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Experiment - 2.

Aim :- To know the classification of chasis, Ackerman's steering mechanism, Telescopic suspension, disc and drum brake.

Objectives :- i) To ensure the inner and outer front wheels turn through a different angle when cornering, through Ackerman's steering mechanism.

ii) To ensure the safety and comfort by keeping the vehicles passengers comfortably isolated from road noise, bumps and vibrations, by using Telescopic suspension.

iii) To stop the vehicle by disc and drum brake.

Introduction :-

i) The Ackerman steering mechanism is a geometric arrangement of linkages in the steering of a vehicle designed to ~~rot~~ turn the inner and outer wheels at the appro

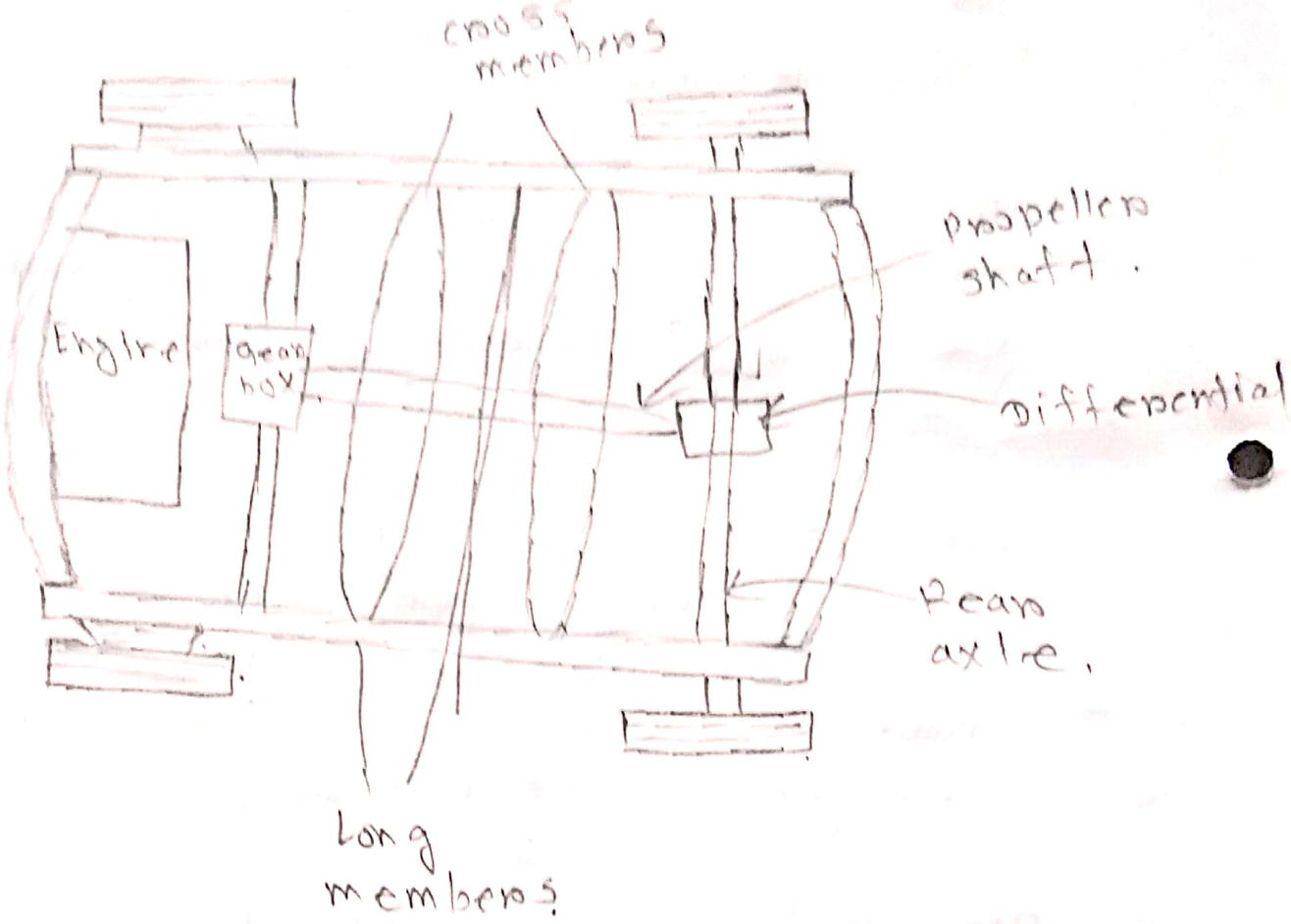


Fig. Ladder type chassis frame layout.

