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THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
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Mechanics of Machines

UME 306

Module - 1

Lecture - 7

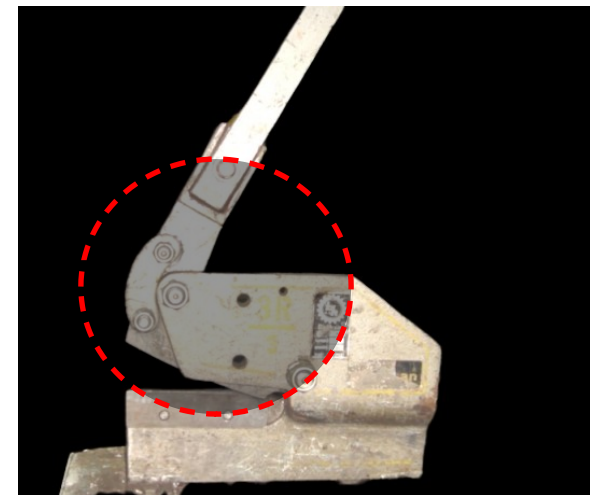
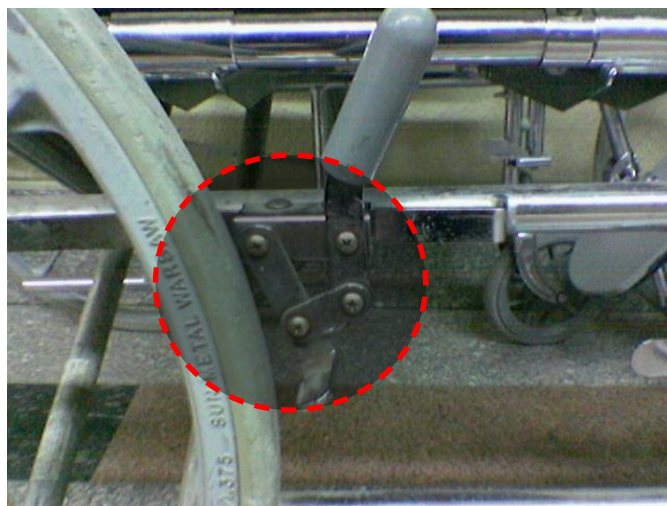
Instructional objective



