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Review: Improving Safety aspects in two wheeler bike

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ABSTRACT

As we all know that today's life is fast and furious and the people take the bike and move forward without removing the side stand because of hurry and due to other reasons i.e. emergency and this may cause accidents. To avoid such accidents cause due to uplift the side stand, we have developed a system in bike that as we press the gear lever, the side stand automatically lift upward i.e sprocket mechanism through retrieve the side stand automatically. The need of prevention of the rider on this type of condition, which is happened many times, so it is very important to create something or mechanism, which prevents the rider from the accidents cause due to uplifted side stand. The mechanism should be such that it should neither affect the original mechanism of the side stand nor create any other problems. In additional it should not increase the price of the two wheeler.

Keywords: Automatic, sprocket, gear mechanism and minimize accidents.

1. INTRODUCTION

In this project we are proposing an idea to overcome one of those accidents which take place due to the non-folding of bike side stand. In case of normal bikes, the stand should be folded manually.

While taking a deep curve or any obstacles coming on the way, sure there is maximum feasibility to meet with an accident. So to avoid this accident, we search for a way to fold the kick stand automatically.

The motorcycles and bikes concerned accidents occur due to riding the bikes with high speed. The major accidents occur due to forgetting to lift the side stand, because all the other sources of accidents has preventive measure, but accidents due to side stand do not have proper preventive measure.

Stand lifting mechanism for two wheelers in which prevents the ride from riding the bike in unreleased position (retracted position) of the side stand. This prevents the rider as well the vehicle to lose the center of gravity by imbalance or surface hindrance due to retracted position of side stand and thereby saves life of the rider. The side stand lock link is cheap, rugged and easier to install without additional installations and fittings.

There are several methods for retrieval of side stand

1) Sprocket Side Stand Retrieve System
2) Automatic Side Stand Lifting Mechanism
3) Bike Side Stand Unfolded Ride Lock Link

Sprocket Side Stand Retrieve System

Based on the working principle of two-wheeler (i.e., the power is generated in the engine and it transmits power to the pinion and makes it to rotate. The pinion transmits power to the rear wheel pinion and makes the vehicle to move). This is the basic principal followed in all type of two-wheelers, based on this "sprocket side stand retrieve system" is designed because this system works by getting power from chain drive.

Fig. 1 Stand Retrieve system

The arrangement and position of components makes the system to function. Each and every components has its own property and responsibility. The power obtained from the chain drive is transmitted to the appropriate component. 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. **"**Automatic side stand retrieve system" will definitely be good side stand retrieve system. Since this 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 types of two wheelers (All front, back hand geared) for retrieving the side stand. 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 Retrieve System" will be the life saver.

Automatic Side Stand Lifting Mechanism

The assembly consists of joint attached of the side stand, hook catch lock, cable wire, gear lever and spring with hook assemble the parts in proper manner. Hook catch lock is placed on a plate and of small plates having a hole attach to the shaft of the gear lever. Cable wire having two free ends is fixed at the position one is at the plate on shaft and

Fig. 2 Setup of Stand Lifting

another is to hook catch lock. The spring makes an angle which is attach to the side stand. External lever is attached to one of the corner of the stand. When we press gear the spring which is attached to the stand moves and lift. In this way the stand is uplifted automatically.

It is based on working principle of two wheeler (i.e the power is generated in the engine's and it transmits power to the pinion and makes it to rotate the pinion transmits power to the rear wheel pinion and makes the vehicle to move.

The working consists of three mechanisms. Main mechanism is spring mechanism by which stand is lifted up automatically without any manual effort. Second one is locking mechanism which is used for locking and de-locking of the stand. Last one is lever mechanism which can operate the spring. Manually, as we press the lever the wire which is attached to the hook catch lock get stretched and pull the lock by which lock gets de-locked. With this hook it escapes from lock and stand get lifted automatically by spring action. This prevents rider as well the vehicle to lose the centre of gravity by imbalance or surface hindrance due to retracted position of side stand and thereby saves life of the rider.

Bike Side Stand Unfolded Ride Lock Link

The side stand lock link makes the contact with the gear lever there by indicating the person handling the vehicle about the unreleased side stand when the rider tries to apply the gear in unreleased state of stand and prevents him from being endanger or to have unsafe ride of motorcycle. In this mechanism there is link designed for front gear motorcycle which is connected to the side stand.

Fig. 3 Released position of the side stand with assembled side stand lock link

To ensure safety of the rider, during absence of mind, negligence, urgency or carelessness the side stand lock link helps in knowing the state of side stand prior to movement of vehicle.

The developed side stand lock link can be fitted to any motorcycle with slight dimensional changes in the link. It is simple in design, easy to fabricate and is low cost.

