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Reverse Gear Mechanism in 2-Wheeler

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Abstract
In the present scenario there were no mopped vehicles equipped with reverse gear facility. So, it is very Difficult for a handicapped person while the vehicles front wheel gets into a trench as well as in the case of parking. Here introduces a reverse gear mechanism, with portable gear box that can be easily operated by hand. Four gears are used for obtaining reverse motion of the vehicle. In this paper, proposes and designed a gear box which will be fitted into those vehicles without much altering the existing transmission system. This reverse gear mechanism provides a simple, low-cost reverse transmission system which will be helpful for handicapped people
Keywords: — *Reverse gear mechanism, Mopped vehicle, Portable gear box, handicapped people, Gear- train, TransmissionSystem, spare parts*

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I. INTRODUCTION

Bharat is the second largest producer of 2- Wheeler in this Planet. In the last few years, the Bhartiya two-wheeler Bharat has Produce a spectacular Growth. Nowadays, the intensity of traffic on Bhartiya roads is increasing at high pace. As in this date there are many options for transportation available for physically challenged persons like, Motorized wheel chair, Handicapped powered tri-cycle, Scooters, etc.

At present, there is no system available to back the vehicle. At times when the front wheel gets into a trench it is very difficult to take the vehicle from parking. Even normal people face much problem to take the vehicle out of the parking at that time. In case of the handicapped people who drive two wheelers with extra support wheels, face much problem to take the vehicle out of the parking by pushing the vehicle with legs as we do.

In order to take the vehicle out of the parking they need to seek others help they should push it out of the parking as a help to them we have designed a system whichwill be fit to the vehicle.

The design deals with the conditions of the system operation, and the design of the compatibility besides providing rapid shifting with full Engine Power.

In motor vehicles, the transmission generally is connected to the engine crankshaft via a flywheel and/or clutch and/or fluid coupling, partly because internal combustion engines cannot runbelow a particular speed.

The transmission reduces the higher engine speed to the slower wheel speed, increasing torque in the process. Often, a transmission has multiple gear ratios (or simply "gears") with the ability to switch between them as speed varies. This switching may be done manually (by the operator) or automatically. Directional (forward and reverse) control may also beprovided.

II. Working Principal

The Reverse gear working in the Principalof Transmission of Gear in Opposite Direction.

When the Intermediate Gear will change Direction of the Final Drive whose Shaft isConnected to Wheels.
As upper gear (1) is connected to lower small gear (2) and then to main drive gear
(3) with chain arrangement, its transfer to main drive gear (3) with chain arrangement, its transfer the whole systemin forward direction.
The whole function is based on drive theforce on gear mechanism.
As upper gear is connected to small gear
(3) and to another small gear (2) and then to main drive gear (3) with chain arrangement. It drive the whole system inReverse direction.

In this way the main function of reverse gear system is perform on gear assembly.

Two-Wheeler Mechanisms:
The gear box unit is introduced betweenthe engine output and chain drive mechanism.
The engine power output is connected tothe input of gear box unit. The gear-box output is connected to sprocket wheel. From the sprocket wheel the drive is transferred to rear wheel through the chain drive mechanism.

NEED FOR THE PROJECT
To Provide a Better Convenient Chariot Ride for Physically, Challenged, Weak andLazy People.

To Make Vehicle out from Parking AreaTo Reverse, U Turn the Vehicle.
To get back the hopeful of handicap toshow the strength of them to society.

BASIC LAW USED
Here is the Most Important Law which will usedin this Project i.e.
V=r(a) ω (a)= r(b) ω (b);

Where Input Gear with radius r(a) and angular velocity ω (a) Meshes with Output Gear of radiusr(b) and its angular Velocity ω (b)

(MODULE = PCD/NO OF TEETHS);

PCD ----------> Pitch Circular Diameter

BLANK DIAMETER =
(MODULE)*(NO OF TEETH+2); DIAMETERAL PITCH = (TEETH/PCD);TEETH RATIO = T(a)/T(b) ;
Spare Parts Required for reverse gear Box

1> 2-Wheeler IC-Engine (4 Stroke)
2> Spur Gear (recommended) or HelicalGear (Nos 4 or 6)
3> Ball Bearing (4)
4> Casing of Ball Bearing (4)
5> Sprocket (Nos 4)
6> Metallic Plates (2 or 4 or 6).
7> Steeped Shaft (Nos 2 or 3)8> Nut and Bolts

Material Selections
1> Steeped Shaft

MATERIAL	Yield Stress (inMPa)	Mass (inGrams)	Length (in mm)	Diameter
Stepped Shaft A	400-600	5	107	17
Stepped ShaftB	400-600	5	107	17

2> Spur Gear

Gear Numbers	Material	Yield Strength(MPa)	PCD (in mm)	Numberof Teeth	Weightof a Gear (in Gram)	OCD (in mm)
Gear A	SAE HT 1045	500-700	52.50	35	3.33	55.50
Gear B	SAE HT 1045	500-700	45	30	3.33	48
Gear C	SAE HT 1045	500-700	52.50	26	3.33	55.50
Gear D	SAE HT1045	500-700	39	35	3.33	42
Gear E	SAE HT 1045	500-700	39	26	3.33	42
Gear F	SAE HT1045	500-700	40.5	27	3.33	43.5

Module of a Gear is 1.557

3> Plate

Property	**Value**
Brinell HardnessNumber	95
Density (Kg/m^3)	2.7
Shear Modulus(in GPa)	96.5
UTS(Ultimate Tensile Strength(in MPa)	300
Yield TensileStrength (in MPa)	276

III. CONCLUSION

In the developed countries the debate has moved beyond a concern about the perceived cost of maintaining the dependent people and to find effectiveways of ensuring the people to contribute in all spheres of life activities.
Measuring the developments which are happened in automobile technology is incredibly difficult. So through this project work, we interlink these two things and try to solve the problem as more as efficient with our knowledge.
We hope that the launching of our vehicle in our Bhartiya road ways would give a pleasurable development to physical challengers which may result inunity.

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