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

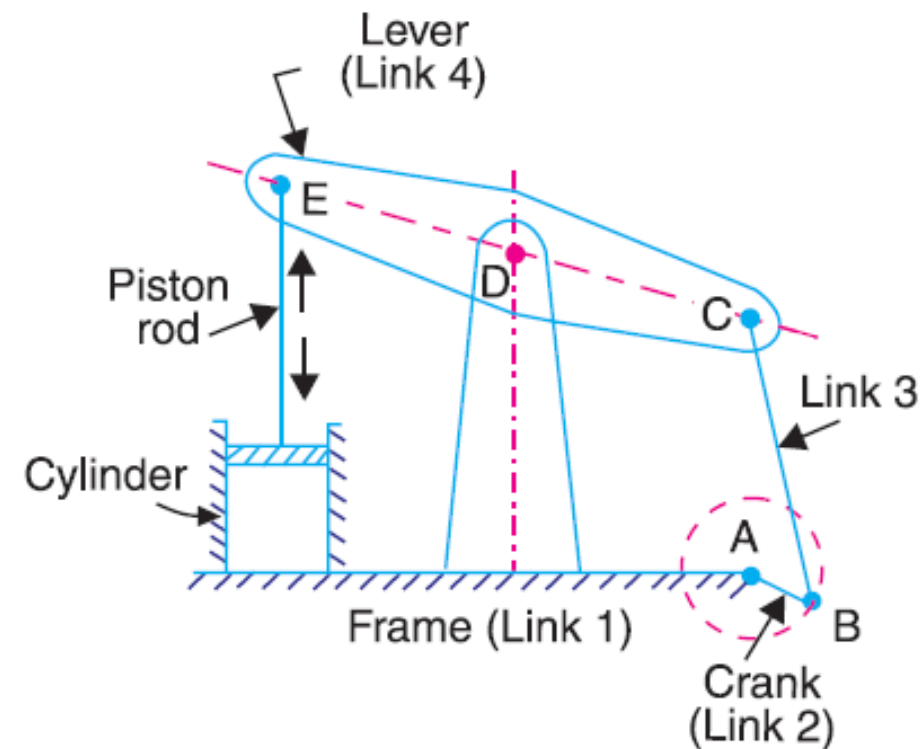
Types of Kinematic Chains

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



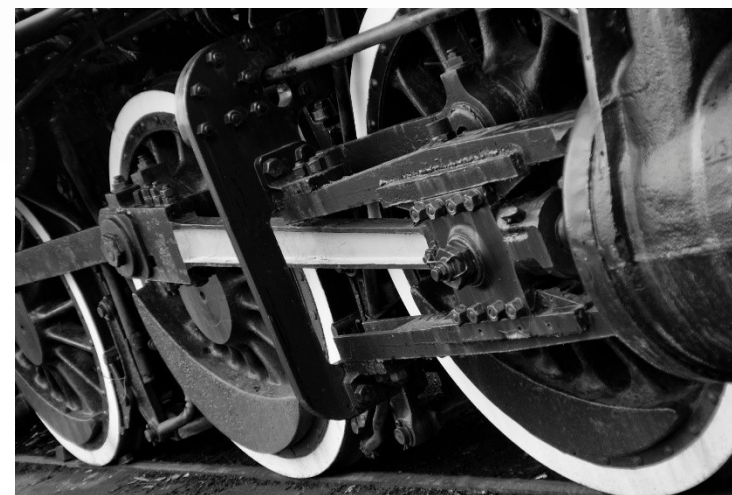
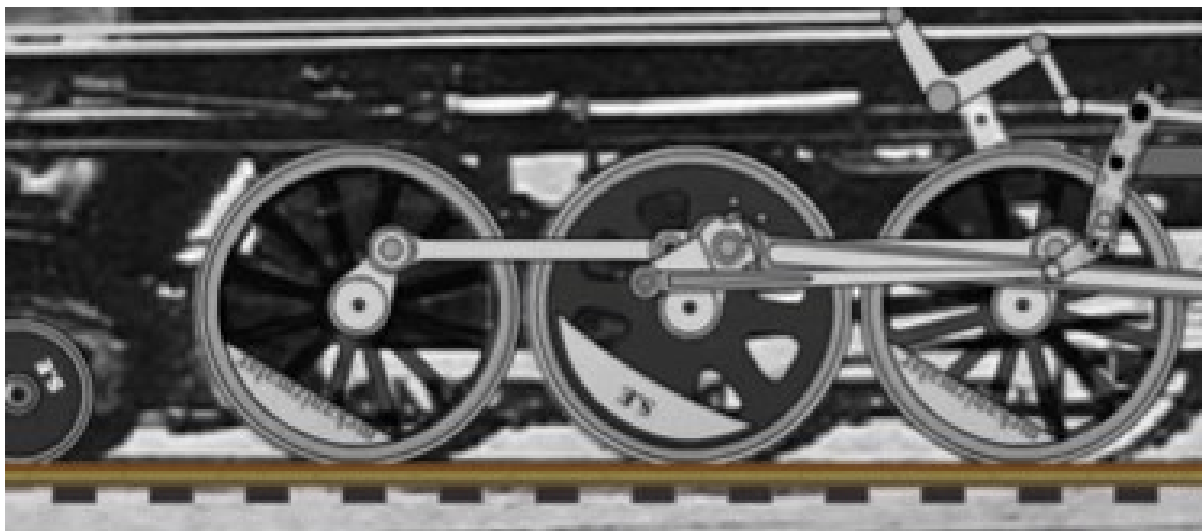
A. INVERSIONS OF FOUR BAR CHAIN

