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A REVIEW ON AUTOMATIC MOTOR BIKE SIDE STAND SLIDER

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Abstract - *The two-wheeler has grown in importance as a mode of transportation in modern times. Although they are simple to ride, two-wheelers may sometimes cause accidents. As we all know, one of the main causes of accidents is the side stand. Riders sometimes start their bikes and go out in a hurry without taking off the side stand, which increases the risk of accidents. As is common knowledge, the side stand is crucial when the vehicle is at rest. Even as they are helpful, they occasionally result in sad things like accidents caused by negligent riders. Major accidents occur if lifting side stands are forgotten. When a bike stand is opened, the risk to the user is increased because the bike may jump onto the stand and seriously hurt them. It might result in riders' deaths or serious injury. Many preventive measures have been taken to address this issue, however they are ineffective. Therefore, by considering all this issues we created the Automatic Motor Bike Stand Slider utilizing the micro-controller to prevent such mishaps. Sensors, a motor with gear box indicator, and safety switches were also incorporated into this system, which was controlled by an Arduino Micro controller. The system utilizes the existing energy supply, therefore no extra energy source is needed.*

***Key-Words*: Side stand, Motor, Sensor, Micro-controller, Wires.**

1. INTRODUCTION

In all over world everywhere motorcycle is used. The early history of the automobile is often divided into variety of eras, supported the prevalent means of propulsion. Later they were defined by the trends in styling of the exterior, body size, and utility preferences. The side stand plays major role while the vehicle is in rest position. But it has some disadvantages takes place as while the driver starting the motorcycle, there may be possibility of forget to release the side stand this will caused to unwanted troubles.

The side stands work as a support for a parked vehicle. 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 may cause to unwanted troubles. Then the undistracted stand hitting the bottom and affected the rider's control during the turn. These are the major source for accidents. Forgetting to lift the side stand causes huge accidents in rural areas partly in urban areas too, because all the opposite source of accident has precautions, but accidents due to side stand don't have proper precautions.

In order to reduce that we have developed a new type of side stand which is automatically retracting the side stand through some mechanical and electronic arrangement and it also have some advance feature. In this system microcontroller, Displacement, Vibration Sensor with a dc battery is used. Through the sensor, sensor sense the rotation of the key from OFF position to ON and sends the signal to the microcontroller which is actuate the dc motor which is caused the disengage the stand from the road.

2. LITERATURE REVIEW

There are different types of mechanisms are available to lift these side stands. We studied some of those papers and those papers them are mentioned as follows:

1.) Sachin J. Ugale et al proposed a new system of "AUTOMATIC BIKE STAND FOR TWO-WHEELER" for lifting the side stand. In this process they used the micro-controller, sensors, etc., to lift the side stand. When the bike is lifted, the sensor senses the distance from stand to ground and sends signals to the micro-controller. The micro-controller activates the DC motor and through the DC motor the stand may be lifted.

2.) V. Bhargav et al designed the "DESIGN OF AUTOMATIC MOTOR BIKE STAND SLIDER". In this system he told the history of bikes and who proposed these bikes and he used the pro mini micro-controller to lift the side stand. In this system he used different components. When the Ignition key is turned on the side stand may lift up and when the ignition key is turned off the side stand may be retracted to its original position.

3.) Vishal Srivastava et al proposed the "AUTOMATIC SIDE STAND". In this system they also used the micro-controller to lift the side stand. Here they used a step-by-step process to fabricate the side stand. But, in this system they additionally include a speed sensor for reduction of the side multiplied by the torque.

4.) Navendra Pratap Singh et al introduced "AUTOMATIC BIKE SIDE STAND". In this system they used the sprocket mechanism to lift the side stand. When the motor bike starts the chain drive takes the energy from

the battery and it activates the sprocket. The sprocket will rotate and it pushes the pushing lever, the pushing lever pushes the lifting lever and through the lifting lever the side stand may be lifted up.

5.) P. Pavan et al produced "AUTOMATIC TWO-WHEELER SELF-SIDE STAND SYSTEM". In this system they used the sprocket system with helical spring mechanism. When the rider makes the first gear the force exerted on the spring and the side stand is lifted.

