

Automatic Bike Side Stand

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Abstract: The Side stand is used for supporting a parked motorcycle. If the rider may forget to retract the side stand before riding, then the undistracted stand hit the ground and thus may cause accident and the rider lose control over the bike

To solving this problem many advanced measures has taken. The new system “automatic bike side stand” is manufactured based on the working principle of motorcycles. 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.

Keywords: bike stand

1. Introduction

Bike plays a very important role in our life. It helps to travel from one place to another place in very short time. The bike is a widely used vehicle in everyone life. As we know that side stand plays a very important role while the vehicle is in the rest condition. It may cause the death of riders or may be some bad injuries. This rate is increasing day by day so it is necessary to take up some preventive measures to avoid an unwanted accident. In manual side stand there is a possibility that the riders have been forgetting off to lift the stand and it causes an unwanted accident. So to overcome this accident we make a project that is automatic bike side stand. The automatic side stand works on the simple mechanism and no need to take extra power while operating. The design of the vehicle is not affected only simple mechanism is added to the vehicle.

Here the components like sprockets, lifting lever, pushing lever, spur gear, chain and frame are added which is cheap in price. So overall price after installing this idea in a vehicle is not affected. This is the new advancement in a bike with the facility to lift the side stand automatically. This may avoid an unnecessary accident in the day to day life. This mechanism of our project is simple and that's why it does not affect the current design of the bike.

2. Principle

Automatic bike side stand retrieve system is to be manufactured based on the working principle of motorcycle. The design setup is to be kept in between chain drive, then sprocket rotates and side stand get retrieves automatically.

The suitable components take the power obtained from the chain drive without any power loss.

3. Components of Project

1. Bearing
2. Sprocket
3. Lifting Lever
4. Pushing Lever
5. Spur Gear
6. Chain
7. Frame

4. Working Assembly

The function of system of the above four components are arranged in two assembly which is described below.

- Inciter assembly
- Retriever assembly
- Inciter assembly consist of Axle sprocket and lifting lever
- On the front side of the axle the lifting lever is welded and the sprocket is arranged on the centre of the axle.
- The retriever system consists of pushing lever and bike side stand.
- The pushing lever is pivoted at the centre with bike Side Stand.

5. Processed used

- Drilling
- Electric arc welding
- Cutting
- Facing

6. Data of Components

- Diameter of big gear (D)=21.5cm
- Diameter of small gear (d)=8cm
- Teeth of big gear (Z1)=48
- Teeth of small gear(Z2)=18
- One rotation of big gear =2.75 of small gear
- One rotation of chain =6 rotation of small gear
- One rotation of chain=2.25 rotation of big gear
- Length of chain =150 cm

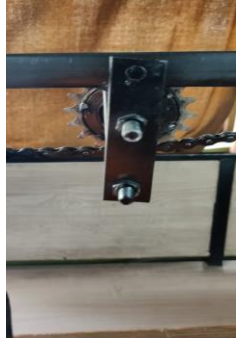


Fig. 1. Lifting lever



Fig. 2. Gear Sprocket



Fig. 3. Retriever Assembly



Fig. 4. Project hardware setup

7. Conclusion

Automatic Bike Side Stand is a good retrieve assembly system in bikes. This system is petite in size and it does not hinder the efficiency of the motorcycle. We obtain the power from the chain drive so it can be used in all two wheelers vehicle for retrieving the side stand. This setup will help to eradicate the accidents happens if the side is not pulled back. This system can be implemented by changing small variation in bikes so it will not obstruct the fiscal conditions.

References

- [1] Reeder A. I, Chalmers, D. J. and Langeley J. D, "The risky and protective motorcycling opinions and behaviors of young on road motorcyclist in New Zealand."
- [2] Sprocket and Chain guide created by REV Robotics 2016.
- [3] Frederick G. Taylor and R. L Granston, "bicycle support", U. S. patent 456,347.
- [4] V. V. R. Murthy, T. Seetharam, V. Prudhvi Raj; "Fabrication and Analysis of Sprocket Side Stand Retrieval Systems," International Journal & Magazine of Engineering, vol. 2, no. 7, pp. 211-215, July 2015.
- [5] Pintoo Prjapati, Vipul kr. Srivastav, Rahul kr. Yadav, RamapukarGon, Pintu Singh, Sandeep, "sprocket side stand retrieves system," International Journal of Technical Research and Applications,
- [6] C. H. Mohammed Koya, "Sprocket Side Stand Retrieval System," National Conference on Technological Advancements in Civil and Mechanical Engineering, vol. 6, Special issue 4, pp. 99-102, March 2017.