1. Beam engine (crank and lever mechanism)

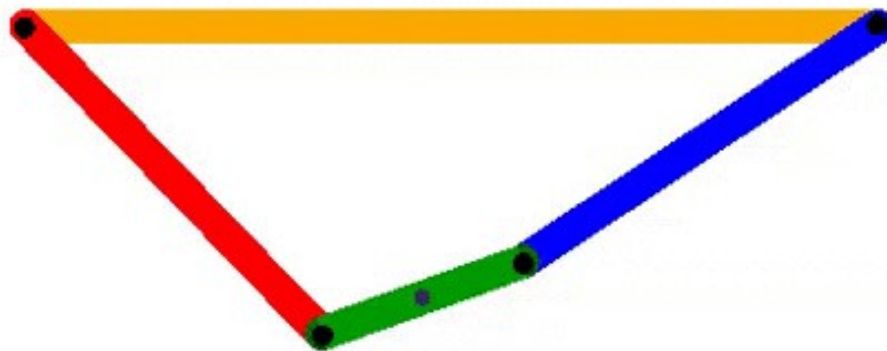


Adapted from Fig. 5.19, Page No: 106, Khurmi, R. S., and J. K. Gupta. "Theory of machines", S. Chand & Co. Ltd., New Dehli 14th e. (2005)

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



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



B. SINGLE SLIDER CRANK CHAIN

Converts rotary motion into reciprocating motion and vice versa.

