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DESIGN OF LOAD TRANSFER DEVICE IN FARM ACTIVITIES TO AVOID BACK PAIN ISSUES

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ABSTRACT

The demand for this system stems from the daily needs of agriculture and our society. Use trolleys and other equipment to reduce the pressure when lifting heavy objects from high places and level ground; however, when transporting goods through a small group of ladders, this equipment usually does not work. This is why a ladder truck was made in this project, which can be more than manual Transport more effortlessly to move heavy objects up the ladder. Various designs have been developed to enable non-industrial trolleys to climb stairs, lift loads, curbs or uneven terrain, thereby reducing user stress. In our project, the trolley is equipped with helical gears and TriStar wheels, which can lift the load, go up and down the stairs and move the trolley on uneven surfaces such as potholes, potholes, and potholes more easily. and many more.

Keywords: Easy handling, time consumption, relieve stress, farming.

I. INTRODUCTION

The wheels are mounted on shafts supported by bearings. Professional freight forwarders prefer to use trolleys when transporting stacked items (such as boxes, cages or sacks). The user of the trolley must be careful not to stack the trolley too high to avoid obstructing or obstructing the load. To carry objects from one location to other small vehicle such as trolley is used. Trolley is common tool used in various industries to transport physical objects. For lifting heavy objects trolley protect people from back pain or any other health related problem. To carry heavy load stainless steel is used to make trolley and to carry medium load structural steel trolley is suitable. The cart is designed to lift heavy weights with less manpower. In farmland, it plays a weightlifting role and can be used by farmers, especially when someone is injured at this time. Lifting loads with this type of trolley is very easy to use.

II. LITERATURE REVIEWS

There changed into lots of associated paintings & studies achieved with inside the shape of literature survey to gather the knowledge & abilities wished to finish this challenge. This led us to stumble upon numerous challenge paintings, thesis & technical papers observed with the aid of using numerous opinions given on them. We can be discussing a number of the papers & the paintings achieved in them & then reviewing with the aid of using evaluating them to our challenge paintings.

Pratik H. Rathod, Designed and manufactured labor-saving trolleys for climbing stairs, suitable for libraries, hospitals, and general cargo transportation. The main modification of this trolley was carried out on wheels with a flat roller platform instead of a traditional wheel frame. The inclination angle of 44 degrees plays an important role here because it covers more than 90% of all stairs within this limit. There is an optional maximum slope alarm, which will warn the operator if the slope is greater than 44 degrees. If the operation of the forklift exceeds the allowable limit, the necessary safety measures must be taken.

Roshan Alaspure , AND has manufactured a stair climbing wheel, which can be seen as a substitute for lifting loads. The newly designed ladder wheel can be climbed by manual arc welding (MMAW) or rod welding. It is used to generate an arc between the substrate and the rod or rod of the consumable electrode. The electrode shaft is composed of a material compatible with the substrate to be welded, and is coated with a flux that emits steam and acts as a shield. Gas and form a layer of slag to protect the welding area from air pollution.

Ashish Singh, A robot working on four wheels will be able to climb to a height corresponding to its diameter. Projects like robots need to be updated with different application sensors (such as cameras, thermal imaging cameras, or chemical sensors). To be used in search and rescue or safety applications, the robot must run for at least two hours without changing the battery.

N. Pandit, the design, analysis and safety requirements of the scissor lift are studied. It is a multi-functional material handling equipment that can use hydraulic, pneumatic or mechanical energy as the input for its operation, because the design force can be balanced and the balance can be taken into account. The system calculates in both closed and open positions. The device can be equipped with various accessories to ensure the safety of workers who use it and provide information on how to use the device.

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III. METHODOLOGY

The square section structural steel frame is welded into a cart using an additional configuration of three wheels forming an equilateral shape at either end of the cart. The production takes place with construction and modeling software. The analysis is carried out on the wagon to find Von-mises stresses and strains in order to know the failure criteria in the entire wagon configuration The number of nodes and elements formed by the network component provides the prerequisite for a detailed analysis The procedure becomes step Performed by step for the design and analysis of the stair climber cart is made as follows the procedure is presented below - Identify the specifications of the parts that will be assembled into a car. Make sure the cost estimate of the car's components is done Plan and design the manufacturing process to be carried out Sketch the cars in the software and analyze the entire working mode.

IV. MODELING AND ANALYSIS

This trolley car contains each step ascension and worm and gear weight lifting mechanism.

