

Design and Fabrication of Luggage Trolley

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Abstract— The paper deals with the modification of luggage trolley. It is all to increase the load carrying capacity and reduce human efforts to carry the load. The extra component used for modification of the trolley consists of dynamo and motor which helps in reducing human efforts to carry load. Addition of extra wheels distributes the load and hence load carrying capacity increases. We are going to use the renewable energy produced by the dynamo to run the motor. The mechanism we are using promises to carry a good sum of load with less efforts.

Key words: Dynamo, Motor, Efforts, Load

I. INTRODUCTION

Any machine which occupies less space and takes less time is preferred the most. The project modifies the trolley in order to increase the load carrying capacity in a small area and decrease the effort of the porter side by side by the motor which is coupled to the wheel is used. The motor is powered by dynamo which recharges the battery. It consists of design and fabrication of luggage trolley which has high load bearing capacity and fewer efforts to carry it. Luggage trolley has undergone various changes according to the demands. Luggage trolley is used in carrying loads for a shorter distance. It is the conventional way to carry loads with the help of wheels. Since many centuries wheel is designed and trolley also.

II. WORKING

A. Name and Function of Component

- 1) Chassis: To support all the elements & carry the load.
- 2) Wheels: To distribute the load.
- 3) Dynamometer: To produce electricity.
- 4) Shock absorber: To absorb the shock, damp shock & to avoid the front wheel to lift.
- 5) Battery: To store energy.
- 6) Motor: To create motion.
- 7) Bevel gear: To transmit motion.
- 8) Brakes: To regulate speed.

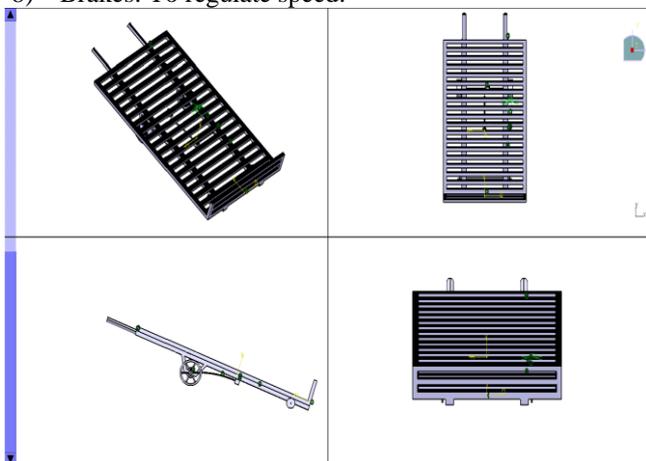


Fig. 1: Over All View

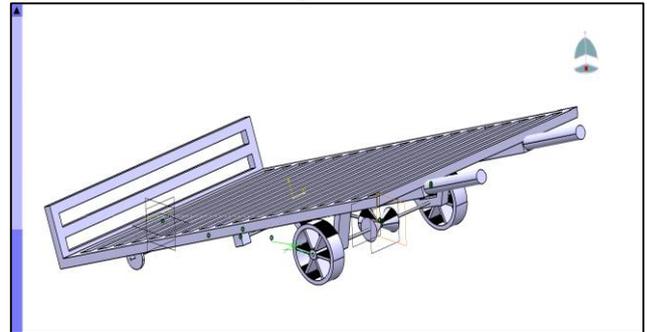


Fig. 2: Side View

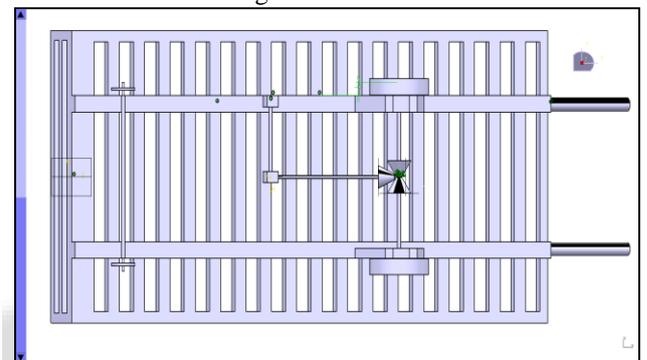


Fig. 3: Bottom Side View

III. WORKING

A. Description of the Preferred Embodiments

Referring now to FIG 1 It is the overall view of the trolley which clearly shows all the components and the arrangement of the components. It gives clear image of how the trolley looks from all side.

