A LEVEL DESIGN ENGINEERING

6.4 MECHANISMS PART 1

Design & Technology – Starter

PLEASE SIT DOWN IMMEDIATELY & WORK IN SILENCE

Today we will be exploring mechanisms. But!
How many different mechanisms do you already know?

How many different mechanisms can you name?

What is the purpose of a mechanism?

Learning objectives

- What are mechanisms?
- What are the different types of mechanism?
- How are mechanisms used in products?
- What is the basic machine principle?
- What is mechanical advantage and gear ratio?

Key words:

Mechanism, gear, cam, linkage, lever, chain and sprocket, belt and pulley, basic machine principle, mechanical advantage, velocity ratio

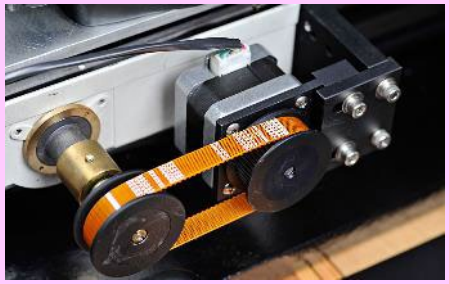
Learning objectives:

- What is a mechanism?
- What are the types of mechanism?
- How are mechanisms used in products?

Explanation

What is a mechanism?

Definition: a system of parts working together in a machine.

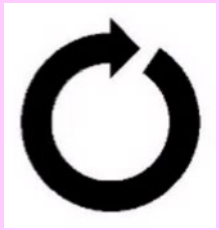


Learning objectives:

- ❑ What is a mechanism?
- ❑ What are the types of mechanism?
- ❑ How are mechanisms used in products?

Explanation

What are the types of motion?



Rotary

Linear

Oscillating

Reciprocating

Learning objectives:

- ❑ What is a mechanism?
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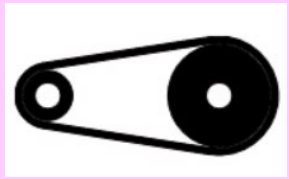
- ❑ How are mechanisms used in products?

Explanation

What are the basic types of mechanism?

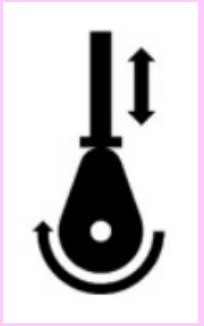
Gears



Belt and pulley

Linkages

Chain and sprocket



Cam

Learning objectives:

- ❑ What is a mechanism?
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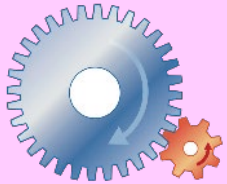
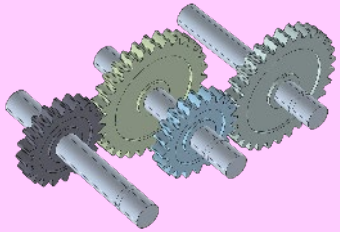
Explanation

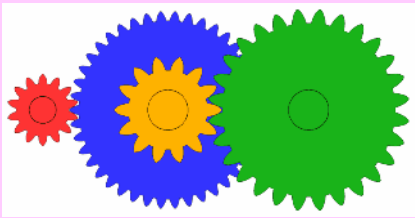
What are the types of gear?



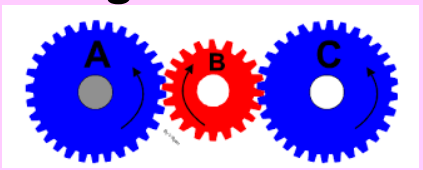
Spur gears



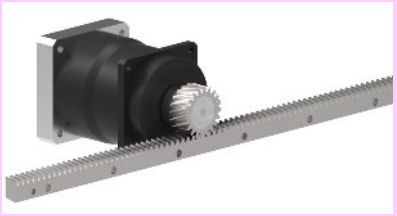
Compound gear train



Idler gear

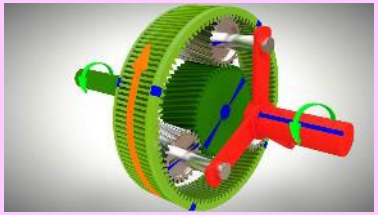


Leadscrew (screw and nut)

