DESIGN AND DEVELOPMENT OF MOVING HEADLIGHT WITH STEERING

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Abstract - The highest fatal traffic accident rate occurs on curve road at night time. In most cases, the late recognition of object in the traffic zone plays a key role. This fact point to the importance of the role of automobile forward lighting. In order to provide enhanced night time safety measures, this work aims to design and build a prototype of steerable headlight by adapting an adaptive static headlight with every close eye on cost and reliability. Components that are easily available in the market and suitable for developing a steerable headlight system were tested. Different kind of tests was done on critical parts of the system in order to determine its accuracy, its response time, and system impacts. Finally the result acquired from the various tests will be discussed. Any findings and changes that should be made are discussed and may be useful for future development. Special safety features have been built into cars for years, some for the safety of car's occupants only, and some for the safety of others. One of the choices available is design and fabrication of steering controlled head light system. Car safety is the avoidance of automobile accidents or the minimization of harmful .

Keywords: Prototype, Steerable headlight, movable, Adaptive headlight.

1.INTRODUCTION

Car safety is the avoidance of automobile accidents or the minimization of harmful effects of accidents, in particular as pertaining to human life and health. Special safety features have been built into cars for years, some for the safety of car's occupants only, and some of the safety of others. One of the choices available is Design and fabrication of steering controlled head light system. This device relates to a headlight arrangement for vehicles, and, more particularly, to a head light arrangement operably connected to the steering mechanism of the vehicle for illuminating the proposed path of travel including support brackets operable to support head light members thereon connectable to a frame portion of the vehicle, linkage means interconnecting the

brackets for conjoint movement thereof, and means interconnecting one of the brackets to the connector rod of the vehicle whereupon the brackets and headlight members are moved in relation to the direction of vehicle travel. Still, more specifically, this device relates to a headlight arrangement operably connected to the steering and front wheel assembly.

2. LITERATURE REVIEW AND OBJECTIVE

Prof. G.S. Dhumal, Abhay N. Shinde, Abhijeet R. Tad, Akshay A. Andhale, Prashant K. Pawar, done the work on , A Review Paper On Intelligent Headlight System, according to his work, The topic of this project is steering controlled (or directional) headlights, that are usually a separate set of headlights fitted to road vehicles beside the usual low beam/high beam headlights and their feature is that they turn with the steering, so that the driver of the vehicle can see the bend, what he is actually turning into. These type of headlights appeared on production cars in the1920's and are still around now a days, but not very popular, although they make night time driving safer. The most famous car which featured these lights was the Citroen DS (1955-1975), introduced on the1968 Paris Motor Show. The headlights can be connected to the steering linkage by means of rods or cables, operated hydraulically by the power steering or now a days electronically adjusted, even controlled by satellite navigation system. Our project is to make new and modern Directional Headlights‖ in efficient manner by increasing the light angle. Directional headlights are those headlights that provide improved lighting especially for cornering. There are automobiles that have their headlights directly connected to the steering mechanism so that its lights will follow the movement of the front wheels. Our project comprises Gear mechanism. Gear mechanism is used to transmit motion and to reduce the no of rotations from steering rod to cam shaft. According to our project, when the steering steers to the right, the light bracket at right alone steers to right using spur and bevel gear mechanism and reduction gears & vice versa. The reduction gears are used to turn the brackets to the required angle respective to the steering rotation. Our project will be useful for vehicles, which are been used in hill areas The 1968 Citroen DS featuring directional-headlights. [1]

Objectives

1) To design of "Headlights tilting mechanism according to steering" react to the steering, and automatically adjust to illuminate the road ahead.
2) To make a "Headlights tilting mechanism according to steering" are directed at the road, the incidence of glare is reduced.
3) To development & fabricate of "Headlights tilting mechanism according to steering" to the steering with low cost alternatives.
4) To provide smooth and safety ride in curved roads especially in mountains

3. MECHANICAL DESIGN

Mechanical design phase is very important from the view of designer as whole success of the project depends on the correct design analysis of the problem. Designer should estimate these forces very accurately by using design equations. If he does not have sufficient information to estimate them he should make certain practical assumptions based on similar conditions. This will almost satisfy the

functional needs. Assumptions must always be on the safer side.

1) Design parts

2) Parts to be purchased.