6.) Anlin J P et al proposed "DESIGN AND FABRICATION OF AUTOMATIC SIDE STAND LIFTER FOR TWO-WHEELER". In this system they designed the different views of side stand. This is also a sprocket helical spring mechanism. But, in this system they used the single lever gear to lift the side stand.

7.) Shubham Jichkar et al introduced "AUTOMATIC SIDE STAND SLIDER ASSEMBLY" for lifting the side stand. In this system when the rider starts the ignition key, the sensor sends the signals to the micro-controller and the micro-controller activates the DC motor. When the ignition key is ON the side stand is rotated by 90^0 and when the ignition key is turned off the side stand may be retracted to its original position.

8.) Amit Singh et al proposed the "AUTOMATIC SIDE STAND FOR TWO-WHEELER" to lift the side stand. In this system they used the Arduino based micro-controller to lift the side stand. The DC motor is connected to the vehicle battery. When the person turns ON the ignition switch the motor starts rotating in anticlockwise direction and the stand is retracted.

9.) T. Ashok et al introduced the "AUTOMATIC SIDE STAND RETRIEVE SYSTEM" for lifting the side stand. In this they used the Micro-controller unit to lift the side stand. So, when the key is turned on the sensor senses the signals and send to a micro-controller chip, the chip activates the DC motor which is attached at the base part of the bike and through that the motor runs and stand is lifted up.

10.) P. Vijay et al introduced the "AUTOMATIC SIDE STAND RETRIEVING SYSTEM FOR TWO WHEELERS". This is operated by sprocket. When the ignition starts, the chain drive receives some energy from the battery and it pushes the pushing lever. The pushing lever pushes the lifting lever and through that the stand is lifted.

11.) Tahir Shaik developed an "AUTOMATIC BIKE SIDE STAND BY USING MICRO-CONTROLLER" to lift the side stand. In this system he developed a program by using the C language to lift the side stand.

12.) Ranjeet Pokharel introduced "AUTOMATIC SIDE STAND RETRIEVE SYSTEM" to lift the side stand. In this system he uses the sprocket mechanism. When the ignition starts, the chain drive receives energy from the battery and makes the sprocket to rotate and the pushing lever pushes the sprocket lever through that the stand is lifted.

13.) Suraj M. Dhonde used the "AUTOMATIC POSITIONING OF TWO-WHEELER'S SIDE STAND" to lift the side stand. In this system he used the components like Arduino, DC motor, side stand and battery to lift the side stand. In this process when the bike is lifted the micro controller send the orders to the motor and the motor lift the side stand.

14.) Moin Ahmad introduced "AUTOMATIC SIDE STAND LIFTING SYSTEM". In this system he used the spring to lift the side stand. When the rider makes the first gear, the forced exerted on the spring and it lifts the side stand.

15.) Manthu Praveen Kumar proposed "AUTOMATIC SIDE STAND RETRIEVAL SYSTEM USING KINEMATIC LINKS". In this he used the kinematic links to lift the side stand. When the rider makes the first gear the spring which is connected to the L-link may be activated and it lifts the side stand.

16.) Aniket Gulhane proposed the "FABRICATION OF AUTOMATIC SIDE STAND LIFTING MECHANISM" to lift the side stand.in this system when we shifting the gear that lever power transfer through the connecting rod to the catch lock hook and catch lock hook is de-locking and due to action of spring side stand is lifted.

17.) Dr. J. Hameed Hussain introduced "DESIGN AND FABRICATION OF AUTOMATIC SIDE STAND RETRIVE SYSTEM". In this he designed and fabricated the side stand lifting system through sprocket mechanism. In this system when the vehicle is in moving motion the sprocket will lift the side stand.

18.) Narayanan Seshan introduced "AUTOMATIC SIDE STAND" to lift the bike stand. In this system he used the Arduino, DC motor, sensor and a stand to lift the bike stand. When the bike was lifted by the rider the sensor will send the signals to the micro-controller, the micro-controller will activate the DC motor and the DC motor will lift the side stand.

