

Concept Design of a Child-Seat by TRIZ Style Problem Identification

Second Report

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Abstract

Only 50% of cars carrying children on Japanese roads are equipped with child seats. Behind this low penetration number, sits insufficient performances of conventional child seats. To solve this situation, the author has been studying child seats that can swing on a spherical surface to cope with deceleration in collision and to absorb vibration while allowing children move freely during stable cruising. This concept was reported in the 5th Japan TRIZ Symposium. However, a problem was remain unsolved at that time, i.e., rocking vibration continues after a shock due to the lack of a damping mechanism. To invent a damping mechanism without any adverse effects, contradiction matrix was used first. Then, substance - field analysis was conducted. Introduction of a new "field" in a system came to the author's mind. From here, the author searched physical principle that can act as damping but not utilized yet. Electro-magnetic induction that generates eddy current seemed to be the solution. From this, analogy was taken to find realizable mechanism in different industry field. The study is in the stage of embodiment design at this moment.

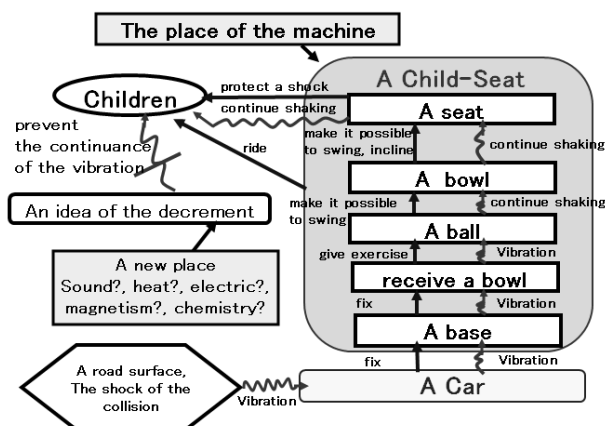


Fig.1 Substance-field analysis

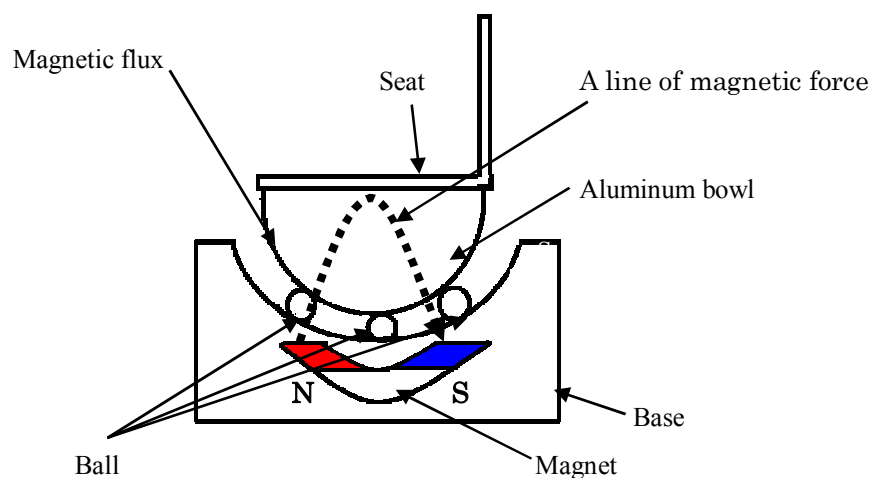


Fig.2 Prototype with vibration damping mechanism