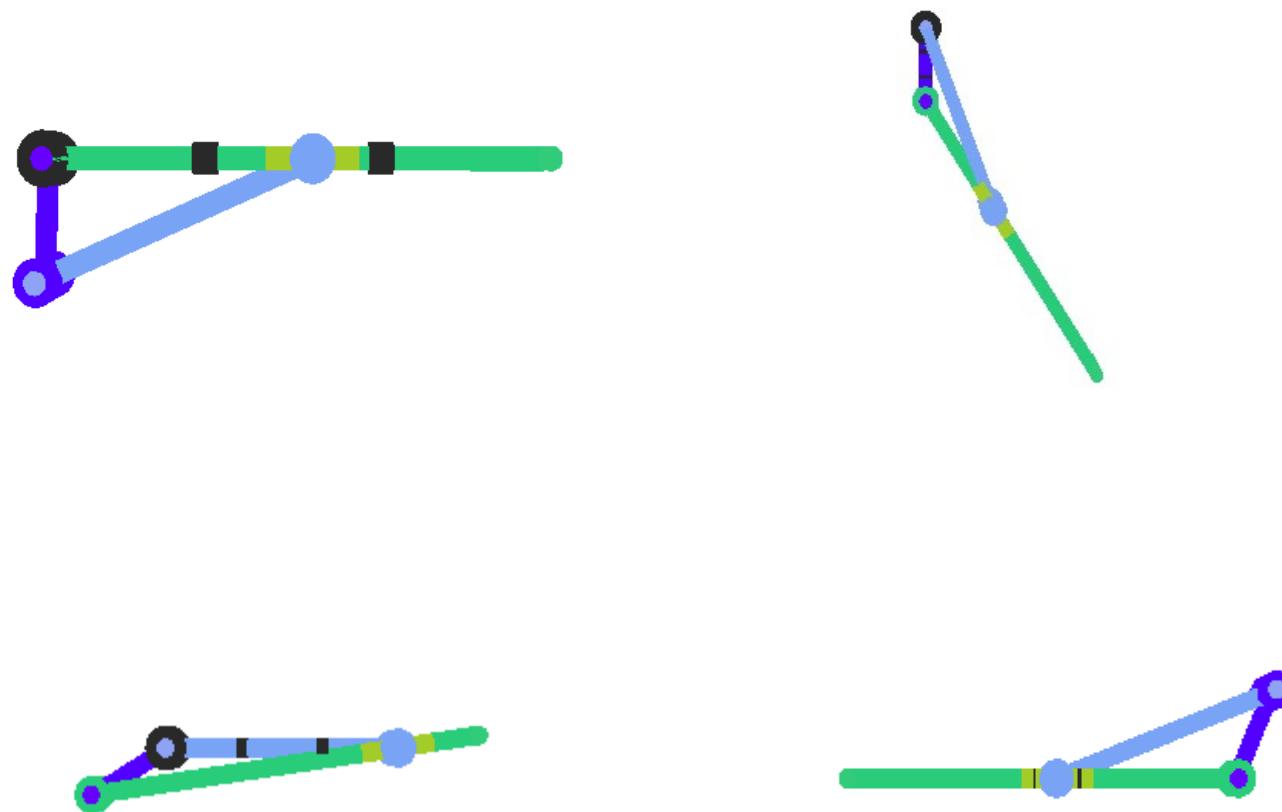
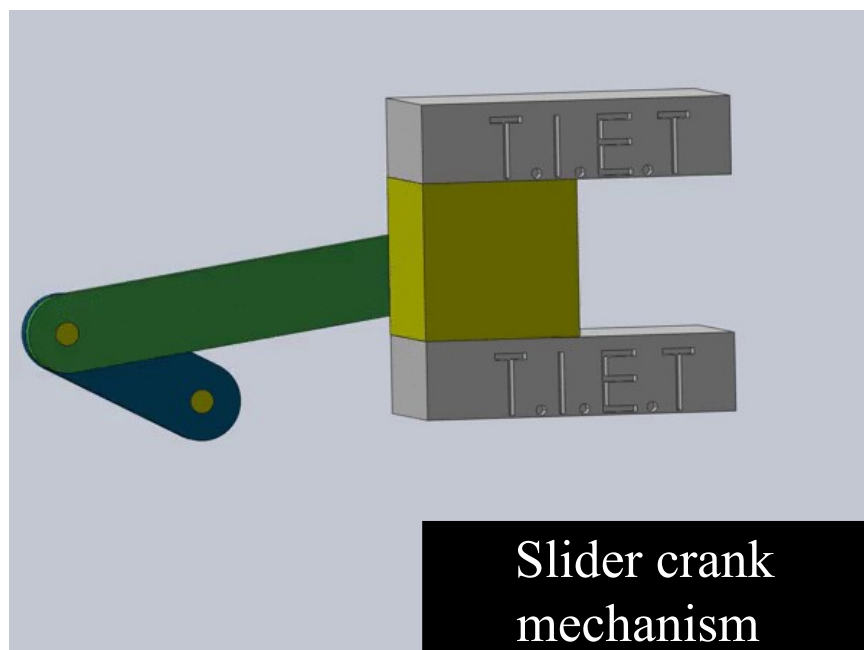
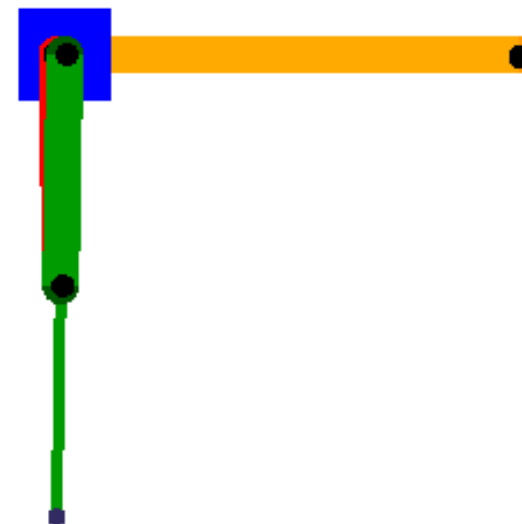


