

# Sprocket Side Stand Retrieval System

Akhil Ramesh<sup>1</sup>, Mohammed Misfar K S<sup>2</sup>, Mohammed Rizwan N A<sup>3</sup>, Mohammed Shuaib P S<sup>4</sup>, Vishnu P S<sup>5</sup>.

Assistant Professor, Department of Mechanical Engineering, KMEA Engineering College, Edathala, Kerala, India<sup>1</sup>

Students, Department of Mechanical Engineering, KMEA Engineering College, Edathala, Kerala, India<sup>2345</sup>

**ABSTRACT:** Automobiles play a major role in the current world as it reduce human effort and time, mostly bikes. Two wheelers are helpful to reach faster at target locations, but due to carelessness of the driver accidents can occur. Most of the accidents occur due to forgetting the side stand. The side stand is used for supporting a parked motor cycle. They are perfect on quick stop, when one need to leave the vehicle for a short while. When they continue to travel using that bike they forget side stand to retrieve. To avoid this problem we do project practically for “SPROCKET SIDE STAND RETRIEVAL SYSTEM”. It is based on working principle of bikes. Our set up is kept between chain drive, as all the bikes transmit power with the help of chain drive. A new type side stand which is automatically retracting side stand is invented to prevent such type of accidents.

**KEYWORDS:** Automobile, Sprocket, Retrieval, Avoid accident.

## I. INTRODUCTION

In modern era, the automobile takes a great part in the development. While automobile is concern motor cycle and bikes, it plays very important role because it saves the time of the traveller by reaching the target place very faster. Motor cycles are generally provided with stand for supporting the motor cycles when they are not in use. The major accidents occur due to forgetting to lift the side stand, because all other source of accidents has preventive measure. If the side stand is in park position while the motor cycle is moving, a serious safety hazards exists.

The pinion transmits power to the rear wheel pinion and vehicle gets its motion. This principle is followed in all types of two wheelers, based on this sprocket side stand retrieve system is designed because this system worked with the help of the power from the chain drive. The power is used only on sprocket during lifting the stand and after that no power is needed; hence it does not affect the efficiency of the vehicle.

## II. CONSTRUCTION

Sprocket Side stand retrieval system construction is easy. The whole construction of this system is simple and efficient. The arrangement and position of components makes the system to function. Each and every component has its own property and responsibility. Engine power is transmitted to rear wheel with help of chain drive. So we fitted the sprocket in chain. Then link is fit with stand and sprocket. That means link one end is fixed in stand and other end is fixed with sprocket. Construction of this system is efficient. Because there is less power needed for this system, chain drive is working for long time. So this system worked for long time.

### Components

- Axle
- Sprocket pinion
- Pushing lever
- Lifting lever

## Axle



Fig:1 Axle

Axle is stationary part which is used to support the bearing. Also it is the rod that serves to attach a wheel and provides support for bearings on which the wheel rotates. Axle helps to rotate sprocket freely. Hence sprocket attached to axle also be known as freewheel.

## Sprocket pinion



Fig:2 Sprocket with bearing

It is the device which transmits the linear motion into rotary motion by means of the tooth found on it. The sprocket with ball bearings which is mounted on the chain drive is said to be free wheel. Since it is a free wheel it allows rotate free from central portion in a direction. This type of sprocket is used to transmit power to rear wheel by engaging the toothed area with chain drive and also allows rotating in counter clockwise when pedalled counter clockwise direction. This action of sprocket allows attached lifting lever to adjust itself when it does not engages with pushing lever properly.

## Pushing lever



Fig:3 Pushing lever

Pushing lever is the component pivoted centrally to the side stand. The pushing lever is metallic c-shape rectangular plate, and top end is welded with a small piece of rectangular rod. Lifting lever lifts the pushing lever which lifts the side stand. Since this rod engages over tapered edge of lifting lever, thus the lifting occurs smoothly. The pushing lever is made of MS-flat rod with the length according to the distance of side stand arrangement. Its top end is extended perpendicularly so as to engage with lifting lever. The bottom end of the lever is made as C-clamp, which keep attached to the side stand.

## Lifting lever



Fig:4 Lifting lever

Lifting lever is the major component of the system. The lifting lever is the rectangular rod made of ms-rod, which consists of two lifting leaves which is mounted with the edge of axle. The lifting leaves should be parallel to the sprocket pinion. The lifting lever is composed of two metal rods, where both are welded at either sides of the axle. The free ends of the lifting leaves are tapered well. The ends are machined well for tapered shape for smooth engaging with pushing lever.

