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AUTOMATIC SIDE STAND LIFTING MECHANISM

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***Abstract*— As we all know that today's life is very fast and the rider kick the bike and move forward without removing the side stand because of hurry and this may cause accidents. To avoid such accidents cause due to uplift the side stand, we may produce the new advancement in bike that as we press the gear lever, the cable wire get stretched due to the hook catch lock get de-locked to lift the side stand automatically. The need of prevention of the rider on this type of condition, which is happened many times, hence, it is important to create something or one mechanism, which prevents the rider from the accidents cause due to unlifted side stand. The mechanism should be such that it should neither affect the original mechanism nor create problems. In additional it should not increase the price of the bike. It is just a small mechanism, which operate the stand and operation should so easy. Therefore, it is necessary to have a separate attachment in a bike to lift up the side stand automatically.**

***Key Terms*— Automatic, Avoid Accident's.**

I. INTRODUCTION

Now a day's there are thousands of bikes running on the road. there is tough competition between the companies of the manufacturing different types of mechanisms. On the other hand percentage of accidents also increase, therefore every company try to find cause of accidents and eliminate this cause, however there is one problem, which is unsolved up to the present day. The problem is accident cause due to unlifted side stand. During driving very time due to early, forget next or any other such reasons, rider forgets to lift the side stand, this is very necessary to have an arrangements in the bike to prevents the accidents.some companies tries to solve this problem, but they got success in certain extend. The behind making any product is to fulfill the requirements of society. Therefore it is necessary to have a separate attachments, which can be connected to attach to the bike for automatically lifting the stand and this can be possible with pressing gear lever. In addition, this is easily welded or connected to most of bikes, but the limitation is that it is possible only for those bikes having foot gear arrangement. As we all know that today's life is very fast. The people are always in hurry because of this they forget to lift the side stand and may cause the accident. This is new advancement in bike with the facility to lift the side stand automatically. This may avoid unnecessary accidents. This is a simple mechanism that does not affect the original position of the bike. This is very cheap in the cost to apply on the bike. It is easily acceptable in market because of its standard maintaining attractive in appearance and is smooth in work.

II. LITERATURE REVIEW

Vishal Srivastava, Tejasvi Gupta, Sourabh Kumar, Vinay Kumar, Javed Rafiq, Satish Kumar Dwivedi, has Worked on Automatic Side Stand. If the rider may forget to retract the side stand before riding, Then undistracted stand hitting the ground and affected the rider control during the turn and this will caused to unwanted troubles. In this paper the presented mechanism consist of D.C. motor powered by motorcycle battery which is connected to the worm and worm gear mechanism for reduction of speed of motor and multiply the torque. Then the motor is actuated by rotation sensor which is mounted on the front of the wheel. We observe that from the design and analysis D.C. motor and other components like as Micro-controller and speed sensor, swich are occupies less space and this space is easily available into the mechanical frame of the motorcycle. After analysis of torque the required torque to raise the side stand is 6076 N-m and the power required to raise the side stand which is 19.078 Watt.[1]

Pintoo Prjapati, Vipul kr. Srivastav, Rahul kr. Yadav, Ramapukar Gon, Pintu Singh, Mr. Sandeep has worked on Sprocket Side stand Retrieve System. It is based on the Working Principle of Two Wheelers. In Motor Bike power is transmitted from engine's pinion to 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 bike to move. This system could be used in all type of two wheeler (Tvs-XL, all front, back and geared) for retrieving side stand and to control accident due to side stand problem and protect the careless rider.[2]

Bharaneedharan Muralidharan, Ranjeet Pokharel, has worked on automatic side stand retrieve system. This system is based on working principle of two wheeler(i.e the power is generated in the engine's and it transmite power to the pinion and make it to rotate the pinion transmits power to the rear wheel pinion and makes the vehicle to move. The objectives of this system is to provide a device responsive to an operating condition of the engine's of the motorcycle for moving the stand to its raised position when motorcycle is in its running position.[3]

Mr. V.V.R. Murthy, Mr. T. Seetharam, Mr. V. Prudhvi Raj, has worked on Fabrication and Analysis of Sprocket Side Stand Retrieve System. It is based on working principle of two wheeler(i.e the power is generated in the engine's and

it transmite power to the pinion and make it to rotate the pinion transmits power to the rear wheel pinion and makes the vehicle to move. This system could be used in all type of two wheeler (Tvs-XL, all front, back and geared) for retrieving side stand and to control accident due to side stand problem and protect the careless rider[4].

