90 DEGREES STEERING MECHANISM

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Abstract: The soft car design proposal has swing 90 degrees. It can pull up alongside a parking space and drive in sideways. Conventional steering mechanism involves either the use of Ackerman or Davis steering mechanism. The disadvantage associated with these systems is the minimum turning radius that is possible for the steering action. This difficulty that is with the conventional methods of steering is eliminated by employing a four wheel 90 steering system.

I. Introduction

- A new absolute eco-friendly vehicle with independent, low emission transportation possible for people who utilize wheelchair could definitely be an improvement in this system. For this, an eco-friendly vehicle, like an electric car which can steer through 90 degrees, thus reducing the turning radius with low efforts has to be defined. Automotive of present time does not have the ability to steer through 90 degrees. Such vehicles can help disabled people effectively. A lot of researches have been done on this field so as to implement this methodology but it has not yet been implemented. The idea is to use electric motors on any two diagonal wheels and a counter phase system implementation.

- The mechanism works at low speed only. The steering mechanism uses rack and pinion in defined gear ratios with the help of some bevel gears. The rear wheels are mounted in such a way that the power is transmitted even when it is being steered through 90 degrees. The vehicle is designed in such a way that it has facilities for disabled people to enter into and out of the vehicle without any external help.

- Even for people who depend fully on wheel chairs can easily enter the vehicle through the inclined passage provided at the rear side. Advantages of this system are that it can work in limited space and it reduces the time and effort for steering through 90 degrees thus making the system more flexible. It can be used for other applications such as parking, farm vehicles, trucks, forklifts etc.

360 degree rotation

- 90 degree steering mechanism basically helps to reduce the efforts and space required for a person to steer his vehicle. Most of us can’t even imagine what life would be like with disability. We take walking, running, driving a car for granted, but for those who spend much of their day in wheelchair, these things are a challenge. Although accessibility has improved drastically over the past few decades, many things especially vehicles aren’t just designed with disabled person in mind.

This 90 degree mechanism can be implemented in vehicles that can be designed especially for the disabled, for whom, simple vehicle designs are necessary. In the current scenario, the vehicles that the disabled use are simply the ones that normal people use, with some basic attachments such as side wheel attachments used in scooters. The major problems in these systems are - Large turning radius - Large effort Not eco friendly To account for the difficulties mentioned above. A new absolute eco-friendly vehicle with independent, low emission transportation possible for people who utilize wheelchair could definitely be an improvement in this system. For this, an ecofriendly vehicle, like an electric car which can steer through 90 degrees thus reducing the turning radius with low efforts has to be designed. The basic requirement of this car is that it, - Steers through 90 degree - Runs on electric motor
thus reducing emissions A slope for entry on the rear end.

II. WORKING:
In this project battery provides the power supply to the control unit. The equipment contains totally six motors, two motors coupled with the vehicles left and right wheels of the front side, the next two motors are connected to the vehicles left and right side of rear. These Four motors are used to run the vehicle. Another two motors are connected to rotate the vehicle wheel 90 degrees by chain driven arrangement.

III. Working of steering switches
The front wheels as well as the rear wheel are positioned as parallel to each other which are normal in condition before operation. Left and right switch on keypad is used for movement of left and right wheel respectively. When third key is operated front wheels are parallel to rear wheel and makes an angle of 90 degrees to normal wheel system. In this position we directly turn the vehicle without any turning radius.

IV MAJOR BLOCKS
• Steering mechanism
• battery
• DC motor.
• Toggle switch/ 3 tier switch.
• Sprockets and chains.

V TYPES OF STEERING
• Power steering
• Four wheel steering
• Crab steering
• Rear wheel steering
• Speed sensitive steering

VI FOUR WHEEL STEERING
• Rear wheels turns in opposite direction to front wheel in 1:2 ratio
• It is also known as all wheel steering system
• When the steering is steered the power is transferred to the front steering gear box and a bevel gear arrangement is made to transfer the power to rear steering gear box

VII BATTERY
• A battery is a device that converts chemical energy to electrical energy.

• We generally use two types of battery, one of them is which can be used once before it gets totally discharged.
• Another type of battery is rechargeable which means it can be used multiple times by recharging it externally.

VIII DC MOTOR
• DC motor stands for direct current motor.
• A machine that converts dc power into mechanical energy is known as dc motor.
• Its operation is based on the principle that when a current carrying conductor is placed in a magnetic field, the conductor experiences a mechanical force.

IX TOGGLE SWITCH
• An electric switch having a projecting lever that is manipulated in a particular way to open or close a circuit.
• The mechanism of a switch removes or restores the conducting path in a circuit when it is operated.

X 3 PIN SWITCH
• A push-button or simply button is a simple switch mechanism for controlling some aspect of a machine or a process.
• Buttons are typically made out of hard material, usually plastic or metal.
• Buttons are most often biased switches, though even many un-biased buttons.
• A spring to return to their un-pushed state.

XI SPROCKET AND CHAINS
• A sprocket is a toothed wheel unto which a chain rides.
• Contrary to popular opinion, a sprocket is not a gear

XII ADVANTAGES
• Easy to design
• Easy to maintain
• Easy to operate
• Easy to installed
• Advance technology
• Saving of fuel
• Zero turn movers

XIII APPLICATIONS
• Electric vehicles
• Mini fork lift
• Go kart (mini race car)

XIV CONCLUSION

Conclusion The project carried out by us made an impressing task in the field of automobile industries. It is very useful for driver while driving the vehicle. This project has also reduced the cost involved in the concern. Project has been designed to perform the entire requirement task, which has also been provided. The purpose of developing this project is to avoid parking problem, minimize the space between two parked cars to minimize the time required for parking reduces the problem of accidents during parking and to improve the design of existing vehicles.

REFERENCES