



OPEN ACCESS INTERNATIONAL JOURNAL OF SCIENCE & ENGINEERING

STUDY OF BUTTON OPERATED GEAR SHIFTING SYSTEM

Y. D. Gujarati¹, I. R. Shaikh², S. U. Patil³, I. B. Deshmukh⁴

SNJB's Late Sau. K. B. Jain College of Engineering, Chandwad

Abstract: *In this project, we aim at developing easy gear shifting mechanism for transmission which will make motor bike rider's gear shifting very easy. Everyone desires for the smooth running of the vehicle whatsoever may be the speed of pickup of the vehicle a person is operating, but one of the most important system which every engineer is concerned about in vehicle is gear shifting system for ensuring smooth and desired ride on their two wheelers.*

In this system, two electromagnetic coils are coupled to the gear lever of the two ends. The two buttons are used to activate the electro-magnetic coil so that the gear will be shifted.

Keywords: *Solenoid , Gear shifting System , Electromagnetic System*

I INTRODUCTION

Gear shifting mechanism plays an important role in energy and fuel conservation. This study is based on system and its design for gear shifting mechanism. With the advent of automated gear transmission system ease of access to vehicles has increased over last 20 years. Generally in 2 wheelers, gear is shifted manually with the help of lever but this technique is not suitable for handicapped people and also non handicapped people can get a maximum comfort level while riding. So we are in a process of making it more friendly and convenient to use. This can be achieved using motors and some modification in lever shaft. Nowadays, a manual transmission or sequential type is a type of transmission used on motorcycles and Two Wheelers, where gears are selected in order, and direct access to specific gears is not possible. With traditional manual

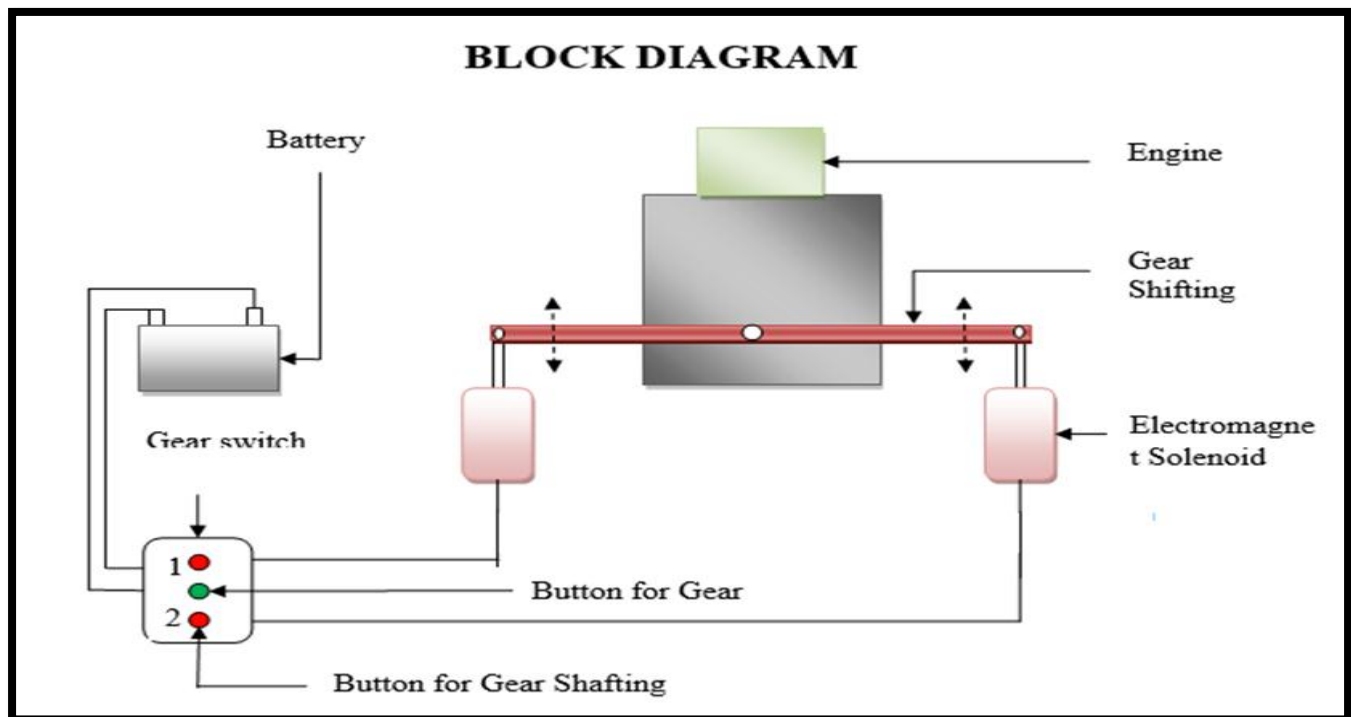
transmissions, the driver can move from gear to gear, by moving the shifter to the appropriate position. During manual transmission, shifting between gears in order to match acceleration and deceleration needs, drivers have to learn how to use a clutch, when to shift, and the proper timing required for operating a manual transmission effectively.

