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A Review Paper on Design and Fabrication of Bogie to Carry the Load around Shop Floor

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Abstract: We are presenting paper on "Design and Fabrication of bogie to carry the load around shop floor" which is creating a bogie that will minimize the effort required to push or pull load on it. Motor is used in this system to help to push or pull load. A bogie system is the key equipment in industrial applications. To carry large weighted material without effort is important to avoid accidents, waste of material and time delay. Rigorous practical evaluation of bogies is still a challenge. Presently, there is overreliance on part-specific experiments in practice. In the present work, a risk evaluation index system of a bogie system has been established based on the inspection data and experts' evaluation. Then, considering quantitative and qualitative aspects, the risk state of a bogie system has been evaluated using an extension theory and an entropy weight method.

I. INTRODUCTION

The load carrier is a recent technology that enables workers to work comfortably without experiencing any difficulties or danger to their health. It may be utilized in settings like factories, ports, construction sites, etc., or almost anywhere big loads need to be lifted and carried by hands, shoulders, or heads. The ergonomic design of this carrier lowers the danger of head, shoulder, hand, and other body injury while also improving the working environment for workers. The major goal is to enable the workers to carry the loads in three simple ways: over the head, at the back, and by pushing or pulling. Easy to prepare and inexpensive. Making it also doesn't take a lot of expert labour. The many tools and load carriers that are presented here are the latest and best inventions for transporting things simply and safely without causing any harm to the head, neck, shoulder, legs, or hands, among other body parts. These new load carriers are made to be lightweight, simple to use, and work without putting undue strain on the body's muscles or other organs. The primary goal of all devices, regardless of their intended function, is to minimize bodily strain and injury levels in any way that is possible. Some are employed in industry, while others are employed in domestic settings, such as gardening. Each of the devices listed below has a specific use and mode of usage, as well as a variety of advantages over earlier iterations and contemporary devices.

We are going to create a bogie, or carrier, that can move forward and backward while also allowing us to adjust the motor's speed. The bogie can carry a load of approximately 100 kg. We'll utilize an Arduino motor control circuit to perform this operation, and we'll modify the variable speed accordingly.

II. PROBLEM STATEMENT

The bogie which is being utilized for has such a lot of weight to convey so it isn't so natural to move the bogie by the human exertion, which will make the work drearier and less productive. To that end we are making a system which can work the bogie and control the speed of the bogie as well.

III. OBJECTIVES

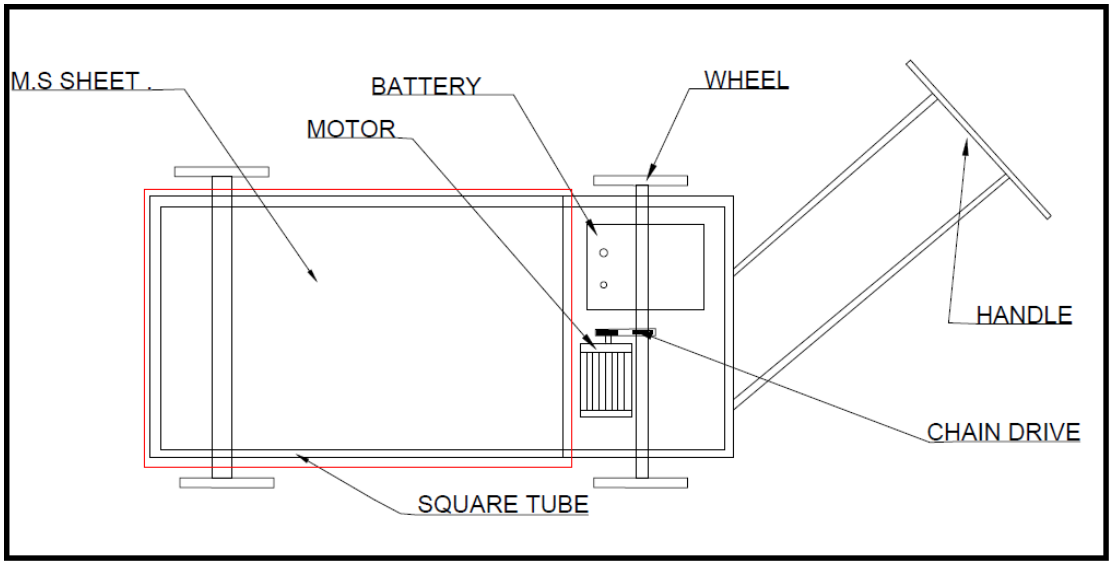
1. Creating a bogie that will minimize the effort expected to push or pull load on it.
2. Creating a mechanism on the bogie which will make the bogie to move at a controlled speed.
3. Creating a system for transmission movement which can carry the load of 200 kg.

IV. SCOPE

1. Expanded functional proficiency through standardization of operations.
2. Decrease in occurrence of mistakes in work.
3. Uncovering of loopholes in production or processes.
4. Builds efficiency of the staff.
5. Positive effect on the income of an assembling business.

