Advance Safety In Two Wheeler

Sagar D. Aher[1]
Student
Department of Mechanical Engineering
AIETP Ashoknagar,
Shrirampur, India
sagaraher.1851@gmail.com

Rameshwar G. Somawanshi[2]
Student
Department of Mechanical Engineering
AIETP Ashoknagar,
Shrirampur, India
rameshwarsomavanshi@gmail.com

Avinash N. Nimbalkar[3]
Student
Department of Mechanical Engineering
AIETP Ashoknagar,
Shrirampur, India
avinashnimbalkar510@gmail.com

Dadasaheb N. Pawar[4]
Student
Department of Mechanical Engineering
AIETP Ashoknagar,
Shrirampur, India
dadapawar4141@gmail.com

Abstract— One of the problem that we are experiencing during travelling on road surface the number of times accident is happened when side stand of the bike is not take up while, it only due to the carelessness of the driver or any emergency. It wills leads to fatal accidents and savior injury to the driver as well as pillion. The number of times accidents is happened on the road due to the released condition of side stand of bike during its running. In India the number of road accidents are happened in every year is near about 3500 to 4000 as per the survey. So, to avoid this we find the new solution over it i.e. **"**Advance Safety Stand in Two Wheeler**".** So, it will totally help to avoid the percentage of road accidents due to the arrangement of side stand in two wheeler. Our idea is that until & unless we do not take up the stand of the bike it will not start. Whenever bike is parked on side stand and if anybody tries to start the bike, it doesn't possible because the air which is required for combustion process is not passed in to the carburetor and proper air-fuel mixture is not takes place inside it, so the bike will not start either by cell or kick. In our project we design the piston and cylinder arrangement which is place near to the air filter in which it passes pure air into the carburetor. Due to the arrangement of piston and cylinder the air inlet valve is open and close as per the movement of the side stand in up and down. The piston is connected to the stand through the inner lining wire. The main function of it is to provide the safety to the driver, pillion and vehicle.

Keywords- *Carburetor, Piston, Cylinder, Air filter, Inlet valve, Side stand, Safety.*

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I. INTRODUCTION

What is Safety?

We can define the safety as a thing that helpful to totally avoidance of any hazardous & any injurious to the human being this is happened due to the accident while working in industry or either is driving or either doing any kind of work. It means safety is nothing but resistance/ opposition to any kind of accidents which may leads any serious hazardous & injurious to the human. Also we can define the safety that preventive measures that should be taken against accidents. We see in day to day life the safety is very important thing & without safety there will be every possibility to happen accidents. So to avoid number of accidents we have to follow proper safety procedures & safety devices. But in now a day the human becomes careless and not follow proper safety procedures that may leads to accidents. Safety and environmental considerations are an important part of our daily life. In order to maintain the safety we have to follows proper safety procedures which are given in the manuals of the respective bikes or any machine, equipment. This manual work as a guiding document to keep our self well from any kinds of injury and harm (hazard) due to the accidents.

Need of Safety:

Safety is necessary from following some important reasons:

1. To avoid the serious danger.
2. A serious damage to the machine components.
3. Any injurious to the human being either working in Industry Or at the time when we do anything works.
4. to prevention from major and minor accidents due to Carelessness.
5. To feel safe while working or doing any task.
6. to increment in work efficiency.
7. To have a long life.

II. PROBLEM DEFINATION

One of the problems that we are experienced i.e. our one friend went to Nasik (Nasik) for doing somewhat important work. He completed his work. During coming back he forgot to take up the side stand of the bike, because he was in emergency & at the time of turning an accident was happened. In that accident our friend was injured. Now he is good by taking hospitality treatment up to 8 to 10 days.

In day to day life we see the peoples are always is in emergency, so they forget to take up the side stand of bike and it may cause a serious accidents.

So we find the new innovation to avoid such types of accidents that is simple safety stand arrangement. By implementing this new safety technique in bike, the bike will not start unless & until we do not take up the side stand of the bike. This arrangement totally avoids the overall percentage of road accidents which will be happened due to the side stand of the bike. Due to this arrangement in bike the driver & pillion

will be safe from the accidents and also the bike will be safe from damaging, scratches, etc. This arrangement also helps to increase the life span of the bike and will be save its repairing cost.

III. ADVANCE SAFETY IN TWO WHEELER

A) Specification: -

By taking various survey & designs we have finalized following specification.

1. Diameter of connecting rod= 4.002mm.
2. Length of connecting rod= 180mm.
3. Helical compression spring specification:-

i) Outer diameter of spring= 8mm.
ii) Inner diameter of spring= 6mm.
iii) Diameter of spring wire=1mm.
iv) Total numbers of coils= 30.
v) Solid length=30mm.
vi) Free length= 99mm.
vii) Spring index= 8
viii) Stiffness of spring= 0.130 N/mm.
ix) Diameter of piston= 34mm.
x) Diameter of cylinder= 34mm.