-priate angles.
ii) telescopic suspension is a type of suspension system used mostly in two-wheelers, they include two sets of shock absorber that are usually a combination of coil springs, mounted on the front of the vehicle.
iii) A drum brake is a brake that uses friction caused by a set of shoes or pads that press outward against a rotating cylinder-shaped part called a drum brake.

1) classification of chasis

i) Ladder chasis.
A ladder frame car chasis is a common type of frame used as a base for vehicles, creating a solid base from the shape that the name suggest.

ii) Backbone chasis :-
- A substantial central component is necessary for a

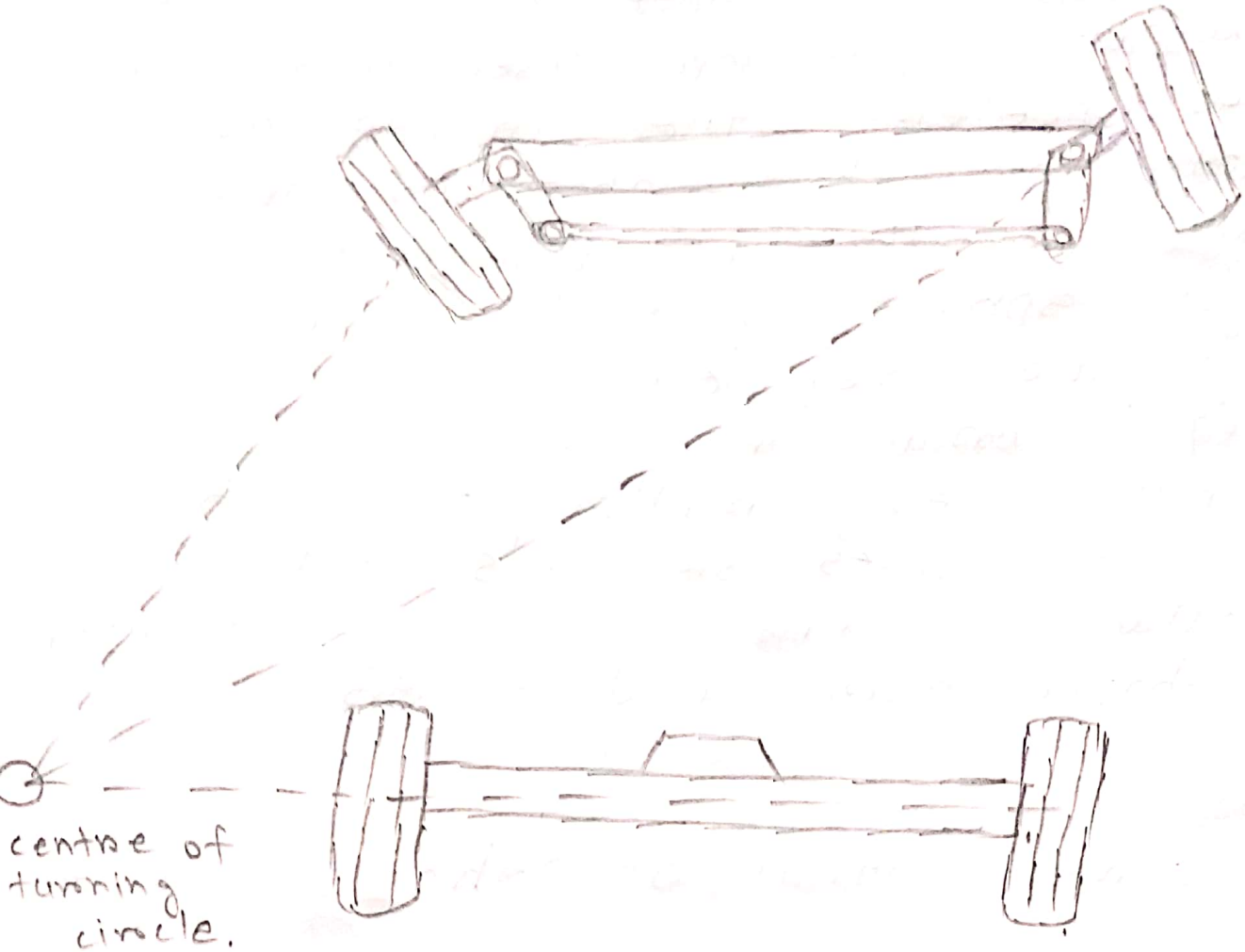


Fig. Ackerman steering mechanism.

backbone car chasis connecting the front and rear of the entire frame.

iii) Monocoque chasis :-
- A monocoque car chasis is one that uses metal that is molded from sheets of the material which is the same method to build other parts of the frame. This type of chasis is similar to a unibody type.

iv) Space :
- A space chasis can also be known as tubular even though it is not tubular in the true sense. The components are welded together to create a strong frame that comprises some flexibility.

v) Combination chasis :-
- You will often find that a car chasis is not any single types, taking elements from a range of different

types to create a version that is best suited to the car frame.

