

Mechanical Power Assistance to Rickshaw Puller

Dhruv Duggal¹

¹(Department of Mechanical, SRM University, Ghaziabad)

Abstract: Bicycle Rickshaw has always been seen as a comfort to traveller but not to the driver. The Rickshaws which have been in use are contained with high gear ratio. Many rickshaw pullers are not Health conscious and therefore not properly nourished. So, to pull a Rickshaw poses a great danger to their lives as they come under too much of physical and mental strain. Mechanical Assistance in providing the rickshaw pullers would ease out their effort and thus increase efficiency, making it cost efficient.

Keywords: Assistance, Cost, Health, Mechanical, Nourished,

I. INTRODUCTION

Rickshaw is seen as a three tiered cycle with a rickshaw puller who pulls the rickshaw with passengers on the back seat, unlike taxi and cars, rickshaws are considered as Environment friendly and pollution free. These also help even passengers with low wages to transport from one destination to other. Developed countries also use rickshaws for intercity transportation purpose. Rickshaws don't need technical training to ride, it serves as a basic tool for earning to people with less education, poor people "Fig1" shows the plight of rickshaw pullers.

II. PROBLEMS WITH RICKSHAW PULLER

The main issue with the rickshaw puller is cost, since he can not afford to buy a rickshaw himself, therefore he rents it out. Moreover, he has to give a certain amount of his earnings as rent to the owner due to which he is not able to earn much for his living and his family. He also has to slog hard in the summer dead heat to ride the rickshaw which adds to his plight and under nourishment. He even has to pay for the Accidental damages done to rickshaw. He has to ride it under worst possible strenuous condition adding to his poor state and worsening it. There are eight million rickshaw pullers in India along with many more in developing countries [1]. Without the training or skills needed to get a desired job, those unable to find a better livelihood instead rent a rickshaw in an effort to make a living [2].

III. PROBLEM STATEMENT

Since the problem statement is to ease out the effort of a rickshaw puller mechanically without the consumption of any fuel, so keeping in mind the respective problem we have come up with a designing solution that can help a rickshaw puller in generating more mechanical output (efficiency).

IV. SOLUTION

The pedal mechanism of sewing machine has been used which accordingly suits the best for the given problem. As it is less tiresome and easily adjustable on a rickshaw, it would not create a problem to the basic design of a rickshaw. Moreover it will increase the efficiency of a rickshaw. The passenger is just required to produce a reciprocating and rotatory motion using his foot, whenever he feels like. We have used seven sprockets, out of which one is fitted with a crank shaft and the rest are used in the transmission of power and motion. For the transmission we have used the chain mechanism though in the figure it shows a belt drive. As we know that the mechanical power is contributed by a rickshaw puller using pedals, so here we contribute to the mechanical power by using passenger pedal as an add-on source of transmission. The passenger pedal when pushed down rotates the linked sprocket with help of crank shaft which further adds to the transmission by rotating the shaft common to the corresponding sprocket. Refer to "fig2", "fig3"

