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PNUEMATIC 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 destructive for the driver using push button System design. 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, the selects the transmission gear as per the speed of the vehicle without any human interference. A pneumatic shifter is a mechanical device that uses compressed air to shift a gear controls the engaging and disengaging of clutch automatically. There is no lag time in a gear shifting operation and taking hold in the rest of the vehicle.

1. 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 apt 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.

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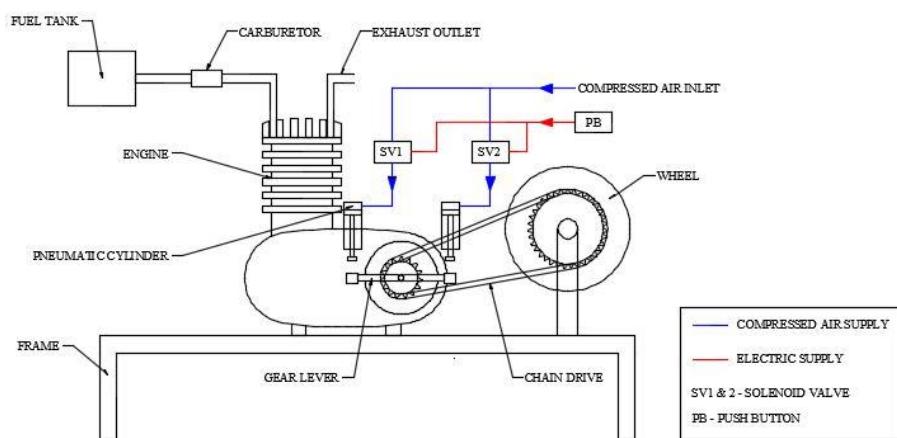
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2. MAJOR COMPONENTS

1. PNEUMATIC CYLINDER
2. TWO STROKE ENGINE
3. PETROL TANK
4. HOSE AND CONNECTOR
5. SOLENOID VALVE
6. WHEEL
7. CHAIN DRIVE
8. GEAR ROD
9. FRAME
10. SHAFT
11. METAL STRIP
12. BEARING
13. COMPRESSOR

3. LAYOUTS OF MODEL



4. WORKING PRINCIPLE

When the driver triggers the potentiometer to the required gear level, it sends the feedback signal to the electronic control unit and actuates the solenoid valve which passes air supply to the pneumatic cylinder which get coupled with clutch lever, this creates tension force to pull the clutch lever along with pneumatic cylinder and causes the clutch to disengage. After this process gear lever is actuated by the pneumatic cylinder which is placed above it by the force created during its extension. After the gear get engaged, solenoid valve function is stopped and this process get repeated for each and every successive gear engagement. Similarly the next cylinder activation reduces the gear level by the feedback signal experienced during the reverse rotation of potentiometer.

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5.ADVANTAGES

- It requires simple maintenance cares
- The safety system for automobile.
- Checking and cleaning are easy.

6.APPLICATIONS

- It is used to change the gear in crusher machine
- Used in automobiles
- Used for shift the gear in press machine

7.CONCLUSION

The pneumatic gear changer was designed and checked for successful working. It was found to be running successfully under all the conditions. By the results, the suggested mechanism is realizable and workable. Using the simplest and required hardware enables to convert the old traditional gear shifting mechanism to semiautomatic one. Using of this mechanism in vehicles leads to make the driving process easier, reduces the risk of destabilizing the car, the lap/stage time, and the chance of miss shifting

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