DESIGN OF A POWER TRANSMISSION SYSTEM OF A PEDAL CAR

by

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Supervised by

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DECLARATION

This Dissertation paper contains no material which has been accepted for the award of any other degree or diploma in any University or equivalent institution in Sri Lanka or abroad, and that to the best of my knowledge and belief, contains no material previously published or written by any other person, except where due reference is made in the text of this Dissertation.

I carried out the work described in this Dissertation under the supervision of
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Abstract

Transportation has become a major socio-economic and environmental problem in urban environments today. Escalation of oil prices, environmental pollution, unsafe conditions, unbalanced designs of bicycles, motorcycles, and three wheelers and complex lifestyle are some of those significant contributing factors to it. **Ergonomically designed Human Powered transport** is one of the feasible solutions for urban requirements. Ergonomics deals with human comfort in any work situation in order to operate it efficiently and effectively. Concept of pedal car came into being in order to eliminate discomfort and unsafe conditions due to heat, dust, rain, unbalanced designs, uncovered body, and fatigue due to uneasy postures. In addition to the above it provides cheap transport and recreational facility, physical exercise, while providing additional value for the rider to iron out complex health hazards.

Design of Power transmission system integrates with Engineering aspects, strength, rigidity, stability and ergonomics aspects. One of the major innovative steps taken in fabrication of first embodiment of the pedal car is to eliminate long chains by introducing pedal linkage with a shorter chain. First embodiment incorporates positive achievements such as; ergonomically designed compact long wheel base and seat, shorter chain, standard parts, small wheel sizes, affordable price, environmentally friendly, fashionable appearance, Easy manufacturability and maintainability of Driving Mechanism, and physical exercise to the rider. Over weight of frame and wheel assembly deprived acceleration in gradient at 30° to 8Km/h and 15-18Km/h in level roads. Reduction of weight of the first embodiment by re-design and re-selection of parts with lighter hood cover with additional power supply to the system also required to overcome the above problem. One of the major limitations of this study is maximum human power in put. Further study on maximum power application in relation to pedal height, seat angle, foot position and crank length is also important for further improvements.

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