Solenoid operated gear shifting mechanism is mainly designed for the handicapped persons who unable to shift the gears by their foot. The technique used in this gear shifting mechanism consists of solenoid. Solenoid completes one up and down motion called as one stroke. This stroke time depend on supplied voltage and current. According to stroke length and voltage calculation, solenoids are mounted on both sides of gear shifting pedal at ends. By pressing that switch, person easily shifts the gear with the help of foot which is most efficient to handicapped person.

II MATERIAL

Sr. No.	Parts	Quantity	Material	Amount (Rs)
1	Frame Stand	1	Mild Steel	2,000
2	Battery	1	Lead Acid	2,000
3	Electro-magnetic coil	2	Coil	2,000
4	Bearing with Bearing Cap	1	M.S	500
5	Engine	1 (98.2 cc)	-	4,000
6	Chain with Sprocket	1	M.S	2,000
7	Electrical Wire	12 m	-	250
8	Wheel Arrangement	1	-	500
9	Push Button	2	-	240
10	Wire Clippers	8	-	80
Total				13570 /-

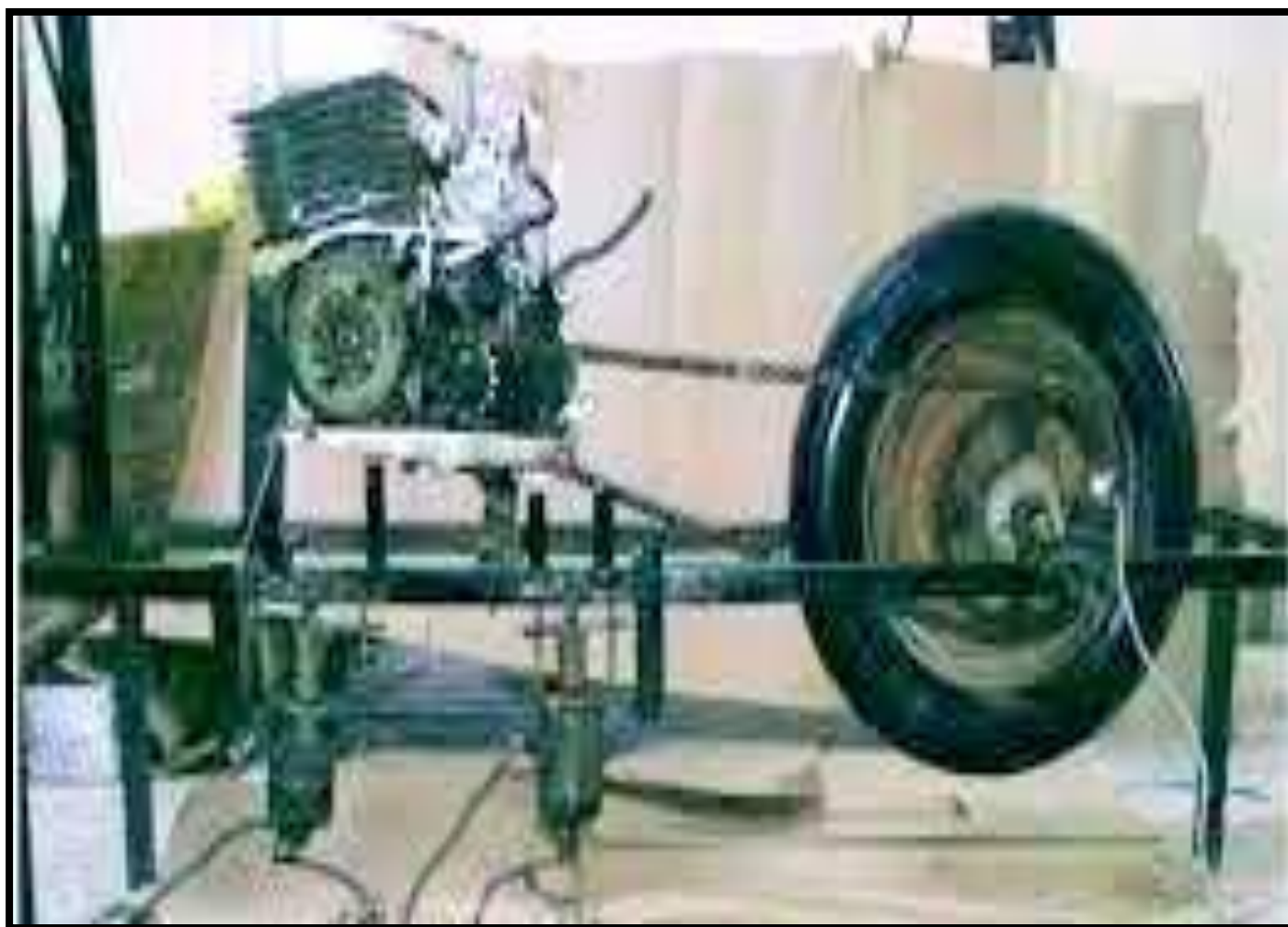
III METHOD:



