"REVIEW ON DESIGN AND FABRICATION OF SHOCK ABSORBING LOOP WHEEL"

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ABSTRACT: *In today's fastest growing world uses various different types of technologies, so changes in people thinking and their living life affect the technology and motivate to invent new technology for people to made his life very easy and enjoyable.Bicycles are the most favorite choice when it comes to causes like health, pollution, and environment. Several researches have been done in order to make the ride comfortable. Distinctive sorts of cycles have been produced for different applications like Commuter Bikes, Mountain Bike, and Racing bicycle. This undertaking report introduces the Loop wheel which is outlined to such an extent that the suspension framework is coordinated inside wheel for higher stun engrossing execution and better comfort. Loop wheels offer you a smoother ride. Circle wheel springs are generally comprised of a steel material precisely created to offer ideal pressure and horizontal soundness and quality and strength. The three circles in each wheel work along as a self-amending framework. This spring framework between the center point and the edge of the wheel gives suspension that constantly acclimates to uneven landscape padding the rider from anomalies in the street wheel. The spring design allows the torque to be exchanged easily between the center point and the edge. In this project report loop wheel manufactured using C20 steel material and the analysis is done on ANSYS Workbench R15 to determine the stress developed during forces acting on wheel, maximum deflection, principle stresses.*

Keywords*:* Bicycle,Loop wheel, integrated suspension system, Triangular hub,rim, ANSYS R15.solid works etc.

1. INTRODUCTION

A Loop wheel is a wheel with integral suspension, designed for better shock-absorbing performance and greater comfort. Loop wheels give you a smoother ride. They are more comfortable than standard wheels: the carbon springs absorb tiring vibration, as well as bumps and shocks. They're designed for everyday use and are strong and durable. The loop wheels for wheelchairs help people push over uneven streets, rough tracks and gravel paths, with less effort, and the carbon springs give you extra power to get up or down kerbs. They reduce jolting and vibration, by as much as two thirds compared with a spooked wheel. They made the decision to focus just on wheelchair wheels because the demand for these was really strong, and but it is very small company. A loop wheel for bikes is an awesome ride. As we know because we've tried them a lot.

2. LITERATURE REVIEW

We are interested in the research in the automobile field, we are searching the optimization in any component in 2 wheel vehicle. After studied and read different automobile related general and paper we came to know the concept of loop wheel "Design and Analysis of Composite Leaf Spring for Light Vehicles" by Pankaj Saini, Ashish Goel, Dushyant Kumar, The

author says that, the Automobile Industry has great interest for replacement of steel leaf spring with that of composite leaf spring, since the composite materials has high strength to weight ratio, good corrosion resistance. The material selected was glass fibre reinforced polymer (E-glass/epoxy), carbon epoxy and graphite epoxy is used against conventional steel. The design parameters were selected and analyzed with the objective of minimizing weight of the composite leaf spring as compared to the steel leaf spring. From the static analysis results it is found that there is a maximum displacement of 10.16mm in the steel leaf spring and the corresponding displacements in Eglass / epoxy, graphite/epoxy, and carbon/epoxy are 15.mm, 15.75mm and 16.21mm.. Among the three composite leaf springs, only graphite/epoxy composite leaf spring has higher stresses than the steel leaf spring.E-glass/epoxy composite leaf spring can be suggested for replacing the steel leaf spring from stress and stiffness point of view.

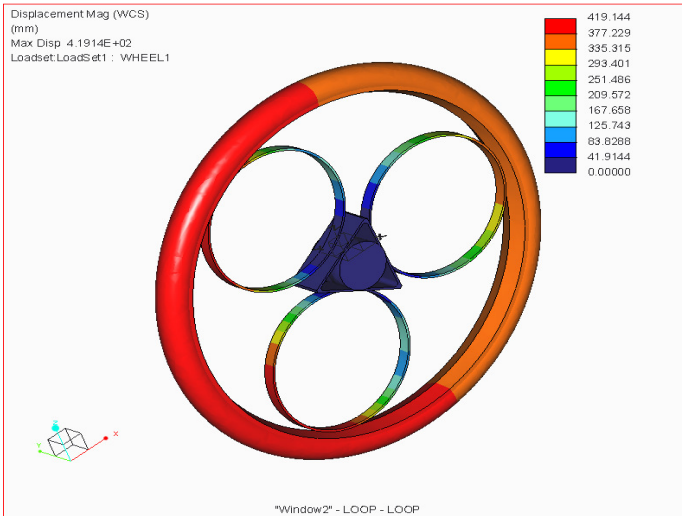

Figure 1: D Model of Loop Wheel

3. COMPONENTS USED

Bicycle: A bicycle, often called a bike or cycle, is a human-powered, pedal-driven, single-track vehicle, having two wheels attached to a frame, one behind the other. A bicycle rider is called a cyclist, or bicyclist.

Tyre: A tire or tyre is a ring-shaped covering that fits around a wheel rim to protect it and enable better vehicle performance by providing a flexible cushion that absorbs shock while keeping the wheel in close contact with the ground. The word itself may be derived from the word "tie," which refers to the outer steel ring part of a wooden cart wheel that ties the wood segments together.

Wheel Rim: The rim is commonly a metal extrusion that is butted into itself to form a hoop, though may also be a structure of carbon fiber composite, and was historically made of wood. Some wheels use both an aerodynamic carbon hoop bonded to an aluminum rim
on which to mount conventional bicycle tires. A bicycle wheel is a wheel, most commonly a wire wheel, designed for a bicycle.

Leaf Spring/Loop Spring: A leaf spring is a simple form of spring commonly used for the suspension in wheeled vehicles. Originally called a laminated or carriage spring, and sometimes referred to as a semi-elliptical spring or cart spring, it is one of the oldest forms of springing, dating back to medieval times. A leaf spring can either be attached directly to the frame at both ends or attached directly at one end, usually the front, with the other end attached through a shackle, a short swinging arm.

Triangular Wheel Hub: A Triangular hub is the centre part of a bicycle wheel. It consists of an axle, bearings and a hub shell. Hub shells can be one-piece with press-in cartridge or free bearings or, in the case of older designs, the flanges may be affixed to a separate hub shell. The hub is the centre of the wheel, and typically houses a bearing, and is where the axle is mounted inside it. A hub less wheel (also known as a rim-rider or center less wheel) is a type of wheel with no centre hub.

WORKING: Loop wheel springs are made from a low carbon steel material, carefully developed and tested to give optimum compression and lateral stability as well as strength and durability. Specially-designed connectors attach the springs to the hub and rim.

The three loops in each wheel work together as a self-correcting system.
This spring system between the hub and the rim of the wheel provides suspension that constantly adjusts to uneven terrain, cushioning the rider from bumps and potholes in the road. In effect, the hub floats within the rim, adjusting constantly as shocks from an uneven road hit the rim of the wheel.

4. ADVANTAGE

- Better shock absorbing performance
- Greater comfort.
- More comfortable than other wheel.
- Smoother ride

5. REFERENCE

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