V. Figures



Figure1.Plight of rickshaw puller

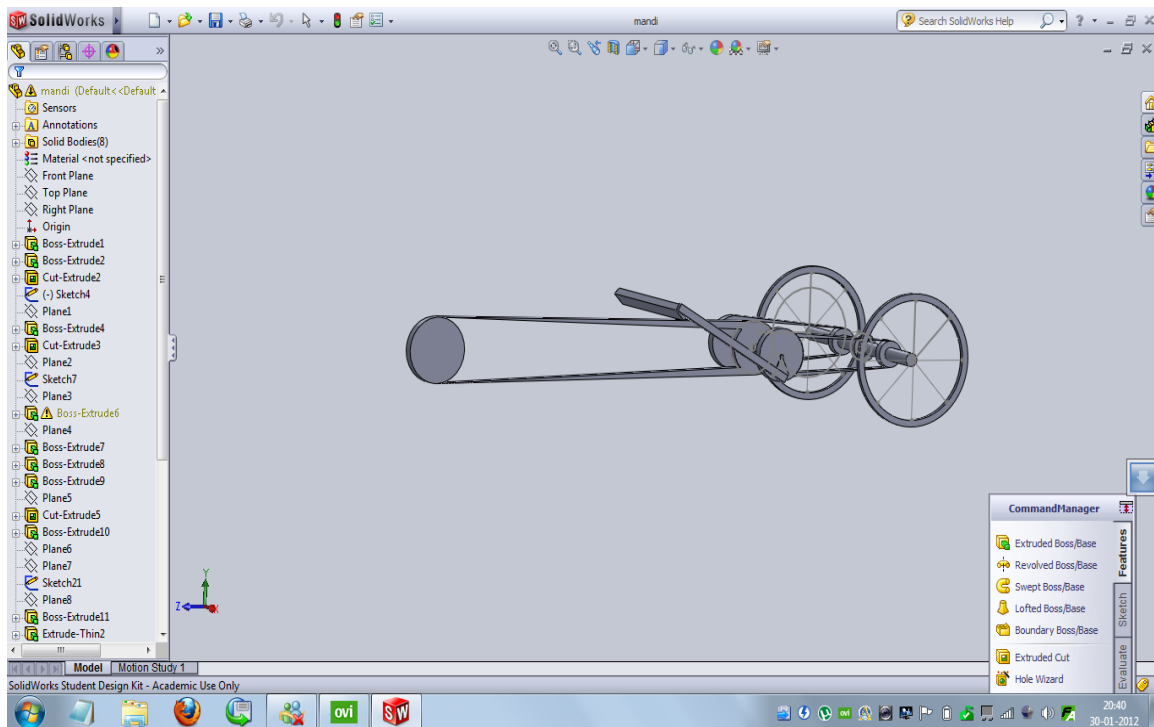


Figure2.Design of solution using sewing machine mechanism

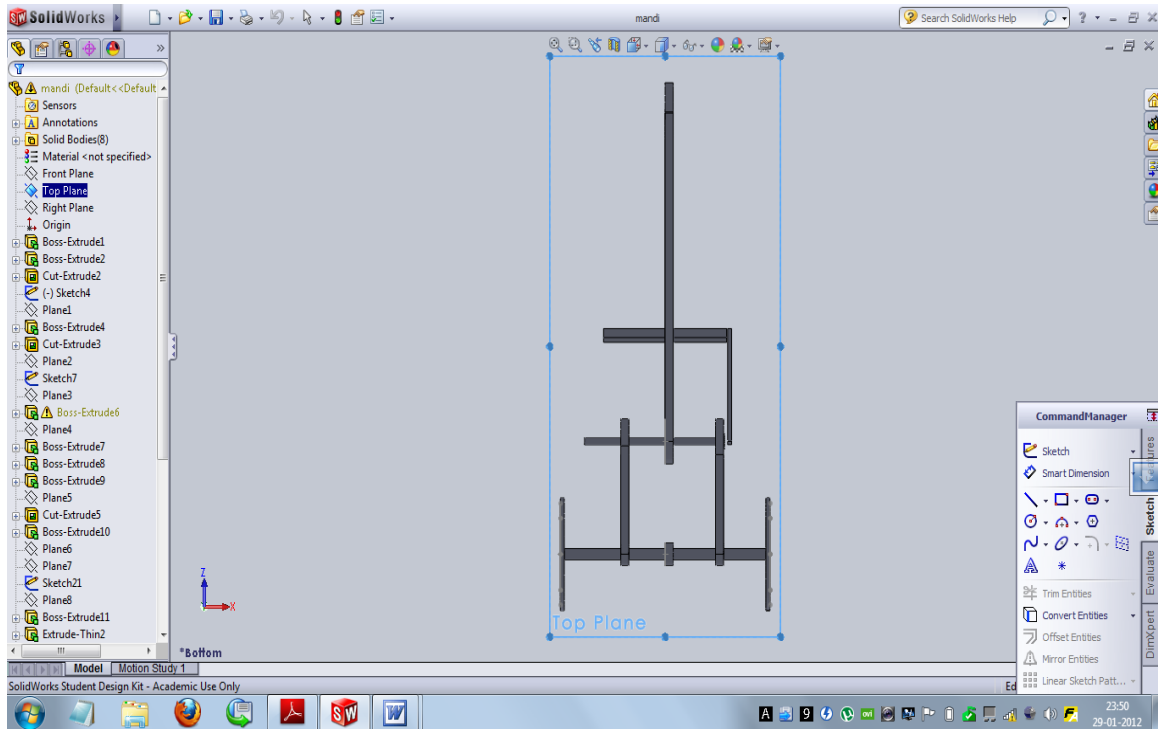


Figure3.Top view of solution

VI. CONCLUSION (ADVANTAGES AND LIMITATIONS)

This mechanism will add to the passenger's health as he will exercise his lower body while pedalling. It will produce more mechanical efficiency. It will be cheap and affordable to install as it uses chain transmission instead of gear transmission. It will produce more mechanical advantage. It is a stable design. Cost of maintenance and repairing is low. It has less slippage coefficient than belt transmission. It is less efficient than gear transmission. It has more slippage coefficient than gear transmission.

REFERENCES

- [1] Pradip kumar sarmah.2010."Rickshaw bank: Empowering the poor through asset ownership."Innovations, volume 5Issue 1.
- [2] Centre for rural development.2008"the rickshaw bank".