

# Fabrication of Battery Operated Remote-Control Forklift Machine

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**Abstract - Mechanical split lift is a better and go onward technology that helps brought about rebellion in the mechanical industry today all heavy manufacturing company uses it extensive use of the forklift truck had revolutionize warehousing practice before the center of the 20th century. A mixture of matter handling systems is in the use, precise beginning that entirely physical to the ones that are semi-automatic but manually forbidden Forklifts have revolutionized store work. They made it likely for one person to move thousands of pounds at once. Well-maintained and safely operated forklifts make exciting and transporting cargo considerably easier. This is the general account of a normal forklift truck. To enhance the knowledge further, this prototype module is constructed with remote skill, present by the operator can walk the length of with the forklift for better visibility & the container can be placed exactly (precision position). This increases the security of the operator.**

**Index Terms - Forklift, worker, transport, operator.**

## I. INTRODUCTION

In general, the forklift can be defined as a tool able of lifting hundreds of kilograms of load. A forklift is a means of transportation similar to a small truck that has two metal forks on the features used to lift cargo. The forklift worker drives the forklift onward until the fork push under the weight and can then lift the cargo some feet in the air by working the forks. The forks, also known as blade or tines, are usually completely out of steel and can lift to a few masses. Forklifts are machines with the purpose of use levers and/or pulleys to lift important weights. A forklift one pass on the road may look like a fairly contemporary creation, but these machines have been used for at least the past 2000 years, if not longer. The Romans used forklifts to build huge monuments. Medieval churches were constructed using them. Also, the Egyptians may have

used them to make pyramids. The modern account can be either simple or compound, and forklifts vary based on their function.

## II. LITERATURE SURVEY

The forklifts are the essential part of today's supply unit where it is transporting goods from one place to one more in the storage, load, or unloading good to the truck the forklift utilizes. The two-wheel hand over operate forklift first appear over one hundred years ago. These original units were shaped-iron axle and cast-iron wheels which enabled many to be lifted and transported without physical labor.

The evolution to unite horizontal and vertical motion resulted in the first hand operate forklift capable of exciting a few inches of the land and with this the growth of the forklift is on Fast Track till today. In 1917 the business named Clark started the manufacturer of axles and created a truck called the tractor to move resources around their factory in a variety of units of the plants. As visitors to the industrial unit saw the tractor at work, they are also paying attention in the way to use a tractor in their place live, so they placed orders to build tractor for their business.

Both of these developments increased making of forklifts and allowed distributors the means to professionally shift heavy many in the factories. 'Load centers represent the center of a forklift truckload, from front to rear. It is easily calculated by measuring the load to be carried and in-between by two (providing the load is evenly distributed and located to butt up to the forklift backrest).

The joint center of the seriousness of the truck and weight system shifts onward outside the constant triangle, as the load's moment, is greater than the vehicle's instant, and the forklift tips forward, Pivoting

on the front axle or fulcrum. The regular forklift is wide in size and cannot be utilized in a narrow passage with the load as there are having more chance of an accident as it's fairly difficult to rotate in narrow passage whereas the two-wheeler forklifts can be utilized very easily narrow passages as compared to a normal forklift.

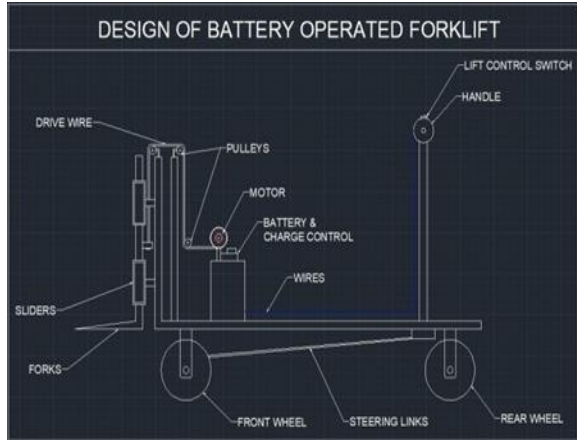


Fig.1.1 Battery operated forklift

### III. COMPONENTS DESCRIPTION

The different mechanism used in this project are as given below:

- 1) Base (Chassis)
- 2) Remote Controlled System
- 3) Slider
- 4) Shaft
- 5) cord
- 6) Pulleys
- 7) DC Motor
- 8) Battery

#### 1. Base (Chassis)

The chassis is made up of Plywood sheets. This is done for ease of fabrication, and to decrease the overall weight. The chassis was intended to take a static load of 3kg. The flange which holds the motor was calculated using Aluminum and is bolt to the chassis. So that the rotate motors can easily accommodate below the chassis. The chassis incorporates a hole for attaching the front globe wheel, and also for attaching the lift structure.

