Hydraulic Powered Mechanism in Vehicles.

Human Powered Mechanism For Hydraulic Bicycle.

Deshmukh shubham Rajkumar (B.Sc, B.Com.- K.B.P. College Pandharpur).INDIA

More pooja manohar. (Zeal college of engineering , pune).INDIA

Kodag abhishek Prabhakar (SWERI college of engineering pandharpur).INDIA

Kodag Supriya Prabhakar (SWERI college of engineering pandharpur).INDIA

Deshmukh-Babar Anjali Mukund (K.B.P. college of pandharpur). INDIA

***Abstract*—The present paper report that, Hydraulic Powered Mechanism in Vehicles. The present work reports the method of modern efficient bicycle mechanism . It is also concept of future bicycle & other manpowered vehicles. It is mainly invented for easier way of travelling for handicapped persons. Handicapped persons, normal bicycle user & for higher efficiency in Powered Hydraulic Bicycle (HPHB) is mainly invented for handicapped peoples, two & four wheelers. It works on basic principles of hydraulics, speed up gear mechanism & fluid transmission. It has higher efficiency rate than normal bicycle with affordable system.**

***IndexTerms*— HPHB, Scotch-Yoke Mechanism, Speed up mechanism, Fly Wheel (optional)**

I. INTRODUCTION

Now a days, people using normal bicycles and get tired due to many reasons such as,1) They loss their energy to get sufficient speed. 2) Lower efficiency of chain-sprocket mechanism. 3) While urgent breaking, and after that restarting requires much more power (considering old peoples)[1].Also Handicapped persons are not more comfortable with such type of human powered vehicles; they need more effective and more efficient mechanism for easy travelling & movement[1-4]. Human powered hydraulic bicycle" is concept of modern efficient bicycle mechanism (manpowered vehicles).It is also concept for future of bicycles & other manpowered vehicles. It is mainly invented for easier way of travelling for peoples & Handicapped persons in no cost. To reduce excess energy loss, two point working[2-5].

.

II. METHOD

It generally divided into four mechanisms. i) Scotch yoke mechanisms, ii) Reverse double hydraulics mechanism, iii) Speed-up gear mechanisms, iv) Flywheel mechanisms (Optional). First of all, Pedals and first sprocket mounted on same shaft, then Second sprocket and Gear of maximum diameter is attached on same shaft. In between two sprocket, hydraulics system is attached at which Reverse Double Hydraulic System is used. In which linear is converted into rotary by Scotch Yoke Mechanism. After that two gears of different diameters are attached on this shaft which works as Speed Up Gear Mechanism. At forth shaft, Third sprocket is attached as well as Gear which is driven by Speed Up Gear Mechanisms. At last stage Freewheel is attached, at which Maximum Power is get transmitted.