V. CONCEPTUAL DIAGRAM

It is creating a bogie that will minimize the effort required to push or pull load on it. A bogie system is the key equipment in industrial applications. To carry large weighted material without effort is important to avoid accidents, waste of material and time delay. Rigorous practical evaluation of bogies is still a challenge. Presently, there is overreliance on part-specific experiments in practice. In the present work, a risk evaluation index system of a bogie system has been established based on the inspection data and experts' evaluation. Then, considering quantitative and qualitative aspects, the risk state of a bogie system has been evaluated using an extension theory and an entropy weight method.
It consist of Motor, Battery, chain drives and MS square tubes for fabrication.



VI. ADVANTAGES

1. Load carrier is a new creation to assist the workers with working easily with no issue and no risk of any kind of damage and medical problems.
2. It could be utilized at places like construction sites, industries, ports, etc. or we can say where there is need to lift and convey weighty burdens by hands or on shoulders and head. This is an ergonomically designed carrier to improve the working condition of labours and reduce the risk of injuries to head, shoulders, hands, waist, etc.
3. The main objective is to provide the workers with the facility to carry the loads in three simple ways which are over the head, at the back and push or pull activity.
4. These new load carriers are designed so that they are light in weight, simple to utilize and work effectively with practically no strain to the muscles and the body parts

VII. DISADVANTAGES

1. This machine is not suitable for rough roads

VIII. LITERATURE SURVEY

Design and Fabrication of Rocker Bogie Mechanism Geosurvey Rover, B.Babu, N.Dhayanidhi, S.Dhamotharan [1] - The Project work "Rocker Bogie system Geosurvey Meanderer" manages the significant part of working on the wanderer from its past plans. The Geosurvey meanderer needs to work on unpleasant and brutal conditions for which it was planned yet a few variables limit its functional capacities, so the focal point of our examination is to beaten limitations or to decrease it to inside a satisfactory reach for its smooth presentation.

Prospects for Development of Load – Carrying Elements of Freight Car Bogie, O.V. Makhnenko, G.Yu. Saprykina, I.V. Mirzov and A.D. Pustovoj [2] - As of late mishaps connected with break of cast load-conveying components of three-piece intruders of cargo vehicles have become more continuous in the

rail lines of Ukraine and Russia. The work proves the judiciousness of advancement and utilization of all-welded load-conveying components of cargo vehicle bogie (FCB), working on their functional dependability. Welded designs of FCBs are generally applied in West Europe. Endeavors to foster designs of all-welded components of FCBs indispensable with cast structures are made in Ukraine and Russia. In any case, none of the created welded structures is right now applied at customary freight transportation, due to non-ideal plan of bogie welded components as far as guaranteeing the necessary weariness obstruction edge.

Design of all-Terrain Vehicle using Rocker Bogie Mechanism, M. Vigneshwaran, R. Siddhartha, G. Vijay and S. Pravin Kumar [3] - The requirement for creating a very stable suspension system that can function on various terrains while maintaining full wheel contact with the ground to create a system that can navigate terrains where the left and right rockers must each climb a different obstacle separately. To maintain an angle of tilt more than 50 degrees without falling over. For conducting scientific examination of goals that are separated by many meters to tens of kilometers, rocker bogie are crucial.

Study of Failure Pattern on Load Bearing Wall, Anurag Wahane, Vinay Kumar Sahu, Ritik kumar Sahu, Hemendra kumar Sahu [4] - The study of load-bearing wall structure models is the topic of the work. This masonry load-bearing wall may collapse due to instability if it is subjected to vertical concentric and eccentric loading. In this study, the failure patterns of masonry load-bearing walls of various sizes were examined using compressive strength tests and shaking table tests. The outcome demonstrates that the bearing wall cannot support enormous loads, however increasing thickness may result in reduced structural damage.

Risk Evaluation of Bogie System Based on Extension Theory and Entropy Weight Method, Yanping Du, Yuan Zhang, Xiaogang Zhao, and Xiaohui Wang [5] - The essential component of railroad vehicles is a bogie system. Bogies continue to have difficulties in rigorous practical examination. In practice, part-specific experiments are currently used excessively. Based on inspection data and expert evaluation, a risk evaluation index system for a bogie system has been constructed in the current study. The danger status of a bogie system has then been assessed utilizing an extension theory and an entropy weight approach while taking into account quantitative and qualitative features. Finally, four distinct samples' bogie systems have been evaluated using the approach. Results indicate that this method can precisely determine a bogie system's risk state.

Bogie Steering System Improving Alignment of the Urban Railway Vehicle in Track, Michał Podalski, Maciej Slabuszewski [6] - Low-radius curves, which provide significant challenges for contemporary rail vehicles, are a common feature of urban rail systems. To address such issue, numerous technologies have been created over time. One category of these is bogie steering systems, which are in charge of improving the alignment of cars in a curve, improving ride comfort, and minimizing wear on the wheels and rails. The goal of these systems is to reduce the angle of attack by correcting the relative settlement of bogies and car bodies during curve negotiations. This paper describes one of those systems in terms of design, operation, and verification. Results from some simulations and experiments are given and analyzed.

IX. CONCLUSION

The result of the project was the execution of free directional control using least drive modules which builds the effectiveness.

At the same time, A progression of portability experiments in the farming area, rough roads, inclined, steps and obstacles surfaces concluded that rocker bogie can accomplish some distance navigates on field. This work shows how rocker bogie system works on various surfaces.

X. REFERENCES

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