### III.WORKING PRINCIPLE

Sprocket side stand retrieval system retrieves the side stand automatically if the rider forgets to lift the side stand while moving the bike. It works based on the working principle of the two-wheelers. Every bike transmits power from engine's pinion to the rear wheel i.e. rotary motion of the pinion makes the linear motion of the chain. That linear motion of the chain is absorbed by rear wheel's sprocket and converted into rotary motion. That rotary motion of the rear wheel makes the bikes to move. Based on this Sprocket side stand retrieve system is designed. If Sprocket is kept between the chain drive, it make the sprocket to rotate so, using the sprocket as the major component this system works. It gains the power from the chain and make specially designed component (lifting lever) to rotate. This rotation incites engaged pushing lever to push the side stand to retrieve. When chain rotates anti-clockwise direction the inciter assembly's sprocket absorbs the power and rotates in clockwise direction. The working of "Sprocket-Side Stand Retrieval System is explained below in both (resting & riding condition of two-wheeler).

#### Resting condition:

When two-wheeler is in resting condition i.e. when rider actuates the side stand of the vehicle to ground, the pushing lever that is pivoted at the centre of the side stand gets engage with the inciter assemblies lifting lever. During at this condition the inciter assembly is at rest and retriever assembly (pushing lever's tapered end get engage with tapered end of lifting Lever). Pushing lever's length can be changed according to type of bikes and distance calculated between the side stand and chain drive. Closed coil helical spring which gets pulled, the coil of spring get tensed during stand resting in ground. This is the condition of system during resting stage.

#### Riding condition:

When two-wheeler is started Engine's pinion transmits power to the rear wheel by the chain drive. The inciter assembly which is kept at the centre of the chain drive gets rotates as the sprocket gets engage with chain drive. So, when the sprocket rotates the lifting lever mounted with axle rotates. Hence the lifting lever lifts engaged the pushing lever and therefore the pushing lever pushes the side stand by clamping it with the C shaped clamp stand holder and hence the spring tensed in the side stand get compressed quickly as a result side stand get retrieves.



Fig:5 Resting condition



Fig:6 Riding condition

#### IV.APPLICATIONS

This is used in all type of two wheelers such as geared, non- geared, hand gears two wheelers.

##### Advantages

- Here simple mechanism operated
- It is simple in installation
- No needed for extra power source
- good economic cost
- It not require special design

#### V. CONCLUSION

Finally we get the conclusion “sprocket side stand retrieve system” is a good retrieval system. Since the setup is compact and easy one it does not disturb the performance of the vehicle. Because of the power is obtained from chain drive. In all type of bikes power transfer through chain drive. Definitely this system could be used in all type of bikes for retrieving the side stand, it will be the major system to control accidents due side stand problem and protect the careless rider. These systems can be implemented in all types of bikes by changing small dimensions in size and this system is economical, so it will not affect the economic level also. While compare to other system this sprocket side stand retrieve system will be the life saver.

#### REFERENCES

- [1] V.V.R.Murthy, T.Seetharam, .V.Prudhvi Raj; “Fabrication and Analysis of Sprocket Side Stand Retrieval Systems,” International Journal, ISSN No: 2348-4845.
- [2] Pintoo Prjapati, Vipul kr. Srivastav, Rahul kr. Yadav, RamapukarGon, Pintu Singh, Sandeep, “sprocket side stand retrieves system”.; International Journal of Technical Research and Applications,e-ISSN: 2320-8163.
- [3] Bharaneedharan Muralidharan, Thandalam, “Automatic Side Stand Retrieve System,” ;Volume: 3 | Issue: 2 | Feb 2014.
- [4] Dr. K.Tirupathi Reddy, Syed Ataf Hussain “Modelling and analysis of Two wheeler connecting rod”;International journal of Modern Engineering Research (IJMER) Vol.2, Issue.5, Sep-Oct. 2012 pp-3371
- [5] Shigley, J.E. and C.R. Mischke, 2001. “Mechanical Engineering Design”; McGraw-Hill, New York, 776. Webster, W.D., R.Coffell and D. Alfaro, 1983.
- [6] Meriam, J.L. and L.G.Kraige., 1998. “Engineering Mechanics”; 5th Edition, New York, john willey, 712.