

Thapar Institute of Engineering & Technology - Patiala

Dr. Vishal Gupta
Assistant Professor
MED-TIET- Patiala

Thapar Institute of Engineering & Technology
(Deemed to be University)
Bhadson Road, Patiala, Punjab, Pin-147004
Contact No. : +91-175-2393201
Email : info@thapar.edu

Contact Details
Cabin H Block, first floor
📱 9729002917
✉️ vishal.gupta@thapar.edu
<http://www.drvishalgupta.co.in>



THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)

Mechanics of Machines

UME 306

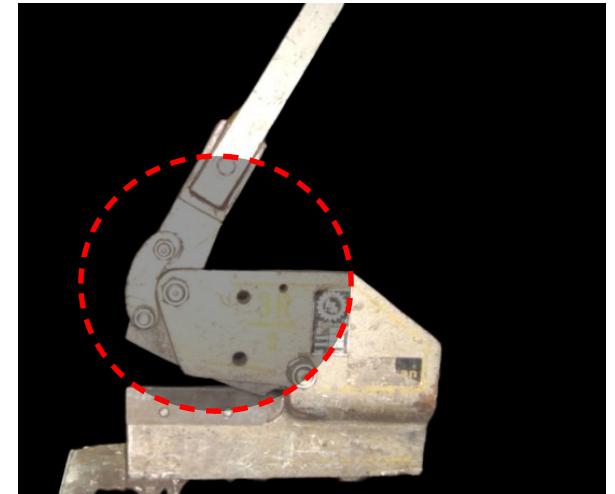
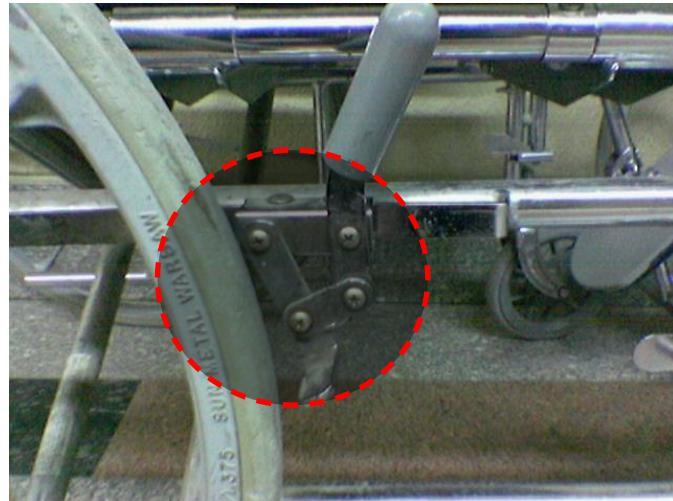
Module - 1
Lecture - 7