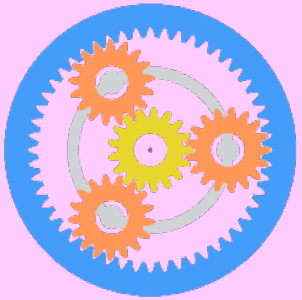


Rack and pinion

Bevel



Epicyclic/ Planetary



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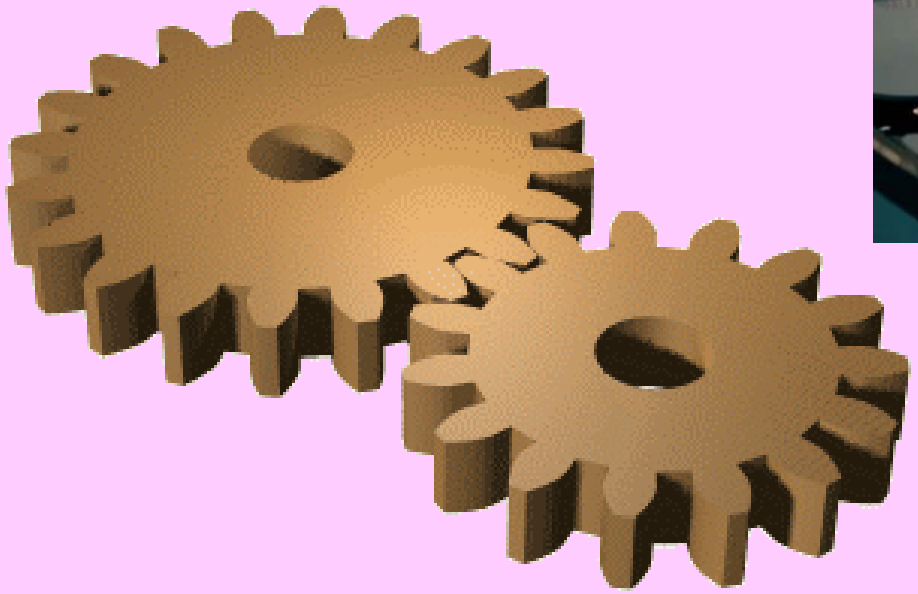
Explanation

Spur gears?



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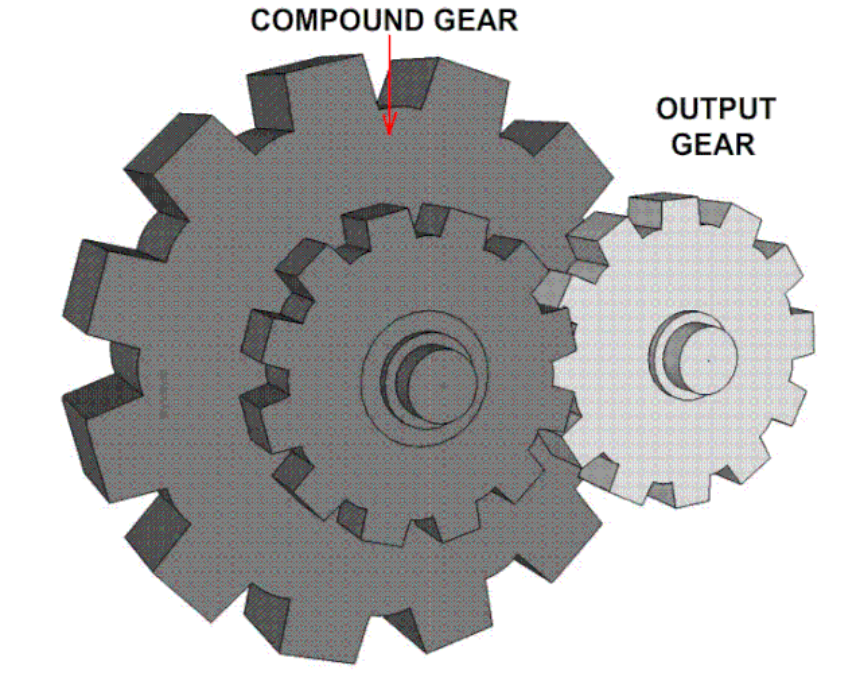

