

# A Novel Design of Co-Joined Rim for the Rear Wheel of Two Wheeler System

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**Abstract**— It has been observed that the two wheelers get easily punctured on and off when it is being used and it causes high inconvenience to the rider if it gets punctured in remote areas where sudden repairing of puncture is not possible and the only possible solution, mainly in (motorcycle) is to drag the vehicle to a repairing shop and get it repaired. In order to avoid such possible breakdowns a possible solution is that we can provide a twin rear wheel system in the (motorcycle). For this a complete re-modification of the rear wheel system of two wheeler is to be done to accommodate the vehicle with co-joined rim, adjustment in the power transmission, wheel rim, rim width modification axle shaft and hub re-modification, brake drum modification is to be done, so that the new re-modified co-joined rim two wheeler can be used for the existing two wheeler for tackling such hard situations and hence this idea has been put forth in this project which is to re-modify the complete rear wheel system of two wheeler.

**Key words:** Co-Joined Rim, Enlarged Rim, Widened Hub

## I. INTRODUCTION

Even after such advancement in the two wheeler segment there are some areas where there is a possibility for some change to be brought in the two wheeler and this is the area where a CAD engineer finds a place to put forth or place his/her views. It has been observed that the two wheelers get easily punctured on and off when it is being used and it causes high inconvenience to the rider if it gets punctured in remote areas where sudden repairing of puncture is not possible and the only possible solution, mainly in (motorcycle) is to drag the vehicle to a repairing shop and get it repaired. To avoid such possible breakdowns a possible solution is that we can provide a twin rear wheel system in the (motorcycle). For this a complete re-modification of the rear wheel system of two wheeler is to be done to accommodate the vehicle with co-joined rim, adjustment in the power transmission, wheel rim, rim width modification axle shaft and hub re-modification, brake drum modification is to be done, so that the new re-modified co-joined rim two wheeler can be used for the existing two wheeler for tackling such hard situations and hence this idea has been put forth in this project which is to re-modify the complete rear wheel system of two wheeler.

## II. OBJECTIVE

In order to eliminate the frequency of breakdown of the rear wheel system of two wheeler vehicle specifically the frequency of punctures there is a need to develop the two wheeler rear wheel system with least possibility of failures or breakdowns.

For this purpose a slight modifications are needed and creation of CAD model of pre-existing alloy wheel and doing simulation on new and existing alloy wheel designs

that focus on reducing the mass of the current design and selecting better wheel material. The new designs include reducing the number of spokes, modifying the fillet radius at the intersection of the spoke and the hub.

## III. PROPOSED WORK ON CO-JOINED RIM

This works aims to find solution for the frequent breakdown of the rear wheel system of two wheeler which will be aptly solved by providing a modified rear wheel system with co-joined rim with certain amount of adjustment in the rear wheel rim, rim width modification, modification of axle shaft, hub modification, adjustment in the power transmission system and space optimization to accommodate a re-modified co-joined rim system.

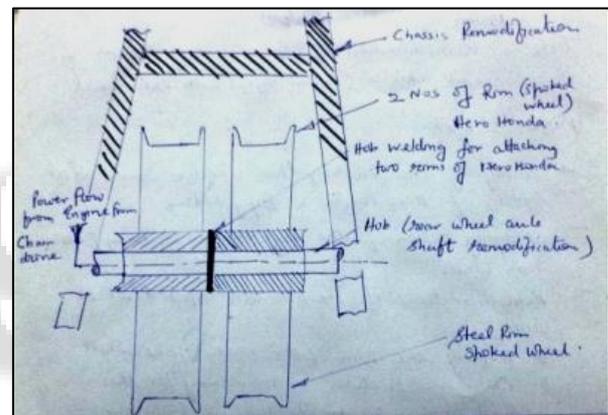


Fig. 1: Cut Section Free Hand Front View of the Proposed Co-Joined Rim

### A. Steps Involved For Adaptation of Concept of Co-Joined Rim in Rear Wheel:

- 1) Study of the existing two wheeler rear wheel system.
- 2) Studying the design of the Hero Honda & Bajaj Pulsar rear wheel.
- 3) Re-modification of Hero Honda spoke/ alloy wheel rim.
- 4) Welding the rim of Hero Honda wheel for width enlargement.
- 5) Chassis modification if necessary to accommodate the twin modified wheel.
- 6) Rear wheel axle extension or axle shaft length modification.
- 7) Rear wheel hub modification
- 8) A complete modeling, designing and analysis using Pro-E (CREO) & ANSYS software
- 9) Final stage fabrication of the re-modified rear wheel system and fitting the assembly in the existing two-wheeler (Bajaj Pulsar).