Instructional objective

- Types of Kinematic Chains
- Inversions of single slider crank Mechanism

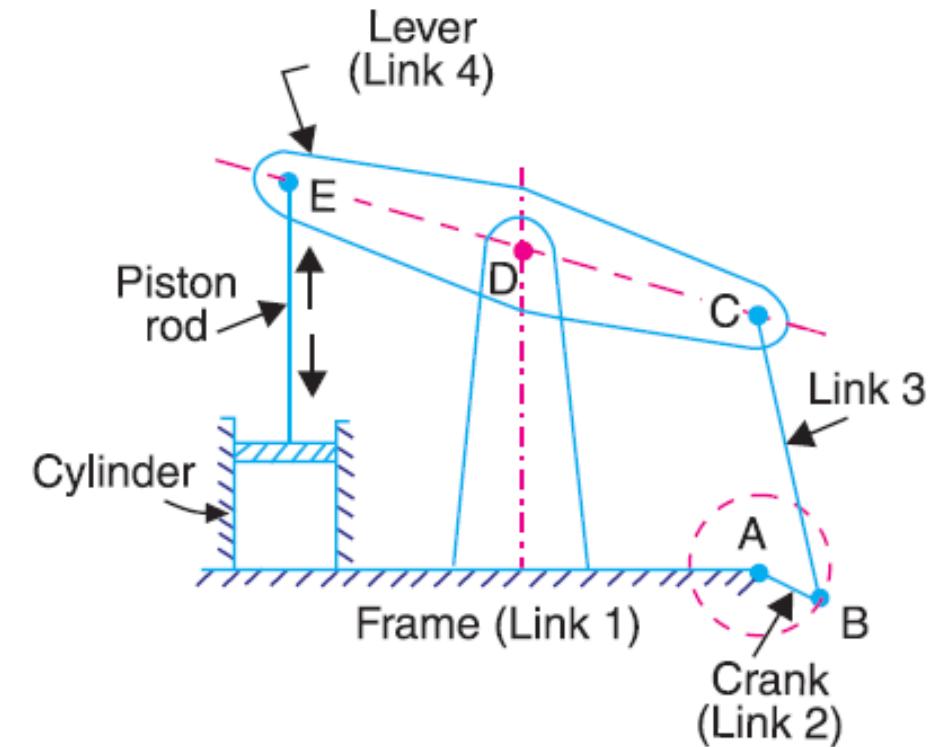
Types of Kinematic Chains

- A. Four bar chain or quadric cyclic chain
- B. Single slider crank chain
- C. Double slider crank chain



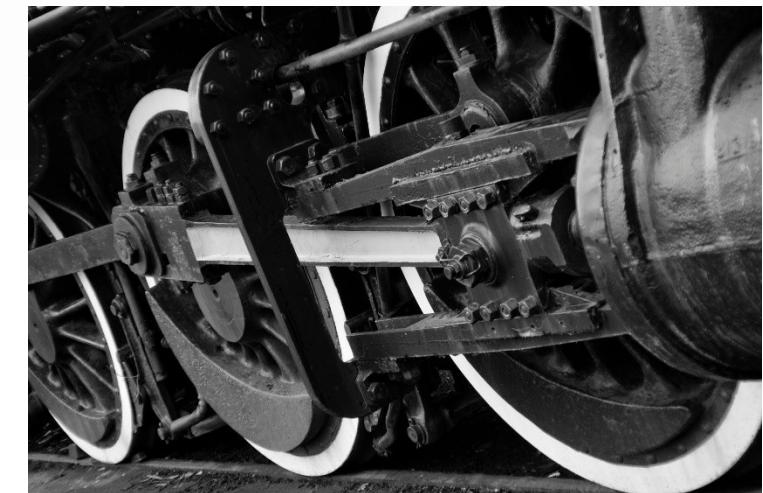
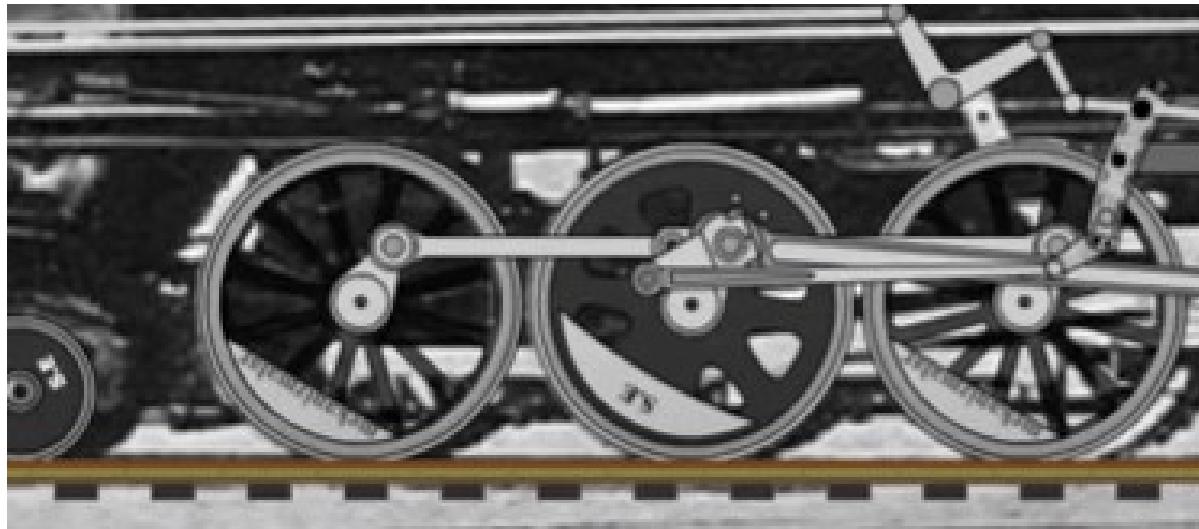
A. INVERSIONS OF FOUR BAR CHAIN