19.) K. Balasubramanian introduced "AUTOMOTIVE SIDE STAND RETRIVAL MECHANISM". In this he designed the system using the CATIA software. This system works on the spring mechanism. He also mentioned the drawbacks of the system and also the accident percentage.

20.) Bharat Krishan Nirmal developed "AUTOMATIC SIDE STAND RETRIEVAL SYSTEM". In this he used the sprocket mechanism. When the vehicle is in rest, the sprocket will engage with the lever and when the vehicle is in moving motion the sprocket will disengages the lever and the lever lifts the side stand.

21.) Raj Mahour et al proposed "AUTOMATIC MOTOR BIKE STAND SLIDER". In this system they used the micro-controller, servo motor, ignition switch & side stand to lift the side stand. When the ignition switch is turned on the micro-controller will actuate the servo motor and the side stand is lifted up.

22.) Pravin barapatre introduced "AUTOMATIC SIDE STAND LIFTING MECHANISM" to lift the side stand. In this he said the three mechanisms to lift the side stand and he sued the micro-controller. When we press the lever the wire which is attached to the hook catch lock get stretched and pull the lock by which the lock gets de-locked. With this hook it escaped from the lock and stand lifted automatically.

23.) K. Gowtham developed "AUTOMATIC SIDE STAND RETRIEVES SYSTEM". He used the sprocket to lift the side stand. When the rider lift the side stand the sprocket will rotate with the chain drive. Through the sprocket the pushing and lifting lever is operated and the lifting lever lifts the side stand.

24.) Tejas Brahmankar et al taken the "ARDUINO BASED AUTOMATIC SIDE STAND USING GEAR MECHANISM". It works on the gear mechanism. When the ignition is on the stand is lifted and when the ignition is off the stand is retracted to its original position.

25.) Achinta Mandal et al have dealt the "AUTOMATIC SIDE STAND RETRIEVAL SYSTEM". This system is worked on the sprocket mechanism. The sprocket will rotate by the chain drive and it will push the pushing lever the pushing lever pushes the lifting lever. The lifting lever lift the side stand.

26.) Pintoo Prjapati et al has chipped away at "SPROCKET SIDE STAND RETRIEVE SYSTEM". It depends on the Working Principle of Two Wheelers. In Motor Bike control is transmitted from motor's pinion to raise that direct movement of the chain is consumed by back wheel's sprocket and changed over into rotating movement. That turning movement of the back wheel makes the bicycle to move. This framework could be utilized in all kind of for recovering side stand and to control mishap because of side stand issue and ensure the reckless rider.

27.) Akhil Ramesh et al developed "SPROCKET SIDE STAND RETRIEVAL SYSTEM". 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 con-verted into rotary motion. Through this type the side stand is lifted by using the sprocket.

28.) Mohit Kumar Pandey et al dealt with "AUTOMATIC MECHANICAL BIKE STAND" for lifting the side stand. In this process he used the cam and follower mechanism. He uses a sprocket to lift the side stand. The sprocket is mounted on a free wheel. So, when the vehicle is in forward motion it engages and when it engages the side stand is lifted up.

29.) P. Ashok et al worked on "SPROCKET SIDE STAND RETRIEVAL SYSTEM". In this system When the ignition starts, the chain drive receives some energy from the battery and it pushes the pushing lever. The pushing lever pushes the lifting lever and through that the stand is lifted.

30.) Shantanu S. Chilgar et al introduced "DESIGN AND MODIFICATION OF SIDE STAND LIFTING MECHANISM". In this system they used the spring to lift the side stand. When the rider makes the first gear, the forced exerted on the spring and it lifts the side stand.

3. CONCLUSION

By observing all the above-mentioned journals some of them are told that the sprocket is best suited for lifting the side stand, some of them are told about the micro-controller is best for lifting the side stand and some of them are told that the helical spring is very useful to lift the side stand. But, as per our knowledge, we conclude that the Motor Bike Side Stand Lifter by using the Micro-controller is best. Because 85% of the authors said that the Arduino micro-controller is best for lifting the side stand and it is very easy to handle.

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