Hand Operated Four Wheeler For Disable Person

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Abstract - This paper presents a review of hand operated four wheeler. The automobiles play an important role in the transport system. With an increase in population and living standard, the transport vehicles as well as car population is increasing day by day. In addition to this there is steep increase in the number of two wheelers during the last two decades. In this project we also added the feature i.e. it can be used for disabled person by button operated clutch, brake and accelerator.

Keywords – Hand, Disable person, four Wheeler, transport.

I. INTRODUCTION

In order to create a device that will accomplish our goal, and benefit the end user, design specifications for the device were established. The specifications are listed in 3 sub-categories, overall design, Control and Implementation.

- **Overall Design**
  1. Minimal individual components for simple maintenance and troubleshooting
  2. Intuitive use to ensure a licensed driver is able to learn the operation of a vehicle with the system within six months
  3. Ergonomic to ensure comfortable operation of system for over two hours of continuous use
  4. The brake pedal has an immediate response time
  5. The gas and clutch pedals are actuated at the speed required by traditional driving standards
  6. Allows for traditional vehicle operation (forward, reverse and gear change)
  7. Competitive market price to ensure affordability for target users
- **Controls**
  1. Allow for safe operation of the vehicle
  2. Each pedal is operated independently of one another
  3. One of the driver's hands can operate the steering wheel at all times
  4. Provides the driver with vehicle control as close to the traditional manual driving experience as possible 18
  5. Allows for recovery of vehicle control within one second in an emergency situation
  6. Driver is able to use other features in the vehicle while operating system (i.e. stereo, turn signals)

II. IMPLEMENTATION

1. Able to be installed in the majority of compact vehicles
2. Installation of device requires minimal tooling.
3. Does not need a trained technician
4. Inexpensive installation

3.2 Components Specification

The components use in the model is made up of the following manner.

1. **Frame:** A-frame is a basic structure designed to carry load or we can say that the outer skeleton of the any vehicle. The frames generally used in vehicles are made up of beam and angles. The material of frame is generally made up of wooden blocks (In old vehicles frame are made up of wood) or iron. A-frames can be used as-is, as part of shears, or set up in a row along a longitudinal beam for added stability, as in a saw horse. We choose a square angle which is weld with the electric arc welding. The outer support frame is settled in 90° of angle with one another shown in figure 1

Fig1:- Outer Frame

2. **Engine: -** An engine or motor is a machine designed to convert one form of energy into mechanical energy. Heat engines burn a fuel to create heat which is then used to do work. Internal combustion engines are heat engines that burn fuel in a combustion chamber to extract work from the pressure of expanding gases. Electric motors convert electrical energy into mechanical motion; pneumatic motors use compressed

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air; and clockwork motors in wind-up toys use elastic energy. The engine used in the vehicle is of Bajaj LML 2-Stroke Engine of 2002Model shown in figure 2

Fig2:- Engine

Engine Description		
Stroke	:	2-stroke
Displacement	:	149.56cc
Power	:	8.4bhp @ 5500rpm
Torque	:	11NM @ 3250rpm
Top Speed	:	85kmph
Production	:	1998
Transmission	:	4 speed, manual with sifter in the left hand gear sifter.
Fuel Type	:	Petrol

3. **Axle: -** An axle is a central shaft which is a kind of rod which is use to rotate the wheel or to equalize the transmitted power for the rear wheel for Rear Wheel Drive vehicle. The material used to make the axle is made up of iron round pipe which is driven by the chain drive. The axle sprocket is attached with the axle by the means of bearing for the rotation of the wheel as shown in the figure 3

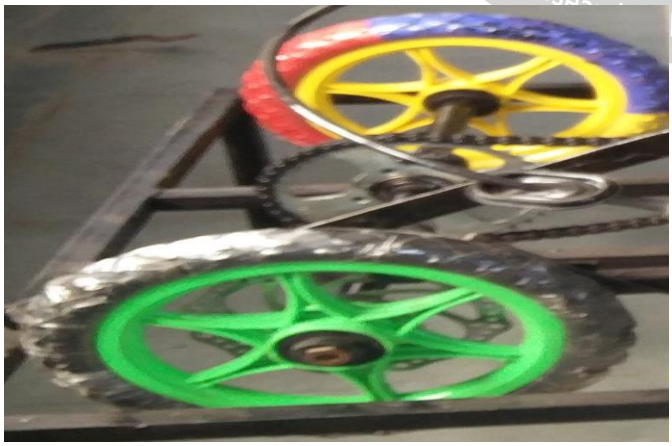

Fig 3: Rear Axle

4 Axle Sprocket: - An axle sprocket is used to transmit the power which is obtained from the fly-wheel to the rear axle. We use the bicycle sprocket as an axle sprocket as shown in the figure 4

Fig 4:- Axle Sprocket

Sprockets are of various designs, a maximum of efficiency being claimed for each by its originator. Sprockets typically do not have a flange. We use the sprocket of cycle to transmit the power to the rear wheel.

5. **Steering: -** Steering is the collection of components, linkages, etc. which allows any vehicle to follow the desired course. An exception is the case of rail transport by which rail tracks combined together with railroad switches provide the steering function. The primary purpose of the steering system is to allow the driver to guide the vehicle.

Fig 5: Steering Wheel

The steering placed for the movements of the front wheel according to road direction are of Maruti Suzuki 800 of 2005 model as shown in figure 5

6. **Accelerator Lever: -** The accelerator lever used in this is of the brake lever of the Bajaj Scooter LML of two strokes. The Accelerator Lever is made up of hard fiber. The accelerator lever is used to give the race to the engine according to passenger needs. The accelerator lever also used to open the carburetor throttle according to speed as shown in figure 6

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Fig 6: Accelerator lever

The accelerator lever are attach with the steering wheel, as the driver can easily operate the accelerator lever by his/her hand without any type of difficulty.