The automatic gear shifting mechanism takes advantage over manual gear shifting system but in situation where we have to change gears frequently the fully automated system is not much useful. In such condition the electromagnetic gear shifting system is used. In assembly basically, the engine is mounted on the frame To the engine other components other components such as chain and sprocket ,rear wheel ,accelerator is connected .

. In this system the gears are operated using electronic switch .These switch are connected to battery. The battery is connected to electromagnetic actuator. There are two coils are fitted around the

magnetic bar. As push the button the current passes through the coils. Due to supply of current there is generation of magnetic field in the coils. These magnetic field attract the magnetic bar. Solenoid completed one up and down motion called as one stroke. This stroke time depend on supplied voltage and current. According to stroke length and voltage calculation, mount solenoids on both sides of gear shifting pedal at ends. By providing appropriate voltage it pulls the plunger downward and by cutting off supply it retracts plunger upward. There is generation of specific torque in the bar. This torque is used to shift the gears.



IV CONCLUSION

This project is most useful for handicap persons those who cannot drive the two wheelers because due to gear shifting problem. Hence the gear shifting mechanism is developed and modified according to their requirement. The application of this gear shifting mechanism leads to make the driving process for driver easier, reduces the risk of destabilizing, the chance of miss shifting. Due to this mechanism driver can concentrate on road rather giving concentration of gear shifting and easily drive in traffic areas.

REFERENCES

- [1] Uma Shankar S, D Mohan Kumar, Fabrication of Button Operated Electromagnetic Gear Shifting System, International Journal of Pure and Applied Mathematics, May 2018, 119 (12), pp 10345-10354.
[2] Amol Shitole, Pavan Kotari, Poonam Magdum , Omkar Sutar, Swapnil Toraskar and Prajakta R

Patil , Solenoid Operated Gear Shifting Mechanism for Two Wheeler, Asian review of Mechanical Engineering , Dec 2018, 7 (2) , pp 9-11 .

[3] A.A Jadhav, B S Sali., S. S. Kale, P. S Lipate, O. A. Dhumal, Study of Button Operated Gear Shifting System, Vishwakarma Journal of Engineering Research, Sept 2017 , 1 (3).

[4] Ram Bansal, Idrees Rajgarhwala, Switch Operated Gear Shifting Mechanism .International Journal of Automobile Engineering, Dec 2017, 1 (1), pp 01-09.

[5] D Mangelal, P Ravikant Raju , K Nagendra Kumar , P Amani ,Button Operated Electromagnetic Gear Shifting System, International Journal of Computer Science Information and Engineering Technologies , JUNE 2014, 4 (2),