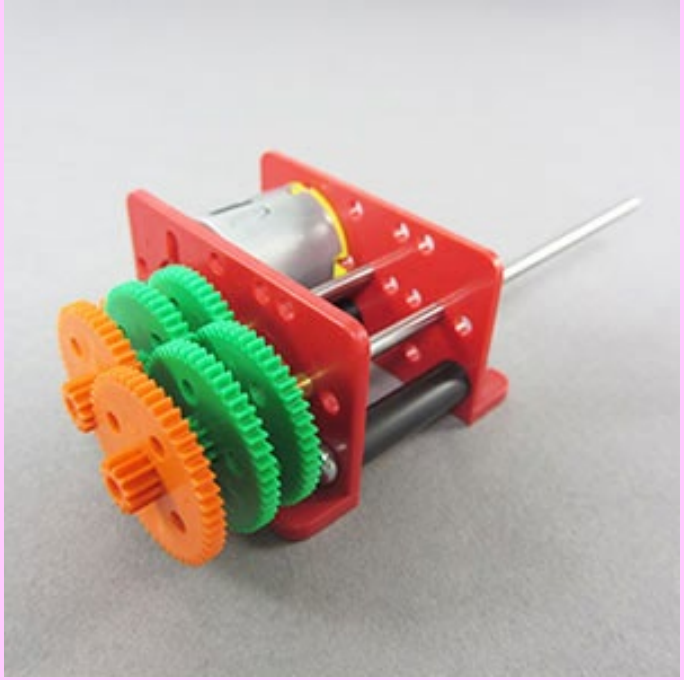

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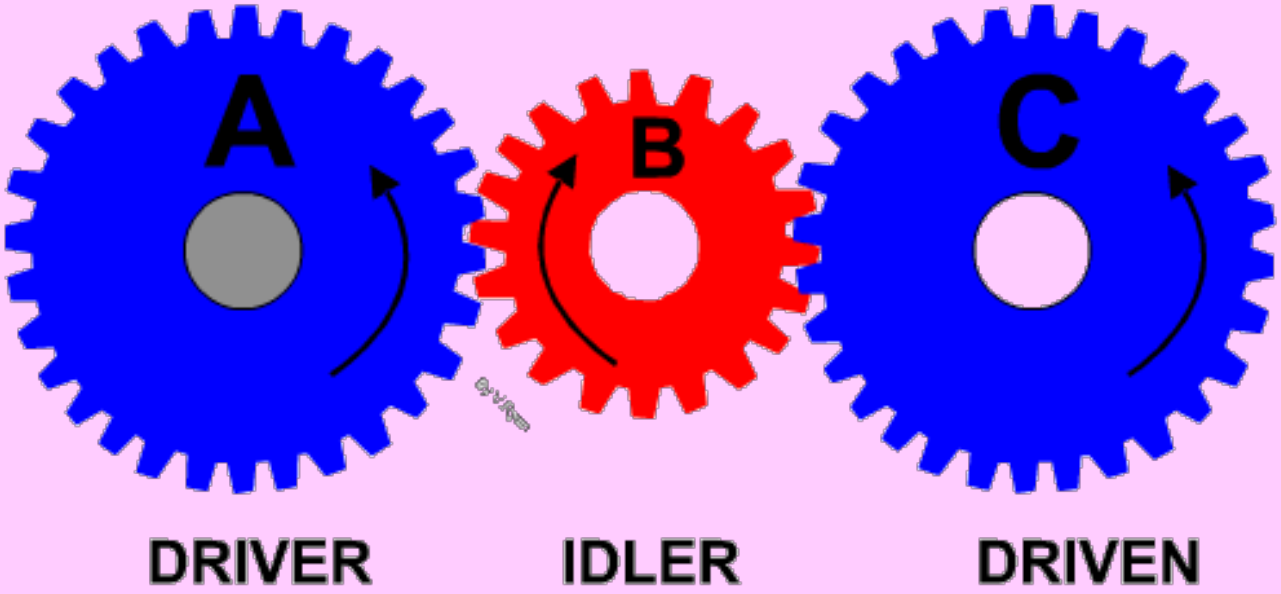
Explanation