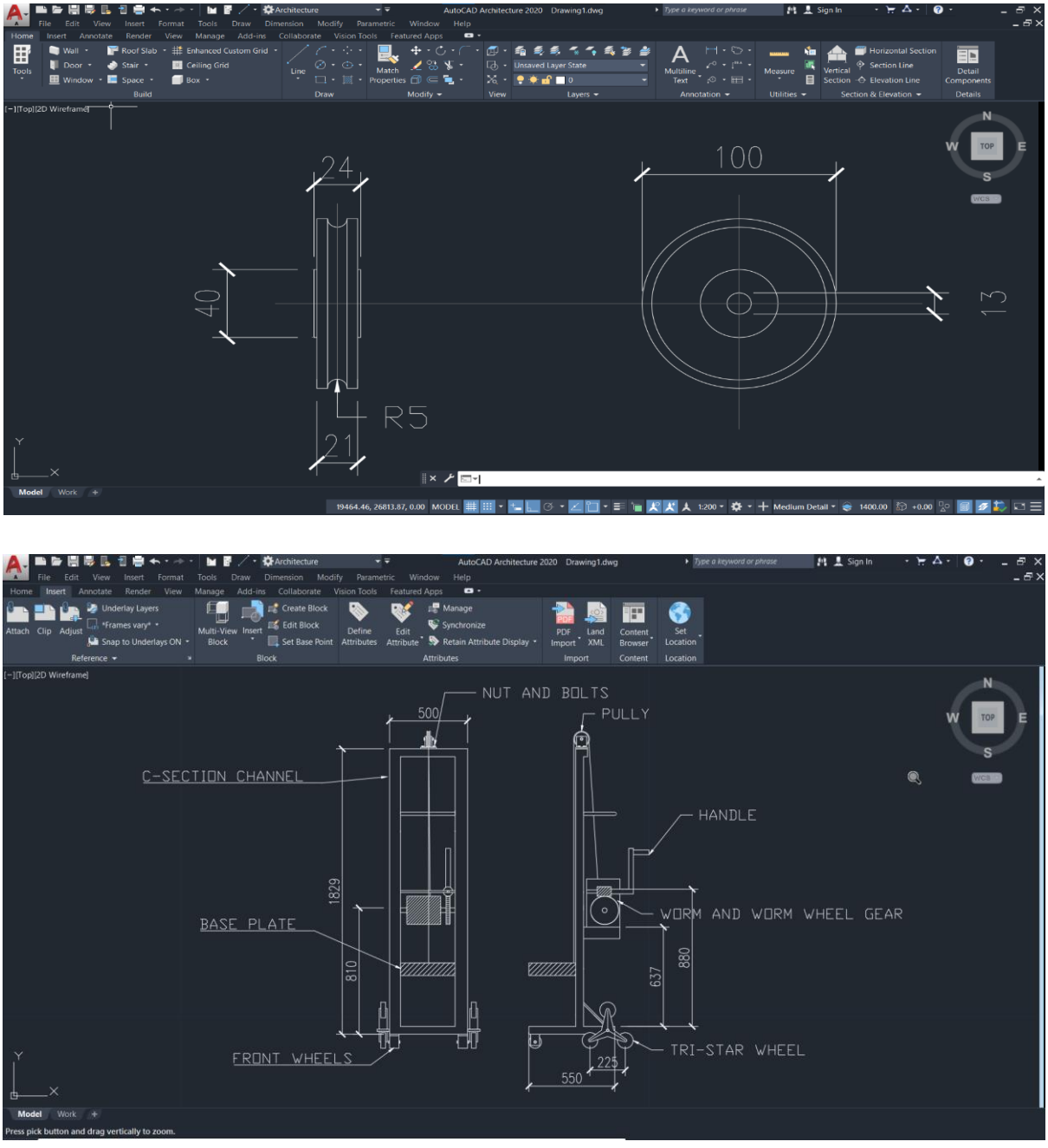

Figure 1: 2d View Of Load Transfer Device.

