Automatic Side Stand Retrieving System for two Wheelers

P. Vijay[1], S. Vinobalaji[2], A. Dyson Bruno[3],
[1,2] UG students, Department of Mechanical Engineering
[3] Assistant Professor, Department of Mechanical Engineering
[1,2,3] PSNA College of Engineering & Technology, Dindigul

Abstract:-In modern developing world, automobile plays important role especially two- wheeler i.e. (motorcycles& bikes) plays a major role. Even though they are helpful there are some sad events like accidents due to careless of rider. Major accidents occur due to forgetting of lifting side stand. To rectify this problem many advance measure have taken, but they are useless. So, by considering that it should be implemented practically in all types bikes.
The new system "AUTOMATIC SIDE-STAND RETRIEVE SYSTEM" is to
be designed based on the working principle of bikes. Since all bikes transmit power from engine to rear wheel by means of chain drive. Since the design setup is to be kept in between chain drive, then setup (Sprocket) rotates and side stand retrieves automatically.

SIDE STAND:

The side stand plays major roll while the vehicle is in rest position. The side stand is used for supporting a parked Motorcycle it has some disadvantages takes place as while the driver starting the motorcycle, there may be possibility of forget to release the side stands this will caused to unwanted troubles.
During the year 2015-2018 (reason) forgetting to lift side stand 36% of accidents occur. During the year 2015-2018 (reason) does not maintain speed limit 38% of accidents occur. During the year 2015-2018 (reason) does not obey traffic rules 22% of accidents occur. During the year 2015-2018 (reason) forgetting to lift side stand 36% of accidents occur. During the year 2015-2018 (reason) other problems 04% of accidents occur. Forgetting to lift the side stand causes huge accidents in rural areas partly in urban areas too.

DESIGN CONSTRUCTION:

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. The power obtained from the chain drive is transmitted to the appropriate component without power loss. The systematic design of system is made in order to consume only very low amount of power initially for few seconds to retrieve the stand. Then the power consumption does not occur after retrieving the stand. Construction of the proposed "**automatic side stand retrieve system**" consists of four major components. They are,

- Axle
- Sprocket Pinion
- Lifting lever
- Pushing lever

DESIGN CONSTRUCTION (3D MODEL)

WORKING MODEL

AXLE:

An axle is a central shaft for a rotating wheel or gear. On wheeled vehicles, the axle may be fixed to the wheels, rotating with them, or fixed to the vehicle, with the wheels rotating around the axle [citation needed]. In the former case, bearings or bushings are provided at the mounting points where the axle is supported. In the latter case, a bearing or bushing sits inside a central hole in the wheel to allow the wheel orgear to rotate around the axle.

SPROCKETAND PINION:

A sprocket is a profiled wheel with teeth, cogs, or even sprockets that mesh with a chain, track or other perforated or indented material. The name 'sprocket' applies generally to any wheel upon which radial projections engage a chain passing over it. It is distinguished from a gear in that sprockets are never meshed together directly, and differs from a pulley, in that sprockets have teeth and pulleys are smooth.
Sprockets are used in bicycles, motorcycles, cars, tracked vehicles, and other machinery to transmit rotary motion between two shafts where gears are unsuitable or to impart linear motion to a track, tape etc.

LIFTING LEVER:

Lifting lever is the third 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 the 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 machined well for tapered shape for smooth engaging with pushing lever.

PUSHING LEVER:

Pushing lever is the component pivoted centrally to the side stand. The pushing lever is metallic rectangular plate, whose bottom end is bended in shape of C and top end is welded with a small piece of rectangular rod. This small piece of rod is used for getting lifted by the lifting lever. Since the rod engages (or) lays over tapered edge of the lifting lever, thus the retrieving occurs smoothly.

WORKING PRINCIPLE:

Sprocket side stand retrieve system retrieves the side stand sprocket 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 direct on the inciter assembly‟s sprocket absorbs the power and rotates in clockwise direction.
The working of “Automatic Side Stand Retrieving 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 center of the side stand gets engage with the inciter assemblies lifting lever. During 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 gets 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 center 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.

ADVANTAGES:

- It‟s cost wise less than other method.
- This method is does not affect the engine efficiency.
- It is does not affect the structure of a vehicle.
- It is easily fitted in the vehicle than other method.
- It‟s a weight less method.
- Electrical supply not required.

CONCLUSION:

“Sprocket- side stand retrieve system” will definitely good retrieve system. Since the setup is compact it does not affect the performance of the vehicle. Because of the power is obtained from chain drive. Definitely this system could be used in all type of two-wheelers (TVS-XL, all front, back, hand geared) for retrieving the side stand, it will be the major system to control accidents due to side stand problem and protect the careless rider. This system can be implemented in all types of bikes by changing

small variation in size and cost of this system also very low and so it will not affect the economic level also while compare to other system this **"AUTOMATIC SIDE STAND RETRIEVING SYSTEM" will be the life saver.**

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