4. Weight of mechanism= 300 gm.
5. Cost of mechanism=Rs. 600.

B) Construction: -

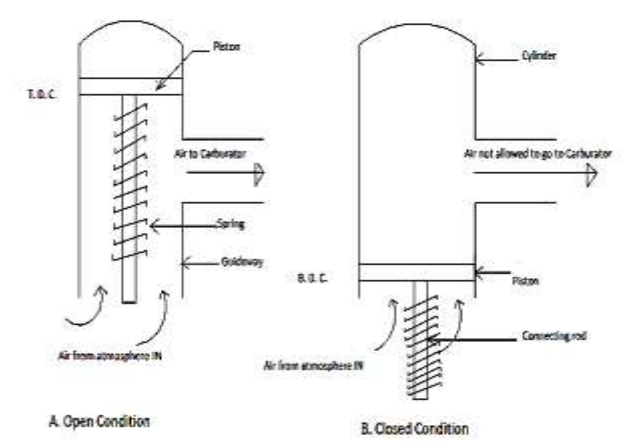

Figure 1.1 Operation of piston and cylinder mechanism

Figure 1.2 Piston and Cylinder Assembly

Figure 1.3 Location of mechanism in Bike

Figure 1.1 and 1.2 shows the operation diagram and assembly for piston and cylinder respectively. It consists of following components.

- Piston
- Cylinder
- Connecting rod
- Guide way
- Helical compression spring
- Inner wire
- T Section
- Screws

1) The construction of a piston and cylinder is very simple. In which piston is connecting to connecting rod.
2) The one end of a connecting rod is connected to the piston and another end is connected to the inner wire.
3) Inner wire is a most important link in between the stand and connecting rod. The one end of the inner wire is connected to the connecting rod and other end is connected to the metal strip which is connected to the side stand of bike.
4) At the periphery of a cylinder one hole is drilled for the purpose of to move atmospheric air toward the carburetor for the purpose of making proper air fuel mixture in carburetor for combustion process, which is done inside the engine.
5) The helical compression spring is fitted in between the piston and guide way and which is surrounded by the connecting rod.
6) The upper end of T-section/cylinder is closed by a cap as shown in figure 1.2.
7) The side end of the T- section is connected to the carburetor pipe as shown in figure 1.3.
8) The piston and cylinder mechanism is placed in between the air filter and carburetor.

C) Working: -

1) We know that for the combustion purpose in engine, air is necessary and without air it is impossible to done combustion process. When the sufficient amount of air is not reached toward the engine, then there is a no any chance to start the vehicle.
2) In our project piston and cylinder is only act as valve for the purpose of open & close the supply of an atmospheric air which is passed toward the carburetor.
3) The side stand of the bike in upward direction is also called as a normal position of a bike.

4) During this condition piston in the cylinder is in top dead center position and the compression spring is at unloaded condition.
5) During this condition atmospheric air is easily passed from the air filter to the carburetor and then engine.
6) It means that whenever side stand of the bike is in upward direction at that time the bike is easily start without any hindrances .
7) But when the driver pushes the side stand of the bike in downward direction at that time the inner wire which is connected to side stand also move in downward direction, due to which piston connected to the connecting rod also move from top dead center position to the bottom dead center position. Therefore the piston closed the air valve; it means that there is a no any chance to flow air from atmosphere to the carburetor.
8) It means that whenever side stand of the bike in downward direction at that time there is a no chance to start the bike.
9) In this way mechanism works.
12) The main objective of our project is to reduce the overall percentage of the accidents which happened due to side stand (downward direction of a side stand) of the bike due to careless of the driver.

D) Advantages: -
1. It provides safety to the driver and pillion.
2. It completely reduces the overall percentage of the road accidents.
3. It does not require any specific lubricant.
4. It is reliable.
5. It is totally free from pollutions.
6. It does not affected by heat and moisture.
7. It is simple in construction.
8. It is having low weight.
9. It required very less space.
10. Flexibility is too good.
11. No any chances of corrosion.
12. The parts are easily available in the nearby market.
13. It does not effect on speed and torque of the engine.
14. Its cost is low.
15. We can easily disassemble and assemble this mechanism.
16. It is suitable for every two wheeler vehicles.
17. Its manufacturing process is very simple.
18. Cleaning is not required.
19. Maintenance experts are not required.
20. It does not create any hazardous effect on environment.
21. It does not required extra effort to take up and released the side stand of the bike.
22. The percentage of exhaust gases will never be increase by integration of this project in bike.
23. It does not require any kind of electrical energy to run.

D) Disadvantages: -
1. It increases very negligible percentage of fuel consumption.

IV. CONCLUSION

By taking actual testing's on our mechanism, we analyzed that:
1) The mechanism shows a desired effect for safety of biker and pillion. When side stand of bike in downward direction, bike was not start. When side stand of bike in upward direction, bike was start.
2) Before implementation of our mechanism in bike the average of our bike was 70 km/hr. And after implementation of our mechanism the average of bike was 68.5 km/hr.
3) It does not create any hazardous effect on environment.
4) It does not affected on sound of the bike.
5) The percentage of exhaust gases will never be increase by integration of this mechanism in bike.
6) It does not required extra effort to take up & release the side stand of bike.

VI. REFERENCES

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