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**Institute of Technical Research and Research
(ITER)**



DESIGN AND DYNAMICS-1 (MEL3031)

PROJECT REPORT

**CAM FOLLOWER MECHANISM WITH SINGLE
DUAL**

SUBMITTED BY: –

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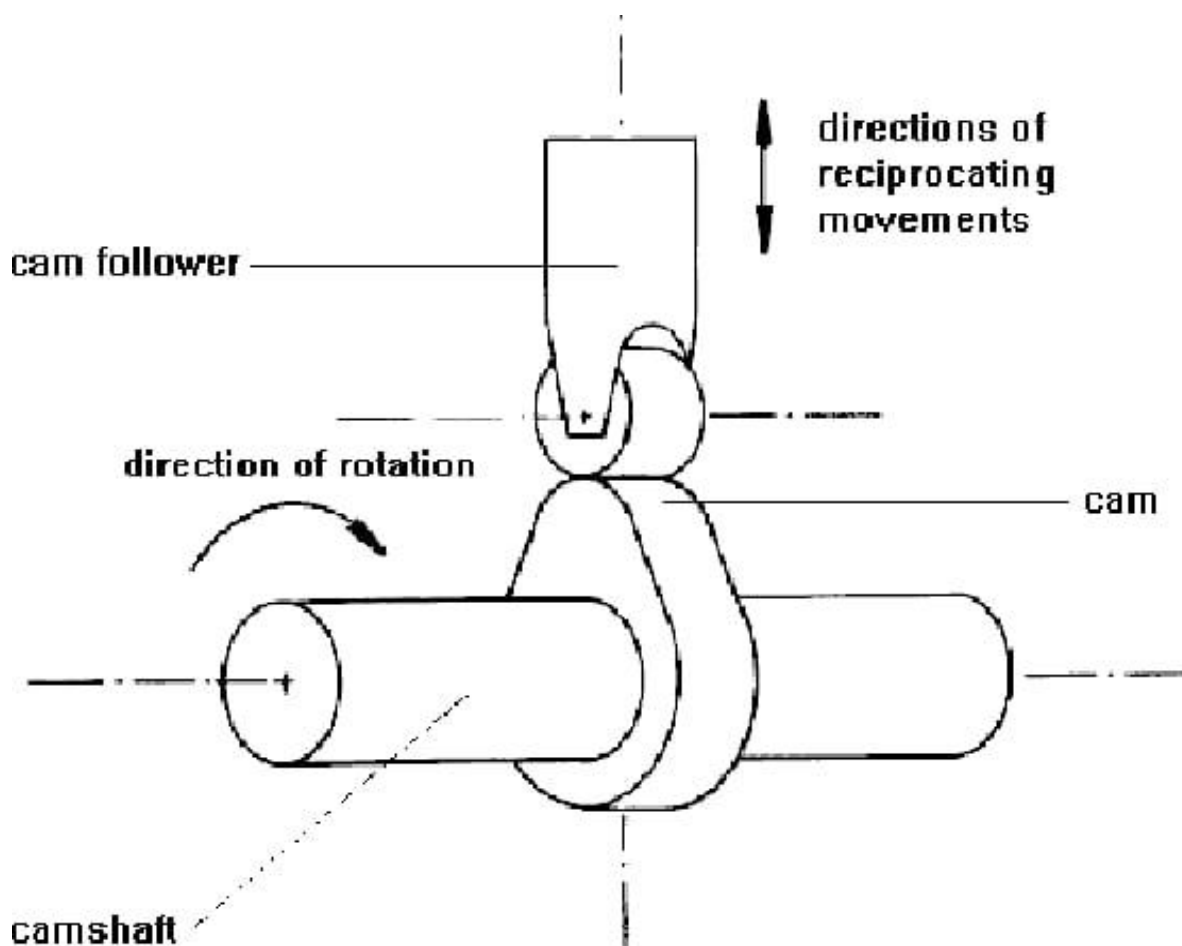
ABSTRACT

The cam follower is a mechanical device which is use to convert the motions of any link into desired way.