Idler gear?



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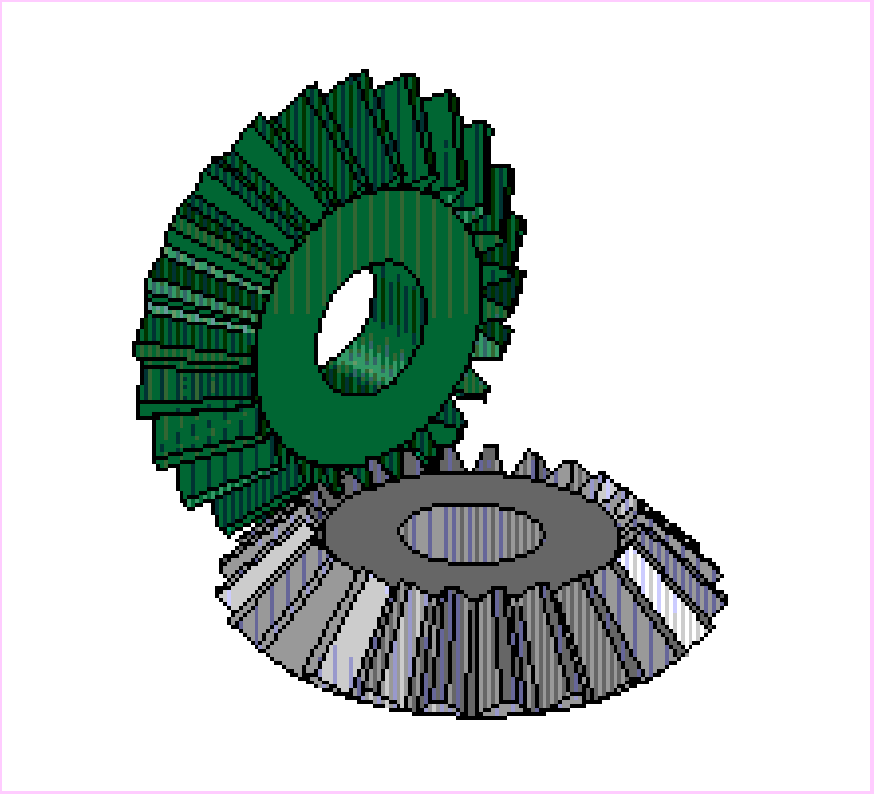
Explanation

Bevel gears?