#### 2. Remote Controlled System

The forklift is ready with 6 manual keys. By activating these keys physically, all the movements can be created in the forklift. All these 6 keys are in a straight

line interfaced with an electrical overpass circuit at the input side, one end of all the keys is shorted jointly and connected to the ground. When any key is pressed, a biased current is transmitted to the next node, and follow, based on this bias the route drives the motor.

#### 3. Slider

It is a rectangular plate which is held flanked by two vertical channels of Aluminum which are free to slide up and down to raise and lower the weight/load up to the desired boundary with the help of a rope which is linked to the DC Motor through Shaft and Bevel gears.

#### 4. Shaft

A shaft is a rotating machine constituent that is used to broadcast power from one place to another. The power is brought to the shaft by some lateral force and the resulting torque set up with the shaft permits the authority to be transmitted to a variety of machines linked up to the shaft. To go the authority from one shaft to another, the various members such as pulleys, gears, etc. are mounted on it. These members along with the armed forces exerted upon them cause the shaft to be twisting. In other words, we may say that a shaft is used for the transmission of torque and twisting moment. A variety of member is mounted on the shaft using keys.

#### 5. Cord.

The rope is used to broadcast power from one point to another utilizing pulleys which turn at the same speed or dissimilar speeds. The amount of power transmitted depends upon the following factors:

- The speed of the rope.
- The stress under which the rope is placed on the pulleys.
- The situation under which the rope is used.

#### 6. Pulley

The pulleys are used to put out power from one point to another by denotes of belts or ropes. Since the speed ratio is the inverse ratio of the diameter of the heavy and driven pulleys, therefore the pulley width should be carefully chosen to have a preferred velocity ratio. The crane must be in the ideal arrangement to allow the belt or line to travel in a line normal to the pulley faces.

#### 7. DC Motor

An electric motor is a machine that converts electric energy into mechanical energy. Its act is based on the principle that when a current-carrying conductor is located in the magnetic field, it experiences a mechanical force whose way is given by Fleming's Left Hand Rule.



Fig1.2 DC motor

#### 8. Battery

It supplies authority to motor and gear box which run the wheel and barrel.

### IV.METHODOLOGY

The method we followed to Complete the project is as follows

1. Collecting research Paper: Collecting research paper from the internet on the prefabricated machines or system for carry Battery operated forklift. Collecting research paper on fabrication of remote operated forklift machine collecting research paper on design and parameters of forklift machine.

2. Project proposal: Making a project proposal for the selection of project and experiencing our ideas with project Guide and getting suggestion and submitting the project proposal to the project guide.

3. Selecting area of work: After project finalization we have to decide and area of work for fabrication of battery operated remote controlled forklift machine. Making CAD model and animation of machine: making and CAD model of machine for explain all the concepts related to the machine. Making the animation of machine for explaining the working of machine

4. Finding resources: Resources should be found for fabrication of machines it requires some pre-fabricated parts which are readily available in market also the battery operated works and fabrication works done from various workshops finding the materials and materials for fabricating parts.

5. Collecting different components: after fabrication and purchase components should be collected at various location of workplace. Assembly: assemble all the components of machine as according to CAD and animation make sure that is relative motion between parts is efficient and the mechanism used in machine is properly working.

### V.WORKING

1. Counterweight - is a mass emotionally involved to the rear of the forklift truck frame. The idea of the counterweight is to counterbalance the load being lifted. In an electric forklift, the large lead-acid series itself may serve as part of the counterweight.
2. Power Source: exciting forklifts are powered by either a battery or fuel cell that provides power to the electric motors. The emotional motors used on a forklift may be either DC or AC types.
3. Slider - is the vertical assemblage that does the work of raise and lowers the load. It is made up of interlock rails that also provide sideways stability. The interlocking rails may either have roller or bushings as guides. It may exist mounted to the face axle or the frame of the forklift.  
Switch: - 2-way switch  
This switch is used in our project for the select direction of a forklift.
4. Dc Motor:  
D.C. Motor is used in our project for touching forklifts from one location to another. Our project has used three motors in which two motors are used to run the rear wheel while one motor is used to run the barrel.

### VI.CONCLUSION

The technology is to add to the safety of the operator by operating the forklift from a sure distance. This increases the efficiency of the output because human error due to poor visibility can be minimized. The

system is designed and developed productively, for the display purpose prototype model (mini reproduction) is constructed. Most of all human safety is a major concern by using the remotely operated forklift.

Our project has an easy electrical heart and a simple mechanical body. As this is the simplest one, we have got a wired remote for manual working It can be modified into any high-class use. Considering the project time and all the necessary steps, we concluded this project is the true one. Since just a simple change in its mechanical arm and movement way, we can convert it into any robot that can perform a special type of work. It can be modified into any high-class function We concluded that remote prohibited forklift is the only way to stop such industrial issues like labor cost, dangerous material handling.

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