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IOT ENABLED PNEUMATIC GEAR SHIFTING IN TWO-WHEELER

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Abstract- The present automatic transmission is fully mechanically controlled and costs very high. In this study, a gear shifting mechanism was designed and applied on a featured bike to make the gear transmission process faster and less destructible for the driver using internet. But the gear transmission mechanism designed makes driving easier and to achieve efficient driving. This new device must be reliable, has small dimensions, economical and low maintenance cost. This project aims to improve the gear shifting process with a suitable control mechanism to implement in clutch featured bikes. According to the suggested gear shifting method, which selects the transmission gear as per the speed of the vehicle without direct human interference. A pneumatic shifter is a mechanical device that uses compressed air to shift a gear controls the engaging and disengaging of gears using internet of things principle to control automatically. There is no lag time in a gear shifting operation and taking hold in the rest of the vehicles.

Keywords: Efficiency, Wear and Tear, Pneumatic

I. INTRODUCTION

This invention relates to control mechanisms and more particularly to mechanisms for controlling the selection and establishment of various gear relations of automotive vehicle transmission gearing. Our Invention relates to gear shift mechanisms particularly such as are used on automotive vehicles. It has for one of its principal objects to provide a gear shift mechanism pneumatically operated, through the instrumentality of which the various gears in the mechanism may be made operative. Other objects are to provide a gear shift mechanism which is noiseless in its operation, which greatly relieves all strain on the parts with which it is connected, which has no parts easily broken or apart to get out of order,

which may be operated with but slight skill on the part of the driver, which is suitable for all makes of automotive vehicles. And which can be manufactured at a relatively low cost. As a rider when we have control over the gear shifter, typically with the rider's left foot and to operate both the clutch and brake, drivers both hands & foot remains busy. To shift the control of gear, in hand from foot & to provide safety & comfort to driver is the need from the perspective of Ergonomics.

II. LITERATURE REVIEW

1. **Mankar N.A, et al** describes that their project is an electro-pneumatic gear shifting mechanism in which the control unit selects optimum gear shifting ratio for an automobile automatically.

2. **Vijay Jadhav, et al** describe that their project is a semiconductor gear shifting mechanism in which the driver can select the gear transmission without moving his hand from the steering wheel by putting the gear shifting push buttons in the steering wheel.

3. **Amol shitole, et al** describes that their project is mainly designed for handicapped persons who are unable to shift the gears by their foot. They are using solenoids to shift the gear and the solenoids are mounted on both sides of the gear shifting pedal from which the person can easily shift the gear.

4. **N.Venkatesh, et al** describes that their project which is a pneumatic gear changer for four-wheelers whose main motive is to reduce the gear shifting time without losing the broken power and to improve efficiency by eliminating the wear and tear.

5. **P.Madhu Raghava, et al** says that the fossil fuels such as petroleum, diesel, etc. which meet most of the energy demand of the world are depleted rapidly, so they are giving an alternative way which is an air-powered bicycle.

6. **Pawan R. Gurav, et al** says that their main motive of the project is to bring automation in gear shifter of two-wheelers using the stepper motor. It is



controlled by buttons that give instructions to the stepper motor through programming to achieve the control motion.

7. **Akash Deep, et al** describes that their project is a pneumatic gear shifter especially for two-wheelers to make the gear shifting smoother and to reduce the gear shifting time.

8. **K Shashank, et al** says that the gear shifting mechanism is playing an important role in the conservation of fuel and energy and have developed a voice-activated gear shifting mechanism, especially for handicapped people.

9. **S Vijay Kumar, et al** describes their project as it was designed and applied to make the gear shifting process faster and less destructible for the driver and the shifting is done automatically with the help of PLC, Two pneumatic double-acting cylinders, and a relay.

10. **Chethan J, et al** describes that the project aims to automate the gear transmission in a gear featured bike to ease the driving and to improve efficiency. and the gear shifting is done by an automatic transmission system which shifts the gear concerning the speed of the vehicle.

11. **Mr.Uzair Ahmed Shaikh, et al** describes their project as about automating the gear shifting mechanism in two-wheelers using an electromagnetic actuator. and it will increase the fuel efficiency and human invention with the help of an electromagnetic actuator placed with the lever which helps to shift the gear according to the speed.

12. **Mr.Mayuresh N, et al** says that the motorcycle is the only engine-based vehicle that is used on large scale particularly in India.CVT transmission does not have the meshing of gears which enhances a smooth ride but the fuel efficiency is low compared to the gear vehicles so the idea of the project is to automate the gear shifting process with the help of embedded systems and microcontrollers to improve the efficiency and comfort while driving.

13. **Daofei Li, et al** describes that the braking energy recovery can significantly contribute to fuel economy and emission reduction, particularly for the commercial vehicles by using compressed air storage rather than using expensive batteries.

14. **Bensode Lawrence, et al** describes that their project is a pneumatic gear shifting mechanism for a shifter kart and the shifter karts include open-wheel, four-wheeled racing categories with usually no suspension, and the performance comparison is done.

15. **Chang- woo song, et al** describes their project as a solenoid actuator with a ferromagnetic plunger to generate both rectilinear and turning motions of a multi-segmented robot.

16. **Jp Yadav, et al** says that the world is hard-pressed with energy and fuel crises compound with pollution of all kinds so they have developed a new engine called as compressed air engine which does not require any of the fuels like diesel, petrol.

17. **James D. Van de ven, et al** describes that their project is a vehicle drive train to improve the fuel efficiency of a passenger of car and the developed hydro-mechanical drive train enables independent control of the torque at each wheel and the motive for this project is a hydraulic hybrid vehicle.

18. **Yongjing Huang, et al** says that the shift schedule of saving energy to keep the torque converter working high efficiency. It carries on the further study of saving energy shift theory and presents the control method of saving energy shift schedule.

19. **Romesh Makwana, et al** describes that the conventional gearboxes are capable to vary the gear arrangement according to fluctuating load. It fabrication of an automated gearbox and comparison of torque, rpm is carried out with standard elementary equations and the performance can be increased by varying the design parameters of gears and pre-requisite.

20. **Siddharth Dahiya, et al** describes the paper as about the design methodology and algorithm development on the design of external gear shifting and clutch actuation system for the sequential gearbox. The project is to provide the drivers with an easier and an efficient means of shifting gears.

III. CONCLUSIONS

The various research works show that it becomes very difficult to change the gear frequently in situations such as traffic. Automatic transmission is used to modify this and give the rider superior comfort, reduce human effort and improve the efficiency of the vehicle as well. By the proposed system, shifting of the gear system is more flexible, and more system becomes reliable.

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