

Fabrication of Gear Lever Locker for Side Stand

**Rohan D. Gaikwad¹, Prashant N. Pawar¹,
Kiran G. Gaikwad¹**

Shri vithal Education and research institute, Pandharpur
Department of Mechanical Engineering,
kirangaikwad@coep.sveri.ac.in

Prof. B.D. Gaikwad²

Shri vithal Education and research institute, Pandharpur
Department of Mechanical Engineering,
bdgaikwad@coe.sveri.ac.in

Abstract— In the modern developing world, automobile plays a significant role, especially two-wheeler have a significant contribution. Even though bikes are helpful, there are some sad events like accidents due to careless driving of rider. Major accidents occur due to the forgetting of lifting the side stand. To overcome this problem, many advance measures have been taken, but still, there is a good scope for modification in the side stand lifting arrangement. In this paper, a mechanism called as “Gear Lever Locker system” is proposed and fabricated. The mechanism consists of a rod which is welded exactly below the Gear Lever of the bike. This mechanism will not allow the gear engagement until and unless the side stand is lifted. The mechanism is fabricated and tested for a two-wheeler. The performance of the fabricated mechanism after attaching to a two-wheeler is found to be satisfactory. The mechanism guarantees that there will be no accidents due to side stand upliftment. Also, the cost of the mechanism is also very lesser as compared to the LED and Sensor system for prediction of the upliftment of side stand.

Index Terms— Side stand, Gear Lever Locker System, Accident, Cost, Upliftment, Sensor, Gear engagement.

1. INTRODUCTION

THE early history of the automobile may be divided into many eras, based on prevalent means of propulsion. Further periods were defined by trends in exterior styling, size, and utility preferences.

According to the present invention, there is provided a stand device for a two-wheeled motorcycle including means whereby the stand can be automatically brought to the inoperative position when the free end of the stand impinges against the surface of the road or some object on the road [1].

A stand device for two-wheeled vehicles having a rear fork pivot able with respect to a vehicle body, including a main stand member pivoted at a base end thereof to the vehicle body frame. [2]

The present invention solves the problems of the electrical surge and reduced reliability related to the shock loading experienced by previous two wheeled vehicle stands when the stand member contacts the ground during the time it is being driven by the stand motor to a position for supporting the two wheeled vehicle.[3]

An attachment for a kick stand of a motorcycle which substantially increases the support surface area of the kick stand when it is used to support the motorcycle in the upright position.[4]

Ranido, C.Danilo, Cristian J. Bagon, and Alvin B. Lacaba worked on automatic side stand retraction when gear is pressed.[5]

2. STAGES

2.1 Review Stage

SIDE STAND:A Side-stand is a device on a bicycle or motorcycle which allows the bike to be kept upright without leaning against

another object or the aid of a person. The Side-stand is usually a piece of metal which flips down from the frame and makes contact with the ground. It is usually located in the middle of the bike or towards the rear. Some touring bicycles have two: one at the rear, and a second in the front.

Albert Berruyer designed the earliest known Side-stand in 1869, and since then Side-stands have been independently reinvented many times. It was mounted below the handlebars, so was much longer than more recent designs. Eldon Henderson patented a shorter model in 1926. In the 1930s, a "smaller, more convenient" Side-stand was developed by Joseph Paul Treen.

In 1891, Pardon W, Tillinghast patented a design for a stand that was mounted on the pedal but folded up flat under the pedal when not in use. Side-stands on bicycles fell out of fashion in the 1970s, as the bicycles became lighter, and many riders were concerned about extra weight.

2.2 Final Stage

By attaching the proposed part to the side-stand, the arrangement of the stand will become in such a way that the stand is in open condition then the gears of the two-wheeler vehicle won't shift so to shift the gear we need to take off the side stand. Due to that many of accidents will not happen.

3. METHODOLOGY

The methodology of this project leads to arc welding of the rod to the side-stand near to the upper end of tensile spring in the vertical direction as shown in figure. We have kept 5 mm gap in between paddle and the upper end of the rod. In this project, we are using one small rod and welding it to side stand due to that the gear shifting will get stop so that vehicle cannot be able to move further without closing the side-stand. By using this arrangement the cost of this system gets reduced there will be no need of sensor, wire, LED, etc. So this process will reduce the cost of system and accidents also avoided with this system.

4. CURRENT SYSTEM

Side-stand indicator

Now a day's sensor are used for ensure that the stand is in released condition. The motorcycle side stand consists of a metallic rod and helical spring which is offset from the centre. The side stand indicator indicates ON only when the side-stand is open. As shown in figure 1 the sensor is activated MCU checks for the output signal. This sensor is placed below the chain guard, aligned with side stand (pulled up). If the side stand is not pulled up, the sensor output is a logic high signal, so a warning indication is given to the rider. If the side stand is pulled up completely, then the sensor output will indicate the stand is closed.



Figure 1 Sensor system

In modern developed vehicles the sensors and LED system is used to show the rider the position of side stand. When the stand will get to the down position then the LED glows and indicates to rider that the stand of vehicle is at down position and you have to remove it as shown in figure.2.

When the stand will get lifted up then the LED light gets off this will be the signal that the stand is lifted up.

5. WORKING STEPS

1. Find out the required raw material.
2. Cut out raw material in required length.
3. Select the proper filler rod.
4. Adjust the length of the rod.
5. Weld the rod to the side stand in a proper manner.
6. Checking the working motion of the side stand



Figure 2 LED indication of side stand

6. DEVELOPED SYSTEM

In this system we have taken an M.S. rod, we have attached it to the side-stand. The welding of the side-stand is made in such a way that there is no problem in upliftment and gear shifting.



Figure 3 Side stand at lifted position



Figure 4 Side stand at down position

When stand is at below position that time this welded rod is not allowing for lever to shift the gears, means it will lock the gears. It lock is shown in the figure 3. When the stand is lifted up the rod becomes horizontal as shown in figure 4.

So by using this system we have achieved good results.

7. ADVANTAGES AND LIMITATIONS

7.1 ADVANTAGES

1. The cost of the system is reduced up to 87% as compared to LED and sensor system.
2. This system is robust and easy to use.
3. This system reduces accidents 100% which are happens due to side stand.

7.2 LIMITATIONS

1. The system manually operated.

8. CONCLUSION

Our proposed Two Wheeler Vehicle Side-stand System is the advanced, reliable and robust version of the safety mechanism for two-wheeled vehicles. The proposed side-stand system also gives cost reduction, the product even more user-friendly. The proposed side-stand system can be installed on a two-wheeled vehicle of any class or company, thereby creating a huge market for the product. Stress was laid in designing a cost-efficient system so that it could also be even bought by the owners of the low-end bikes.

9. REFERENCES:

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