1. Beam engine (crank and lever mechanism)

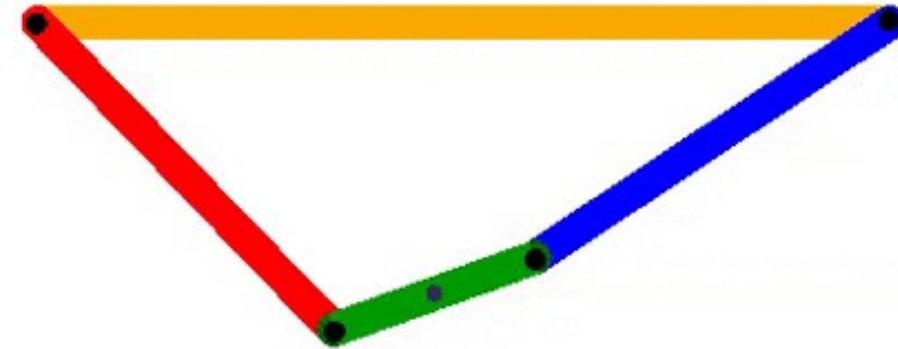


Adapted from Fig. 5.19, Page No: 106, Khurmi, R. S., and J. K. Gupta. "Theory of machines", S. Chand & Co. Ltd., New Delhi 14th e. (2005)

2. Coupling rod of a locomotive (Double crank mechanism)



3. Watt's indicator mechanism (Double lever mechanism).



B. SINGLE SLIDER CRANK CHAIN

L5

Converts rotary motion into reciprocating motion and vice versa.