This project investigates the design, analysis, and application of a cam follower mechanism, focusing on both single and dual cam configurations. The cam follower mechanism is a critical component in many mechanical systems, used to convert rotary motion into linear motion or vice versa. The study explores two types of cam profiles—single cam and dual cam systems—highlighting their differences in motion transmission, load distribution, and efficiency.

INTRODUCTION

This is broadly use in engines for governing the valve timing in during the starting conditions. The fuel control and exhaust gases blow out is also done by this interesting device. Now days due to complex mechanism and fuel economy this is change by variable valve timing. The cam/follower is supported by a rigid frame which controls the motion and keep safe the device from irregular motions and damage. The cam/follower is might be gravity type or spring loaded. Depending upon the accuracy the cam/follower are selected and according to speed variation.



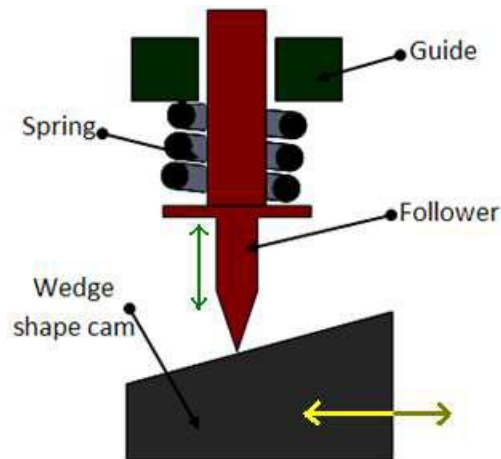
TYPES OF CAM

CAMS ARE CLASSIFIED ACCORDING TO: -

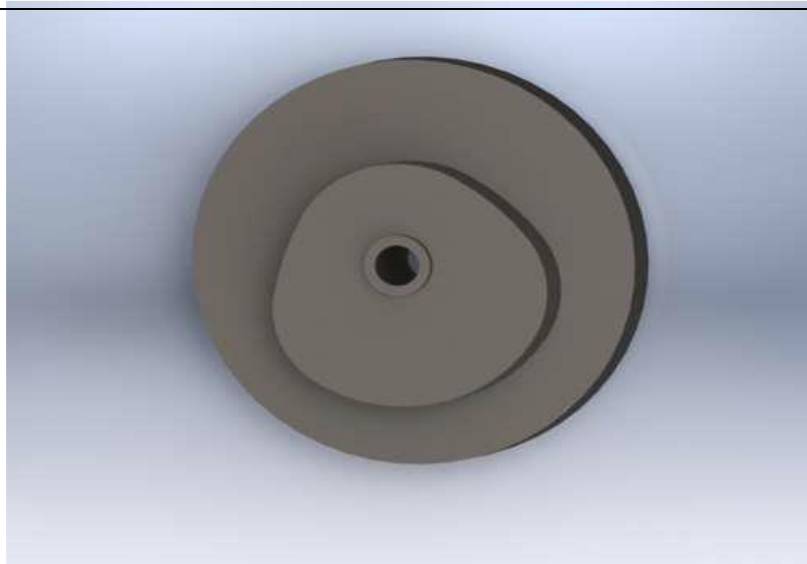
- 1) Shape
- 2) Follower Movement
- 3) Manner of Constraint of the Follower

ACCORDING TO SHAPE: -

(a)Wedge Cam- A wedge cam has a wedge which, in general has a transnational motion. The follower can either translate or oscillate. A spring is usually, used to maintain the contact between the cam and the follower.