2] Ackerman's steering mechanism:

i) A simple approximation to perfect Ackermann steering geometry may be generated by moving the steering pivot points inwards so as to lie on a line drawn between the steering kingpins and the centre of the rear axle.

ii) The steering pivot points are joined by a rigid bar called the tie rod which can also be part of the steering mechanism, in the form of a rack and pinion for instance.

iii) With perfect Ackerman, at any angle of steering, the centre point of all the circles traced by all wheels will lie at a common point.

iv) Note that this may be difficult to arrange in practice with simple linkages, and designers are

advised to draw or analyse their steering systems over the full range of steering angles.

3] Telescopic suspension :-

i) A telescopic suspension is a form of motorcycle front suspension whose use is so common that it is virtually universal.
ii) The telescopic suspension uses fork tubes and sliders which contain the springs and dampers.
iii) It is simple in design and relatively cheap to manufacture and assemble.
iv) It is lighter than older designs using external components and linkage systems.
v) It has a clean and simple appearance that bikers find attractive.
vi) Telescopic suspension sometimes have gaiters to protect the fork tubes from abrasion and corrosion.

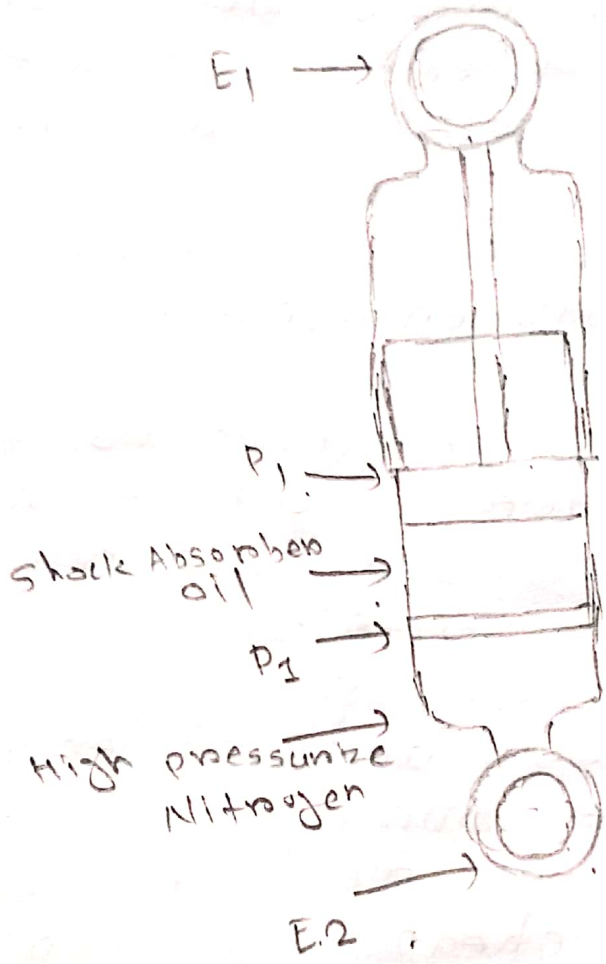
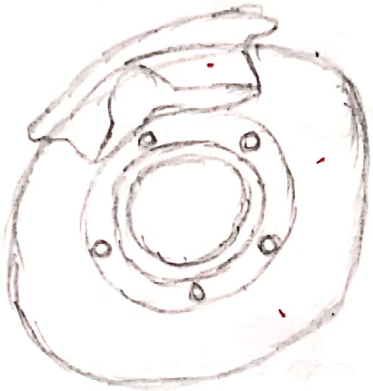


Fig. MONOTUBE SHOCK ABSORBER.

4] Disc and drum brakes :-

i) Disc and drum brakes are both based on a hydraulic pressure system.
ii) A piston compresses brake fluid inside the master cylinder located under your vehicle's hood near your engine.
iii) This creates a lot of hydraulic pressure, generating a much bigger force than that of the small effort of pressing down on the pedal.
iv) The pressure is transferred via the brake fluid through the brake lines then through the brake hoses (flexible tubes) that connect the lines with brake assemblies at each wheel.
v) There, wheel cylinders convert that hydraulic pressure back to mechanical force.
vi) Brake friction material is pushed against the brake disc or drum, slowing or stopping your vehicle.



Disc
brake

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conclusion :- we know the classification of chasis, use of Ackerman's steering mechanism, Telescopic suspension, disc and drum brake.