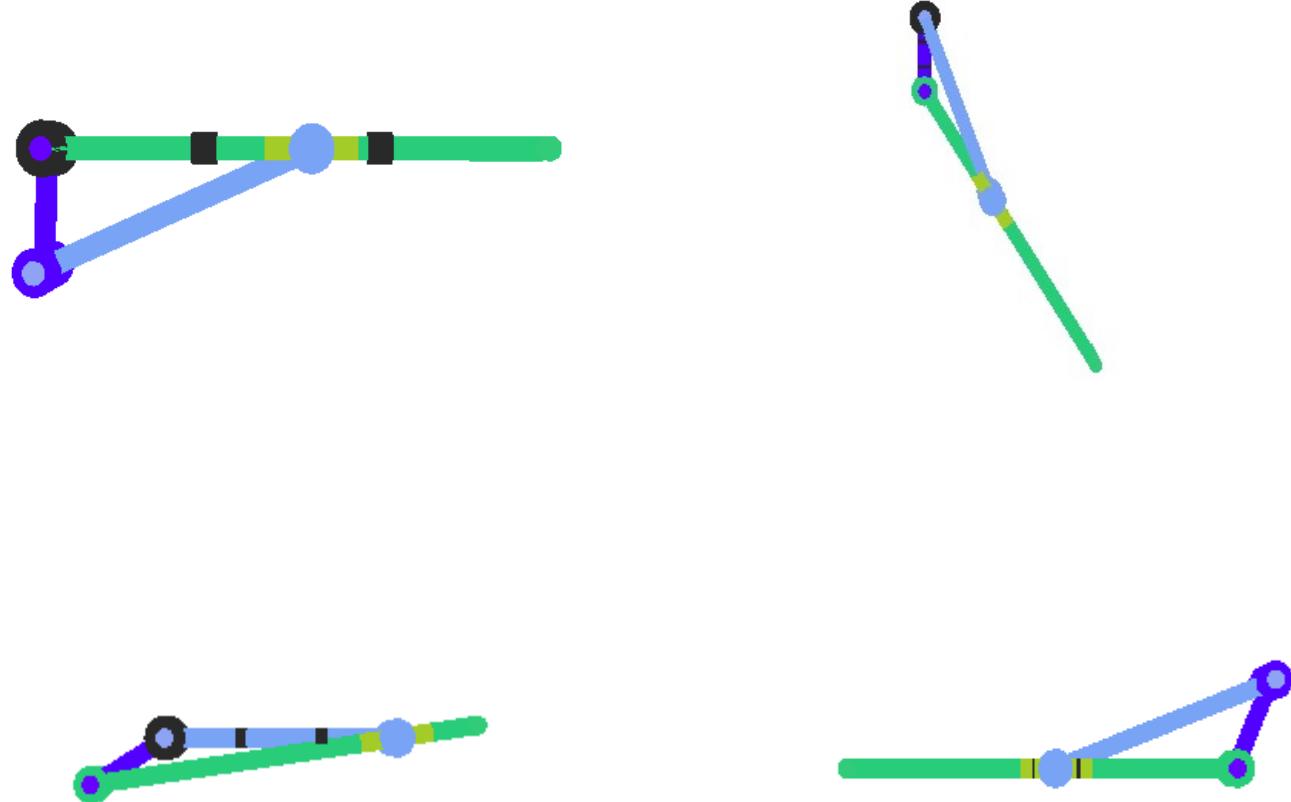
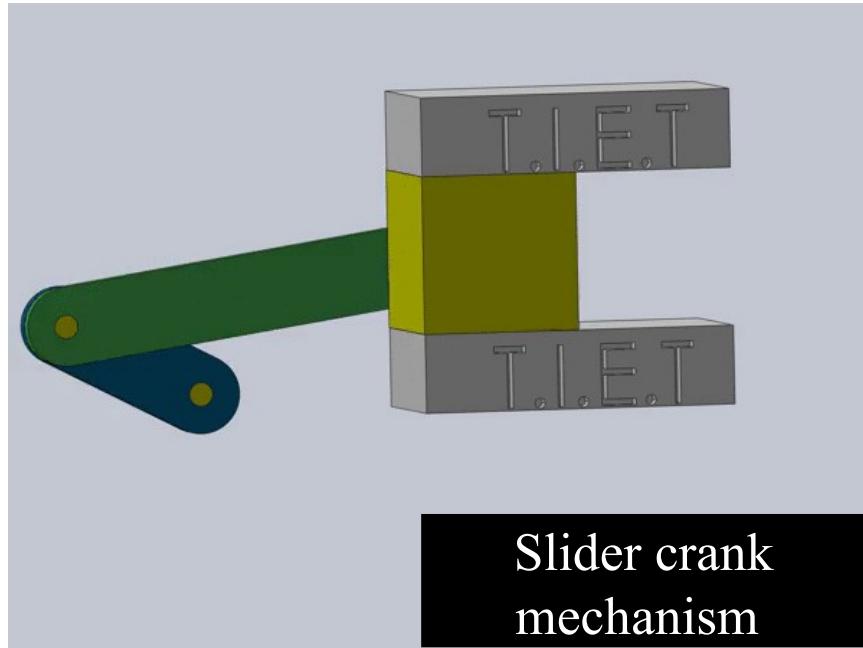
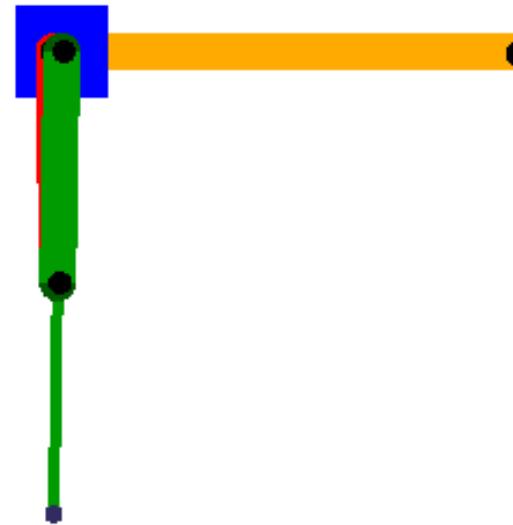