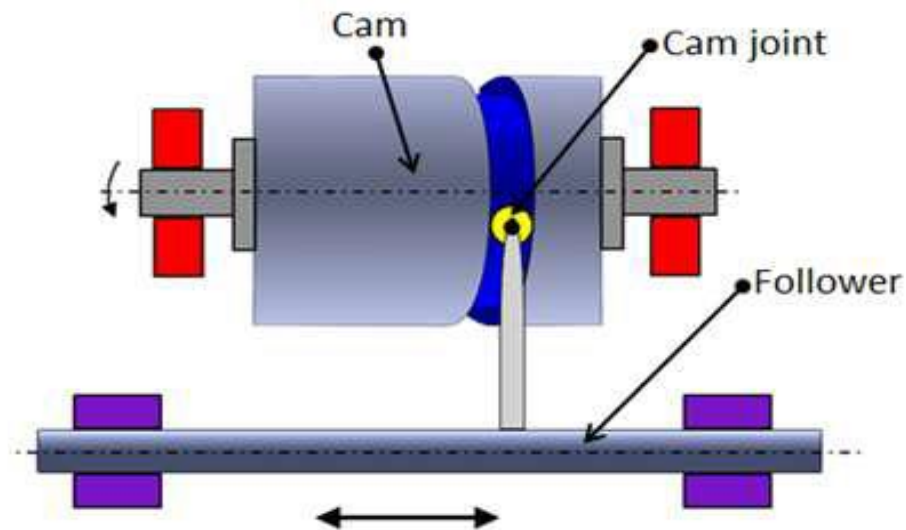
b) Radial/Disc Cam- A cam in which the follower moves radially from centre of rotation of the cam is known as a radial or disc cam.



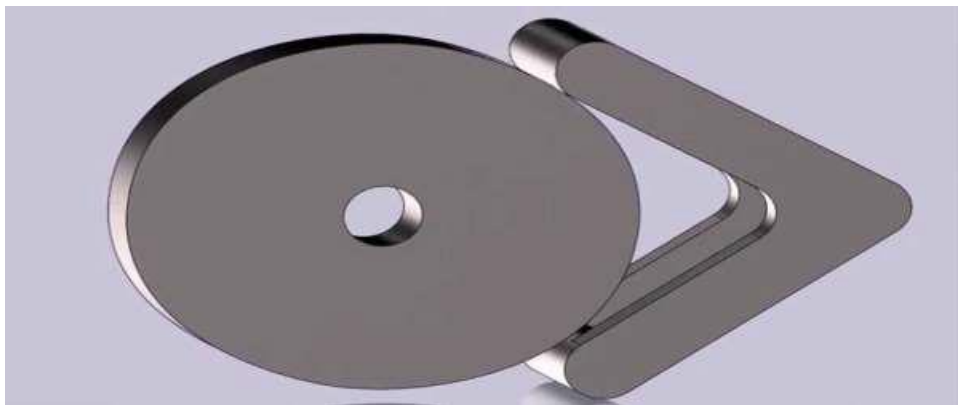
(c) Spiral Cam- A spiral cam is a face cam in which a groove is cut from of a spiral. The spiral groove consists of teeth which mesh with a pin gear follower.



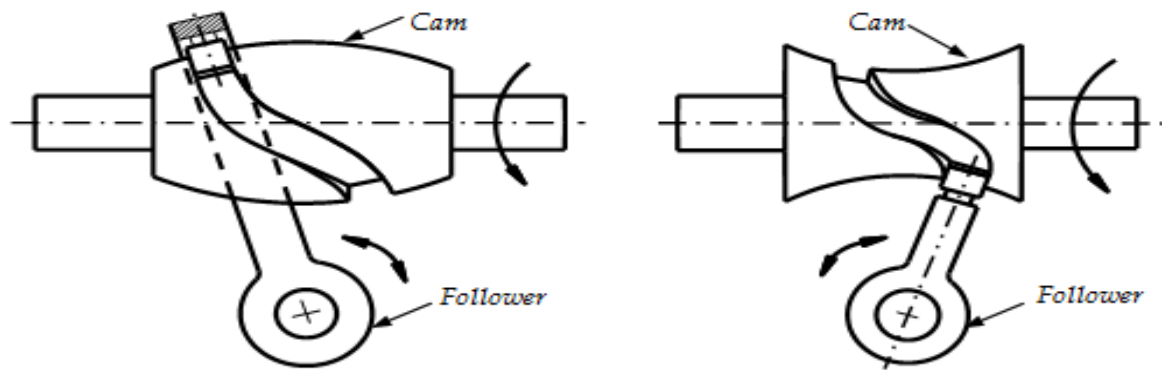
(d) Cylindrical Cam- In a cylindrical cam, a cylinder which has a circumferential contour cut in the surface, rotates about its axis. Cylindrical cam is also known as barrel or drum cam.