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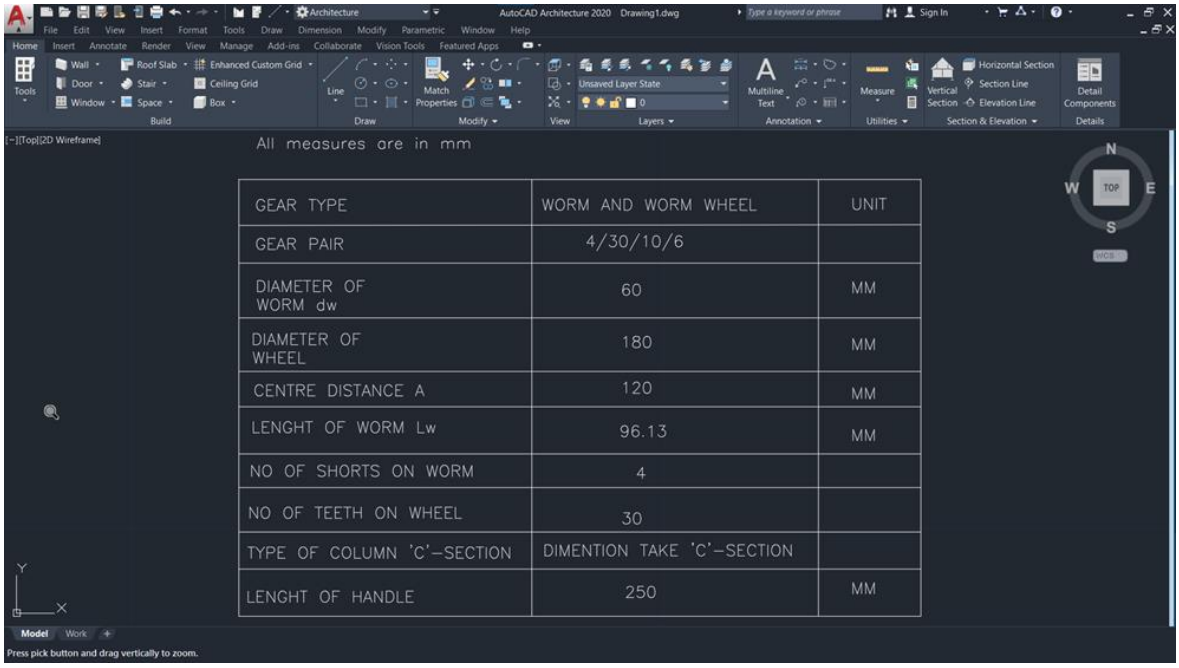

Figure 2: Specifications Of Load Transfer Device.

When we combine these two mechanisms, we will get a wonderful result, giving us a double advantage when lifting weights and lifting stairs. This mechanism helps us climb and descend stairs. An ordinary bicycle is on a horizontal surface, but when it encounters a rolling obstacle, its height will automatically increase. The wheel structure of trolley has three tires, each of which is mounted on a separate axle. These axes intersect at the vertex. The shaft is connected to the fourth central shaft (the motor can be connected to this central shaft). These triangular wheels can drive on a variety of terrains, such as mud or sand; you can also let vehicles pass through small obstacles such as rocks, stones, and stairs. The worm gear is a straight screw that looks like a standard spur gear with slightly inclined and curved teeth. The position of the worm on the worm wheel changes the rotational motion and the plane of motion by 90 degrees. The device has self-locking performance and weight lifting ability.

V. RESULTS AND DISCUSSION

The stair-mountaineering hand truck is developed to lessen legal responsibility instead of boom it. Conventional hand vehicles work properly on flat ground; however, their importance is low. while it will become important to transport an item over an abnormal surface. Delivery boy or package man, frequently locate it important to pull loaded hand vehicles up brief stairs of flight. The whole cause of the use of a traditional hand truck is to keep away from having to raise and convey heavy items around. Lifting a hand truck up the steps defeats the cause of the device, because the consumer ought to offer sufficient upward pressure to raise the heavy loaded cart and its items. A trolley would climb stairs without requiring the consumer to raise might enhance the protection of shifting heavy items over abnormal surfaces.

Worm gears are very suitable for multi-frame systems because the rotational deflection of the connecting shaft and coupling has little effect on its positioning. Under heavy loads, screw jacks are not designed for heavy loads or heavy load cycles. A pair of helical gears demonstrates self-locking capability. This is called self-locking. Some researchers have also studied the mechanism that converts rotational motion into linear motion. However, despite the self-locking ability and the ability to convert rotary motion into linear motion, the use of coupled spiral pairs for hoists has not been explored due to the power loss and hysteresis of helical gears. The efficiency of the spur gear depends on the coefficient of friction and the lead angle.

VI. CONCLUSION

During the research project, we solved many problems and learned a lot. In the beginning, we have just begun to define a problem that affects society and farmers. We have developed a project that can solve this problem with great determination. We have carried out a number of tasks, including extensive research on the current situation of farmers and the difficulties they face on the farm. Actions that affect your posture. We performed a survey amongst farmers. We concluded that your problem can be avoided. This is why we have developed hoists with worms and worm gears and trolleys for climbing stairs.

VII. REFERENCES

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