3.1.Identification and selection of Suitable Machine Components:

The rack-and-pinion steering box has a pinion, connected to the steering column. This pinion runs in mesh with a rack that is connected to the steering tie rods.

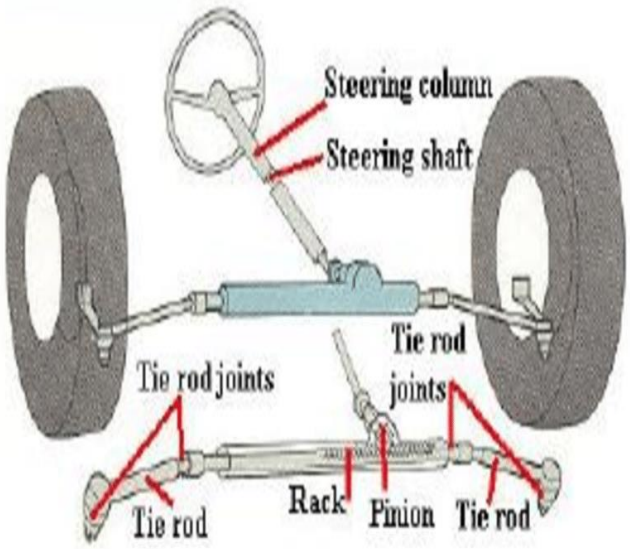

Fig.4.1. Rack and pinion steering system.

The rack-and-pinion steering gear box has a pinion, connected to the steering column. This pinion runs with a rack that is connected to the steering tie rods. This gives a direct operation. The primary components of the rack and pinion steering system are:

•Rubber Bellows

•Pinion

•Rack

•Inner ball joint or socket

•Tie-rod

3.2. Mechanisms Involved In Motion Transformation:

A mechanism is a group of links interacting with each other through joints to complete required motion or force transmission.

•Linkage mechanism

•Four bar mechanism

3.2.1. Mechanism Linkage:

A mechanical linkage is an assembly of bodies connected to manage forces and movement. The movement of a body or a link, is studied using geometry so the link is considered to be rigid. The connections between links are modeled as providing ideal movement, pure rotation or sliding for example, and are called joints. A linkage modeled as a network of rigid links and ideal joints is called a kinematic chain.

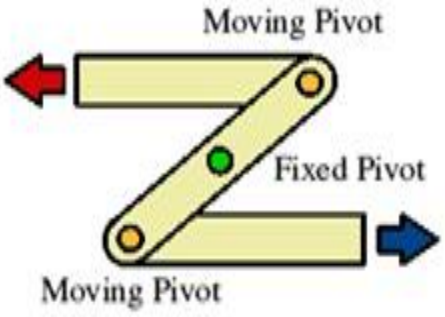

Fig.4.2. Mechanism Linkage.

3.2.2. Four bar mechanism:

A four bar mechanism consists of four rigid link which are linked in the form of quadrilateral by four pin joints. A link that makes complete revolution is called crank, the link opposite to the fixed link is the coupler and forth link is a lever or rocker. From the four bar mechanism, different versions of each of them can be obtained by fixing any one of the link.

4. ADVANTAGES & APPLICATIONS:

4.1. Advantages:

1. To provide smooth and safety ride in curved road especially in mountain road.
2. To provide mind free ride for the car.
3. To provide the nation with an accident free roads.
4. Low cost automaton project.
5. The headlight aligns in two direction (Left and Right)
6. It requires simple maintenance cares.
7. This is the improved safety measure introduced in the automobile.
8. Easy to operate & Manual power required is less.
9. Repairing & replacing parts is easy.
10. No need of heavy lubrication

4.2. Applications:

1. The steering controlled head light mechanism can be applied in all vehicles such as car, buses, and trucks, which ride safely in the ghat roads.
2. Specially designed for installing in cars riding in ghat roads.

This mechanism can also install in all types of commercial vehicles

5. CONCLUSIONS

While concluding this report, we fill quite fullfill in having completed the project assignment well on time,we had enoromous partical experiment on fullfillment of the manufacturing schedules of the working project model.we are therefore,happy to state that the in calculation of mechanical aptitude proved to be a very useful purpose ..

6. ACKNOWLEDGEMENT

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