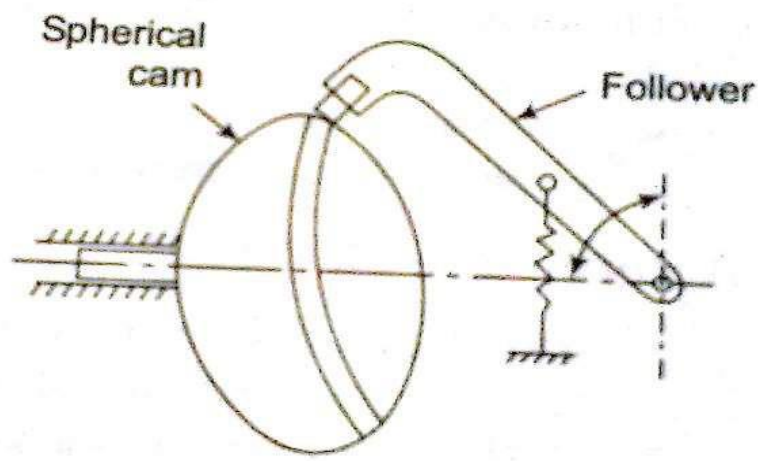
(e)CONJUGATE CAM- A conjugate cam is a double disc cam, the two discs being keyed together and are in constant touch with the two rollers of follower.



(f)GLOBOIDAL CAM- A globoidal cam can have two types of surfaces convex and concave. A circumferential contour is cut on the surface on the rotation of the cam to the follower which has an oscillatory motion.



(g) SPHERICAL CAM- In a spherical cam, the follower oscillates about an axis perpendicular to the axis of rotation of the cam.



ACCORDING TO THE FOLLOWER MOVEMENT: -

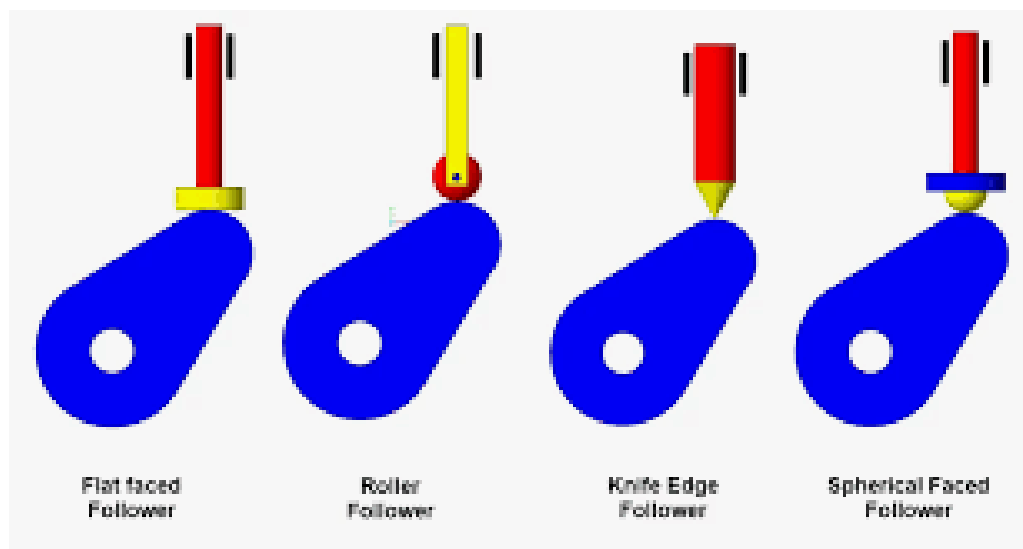
- a) Rise-Return-Rise
- b) Dwell-Rise-Return-Dwell
- c) Dwell-Rise-Dwell-Return-Dwell

ACCORDING TO CONSTRAINT OF THE FOLLOWER: -

(A) PRE-LOADED SPRING CAM- A pre-loaded compression spring is used for the purpose of keeping the contact between the cam and the follower.

