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Design and Fabrication of Rocker Bogie

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ABSTRACT This paper demonstrates the Rocker Bogie Mechanism and its traction control using a microcontroller. The model here represents simplest yet effective way of Rocker Bogie traction system, which can be used in every application dealing uneven terrain surface.

KEYWORDS: Rocker Bogie, Wheel type mobile robot, Stair climbing, Rover.

I. INTRODUCTION

Rocker Bogie is a suspension mechanism for wheels. The conventional suspension mechanism with springs is suitable for flat terrain with small perturbations, but it cannot be used on rough terrain or to climb on obstacle like rocks. The rocker bogie design has six wheels and no springs or stub axles for wheels; this allows adjust the wheels on uneven surface ensuring all the wheels remain on ground. Each wheel has separate motors connected. This gives it additional degrees of freedom. The speed is usually very low to ensure avoiding of any dynamic effects. In order to go over a vertical obstacle face, the front wheels are forced against the obstacle by the centre and the rear wheels. The rotation of front wheels then lifts the front of the vehicle up and over the obstacles. The middle wheel is then pressed against the obstacle by the rear wheels and pulled against the obstacle by the front until it is lifted up and over. Finally, the rear wheel is pulled over the obstacle by the front two wheels. During each wheels traversal of the obstacle, forward progress of the vehicle is slowed or completely halted. This is not an issue for the operational speeds at which these vehicles have been operated to date.

II. PROBLEM STATEMENT

Since the ordinary robots use more wiring or complicated circuit it causes to short circuit because of it there are to much chances of damage the robot for avoiding this problem we use wireless circuit.

Basically robots requires more power for working so, the power consumption become rapidly that's why, we use high capacity with long life battery.

III.OBJECTIVES

- This robot is operated by only one person so there a no required much people for operate ,it that's why it causes to reduce man power .
- With the help of six wheels it can be easily climb any thrust and steps.

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IV.EXPERIMENTATION



Fig.1 Motor

Specification:

12v DC motors with gearbox, 6mm shaft diameter with internal hole, weight-125gm, torque-1.5kgcm, RPM-300 rpm

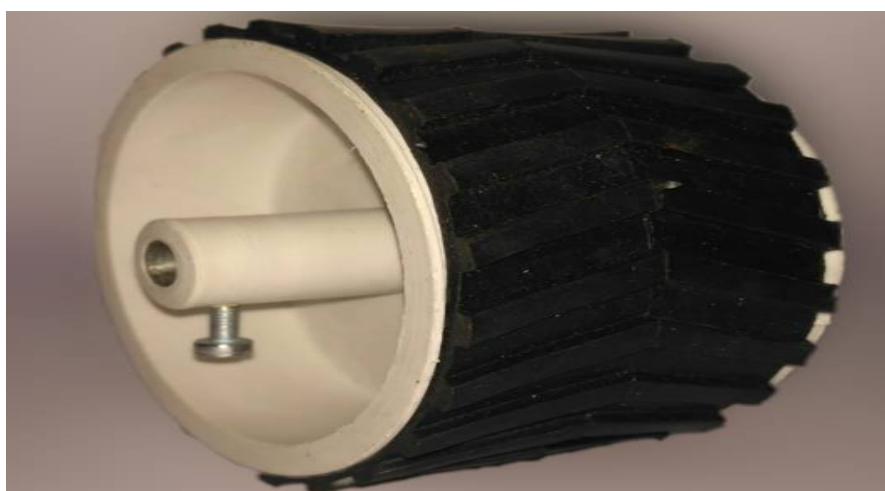


Fig.2 wheel 7cm*4cm

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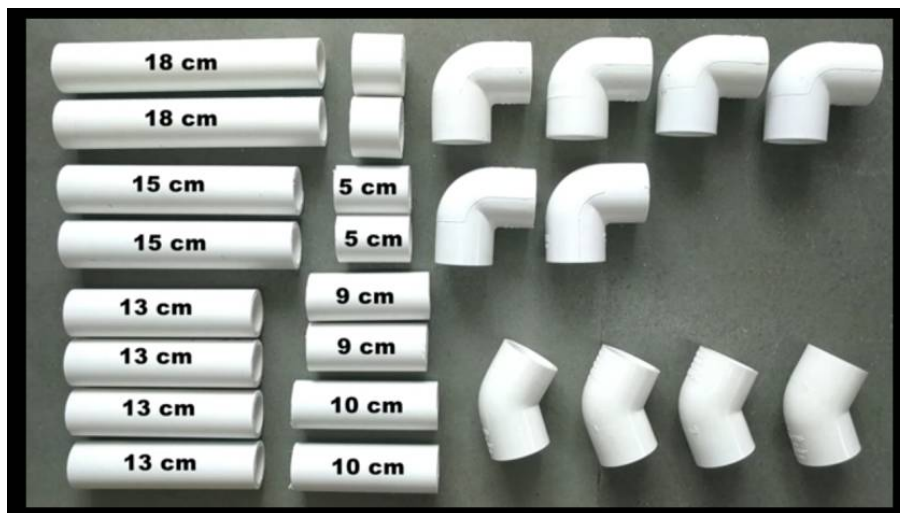


Fig.3 pipes and elbows



Fig.4 Front view OF rocker bogie mechanism

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Fig.5 Side view

V. CONCLUSION

- Our goal is to make the robot with less cost and easy to operate and to climb any type of thrust and obstacles.
- It can be applicable where human presence cannot be adopted like to find explosive elements in war places or in criminal areas.

REFERENCES

- [1]Nitin Yadav, BalRam Bhardwaj , Suresh Bhardwaj “Design analysis of Rocker Bogie Suspension System and Access the possibility to implement in Front Loading Vehicles” IOSR Journal of Mechanical and Civil Engineering e-ISSN: 2278-1684,p-ISSN: 2320-334X, Volume 12, Issue 3 Ver. III (May. - Jun. 2015), PP 64-67
- [2]Dongkyu Choi, Jongkyun Oh and Jongwon Kim, Analysis method of climbing stairs with the rocker-bogie mechanism Journal of Mechanical Science and Technology 27 (9) (2013) 2783~2788
- [3]Hong-an Yang, Luis Carlos Velasco Rojas, Changkai Xia, Qiang Guo, Dynamic Rocker-Bogie: A Stability Enhancement for High-Speed Traversal International Journal of Robotics and Automation (IJRA) Vol. 3, No. 3, September 2014, pp. 212~220 ISSN: 2089-4856.
- [4]Brian D. Harrington and Chris Voorhees, The Challenges of Designing the Rocker-Bogie Suspension for the Mars Exploration Rover, Proceedings of the 37th Aerospace Mechanisms Symposium, Johnson Space Center May, 19-21,2004