ABSTRACT

In our country, there are many thousands of physically challenged persons who use the same old vehicles meant for handicapped persons. Normally, a handicapped vehicle does not have reverse gear. We want to overcome these difficulties of handicapped people by implementing our project, presented in this paper, whose main aim is to help physically challenged persons to move their vehicle in reverse without the help of others.

It consists of three shafts with a keyway cutting and four spur gears. Driver shaft consists of compound gear arrangement. Gear 1 and Gear 2 are main gears, Gear 3 is idler gear which is to transmit power from gear 2 to gear 4 for forward motion and gear 4 is a driven gear that is mounted with driven shaft.

The driven shaft consists of a sprocket that is connected with a chain arrangement that allows rear wheel to rotate. Lever is used in gear setup to change the gear in forward and reverse motion while supporting plate is used for mounting three shafts. Shifting of gears arrangement is provided to change the gear in forward and reverse motion. When
the gear is shifted from right to left, it makes the vehicle move forward. When the gear is shifted from left to right, it moves the vehicle in a reverse direction. It is normally based on messing of gears.

INTRODUCTION

Nowadays, the intensity of traffic on Indian roads is increasing at high pace. As in this day there are many options for transportation available for physically challenged persons like, Motorized wheel chair, Hand powered tri-cycle, Scooters, etc. The problem associated with motorized wheel chair is that it is too costly and is not suitable for commuting. Hand powered tri-cycle requires heavy human effort and in Moped there is Continuous Variable Transmission (CVT) system for power transmission purpose. With the help of CVT we only obtain forward motion. There is no provision of reverse motion in moped. To overcome this drawback, we have designed and fabricated reverse gear box in moped to make physically challenged person self-dependent.

The physically challenged persons are one of the excluded sections of the society and also they face number of problems in their daily life. In order to bring them in the main stream both the central as well as the state governments are introducing many welfare measures and schemes. To avail these welfare measures and the schemes, first of all they must aware about the same. In motor vehicles, the transmission generally is connected to the engine crankshaft via a flywheel and or partly because inter combustion engines cannot run below a particular speed. A simple but rugged sliding-mesh or unsynchronized/non-synchronous system, where straight-cut spur gear sets spin freely, and must be synchronized by the operator matching engine revs to road speed, to avoid noisy and damaging clashing of the gears. The now common constant-mesh gearboxes, which can include non-synchronized, or synchronized/synchromesh systems, where typically diagonal cut helical (or sometimes either straight-cut, or double-helical) gear sets are constantly “meshed” together, and a dog clutch is used for changing gears. On synchromesh boxes, friction cones or “synchro-rings” are used in addition to the dog clutch to closely match the rotational speeds of the two sides of
the (declutched) transmission before making a full mechanical engagement one reverse gear) the counter shaft has four gears which are rigidly connected to it. Clutch shaft has one gear and main shaft has two gears.

LITERATURE REVIEW

Fabrication of pneumatic gear changer by this construction there are two pneumatic cylinders consisting of pistons on either side of the vehicle pedal for engaging the gear. The cylinders are operated with the help of a pressurized air coming from compressor and it is controlled by a control unit (micro controller). This microcontroller (chip) is preprogrammed for working of the system. The role of two pneumatic cylinders is one for increasing the gear speed and for decreasing the gear speed. For the forward motion one cylinder is actuated & for the reverse motion second cylinder is actuated.

Design and Study of Four Speed Sliding Mesh Gear Box is simplest type of gear box out of the available gear boxes. In this type of gear box, gears are changed by sliding one gear on the other. This gear box consists of three shafts; main shaft, clutch shaft and a counter shaft. In a four speed gear box (which includes

- FRAMES
- FUEL TANK
- PISTON

The two gears on the main shaft can slide in the horizontal direction along the splines of the main shaft. However, the gears on the counter shaft cannot slide. The clutch gear is rigidly fixed to the clutch shaft. It is always connected to the counter shaft drive gear. The two gears on the main shaft can be slide by the shifter yoke by operating the shift lever (not shown in Figures).

These two gears are second gear and low/reverse gear respectively. These gears can be meshed with corresponding gears on the counter shaft with the help of shifter yoke and shift lever. Shift lever is operated by hand in four wheelers for changing the gears. A reverse idler gear is mounted on another (third) shaft and is always in mesh with reverse gear on counter shaft.

- ENGINE
WORKING PRINCIPLE

A four-stroke spark-ignition engine is an Otto cycle engine. It consists of following four strokes: suction or intake stroke, compression stroke, expansion or power stroke, exhaust stroke. Each stroke consists of 180 degree rotation of crankshaft rotation and hence a four-stroke cycle is completed through 720 degree of crank rotation. Thus for one complete cycle there is only one power stroke while the crankshaft turns by two revolutions.

FOUR-STROKE SPARK IGNITION ENGINE In this gasoline is mixed with air, broken up into a mist and partially vaporized in a carburetor (Fig. 5). The mixture is then sucked into the cylinder. There it is compressed by the upward movement of the piston and is ignited by an electric spark. When the mixture is burned, the resulting heat causes the gases to expand. The expanding gases exert a pressure on the piston (power stroke). The exhaust gases escape in the next upward movement of the piston. The strokes are similar to those discussed under four-stroke diesel engines.

OPERATION

Fixed-Venturi In which the varying air velocity in the Venturi alters the fuel flow; this architecture is
employed in most carburetors found on cars.

In which the fuel jet opening is varied by the slide (which simultaneously alters air flow). In "constant depression" carburetors, this is done by a vacuum operated piston connected to a tapered needle which slides inside the fuel jet. A simpler version exists, most commonly found on small motorcycles and dirt bikes, where the slide and needle is directly controlled by the throttle position.

The most common variable Venturi (constant depression) type carburetor is the side draft SU carburetor and similar models from Hitachi, Zenith-Stromberg and other makers. The UK location of the SU and Zenith-Stromberg companies helped these carburetors rise to a position of domination in the UK car market, though such carburetors were also very widely used on Volvos and other non-UK makes. Other similar designs have been used on some European and a few Japanese automobiles.

These carburetors are also referred to as "constant velocity" or "constant vacuum" carburetors. An interesting variation was Ford's VV (Variable Venturi) carburetor, which was essentially a fixed Venturicarburetor with one side of the Venturi hinged and movable to give a narrow throat at low rpm and a wider throat at high rpm. This was designed to provide good mixing and airflow over a range of engine speeds, though the VV carburetor proved problematic in service.

BASICS:

A carburetor basically consists of an open pipe through which the air passes into the inlet manifold of the engine. The pipe is in the form of a Venturi: it narrows in section and then widens again, causing the airflow to increase in speed in the narrowest part. Below the Venturi is a butterfly valve called the throttle valve — a rotating disc that can be turned end-on to the airflow, so as to hardly restrict the flow at all, or can be rotated so that it (almost) completely blocks the flow of air.

MACHINES

AND FUNCTIONS:
The low resistance to motion (compared to dragging) is explained as follows (refer to friction):

The normal force at the sliding interface is the same.

Bearings are used to help reduce friction at the interface. In the simplest and oldest case the bearing is just a round hole through which the axle passes (a "plain bearing").

CONCLUSION

In the developed countries the debate has moved beyond a concern about the perceived cost of maintaining the dependent people and to find effective ways 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 Indian road ways would give a pleasurable development to physical challengers which may result in unity.

REFERENCE:

2. Beale, Paul; Partridge, Eric (2003),