Fig: Inversion of single Slider crank mechanism

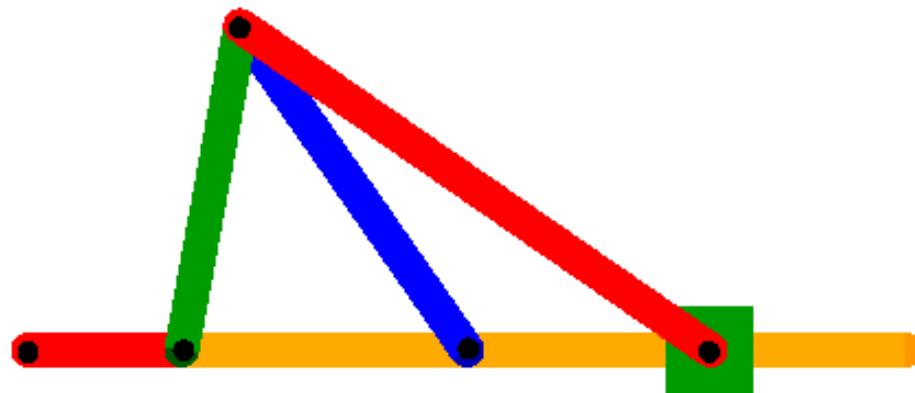
1. Oscillating cylinder engine.