(B) POSITIVE-DRIVE CAM- In this type, constant touch is maintained.

(C) GRAVITY CAM- If the rise/return is occurred due to self-weight of follower.



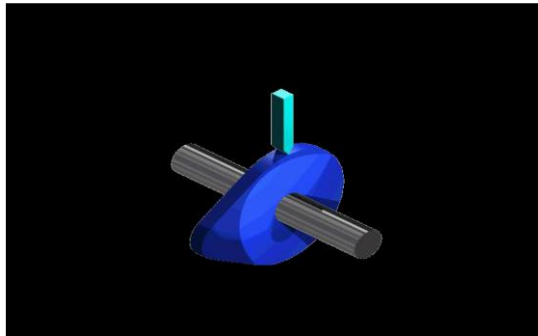
TYPES OF FOLLOWERS

FOLLOWERS ARE CLASSIFIED ACCORDING TO: –

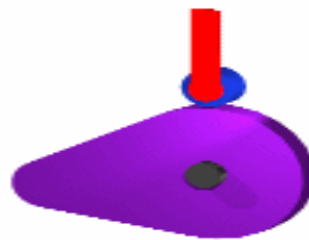
- 1) Shape
- 2) Movement
- 3) Location of the Line of the Movement

ACCORDING TO SHAPE: -

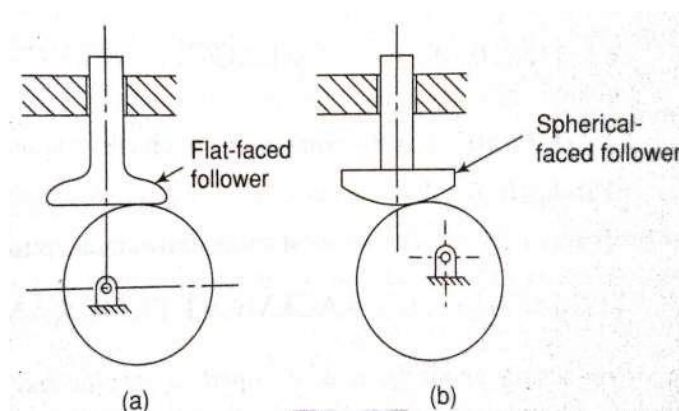
(a) KNIFE-EDGE FOLLOWER-It is quite simple in construction, the end edges are too sharp and causes wear on the cam.



(b) ROLLER-FOLLOWER- It is a widely used cam follower and has a cylindrical roller free to rotate about a pin joint.



(c) MUSHROOM FOLLOWER- A mushroom followers have the advantages that it does not have a problem of jamming. But the surface stress is quite high.



ACCORDING TO THE MOVEMENT: -

(a) RADIAL FOLLOWER- In this, type as the cam rotates, the follower reciprocates or translates in the guides.

(b) OSCILLATING FOLLOWER- The follower is pivoted at a suitable point on the frame and oscillates as the cam makes the rotary motion.

ACCORDING TO LOCATION OF LINE OF MOVEMENT: -

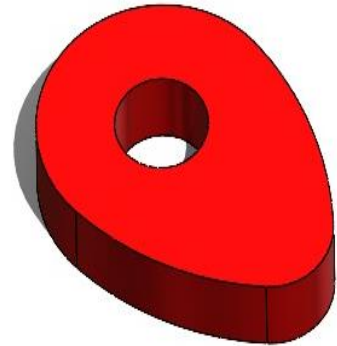
(a) RADIAL FOLLOWER-The follower is known as a radial follower if the line of movement of the follower passes through the centre of rotation of the cam.