III. DIAGRAMMATIC REPRESENTATION OF MECHANISM.

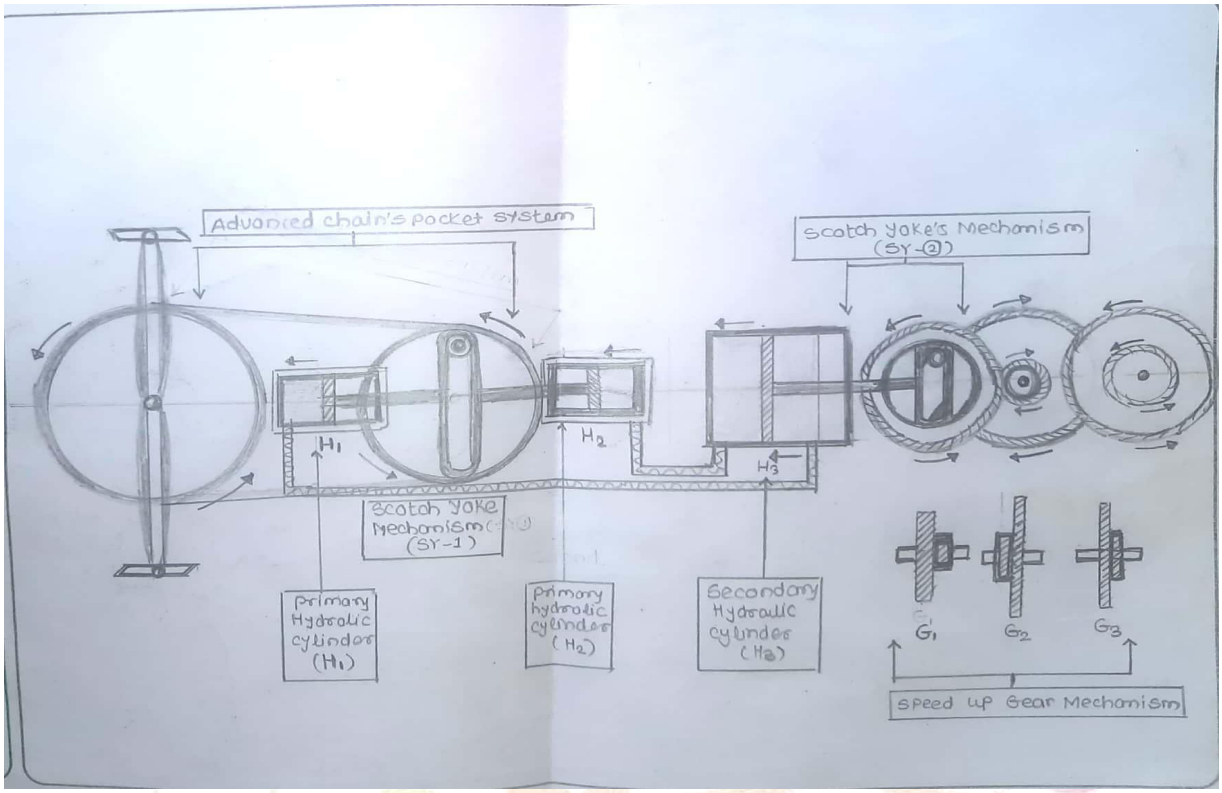

Fig.1 Schematic Diagram of Scotch Yoke Mechanism.

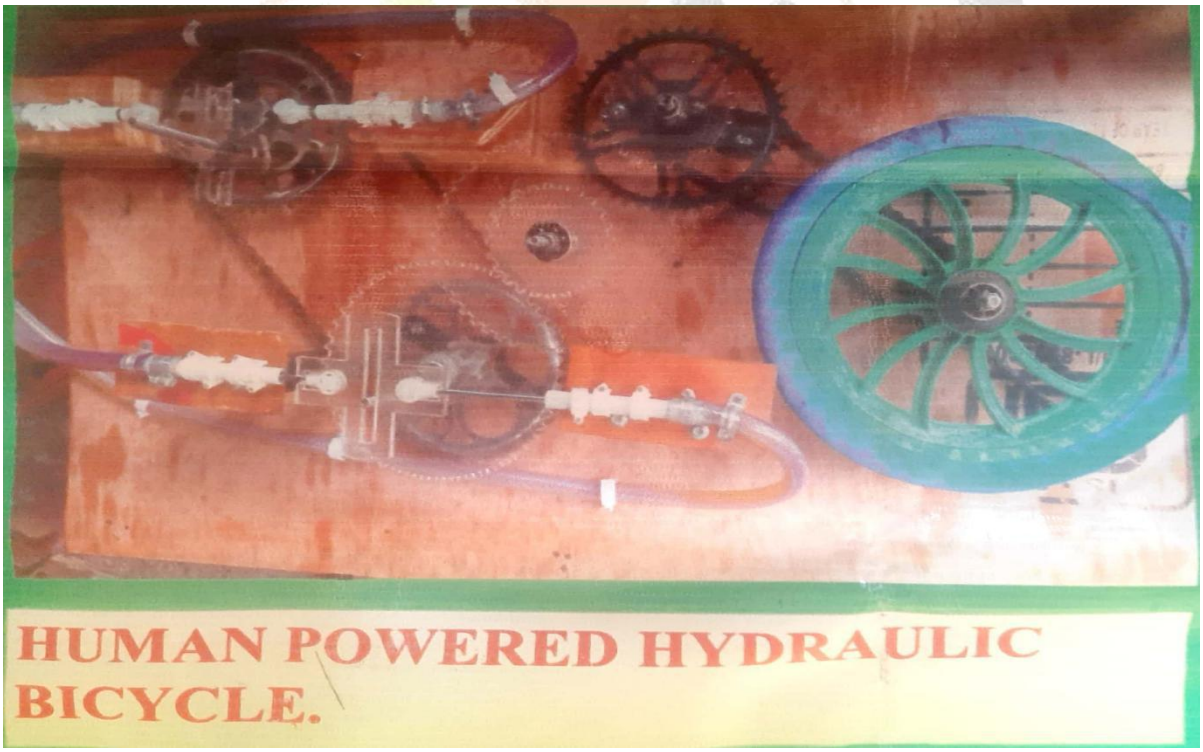

Fig.2 Schematic Diagram of human Powered hydraulic bicycle.