K. Sudershn Kumar, Dr. Tirupathi Reddy, Syed Altaf Hussain, Reported on Modeling and analysis of Two wheeler connecting rod. In this the connecting rod is replaced by aluminium reinforced with boron carbide for Suzuki GS150R motor bike. A parametric model of connecting rod is modeled using PRO/E Wildfire 4.0. Analysis is carried out by using ANSYS Software. They presented the result of material and reported that the working factor of safety is nearer to theorotical factor of safety in aluminium boron carbide.[5]

Sanjeev N K, has worked on Bike Side Stand Unfolded Side Lock Link. In this system the side stand lock link makes the contact with the gear lever therby 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 prevent him from being endanger or to have unsafe ride of motorcycle. The bike side stand unfolded side lock link for two wheeler is one of the life saving mechanism which prevents the ride from riding the bike in unreleased position of the ride stand. This prevent 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. The developed side stand lock link can be fitted to any motorcycle with slight dimensional changes in the link.[6]

III. CONSTRUCTION

The assembly of modified side stand of bike mainly consists of following components:
Gear lever with shaft,
Side stand,
Hook catch lock,
Spring,
Cable wire,
Hook attach on side stand,
Angle plates to prepare the table,
Cable lock.

The assembly consist of joint attached of the side stand, hook catch lock, cable wire, gear lever and spring with hook. We only 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 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.

A. Component of System

- Hook Catch Lock
- Cable wire
- Lever
- Shaft
- Spring
- Angle Plates
- Side Stand

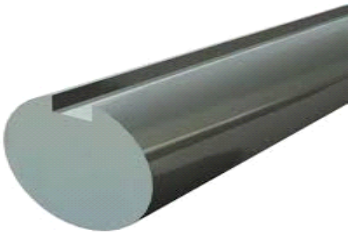
B. Main parts

1) **Hook Catch Lock-** Hook catch look is useful for locking and de-locking of side stand. As we press the gear lever the wire de-locked the side stand and with the help of spring action the side stand lift up automatically.

2) **Cable Wire**- Main use of this wire is to attach gear lever and hook catch lock with its both ends. Also de-lock the lock is main purpose of this wire.

3) **Lever-** Lever is the simple machine used to lift the weight. First let learn some term you will need to know. A load is the thing which you are lifted. A fulcrum is the thing that make the load lighter. An effort is the person pushing to make the object move.

4) **Shaft**- A shaft is a rotating element, which is used to transmit power from one place to another. The power is deliverd to the shaft by some tangential force and the resultant torque setup within the shaft permits the power to be transferred to various machined linked up to the shaft. To transfer power from one shaft to another, the various member such as pulley, gear, etc. are mounted on the the shaft. The various member are mounted on the shaft by means of key and splines. Shaft is used for the transmission of torque and bending moment.



5) **Spring**- A spring is an elastic object used to store the mechanical energy. Spring is usually made out of hardened steel. Small spring can be wound from pre-hardened stock, while larger once are made from annealed steel and hardened after fabrication. Some non-ferrous metal are also used including phosphorous bronze and titanium for parts requiring corrosion resistance and beryllium copper for spring carrying electric current. The rate of spring is change in the force it exerts, divided by the change in deflection of the spring. That is, it's the gradient of the force versus deflection curve. An extention or compression spring has units of force divided by distance, for example N/mm. torsion spring have units of force multiplied by distance and divided by angle, such as N-m/rad. The inverse of spring rate is compliance that is if a spring has a rate of 10M/mm, it has a compliance of 0.1mm. the stiffness of spring in parallel is additive, as is the compliance of spring in series.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, technically a wooden bow is a form of spring.

6) **Angle Plates**-Angle plates are generally made of mild steel. It is used to make rectangular or square table and for many purpose.

7) **Side Stand**-A side stand is a device on a bicycle or motorcycle that allows the bike to be kept upright without learning against another object or the aid of a person. A "smaller, more convenient" kickstand was developed by Joseph Paul Treen, the father of former Louisiana Governor, Dave Treen. A kickstand 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. Some touring bikes have two: one at the rear, and a second in the front.A side stand style kickstand is a single leg that simply flips out to one side, usually the non-drive side, and the bike then leans against it. Side stands mounted to the chain stays right behind the bottom bracket or to a chain and seat stay near the rear hub. Side stand mounted right behind the bottom bracket can be bolted on, either clamping the chain stays or to the bracket between them, or welded into place as an integral part of the frame.[1]

IV. Working Principle

The working consists of three mechanisms. Main mechanism is spring mechanism by which stand is lift up automatically without any manual effort. Second one is locking mechanism which is use

for locking and de-locking of the stand. Last one is lever mechanism which can operate the spring. As we press the gear lever wire which is attached to the hook catch lock get stretched pull the lock by which lock gets de-locked. With this hook it escapes from lock and stand get lifted automatically by spring action.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.

V. Working Model

VI . ADVANTAGES

- It is easily attachable.
- It is rigid versatile.
- It is low cost application.
- Near about less maintenance.
- It is light in weight .

VII. APPLICATION

- It can be used in all type of bikes and motorcycle which have gears, this same gear can be used to operate lift the side stand.
- Many people while driving the vehicles forget to lift up stand and hence accident takes place with the help of these application road accident can be avoided.

VIII. CONCLUSION

Running a bike with side stand in its uplift may create problems but with the help of our accessories we solve this problems.The objective of this project is to provide the rigid and safety mechanism without changing in any standard design of bike. Moreover it should be economical for every class of society. From above report, it fulfills consumer needs and provides versatility moreover, as it is new product it will promote employment and vast field development for new engineer in day period.

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