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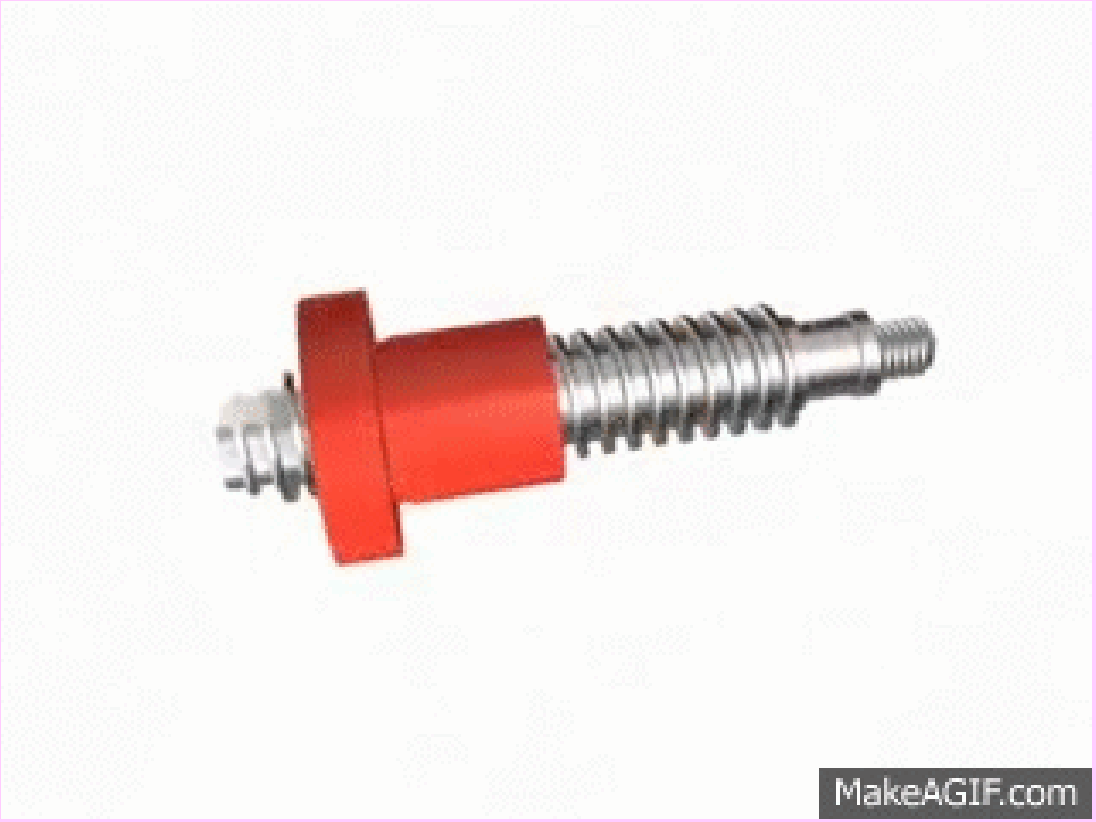
Explanation

Leadscrew and nut?



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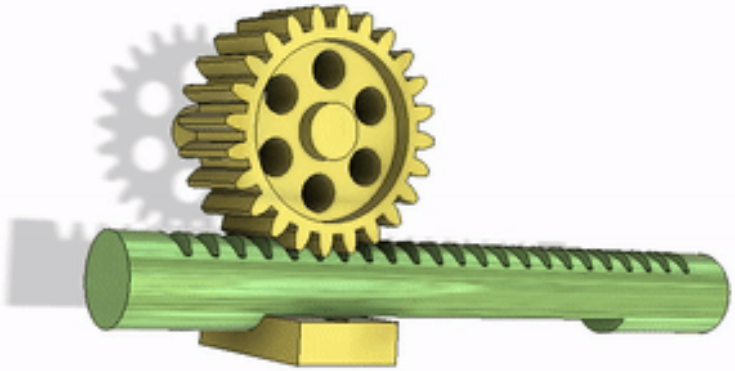
Explanation

Rack and pinion?



