Design and Fabrication of Pneumatic Gear Shifting Mechanism for Two Wheeler

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Abstract--- *In this project, we have a tendency to design a gear shift mechanism and applied it to a bicycle with a clutch, dashing up the forwarding method and reducing the disorder of the motive force exploitation the button style. The designed gear makes operation easier and provides economical operation. This new device is reliable, tiny in size, cost-efficient and cheap to keep up. Follow the projected shift technique. The gas switch may be automation that uses compressed gas to modify gears from the clutch next to the motive force to the engine of the vehicle. Gas switches should be thought-about as safety devices. There's no delay once shifting gears occurring within the clutch and fixing different components of the vehicle.*

Keywords--- *Gear Mechanism, Gear Box, Buttons, Pneumatic Shifter.*

I. INTRODUCTION

This invention relates to regulating mechanisms and additional notably to mechanisms for dominant the choice and institution of assorted gear relations of motor vehicle transmission train. Our Invention relates to gear shift mechanisms notably like are used on automotive vehicles. it's for one in every one of its principal objects to supply a gear shift mechanism pneumatically operated, through the instrumentality of that the assorted gears within the mechanism is also created operative. alternative objects are to provide a gear shift mechanism that is quiet in its operation, that greatly relieves all strain on the elements with that it's connected, that has no elements simply broken or apt to urge out of order which can be operated with however slight talent on the part of the driving force, that is appropriate for all makes of automotive vehicles. And which might be factory-made at a comparatively low cost? As a rider after we have managed over the gear shifter, generally with the rider's left foot each the clutch and brake, drivers each hand & foot remains busy.

II. LITERATURE SURVEY

Make a pneumatic gear selector S. Vijay Kumar, P. Nitesh Reddy, P .; Masum Bash. In this design there is a car to aging gears. It is controlled by the controller (microcontroller). The microcontroller (IC) is preprogrammed to operate the system. Reduction gear speed. In order to move forward, one cylinder is driven.

Electropneumatic gear shift prof. Mankar N.A., Mr. Keshar S.D., Mr. Minde R.R., Mr. Hajj Abulfise A.Kh., Mr. Barhe S.E. This document focuses on the gearshift process using devices as a manual four-speed gearbox. In accordance with the proposed gear shift, it is controlled manually (using buttons).

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Design and manufacture of the mechanism by manual management from Akshyakumar Puttewar, Pratik Kadu, Narendra Sontakke, Sanket Makhulkar, Sumit state. This project is geared toward raising the gear shift method victimization applicable management mechanisms that may be used with clutched motorcycles. in line with the planned gear shift methodology, the gear is chosen in line with the vehicle speed while not human intervention. The motivation for this work is to implement this idea in motorcycles with clutches with applicable clutch management. it's thus clear from the on top of calculation that the force engaged on the cylinder is perfect for moving the shift lever (pedal). In line with the achieved results, the planned mechanism is viable and operable. With the only gas system and also the necessary instrumentation, you'll be able to amendment the previous ancient gear shift mechanism semiautomatically.

Electric actuator switch manufactured by Miss.A.A. Shingavi, Tagad Sham Annasaheb, Pagar Sagar Balasaheb, Pavar Prashant Jairam, José Satish Bhau. This project is a shift process using equipment such as 4 speed manual gearbox, single acting pneumatic cylinder, single pneumatic 2 way 5 directional distribution valve, electric motor, belt, 2 pulleys, buttons, compressor, power supply etc The purpose is to improve. . According to this shift method, the driver can select the gear ratio of the gear box without releasing the hand from the steering wheel by pressing the shift button on the steering wheel.

Vishnu P.R., Vishnu R., Ratish.R., Vinot Kumar.G Pneumatic pneumatic gear train from G. The main purpose of this idea is to use the system for automating the operation of cars. There is a tendency to focus on modeling the mechanism of an automatic transmission of motorcycles using electronic equipment. This is very useful for the vehicle's transmission mechanism. You can easily drive a vehicle and improve its performance. In addition, gear damage and breaks can be avoided.

