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Spring Less Suspension using Rocker Bogie Mechanism

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Abstract: *The rocker bogie mechanism is a type of suspension system commonly used in robotic vehicles, particularly in space exploration rovers like NASA's Mars rovers. Unlike traditional spring-based suspensions, the rocker bogie mechanism relies on a system of pivoting joints and linkages to maintain stability and traction over uneven terrain. This mechanism allows the vehicle to traverse rough surfaces by distributing weight and adjusting wheel positions to accommodate obstacles. Its abstract nature lies in its ability to provide stability and mobility without relying on springs, making it well-suited for navigating challenging environments such as rocky terrain or steep slopes. Overall, the rocker bogie suspension system is well-suited for applications where stability, mobility, and reliability are paramount, making it a preferred choice for planetary exploration missions and other off-road vehicles operating in rugged terrain.*

Keywords: Maintain stability, Distributing weight, Suspension, Mobility, Adjusting wheels

REFERENCES

[1]. https://en.m.wikipedia.org/wiki/Rocker-bogie
[2]. By Harshal Bari 2021 International Journal for research in Science and engineering technology
[3]. By Anmol Singh, PK jain 2020 International Journal of Advance research and innovation A study on rocker bogie suspension for planetary Rover prototype
[4]. S. C. Peters and K. Iagnemma, "Stability measurement of high-Speed vehicles," Vehicle System Dynamics, vol. 47, no. 6, pp. 701–720, 2009.
[5]. B. Chen, R. Wang, Y. Jia, L. Guo, and L. Yang, "Design of a high performance suspension for lunar rover based on evolution,"ActaAstronautica, vol. 64, no. 9-10, pp. 925–934, 2009
[6]. C. Distante, G. Indiveri, and G. Reina, "An application of mobile robotics for olfactory monitoring of hazardous industrial sites,"Industrial Robot, vol. 36, no. 1, pp. 51–59, 2009.

BIOGRAPHY

The rocker bogie suspension system, born out of the necessity for robust mobility solutions in planetary exploration, emerged from the collaborative efforts of engineers and scientists at NASA's Jet Propulsion Laboratory (JPL) and other institutions. Designed to navigate the rugged terrain of celestial bodies like Mars, this innovative mechanism features interconnected bogies with multiple wheels, allowing independent movement to adapt to uneven surfaces while maintaining stability and traction. Its application has been pivotal in space exploration, notably in NASA's Mars rover missions, including Sojourner, Spirit, Opportunity, and Curiosity, enabling these rovers to traverse diverse landscapes and gather invaluable scientific data. Beyond planetary exploration, the principles of the rocker bogie suspension system have inspired advancements in terrestrial robotics and off-road vehicles, reflecting its enduring impact on mobility solutions in challenging environments