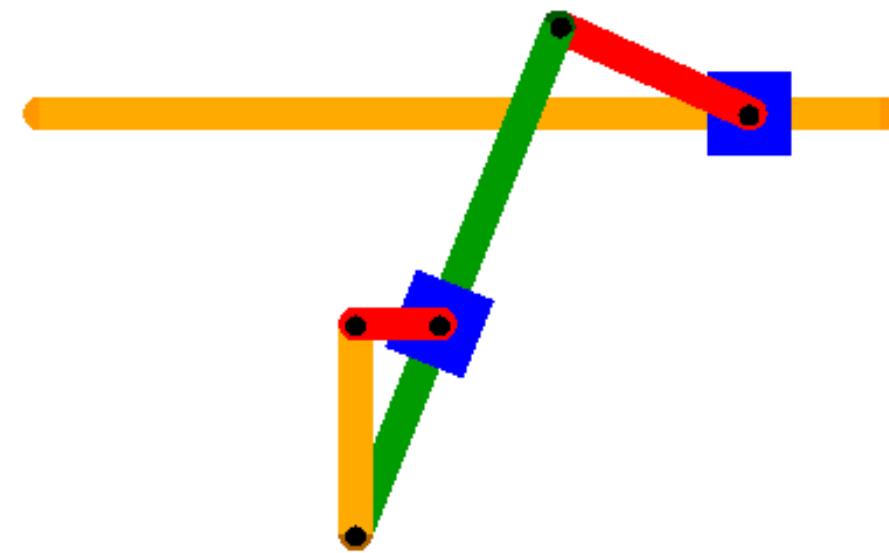
2. Scott Russell mechanism



3. Fourbar Quick Return Mechanism.



4. Whitworth Quick Return Mechanism.

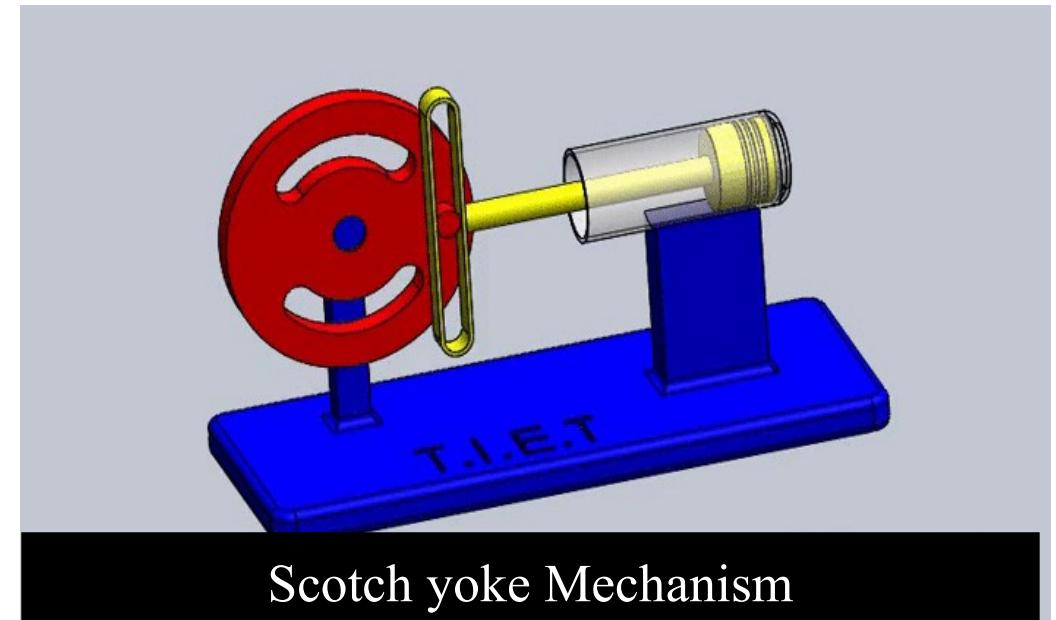


Double Slider Crank Chain

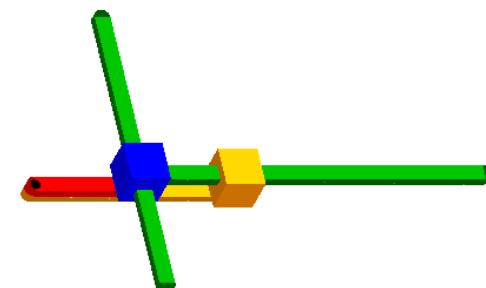
A kinematic chain which consists of two turning and two sliding pairs is known as double slider crank chain.



1. Scotch yoke mechanism



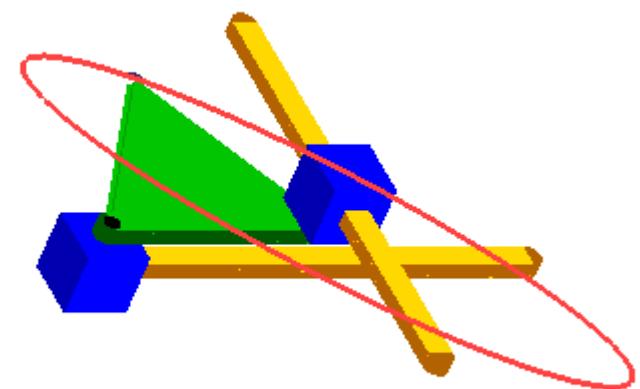
Scotch yoke Mechanism



2. Oldham's coupling



3. Elliptical trammels



Reference Books

1. *Hampali, Shamanth, Rajeevlochana G. Chittawadigi, and Subir K. Saha* “MechAnalyzer® is a 3D model based software” It is freely available for academic usage.
<http://www.roboanalyzer.com/mechanalyzer.html>
2. *Uicker, John Joseph, Gordon R. Pennock, and Joseph Edward Shigley*. Theory of machines and mechanisms. Vol. 1. New York: Oxford University Press.
3. *Norton, Robert L.* Design of machinery: an introduction to the synthesis and analysis of mechanisms and machines. Boston: McGraw-Hill Higher Education.
4. *Rattan, Sarjit S.* Theory of machines. Tata McGraw-Hill Education.
5. *Khurmi, R. S., and J. K. Gupta*. “Theory of machines”, S. Chand & Co. Ltd., New Dehli.

Thanks for watching *this video*



Save Electricity Save World