Referring now to FIG 2. In which is the side view of the trolley which shows the 2 types small at front and big at rear wheels it also consists of handle and supporting element at the end of trolley to support the luggage. The black box shown is the battery which stores the energy and a shaft is shown which takes energy from battery to transmit it to wheels.

Referring now to FIG. 3 This is the bottom view of the trolley which shows detail gear arrangements with the motor and wheels. The gears are connected to shaft and shaft is connected to motor with the help of battery. Motor runs and battery is charged with the help of dynamo.

This is the close view of bottom view it clearly shows the bevel gears arrangement within the casing. These bevel gears would be enclosed in the casing.

IV. BLOCK DIAGRAM

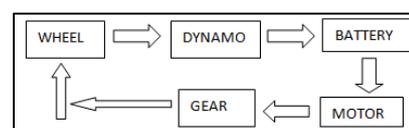


Fig. 4: Block diagram

Referring now to Block diagram: The diagram shows the step by step working of the trolley. First due to rotation of the wheel dynamo also runs and produces the energy. This generated energy is in the form of electricity which is stored in battery. Battery plays the role to store this electricity. The stored energy is transferred with the help of wires to the motor by the battery. Motor is coupled with gears and the gears are driven by motor. gears are attached to rear wheels and gears drive those wheels.

Sr no	Parameters	Specification
1	Load carrying capacity	300 Kg
2	Diameter of wheel	
	Large	0.5m
	Small	0.3m
3	Shaft Material	Mild steel
4	Overall length*width	1.5m * 0.6m
5	Battery	6V bosch
6	Torque generated	Appr-1343.44Nm
7	Starting efforts	Less
8	Shaft	0.030m
9	Dynamo	Present
10	Gear	Differential gear box
11	Motor	1 HP

Table 1: Parameters & Specification

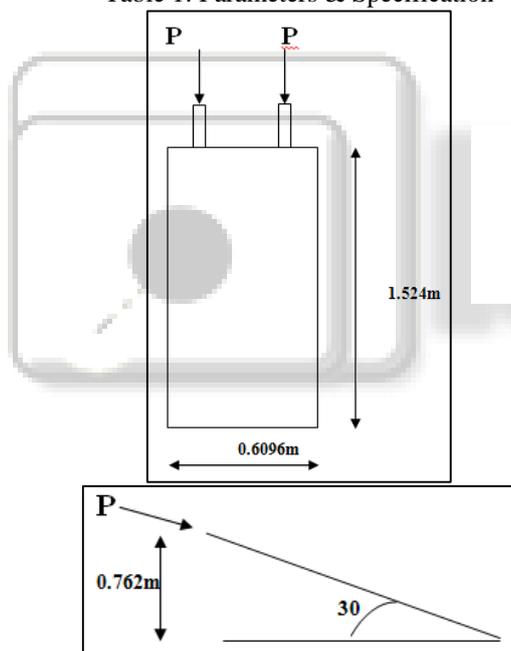


Fig. 5: Free Body Diagram

Having thus fully described the invention, what is claimed as new and desired to be secured by authority is:

A trolley for transporting material from 'one work station to another which comprises a trolley which includes an extra wheels in order to increase the load carrying capacity in any conventional trolley there are only two rigid wheels which only adds extra weights to the existing trolley we have decreased the weight and added two extra big wheels which has made the trolley weight and increased the load bearing capacity along with the aim of increasing load bearing capacity the project also focuses on decreasing this load bearing capacity hence to decrease the load bearing capacity dynamometer is attached on each wheels electricity generated by dynamometer is stored in battery dynamometer is electrical generator that takes energy from

wheels to produce electricity. Dynamometer has a stationary and rotating magnet winding the rotations of winding occurs due to contact of dynamometer to the wheels when the wheel is downhill when the trolley is downhill small wheels situated at the front will rotate more as compared to the rear wheels they will produce more electricity this produced electricity is stored in the battery. Battery is connected to bevel gears with the help of shaft which rotates the rear wheels when the trolley is up hills this energy which helps to carry the load. And hence when the load is increased to carry this load along with human efforts to carry it motor gives a helping hand and it reduces the human efforts to carry the increased load.

V. OBJECTIVE

- 1) The main objective of our project is to increase the load carrying capacity of the trolley.
- 2) As the load carrying capacity increases more effort will be required hence to decrease the effort is also the main objective.
- 3) To make the trolley handy as per the load.
- 4) To generate electricity to run the motor.
- 5) To reduce the time for carrying goods.

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