AUTOMOTIVE SIDE STAND RETRIEVAL MECHANISM

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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 get retrieves automatically.

INTRODUCTION

The early history of the automobile can be divided into a number eras, based on the prevalent means of propulsion. Later periods were defined by trends in exterior styling, size, and utility preferences. Today, Motor cycles are used all over the world. Designs should design each and every component in two wheelers with very at most safe and the product should be economical. In motorcycles, the side stand plays major role while the vehicle is in rest condition. While the driver starting the motor cycle, they may be a possibility of release the side-stand. This will lead to unwanted troubles. To avoid this driver has to ensure that the side stand is released

This problem may be rectified by releasing the side stand when the gear shifting. Because while gear shifting time the leg is in safe and comfortable place. This can be achieved using spring force.

EVOULUTION OF MOTOR VEHICLES:

Sustained economic growth have led to rapidly increasing motorized vehicles in India. There were 210 million registered vehicles in India as on 31st march 2018. Vehicular composition and pattern of category wise growth rates have revealed the preferences of road users for personalized means of transport over public road transport. Vehicular penetration in India, measured by number of vehicles per 1000 persons, as seen substantially increased from
From 1981 to 167 by 2015. The increase in personalized means of transport and declined in share of public transport have significant implication on traffic congestion and safety.

STATISTICS ON ACCIDENTS:
During 2016, a total of 4,80,652 road accidents were reported by all the States /Union Territories. Of these 1,36,071 (28.3 per cent) were fatal accidents. The number of persons killed in road accidents were 1,50,785 i.e an average of one fatality per 3.2 accidents. The total number of persons injured in road accidents were 4,94,624.

The analysis of road accidents 2016 reveals that motorized vehicles accounted for 95.5% of the total road accidents. Amongst the vehicle categories, two wheelers accounted for the highest share in road accidents (28.8%) in 2016 followed by cars, jeeps and taxis (23.6%); trucks, tempos, tractors and other articulated vehicles (19.7%) other motor vehicles (9%), buses (8.3%) and autorikshaws (6.1)

SIDESTAND:
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 stand this will caused to unwanted troubles. then the undistracted stand hitting the ground and affected the riders control during the turn. While the two-wheelers is concerned accidents occurs due to riding the vehicle in high speed, ignores to use helmets, does not maintains the speed limit and forgets to lift the side stand while riding the vehicles. 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 other source of accident has preventive measure, but accident due to
side stand do not have proper preventive measure. If you see the accident status 36% of the accidents occur due to this problem

<table>
<thead>
<tr>
<th>SL.NO</th>
<th>DURING THE YEAR</th>
<th>REASONS FOR ACCIDENTS</th>
<th>%OF ACCIDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2012-2016</td>
<td>Forgetting to lift side stand</td>
<td>36%</td>
</tr>
<tr>
<td>2.</td>
<td>2012-2016</td>
<td>Does not maintain speed limit</td>
<td>30%</td>
</tr>
<tr>
<td>3.</td>
<td>2012-2016</td>
<td>Does not obey traffic rules</td>
<td>22%</td>
</tr>
<tr>
<td>4.</td>
<td>2012-2016</td>
<td>Other issues</td>
<td>12%</td>
</tr>
</tbody>
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LITERATURE SURVEY:

EXISTING METHODS: To prevent accidents occur due this side-stand many ECU and mechanical project had been found. MODERN ECU In order to reduce accidents due to carelessness in lifting the side-stand, many advance measures have been introduced like ECU, the modern ECU contains a 32 bit and 40 MHz processor. It will be fast as pc’s microprocessor. The ECU decides timing and functioning of engine and its parts. This play its role in dashboard, this indicates the gear shifting, side stand, to wear helmet in digital display E.g, Hero Honda’s Karizma ZMR. But the people ignore to listen those indicators and safety rules. So for safe guard many mechanical projects have been found to retrieve the side stand automatically

MECHANICAL PROJECT

In existing mechanical project many ideas had been found to lift the side-stand automatically. i) One small flat rod is kept attached and pivoted between the gear actuator lever and the side stand of the bike. when the gear is actuated the side stand get lifted automatically. ii) Small stepper motor is connected between the side stand and the engine ,when engine is started the stepper motor gains the source of power and retrieve side stand automatically These are some methods to retrieve side stand automatically when the vehicle moves but it is not implemented in practical use due to its drawback
DRAWBACK OF EXISTING METHODS

ECU methods are implemented only in costlier bikes but it does not implemented in normal domestic bikes due to their cost. When we come across those mechanical projects we could note some drawbacks like wear out of gears, making injuries in legs while actuating gears. Major drawback is it cannot use in all type of two-wheelers. So, in order to solve this we thought and designed “AUTOMATIC-SIDE STAND RETRIEVE SYSTEM” this system can be attached in all type of two-wheelers (mopeds, geared, non-geared, hand geared bikes).

PROPOSED METHOD:

When we apply force on the gear pedal, force transmits from gear pedal to spring which is interlinked with wire. This power is used to retrieve the side-stand. This gear principle followed in all type of two-wheelers, based on this “automatic-side stand retrieve system” is designed because this system works by getting power from gear to the side stand. This automatic system consists of four components, which is assembled as two set up which would be explained briefly in construction and working part of this paper.

DESIGNING COMPONENTS USING CATIA:

The below mentioned parts are designed by using catia software which is usually used to design the 3D components. The below parts are designed separately in the part design and assembled through the assembly section.

COMPONENTS USED:

1. side stand
2. hook catch lock
3. lever
4. cable wire
5. shaft
6. spring
7. angle plates

HOOK CATCH LOCK:

This the component which is used for locking and delocking of side stand. As we press the gear lever the wire delocked the side stand and with help of spring action the side-stand lift up automatically.
ANGLE PLATES:

BASE OF THE SYSTEM:
SPRING:

A spring is an elastic object used to store the mechanical energy. Spring is usually made of hardened steel. Small springs can be wound from pre-hardened stop. While larger ones are made from annealed steel and hardened after fabrication. Some non-ferrous metals are also used, including phosphorous bronze and titanium for parts requiring corrosion resistance.

LEVER:

Lever is the simple machine used to lift the weight. First, let learn some terms you will lead to known. A load is the thing which you are lifted. A fulcrum is the thing that makes the load lighter. An effort is the person pushing to make the object move.
COMPLETELY ASSEMBLED BODY:

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.

ADVANTAGES

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

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.

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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