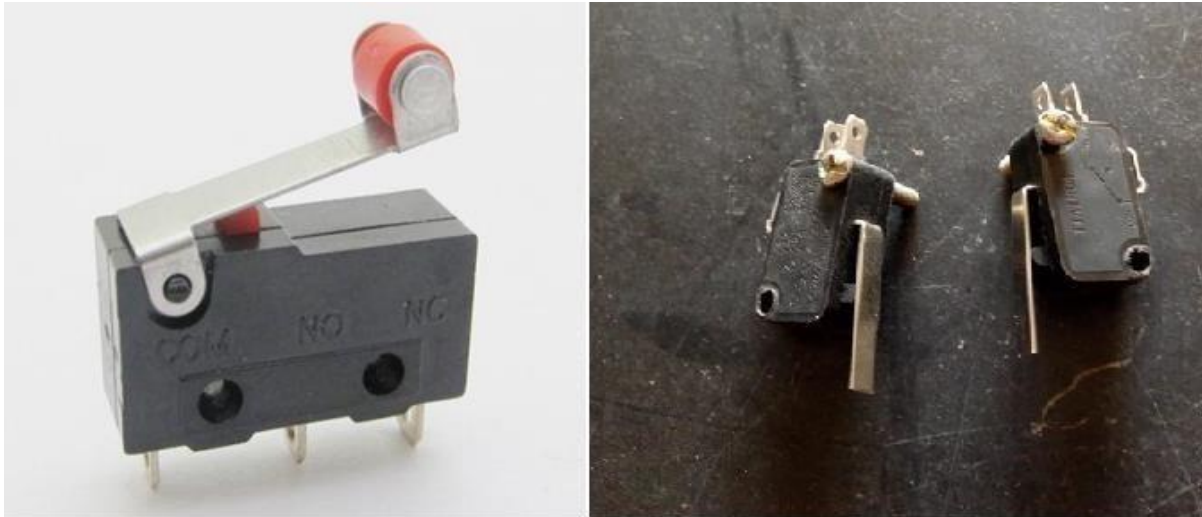


Fig.3.3.Battery.  
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### 3.5. Micro Switch:

Is an electric switch that is actuated by very little physical force, by a tipping point mechanism sometimes called an "over-centre" mechanism?

Switching happens reliably at specific and repeatable positions of the actuator, which is not necessarily true of other mechanisms.



**Fig.3.8.**Micro Switch.

## IV. WORKING

Now a day's will-less hand restriction release mechanism has been replaced by the transmission hand restriction release mechanism. This has taken up an spare use in tenancy of the vehicle by no initiating a rear-wheel skid. The will-less hand restriction release mechanism is one of the most constructive hand braking system over the conventional systems. This type of mechanism provides totally lever-less operation which saves the effort as well as the space utilization of the vehicle. Generally, the hand restriction is manually operated whereas in our project work, we have ripened an will-less handbrake release mechanism for safety purpose. The engagement and split-up of the handbrake is washed-up with the help of electric motor. Moreover, when the ignition system is turned off, the switch gets in and signals to the motor which transmit the rotating motion into the linear motion by the successive engagement between motor and the handbrake mechanism. Although sometimes it moreover known as an emergency brake, using it in any emergency whereas the footbrake is still operational is likely to immensely upset the restriction wastefulness of the car and vastly increase the likelihood of loss of tenancy of the vehicle, for example by initiating a rear- wheel skid.

Additionally, the stopping force provided by using the handbrake is small and would not significantly aid in stopping the vehicle. The hand brake is instead intended for use in case of mechanical failure where the regular footbrake is inoperable or compromised. Modern brake systems are typically very reliable and simple, meaning the handbrake are rarely used to stop a moving vehicle. Comparing with manual handbrake system it has a compact design as well as striking looks having more efficiency.

Working of ripened a model which is Will-less braking for four wheelers. When lock the ignition switch then automatically hand restriction lever in braking condition and releasing when ON the ignition switch. Generally speaking, it is an object of the present invention to provide for simple and intuitive tenancy of a vehicle restriction system. This is performable by ways of an persuasive device of the unstipulated type under consideration, which can be switched into a remoter switching state, and by ways of an impulse method, wherein in response to an actuation, the persuasive device is switched into the remoter switching state. The persuasive device can be switched into the first switching state, the second switching state and the remoter switching state by the same tenancy element. By the remoter switching state, it is possible, for example, for a trailer testing function and/or a trailer braking function and/or an anti-jacking braking function to be selected by one and the same tenancy element, or a function that prevents an will-less

engagement of the parking restriction upon the deactivation of an ignition can be selected by ways of the persuasive device, in particular by one and the same tenancy element.

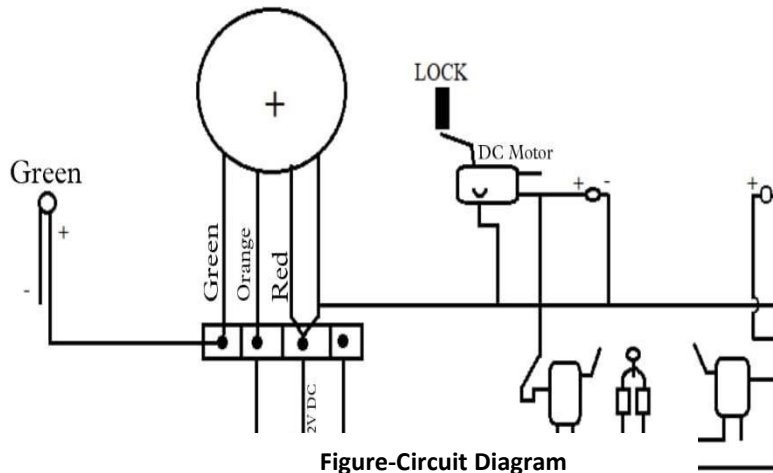


Figure-Circuit Diagram

The persuasive device has, whispered from the tenancy element, at least one electronic system for providing switching states. The persuasive device may however moreover have remoter components of the restriction system, in particular tenancy electronics, power electronics and restriction actuators. The tenancy element of the persuasive device equal to embodiments of the invention can be controlled intuitively and increasingly hands than the tenancy element of the known persuasive device, by ways of which a trailer testing function can be selected, or by ways of which, in combination with a separately serried remoter tenancy element, a trailer braking function and/or an anti-jacking braking function or a deactivation of an will-less engagement of the parking restriction upon the deactivation of the ignition can be selected. Simple and intuitive tenancy is moreover possible in the specimen of a remoter tenancy element, which is actuated separately, for deactivating the will-less engagement of the parking restriction upon the deactivation of the ignition.

#### Advantages:

- [1] As handbrake is operated on turning on or off the ignition key, human interference is neglected so there is no chance that hand brake is not applied.
- [2] Power required to run the system can directly take from 12-V battery which is inbuilt in any vehicle so external installation is not required.
- [3] Simple design and working.
- [4] Cheap in cost.

#### Limitations-

- [1] Installation requires high skilled operator because circuit is little bit complex.
- [2] Very less space is available around handbrake so installing system is little bit difficult.



### V. CONCLUSION

We have developed system which has no human interference due to this probability of error is excluded completely. As we turn ON the vehicle using ignition key, handbrake is automatically disengaged so that we can move the vehicle. As we turn OFF the car hand brake is applied or engaged automatically so that vehicle should not move.

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