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Automatic Side Stand of two wheeler

AMIT SINGH[1], ANKIT KUMAR RAI[2], CHANDAN YADAV[3], JAYHIND YADAV[4], PRASOON CHOUDHARY[5]

[1,2,3,4] Student, Dept. of Mechanical Engineering, IMS Engineering College, Uttar Pradesh, India
[5] Assistant Professor, Dept. of Mechanical Engineering, IMS Engineering College, Uttar Pradesh, India

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Abstract - *In today world two-wheeler vehicles plays a very important role in our life. It is used for travelling from one place to another place. So it is very useful and also responsible for causes of some minor and major accident because of forgetting to lift off the side stand. Side stand plays a very important role while the vehicle is in the rest position. Due to this, it is very important to prevent the rider from this condition which happened many times, which may avoid by using automatic side stand mechanism in vehicles. In automatic side stand the simple mechanism is used for lifting the side stand automatically while the vehicle is at the start or stop condition. In this automatic side stand the simple mechanism is used which is very easy to understand and applicable in a practical life. In a country like India, 20-22% [1] accident happened due to forgetting the lift off the stand. So the figure of accident due this reason is serious and many life has affected by this reason. So preventing this type of accident we installing this mechanism.*

***Key Words*: Manual side stand, Automatic side stand, 20-22% accident, Effective price, installing, economical, two wheeler, lift off.**

1. Introduction

In the present scenario, the living standard was developed. Bike plays a very important role in our life. It helps to travel from one place to another place in very short time. The bike is a widely used vehicle in everyone life. As we know that side stand plays a very important role while the vehicle is in the rest condition. It may cause the death of riders or maybe some bad injuries. In a country like India, this reason causes the increment rate of the accident. This rate is increasing day by day so it is necessary to take up some preventive measures to avoid an unwanted accident. In manual side stand there is a possibility that the riders have been forgetting off to lift the stand and it causes an unwanted accident. So to overcome this accident we make a project that is automatic side stand. The automatic side stand works on the simple mechanism and no need to take extra power while operating. So it does not affect the vehicle efficiency and also suitable for any two-wheeler vehicles. The design of the vehicle is not affected only simple mechanism is added to the vehicle. In the current world, technology plays a very important role so we updated our technology day by day and it is also needs of our society.

Here are only two components are added and that is dc motor and microcontroller which is cheap in price. So overall price after installing this idea in a vehicle is not affected. This is the new advancement in a bike with the facility to lift the side stand automatically. This may avoid an unnecessary accident in the day to day life. The mechanism of this project is simple that why it does not affect the current design of the bike. This is very cheap so we can install this features in any type of two-wheeler vehicles.

1.1 History

In some bikes, the automatic side stand is used but the concept and idea used are different in our project. In that type of bike, the cost of the bike is much affected and only costly bike give the automated lifted stand facilities. Some bike also gives the indications and alarm system regarding the lifting of the stand. But is noisy and irritating to ear sound. And it also consumes extra power from the battery source which causes the drainage of battery.

In our project, the automated lifting of stand mechanism is also possible on a low budget bike or we can say any type bike because we optimize this project according to it may work properly and also cost is not much affected. There is no need for the installation of an extra power source for this mechanism.

2. Objective

The main objective of our project is to provide a safety measure in bikes to avoid unwanted accidents and damage caused by not lifting off the side stand by providing automated side stand lifting system. Here we propose an idea for automatic side stand which is completely mechanical and electronic circuit and without using any external power.

2.1 Scope of project

In future, it is applicable to all type of vehicle whether it is costly or cheaper bike. In future there is also some advanced modification is possible to like on the basis of the sensor. In this project, we operated mechanism of lifting off the stand in the very smooth way.

3. Components

- Battery
- DC motor
- Microcontroller

- Switch (key)
- Side stand

3.1 Battery

A 12-volt dry cell rechargeable battery is used for electrical supply to the motor which is connected to side stand. A dry cell uses a paste electrolyte, with only enough moisture to allow current to flow.

3.2 DC Motor and Microcontroller

It converts direct current electrical power into mechanical power. The speed of the motor is counted in term of rotation of the shaft per minute. Dc motor is designed for two-speed operation. It consists of three brushes namely common, low speed, high speed. Two of the brushes will be supplied for a different mode of operation. The DC motor does not oscillate back and forth, it rotates continuously in one direction like most other motors. The rotational motor is converted to the back and forth wiper motion by a series of mechanical linkage. This type of motor is called a gear head or motor ends DC motor. It has the advantage of having lots of torque. This DC motor works on 12-volt DC battery [2].

A microcontroller is similar to a small computer on a single integrated circuit containing all different components like processor core, memory, and programmable input/output [3]. Micro-controller also having a small amount of RAM. Micro-controllers are designed for embedded applications and it is programmable.

3.3 Switch & Side stand

A switch used in our project is to lift off and release the side stand. This switch is same which is used in the bike for starting ON/OFF purpose. So it is not an additional component.

A Side stand is a device on a motorcycle that allows the bike to be kept upright without leaning against another object. A kickstand is usually a piece of metal that flips down from the frame and makes contact with the ground [4]. The location of automatic side stand is just middle of the vehicle on a left side of the bike from the rear.

4. Step Involved

To make this project we go through several steps like the construction of the frame, programming and finally assembly which are discussed below.

4.1 Construction of the frame

Firstly we are made a general layout of side stand frame according to dimension required in present time of two-wheeler. for making a frame, we are used a mild steel rod and with the help of different manufacturing process be to prepare a rectangular frame the manufacturing process include for making side stand frame are cutting, welding, grinding and super finishing process.

4.2 Final Assembly

In this step, all the component of side stand is assembled in a proper manner according to their function. In this presented mechanism consists of a D.C motor powered by motorcycle's battery, connected to the side stand and this motor and battery source is connected to the circuit and micro-controller. When the bike key is ON then signal is passed to micro-controller and motor starts rotating in anti-clockwise direction that causes the stand is lift off. When the stand is fully disengaged it presses the pressure switch which again sends a signal the microcontroller which stops the motor.

5. Application

The automatic side stand is used in all types of the vehicle whether it is gear or non- geared vehicles. It is used in new vehicles as well as the old vehicle by some small modification in the design of vehicles. It is also applied in some costly cycle by using some modification in design. There may be a lot of innovative future application in automotive industries of two-wheeler bike.

6. Advantages

- It is simple in installation**.**
- It is economical and cost-effective.
- No need for the extra power source.
- It increases the safety measures of riders.

7. Conclusion and Future Scope

We observe that from the design and analysis D.C motor and another component like as microcontroller and speed sensor, switch are occupies less space and this space is easily available into the mechanical frame of the motorcycle [5]. The automatic stand is presently in use and quite successful. In future, it is applicable to all type of vehicle whether it is costly or cheaper bike.

In future there is also some advanced modification is possible to like on the basis of the sensor. In this project, we operated mechanism of lifting off the stand in the very smooth way.

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