Working Procedure

As shown in FIG. 2, the engine starts to drive the main shaft by arranging the belt and the pulley, the gear box is initially in the neutral position, and the output shaft is stationary at first. During operation, cylinder - 1 moves the piston to the right, meshes with 3 rd gear, the output shaft begins to rotate, and power is transmitted from the input. (Engine / engine) to output (both).

III. METHODOLOGY

The transmission process with transmission is a machine consisting of a power transmission system that provides controlled use of power and power. The term transmission simply refers to a gearbox that uses gears and gears to translate speed and torque from a rotating power source to another device. The most common application is a vehicle in which the transmission adapts the output power of the internal combustion engine to the drive wheel. Such engines should operate at relatively high rotational speeds, which is not suitable for starting, stopping and slower movement. Transmission reduces engine speed to a lower wheel speed and increases torque in the process. Gearboxes are also used in bicycles with pedals, stationary cars and where different rotational speeds and torques are applied. In automobiles, the transmission is usually connected to the engine crankshaft via a flywheel and / or clutch and / or

hydraulic clutch, since the internal combustion engine cannot operate below a certain speed. The power output of the transmission is transmitted to one or more differentials that drive the wheels through the drive shaft. The differential can also provide a lower gear, but its main purpose is to rotate the wheels at both ends of the axle at different speeds as the direction of rotation changes (wheel slip when turning This should be avoided).

IV. FABRICATION

Introduction

Various forms of systems and parts are accustomed succeed our goal of making a gas gear shift mechanism for motorcycles. In step with this configuration and manufacture of components, correct placement, and installation of components are performed. Details on the varied parts used and producing ways are delineate during this chapter, which is able to assist you to perceive the varied parts and their work.

Frame Structure

To achieve our productivity, we tend to design the frame with one x 1-inch low-carbon steel sq. bar. We've got created a rough sketch on paper. The frame we tend to try to make should stand up to the load of the engine. I additionally designed a rack for storing the battery and mechanical device. For frame construction, we tend to used varied processes wherever a number of them are arc attachment, drilling and boring.

Calculations

For the Engaging Motion Cylinder

Pressure (P)   = 10 bar

Diameter of the piston   = 32mm

Cylinder area, A:

$$A = \frac{\pi}{4}d^2 = \frac{\pi}{4} 20 \times 10^{-3}$$
$$= 3.14 \times 10^{-4} m^2$$

Force = Pressure × Area

$= 10 \times 10^5 \times 3.14 \times 10^{-4}$

=314 N

For the Sliding Motion Cylinder

Pressure   = 10 bar

Diameter of the piston   = 32mm

Cylinder area, A:

$A = \frac{\pi}{4}d^2 = \frac{\pi}{4} 20 \times 10^{-3}$

$= 3.14 \times 10^{-4} m^2$

Force = Pressure × Area

$= 10 \times 10^5 \times 3.14 \times 10^{-4}$

=314 N

Following are the specification of the cylinder which are used in our syste Single stroke cylinder

Bore diameter=20mm

Stroke length=100mm

Pressure(Bar)	Observation	Gear Shifting
6	Piston rod does not reach To gear lever	No Change
7	Piston rod does not reach To gear lever	No Change
8	Piston rod does not reach To gear lever	No Change
9	Piston rod does not reach To gear lever	No Change
10	Piston rod reach To gear lever	Change

V. CONCLUSION

   This project enclosed the event and implementation of bicycle gas gear. The motivation for this work is to implement this idea in motorcycles with clutches with applicable clutch management. It's so clear from the on top of calculation that the force performing on the cylinder is perfect for moving the shift lever (pedal).

In step with the achieved results, the projected mechanism is feasible and operable. With the only gas system and therefore the necessary instrumentation, you'll be able to amendment the recent ancient gear shift mechanism semi automatically. The employment of this mechanism facilitates the driving method and reduces the danger of instability of the bicycle, wrap/lap time and therefore the chance of false shift.

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