2. MAIN WORK

[A] The assembly of modified side stand of bike mainly consists of following components:

- Side stand
- Spokes
- Spring
- Sprocket

Side stand

A stand usually a piece of metal that flips down from the frame and makes contact with the ground. It is generally located in the middle of the bike or toward the rear.

Fig. 4 Side stand

Spoke

It is a metallic rod made up of mild steel. It is fix on the sprocket of the gear box.

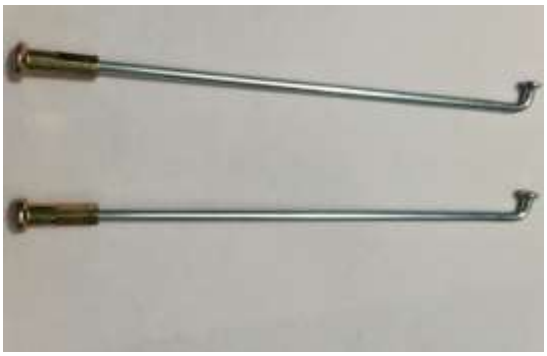

Fig. 5 Spoke

Spring

Spring is usually made out of hardened steel. Depending on the design and required environment, any material can be used to construct a spring, so long the material has the required combination of rigidity and elasticity. It is used to connect the stand with the bike.

Fig. 6 Spring

Sprocket

A sprocket or sprocket-wheel is a profiled wheel with teeth, or even sprockets that mesh with a chain. It is a part of the drive train that propels the bike forward.

Fig. 7 Sprocket

[B] Working

In gear box of bike, chain gear set we use the rotary motion of driving gear to lift the side stand of vehicle. When the gear box is in steady condition, the driving gear is not rotating but when we shift the gear paddle in first gear position the driving gear will rotate in the anti-clockwise rotation.

From basic rule, when circular disc is rotating, the force is acting in tangentially at some angle.

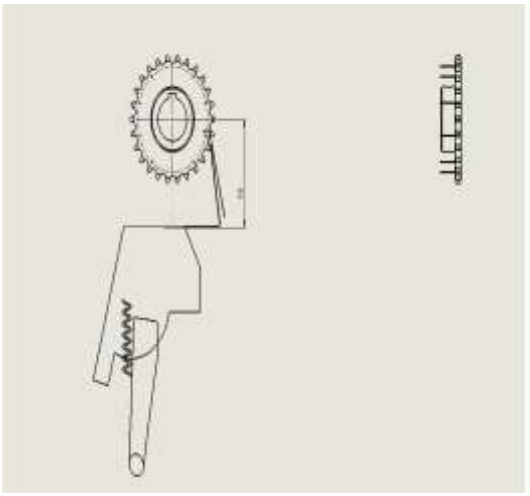

Fig. 8 design of gear mechanism

In above gear we joint small 8 to 10 spokes of 1 to 2 cm on the circular periphery of small driving gear through welding in lower part of the stand there is spring connected between the stand and chesses of the vehicle.

We attach a linkage which is connected with the spring of the stand the other end of link will pull by tangent of the link which will connected with the spoke of driving gear.

When we shift the gear of engine as soon as the driving gear will be rotate in an anticlockwise direction. At that time the "L" shaped link will be connected with the spoke or rod of driving gear. And as a tangent force the link pull the spring of side stand. Due to this the side stand is lifted automatically.

This is the engine base application of rotary motion of driving gear in the vehicle.

3. RESULT AND DISCUSSION

Automatic stand retrieves system working principle is simple. When bike is move then chain drive is rotate then sprocket is rotate along with chain drive. small 8 to 10 spokes of 1 to 2 cm joint on the circular periphery of small driving gear. one link is connected with two welded "l" shape plate at some angle. On that plate one link is fitted. One end of that link mounted on spoke of sprocket circular periphery. Side stand is fit with sprocket link by spring. So as the bike get start within few second link mount on the spoke lifts the side stand There should be the arrangement of the chain sprocket with spokes not move in reverse direction. This arrangement will be made in such a way the the bike stand will not get effected.

Presently many commercial two wheelers come with built in side stand locking systems with indicator and alarm systems, but they are expensive and can't be installed to the bikes that are in use (already on road) without the provisions for fixing it. The developed side stand lock link can be fitted to any motorcycle with slight dimensional changes in the link. It is simple in design, easy to fabricate and is low cost.

4. CONCLUSION

Automatic stand retrieves system construction is easy. Engine power is transmitted to rear wheel with help of chain drive. So from this principle if the arrangement of this type is done on front sprocket the side stand gets lift automatically. Construction and operation of this system is efficient. Since the setup is compact it doesn't affect the performance of the vehicle.

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. It is simple in design easy to fabricate and is low cost. While compare to other system this Automatic side stand retrieve system will be the life saver.

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