Fig: Inversion of single Slider crank mechanism

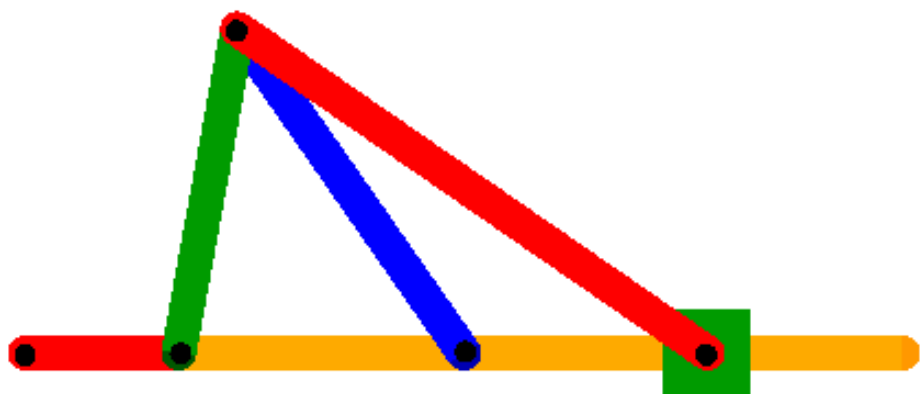
1. *Oscillating cylinder engine.*



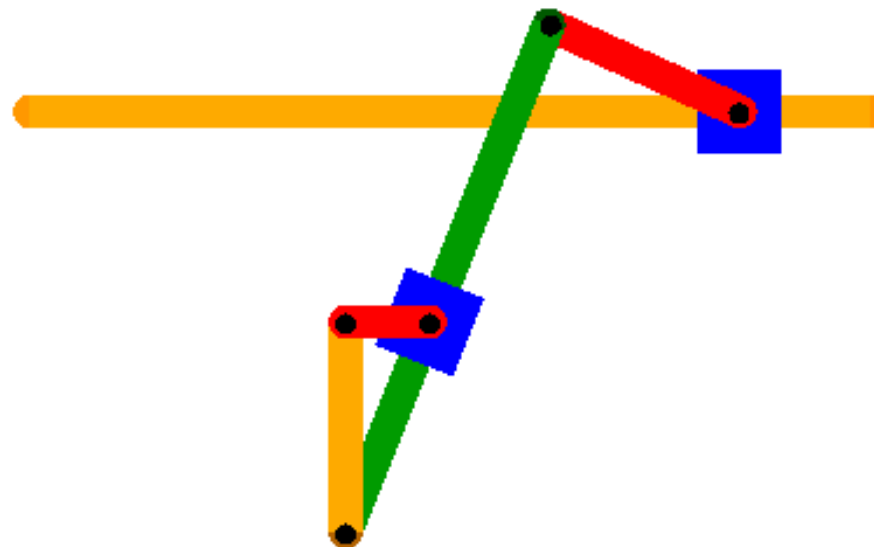
2. *Scott Russell mechanism*



3. Fourbar Quick Return Mechanism.



4. Whitworth Quick Return Mechanism.

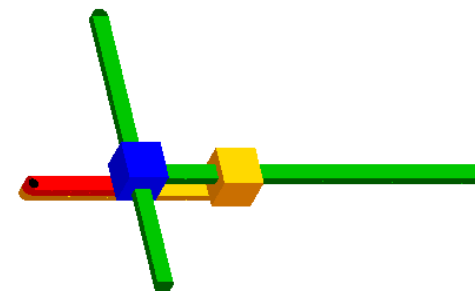
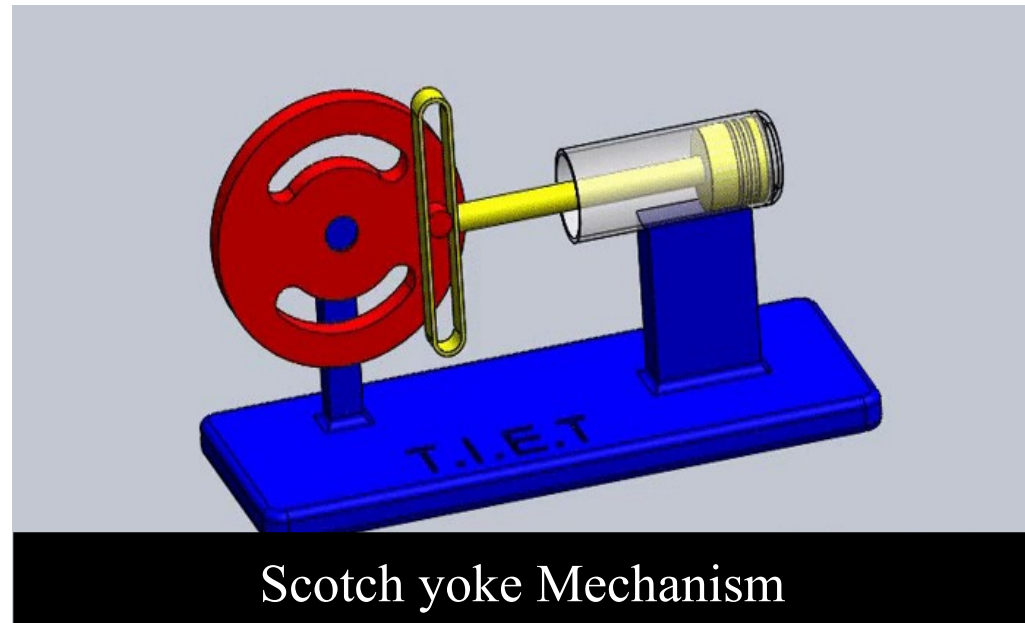