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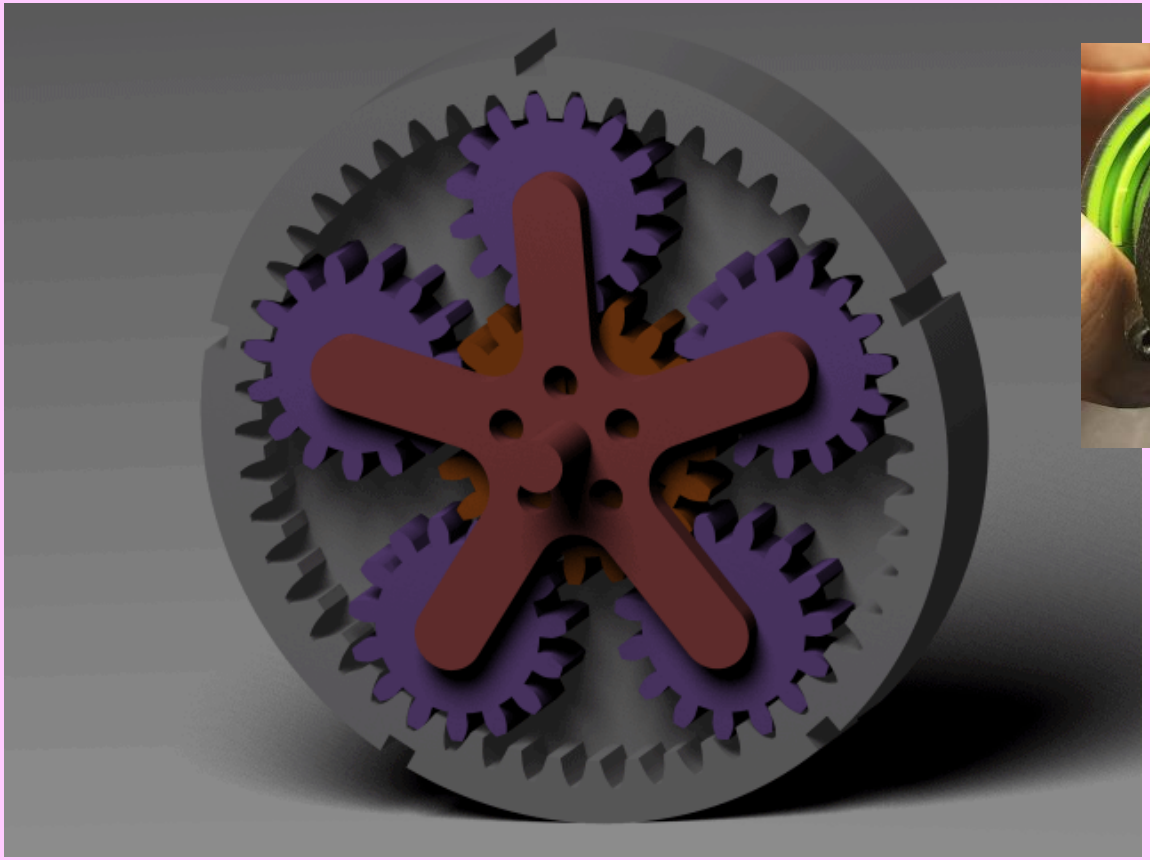
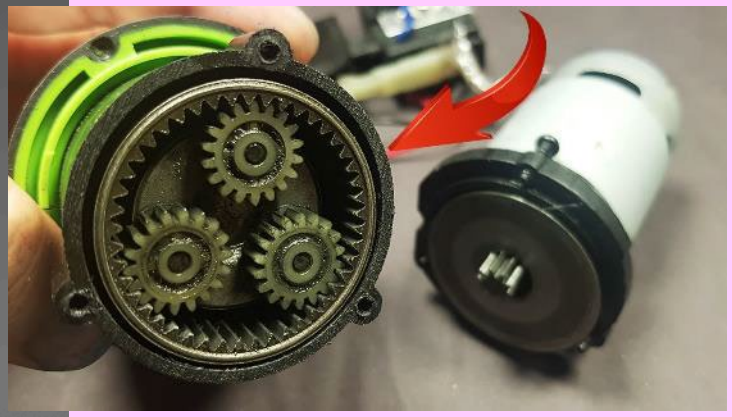
Explanation

Epicyclic (Planetary)?





Learning objectives:

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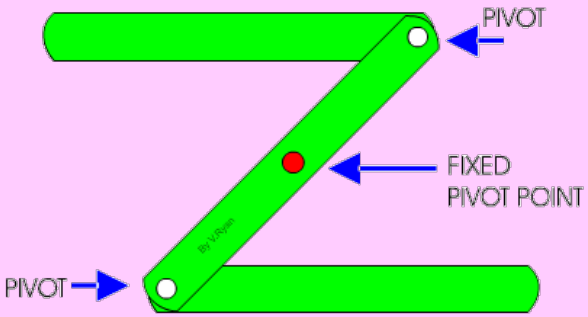
- ❑ How are mechanisms used in products?