7. **Brake Lever: -** The brake lever placed in the hand operated vehicle is made up of fiber and it has locking system by which the occupant can easily apply brake when the occupant wants to stop the vehicle. The locking system of brake lever can be effective because when the occupant want to stop the vehicle he/she have to just push the lever and the brake lever get locked and the vehicle may stop as shown in the figure 7

Fig 7: Brake Lever

The brake lever is placed with the steering wheel as it can operate easily to apply brake when the vehicle is in motion.

8. **Wheel: -** The wheel of the vehicle model is of tricycle wheel. The wheels are made up of the plastic and the wheel can bear up to 130kg of weight.

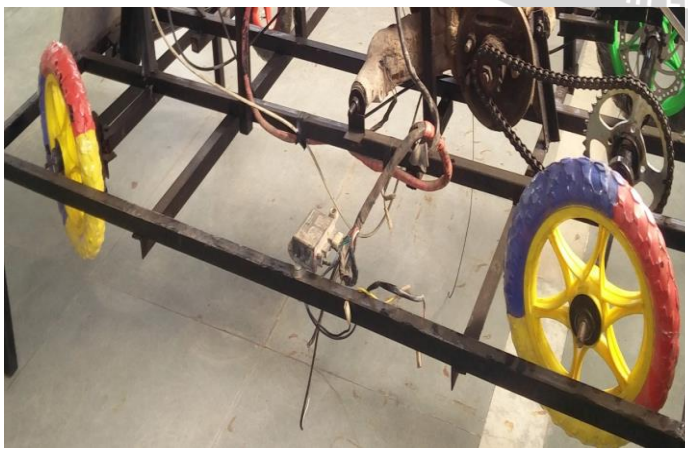

Fig 8: Wheel

The wheel is attached with the frame by the axel. The axle is attached with the frame by the welding the axle by the bearing. The bearing used in the axle to provide the motion to the wheel. The bearing used in the model is a type of ball bearing.

9. **Clutch Lever: -** The clutch lever is placed on the left side of the occupant which is attached with the gear lever as shown on figure 9

Fig 9: Clutch lever

The clutch lever which is used in the model are of Bajaj Scooter LML of year 2000.The clutch lever is made up of the hard plastic.

10. **Gear Lever: -** The gear lever in the model used to engage and disengage the gear according to the road and mode of drive. The gear lever is made up of circular iron pipe; the iron pipe is chosen is circular because of good grip to the occupant and can be easily operated as shown in figure 10

Fig 10: Gear Lever

11. **Seat: -** The seat is placed in the frame behind the steering wheel. The seat is made up of plastic. The seat is for the occupant to drive comfrey, as shown in figure 11

Fig 11: Seat

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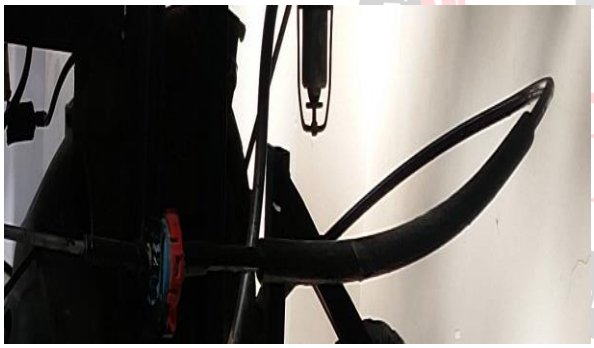
A car seat is the seat used in automobiles. Most car seat are made up of durable material. The most common material is polyester.

12 Fuel Tank: - The fuel tank used in the model is of the Bajaj Scooter LML of year 2002. The fuel tank is for the petrol storage. The fuel tank is connected with the engine in carburetor. The fuel tank is place behind the seat and above the engine, as shown in figure 12

Fig 12: Fuel Tank

13 Clutch Cable: - A Clutch cable is a type of flexible cable which are used to transmit the power or we can say that plays an important role for engagement and disengament the transmission of power in smooth manner. We use the clutch cable of motor-bike for this model as shown in figure 13 (a & b)



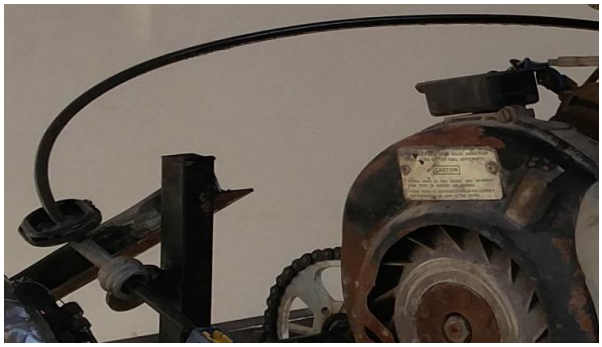


Fig 13: Clutch Cable

14 Brake Cable: - Brake cable is used to apply the brake to the wheel. The brake cable is connected with the brake lever, as shown in figure 14

Fig: 14 Brake Lever

15. Final Design

Fig 15: Final Design

III. CONCLUSION

1. It requires simple maintenance cares
2. The safety system for automobile.
3. Checking and cleaning are easy, because of the main parts are screwed.
4. Easy to Handle.
5. Repairing is easy.
6. Used by disabled persons.

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