(b) OFFSET FOLLOWER-If the line of movement of the roller follower is offset from the centre of the rotation of the cam, the follower is known as the offset follower.

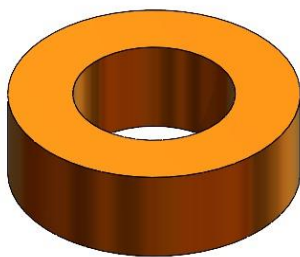
PARTS MADE BY USING SOLIDWORKS



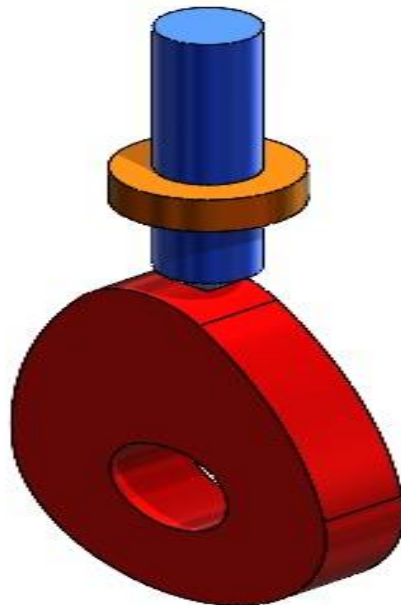
FOLLOWER



CAM

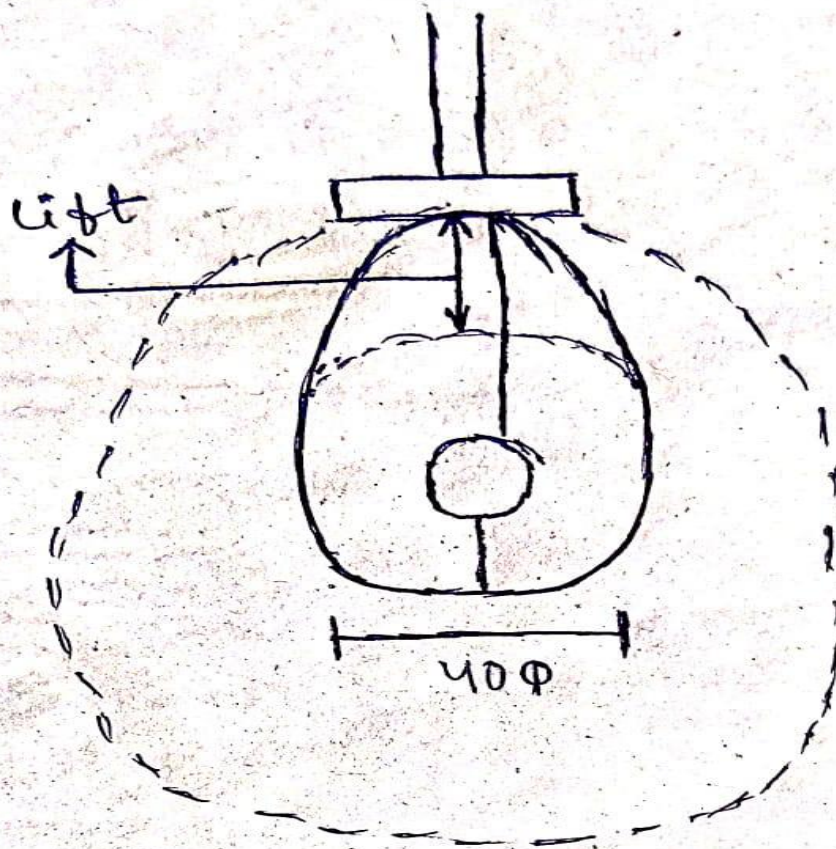


SUPPORT



ASSEMBLY OF CAM FOLLOWER

CALCULATION



Total - 55

Base - 20φ

Lift - 15φ

Prime - 35φ