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Magnetic Shock Absorber

[1]Kale A. B.,[2]Tamhane S. V., [3]Totre A. S., [4]Wayal P. S.,[5]Patait S.B.

[1]*Mechanical Department,Jaihind Polytechnic Kuran , Maharashtra*
[2]*Mechanical Department, Jaihind Polytechnic Kuran , Maharashtra*
[3]*Mechanical Department, Jaihind Polytechnic Kuran , Maharashtra*
[4]*Mechanical Department, Jaihind Polytechnic Kuran , Maharashtra*
[5]*Mechanical Department, Jaihind Polytechnic Kuran , Maharashtra*

Abstract — *A magnetic shock absorber- (for automobiles and two-wheelers) which makes use of the magnetic repulsion between dipoles to achieve shockabsorption. Thisshock absorber will eradicate the problems faced in the spring shock absorbers due to friction and other factors. This will also reduce the maintenance costs as it does not need repairing, changing of springs or dealing with leakage problems as in spring or oil shock absorbers. This magnetic shock absorber can be used in vehicles carrying heavy or less load.*

Keywords-*Automobiles, Suspension, Magnetic, Absorber, Control*

I. INTRODUCTION

Shock Absorbers are a key component of all automobiles. They control the vehicle's suspension movement to provide a stable, comfortable ride. Since they were installed on the first, automobiles the principle of shock absorber operation has remained essentially the same. Now a new type of shock absorber is entering the market, and it may change the way suspensions are controlled. They are called the magnetic shock absorber or the new magnetize shock system. The idea for a Magnetic Shock Absorber (for Automobiles and two-wheelers), makes use of the magnetic repulsion between dipoles to achieve shock absorption. Often when riding on two-wheeler we used to face some problems while moving on the bumpy road due to its unevenness..It observed that the like Poles of two magnets of the same properties and strength repulse each other and they keep a constant distance between each other because of their magnetic fields. This made think that if the Shock Absorbers are made of magnets with similar poles facing each other, it may give better performance and no maintenance would be required for the same.Pneumatic and hydraulic shock absorbers are used in conjunction with cushions and springs. An automobile shock absorber contains spring-loaded check valves and orifices to control the flow of oil through an internal piston..The shock absorber absorbs and dissipates energy. One design consideration, when designing or choosing a shock absorber, is where that energy will go. In most shock absorbers, energy is converted to heat inside the viscous fluid. In hydrauliccylinders, the hydraulic fluid heats up, while in air cylinders, the hot air is usually exhausted to the atmosphere. In other types of shock absorbers, such as electromagnetic types, the dissipated energy can be stored and used later. In general terms, shock absorbers help cushion vehicles on uneven roads.

II. LITRATURE REVIEW

S. Gopinath , R.J. Golden Renjith , J.Dineshkumar In this project two magnets are placed in a piston. One magnet is fixed with piston. Another one is movable, which is connected with rod. With magnets are replaced by air. Our magnetic shock absorber works on the basic principle of magnet that "opposite poles attract each other and same poles repel each other". In this both magnets are facing same poles (both magnets are placed facing north and north or south and south). Both magnets are same pole. When the rod moves inside the piston movable magnet move towards the fixed magnet. Since both magnets are of same pole repulsion force is created between the magnets. So the movable magnet opposes the rod action and moves the rod up. The piston or cylinder is made up of non-magnetic material.

V.V.Borole, prof. K.K.Chaudhari are studied and describe the Electromagnetic suspension system for automobile and study different way to recover energy from suspension system by using piezo- electric material to increase the efficiency of the automobile. Vehicle during running condition vibrate by means suspension operate by using motion of the shock absorber produce energy.

Chandrakant Chavan, 2G.M.Kakandikar, 3Swapnil S. KulkarniDescribe about the analysis of suspension spring to determine and it's fatigue life using finite element methodology. One of the most important part of the suspension system is the coil spring which are helical in shape steel bar that absorb the shock

Sushant Tandel, Bhagyesh Desai, Amit Desai, Amol Shirsat, and Dipak Tambe They describe about the design and fabrication of magnetic suspension system. According to authors of these papers the coil spring suspension system have imitation that after some period of time coils become not only harder but also reducing cushioning effect and these

limitation overcome by the new concept of "MAGNETIC SUSPENSION SYSTEM" the cushioning effect provided by these system existing long life. They select material by considering Mechanical properties.
Suvriti Dhawan1, Ravi Nandu2 studied and describes the disadvantages of other types of suspension system with magnetic suspension the material properties used for the magnet, coil spring, shaft according to author the magnetic system have more and more advantages than the air, hydraulic suspension. The hydraulic and air suspension have leakage problem and which is dangerous for any suspension system because of that big reason magnetic suspension system were used.

III. PROBLEM DESCRIPTION

Our project depend on repulsion force between same pole of magnet the magnetic power use in this suspension is very powerful. They can done work easily shock absorber process. In Japan bullet train works on magnetic repulsion force on with 600km/hr. On this magnetic application we are think if train are running on magnetic repulsion force than why not this power using in bike magnetic suspension they effectively shock absorbed it prove in this project. To established a new idea in front of u for regular usage in two wheeler bike.

3.1. Advantages

- . Maintenance Cost is low.
- No oil is used in this like other shock absorber hence there is No leakage.
- It gives more comfort than other shock absorber.
- Shock absorber cost will be less.
- Free from wear adjustment.
- Less power consumption
- Less skill technicians is sufficient to operate.
- It gives simplified very operation.
- Installation is simplified very much.
- Less time and more profit
- This Shock Absorber will eradicate the problems faced in the spring Shock Absorbers due to friction and other factors.

IV. WORK METHODOLOGY

1. Market Survey
2. Need / Aim
3. Synthesis
4. Selection of material
5. Material description
6. Design of components
7. Modification (Resolution of forces)
8. Detail drawing
9. Manufacturing (Actual work)

V. SCOPE

By using neodymium magnet it will give more comfort as compare to ferrite magnet.
Because neodymium magnet is the most power full magnet, as compare to other magnets.

VI. CONCLUSION

We the students took the initiative in doing this project work "MAGNETIC SHOCKABSORBER" to the peak of success.

During the course of action of our project work, we have gained sufficient technical as well as practical knowledge as how a machine is to be designed, and priced.

This machine was done successfully and tested. It works satisfactorily. We hope that this will be one among the most versatile and interchangeable one even in future

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