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A Review On: Portable Six Wheel Stair Climbing Cart

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ABSTRACT

The project aims to bring forward a way to move heavy objects over stairs. The necessity of such a system is clear from the day-to-day requirements of our society. Devices like hand trolley are wont to relieve the strain of lifting while on flat ground; however, these devices usually fail when it becomes necessary to barter a brief flight of stairs. Within the light of this, the project attempts to style a stair climbing hand cart which might carry heavy objects up the steps with less effort compared to carrying them manually.

This paper provides the detail study of stair climber material handling System. In this paper illustrates the various reviews about the stair climber material handling System for small scale industrial application considering the average requirement of small Indian organization where the lifts are not available. Therefore, in this paper, an attempt has been taken to summarize the past and current research in the material handling. The main objective of this paper is to present the review about the stair climber material handling System. After studying the previous concept of material handling system we tries to make it automatically without damage the material.

Keywords : Tri-Star, Stepper motor ,elevate, effort.

I. Introduction

An ordinary hand trolley is which includes tri wheels placed at the bottom of trolley. the two handles are furnished to help the frame and applied the human attempt. handles are used to push or pull the trolley. the scale, form, and function of handle are vary according to requirement. the wheels are Mounting on shaft supported through bearing. the material used to make trolley is unique consistent with the operating load. to carry heavy load the trolley is made from stainless steel and to carry mild load trolley made from slight metallic. the load is mounting on pinnacle of the trolley. in a few cases rectangular field is furnished to hold the burden. the fabric for rectangular container is vary according to the operating load. the varieties of trolley used are wheeled trolley, folding trolley, kitchen trolley, and Motorized trolley. stair mountain climbing trolley is designed to lift the high weight with much less human attempt. conventional hand trolley is designed to motion on flat surface but it cannot move on irregular floor or on stair (step of ladder). in stair mountain climbing trolley more than triwheels are furnished. these combos of wheels are works as single unit. in stair

mountain climbing trolley three wheels are connected to the shaft by means of triangular plate or immediately rod. such type of trolley could be very Useful in switch books in library and also used in domestic. while person are injured at that point to lift load by using using such kind of trolley is very smooth. the main component to design the motorized stair climbing trolley is wheel-frame, wheel, shaft, gear, motor, battery and bearing.

The paper introduces a new option for the transportation of the loads over the stair. The vehicle is designed in such a way that it has three wheels on each side. They are set in triangular pattern. This project focuses on the maximum ergonomically beneficial to human being. The present project related to load carrying equipment of a type that is automatically operated of moving upwardly and downwardly on flight of stairs. Load carrier is a wheeled mechanism device, is generally used to carry a loads. It reduces human efforts.

II. Literature review

Md. A. Hussain :- Designed and manufactured a stair climbing vehicle using modified form of frame arrangement i.e a curved wheel frame which move on rough surface. To address several technical issues in designing this vehicle is stability and maintain high speed at vehicle wheel arrangement while climbing stairs. The frame arrangement consists of sun, planetary, idler wheel which are assembled to the shaft which reduces application of load. However, the steepness of the stairs is also the important concern of this study. The vehicle has four set of wheels arrangement to support its weight when it moves over the flat terrain. Each wheel frame consists of three sub-wheels attached with the sun wheel through three idler gears

P. Jey Praveen Raj :- Designed and manufactured a stair mountaineering vehicle the usage of modified shape of body arrangement i.e a curved wheel frame which pass on rough surface. to address numerous technical Troubles in designing this automobile is balance and preserve high speed at car wheel arrangement whilst mountain climbing stairs. the frame arrangement consists of sun, planetary, loafer wheel which might be assembled to the shaft which reduces utility of load. but, the stiffness of the steps is likewise the important concern of this take a look at. the car has 3 set of wheels association to help its weight while it movements over the flat terrain. every wheel body includes three sub-wheels connected with The solar wheel via loafer sprocket.

Roshan Alaspure :- Designed and fabricated a stair hiking wheel mechanism which can be taken into consideration as trade for lifting items in this kind of manner that it could be climb a stepped course with its changed wheel shape the usage of guide metallic arc welding or stick welding. an electric powered contemporary is used to strike an arc between the bottom material and consumable electrode rod or stick. the electrode rod is product of a fabric this is like minded with the bottom Material being welded and is covered with a flux that gives off vapors that serve as a protecting fuel and provide a layer of slag, both of which shield the weld vicinity from atmospheric contamination. trolley up short flights of stairs just to attain the front door of a building. the whole purpose of the use of a traditional hand trolley is to keep away from having to lift and deliver heavy objects around.

Tri-Star Wheel

The triwheel become designed in 1967 via robert and john forsyth of the Lockheed Aircraft organisation. they [illegible] odule of the lockheed triwheel, a commercially unsuccessful amphibious navy car. a tristar wheel features as an everyday wheel on flat ground, but has the ability to climb routinely whilst an impediment to rolling is encountered. this wheel design includes three tires, each hooked up to a separate shaft. these shafts are located on the vertices of an equilateral triangle. the one shafts are geared to a fourth,

vital shaft(to which a motor can be connected). while geared in this quasi-planetary fashion, those triangular units of wheels can negotiate many forms of terrain, together with sand and mud; they also can allow a vehicle to climb over small obstructions such as rocks, holes, and stairs. the wheel meeting may be sprocket-pushed, with wheels in rolling contact with the floor. the third wheel idlers at the top until the decrease front wheel hits an obstruction. the obstruction prevents the decrease the front wheel From transferring forward but does no longer have an effect on the motion of the driving axle. this reasons the pinnacle wheel to roll ahead and backward into function as the brand new the front wheel. this wheel normally lands on pinnacle of the obstruction and permits the relaxation of the meeting to vault over the obstruction. tri-big name wheel in movement is proven in figure.