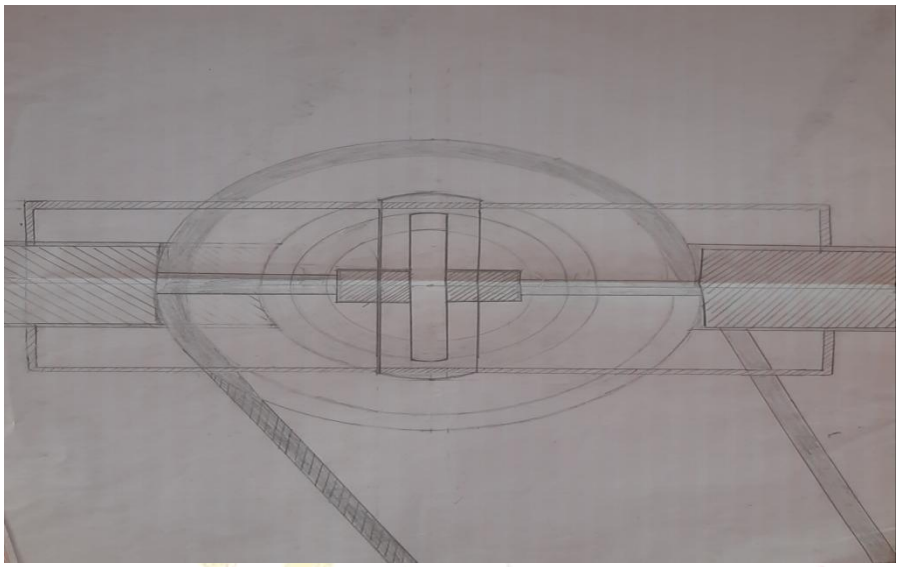

Fig 3. Diagrammatic representation of gear.

IV. TABLE AND CALCULATIONS.

1) Primary table for pedal input and output.

BICYCLE	1 PEDAL	2 PEDALS	3 PEDALS
NORMAL BICYCLE (ROTATIONS)	2.5	5.2	14
SPORTS BICYCLE (ROTATIONS)	4.2	9	22
HYBRID BICYCLE (ROTATIONS)	7	14	35

Table 1 : input and output results of pedaling.

V. RESULTS AN DISCUSSIONS.

Pedaling starts circular motion converted into linear motion by Scotch yoke mechanisms on which hydraulics used in system. Linear motion is used to drive hydraulic piston. Reverse (double) hydraulics is driven by hydraulics which is opposite to it. Which are further moves to compound gear system. Last gears drives free wheel system to run bicycle.

VI. CONCLUSION.

Human Powered Hydraulic Mechanism is the good solution to reduce the cost, size, human efforts ; it is power consumptive for improve performance with long range. (Specially for handicapped persons).

VII. ACKNOLEDGMENT.

I am thankful to Principal and all the faculty member of Department of Physics, K. B. P. Mahavidyalaya Pandharpur, college of engineering pandharpur, Zeal college of engineering pune. giving me this opportunity to actively participate in the research work.

VIII. REFERENCES.

1) Chester R. Kyle,Ph.D. & Frank Berto (Summer 2001) " The Mechanical efficiency of bicycle derailleur and hub-gear transmissions". Human Power, Technical Journal of the IHPVA (52): 3–7.

2) Carlisle,Rodney (2004). Scientific American Innovations and Discoveries,p.266.John Wiley & sons, Inc., New Jersey.ISBN 0- 471-24410-4 "What Hydraulic Press Machine Is".

3) BPThai.Retrieved 2016-06-19 Machinery's Handbook. New York: Industrial Press. 2012. p. 2125. ISBN 978-0-8311-2900-2.

4) Wikipedia sources

5) Google sources.