Double Slider Crank Chain

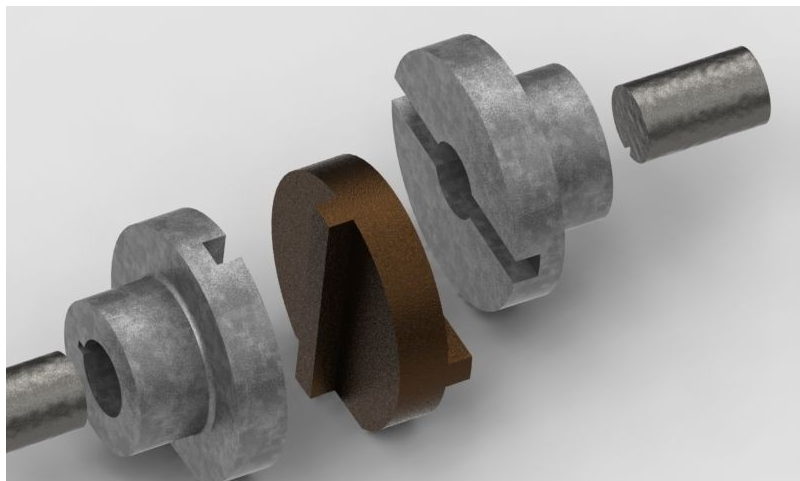
A kinematic chain which consists of two turning and two sliding pairs is known as double slider crank chain.



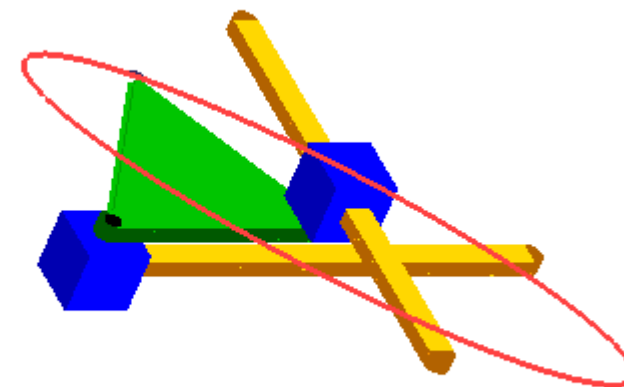
1. Scotch yoke mechanism



2. Oldham's coupling



3. Elliptical trammels



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