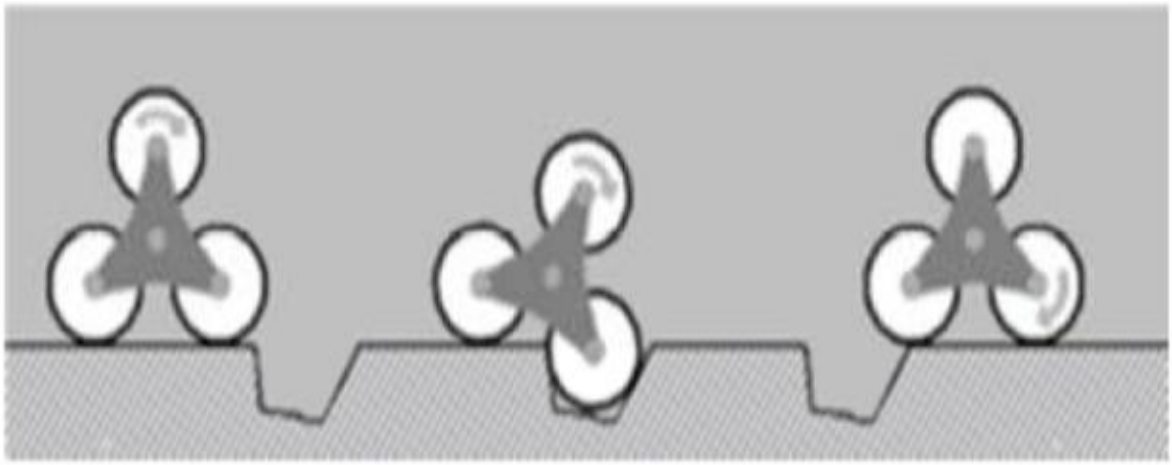

Fig Tri-Star wheel in motion

NEW MODIFIED SYSTEM

This work gives details about the stair climber material handling System, which can climb stair or move along very rough surface. The components uses in stair climber material handling System are e-bike motor, wiper motors, batteries, tri-wheels, microcontroller circuit, remote and trolley. The vehicle has Two set of wheel arrangement to support its weight. Each wheel frame consists of three sub-wheels attached directly to the motor in clamp through nut and bolt arrangement. Gear motor is a special kind of electric powered motor that moves in precisely defined increments of rotor role (steps). the dimensions of the increment Is measured in degrees and can range relying at the application because of unique manage, The batteries wherein a reversible response is chargeable for the era of strength such that they can be reverted to the unique Reactant state fall underneath the category of secondary batteries. A particularly designed wheel frame is required to preserve the cars together on each facet of the shaft. inside the current design, the strength transmission to the unmarried or double wheel is vain to climb the stairs because of peak issue of stairs. Bush roller chain or Curler chain is the form of chain pressure most typically used for transmission of mechanical power on many types of Home, business and agricultural machinery, such as conveyors, cord-drawing and tube drawing machines, printing presses, vehicles, motor cycles and bicycles. A sprocket or sprocket-wheel is a profiled wheel with teeth, or cogs, that mesh with a chain, music or different perforated or Indented material. the name 'sprocket' applies typically to any wheel upon which radial projections engage a chain passing over it.

FORNT VIEW

SIDE VIEW

COMPONENT USED

- ✓ **Gear Motor**
- ✓ **Battery**
- ✓ **Wheel Frame**
- ✓ **Roller Chain**
- ✓ **Sprocket**

OBJECTIVES OF WORK :

• Project aims at making headway for developing a mechanism for transportation of Considerable loads over stairs.

• To prove Tri-Star wheel arrangement is better than normal wheel at climbing the stairs.

• Weight reduction and minimum effort require carrying the load.

• Keep safety, weight, and size in perspective.

WORKING:

First of all the worker have to put the material in the trolley up to the given capacity of trolley. Initially the power is given to the motors through battery, the motors are run simultaneously. While climbing on stair, when first wheel touches the stair simultaneously the upper wheel climb on stair. All Two side of wheels work same. The motors are run according to the input given.

COMPARISON BETWEEN OLD AND NEW CONCEPT

OLD CONCEPT:

It is move on flat surface and it required manually operated. In manual system task not perform fast and efficiently. It required human effort. It required more time. High risk of injury during material handling. In manual there is possibility of damaging the material during storage and movement.

NEW CONCEPT:

It move on rough and stair automatically. In this system task perform fast and efficient. It not required human effort. It is time saving concept. Less risk of injury during material handling. It reduce damage of material during storage and movement

III. CONCLUSION

In this paper we implement the material handling with less human efforts in minimum time without damaging the material while transportation. In this concept we find out the automatic trolley and it operate automatically. concept of stair climber material handling system which provide the service to reduce the human efforts in many fields like offices, colleges and industries for handling material on stair case. It provide service to replace man in dangerous environment to transfer material on stairs and flat surface, like underground storage goods oxygen is in less amount.

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