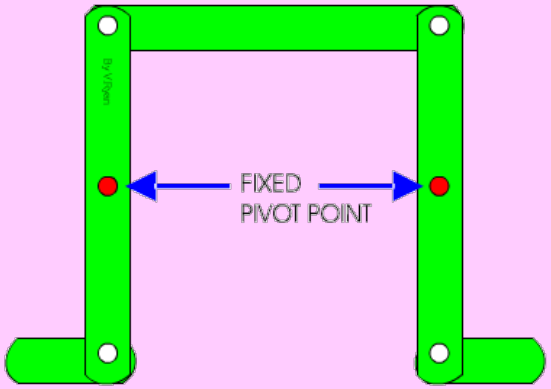
Explanation

What are the types of linkage?

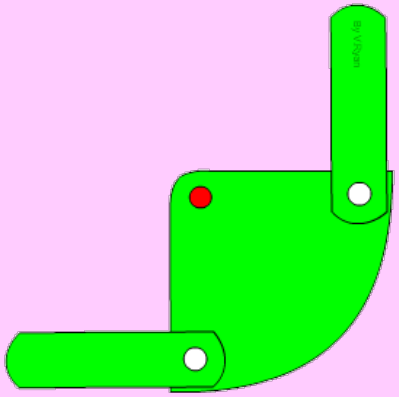
Reverse motion



Parallel motion



Bell crank



Learning objectives:

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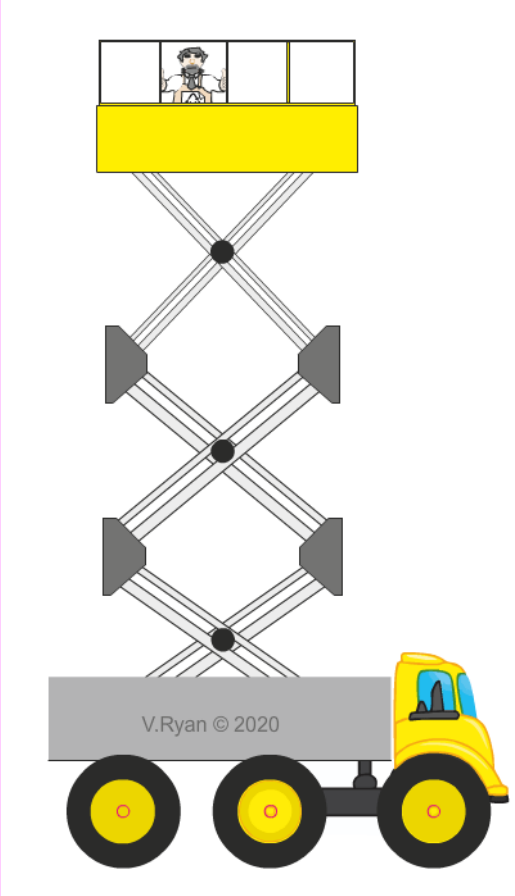
Explanation

What are the applications of linkages?



Learning objectives:

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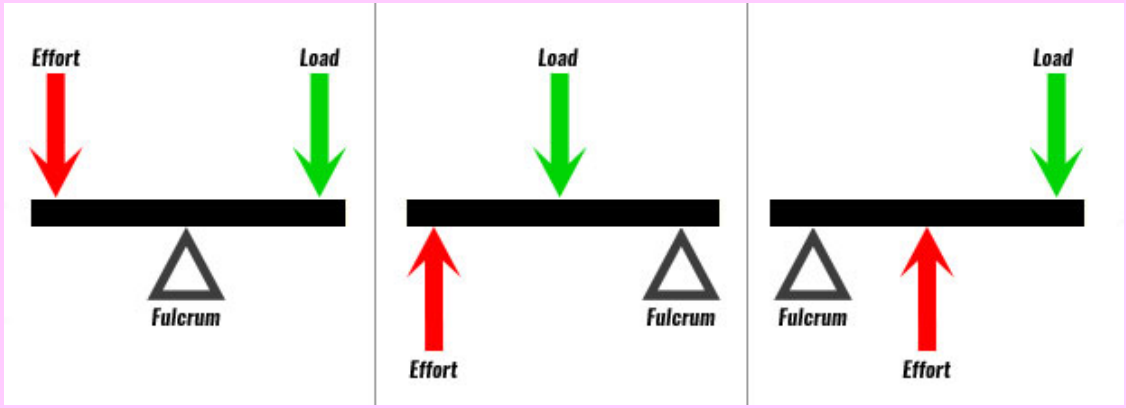
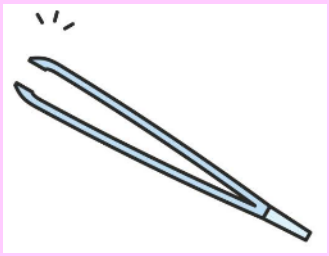
Explanation

What are the types of lever?



What are the common applications?



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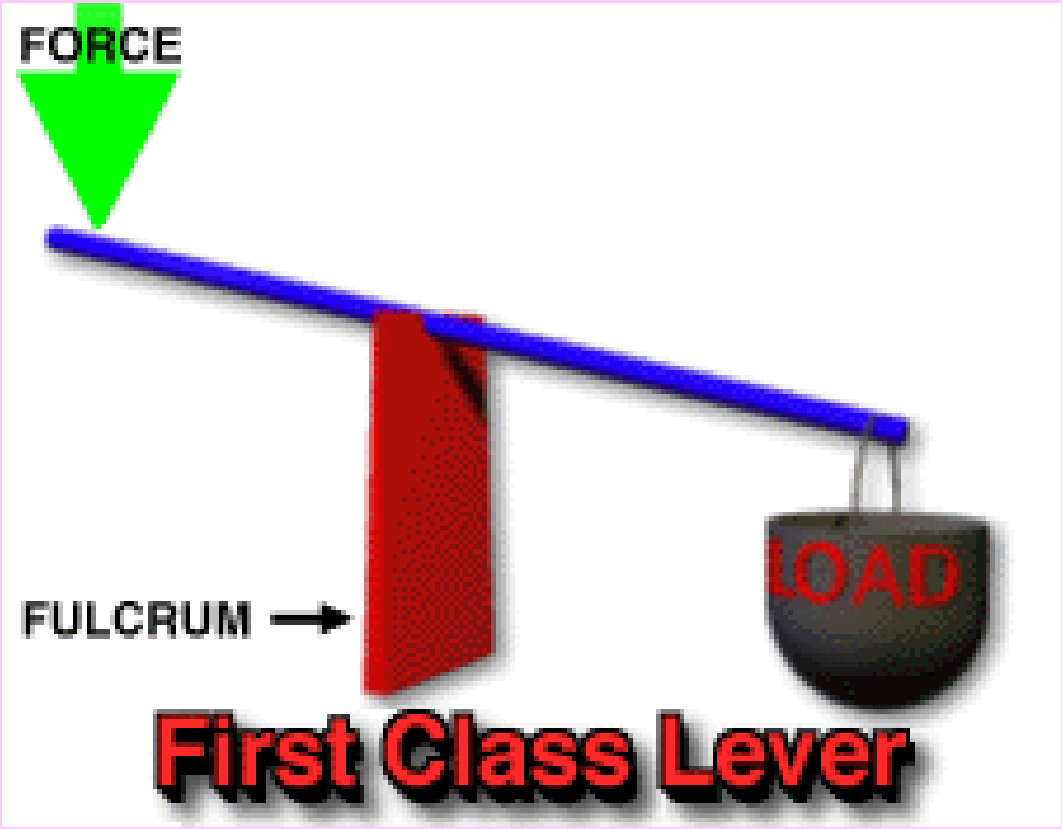

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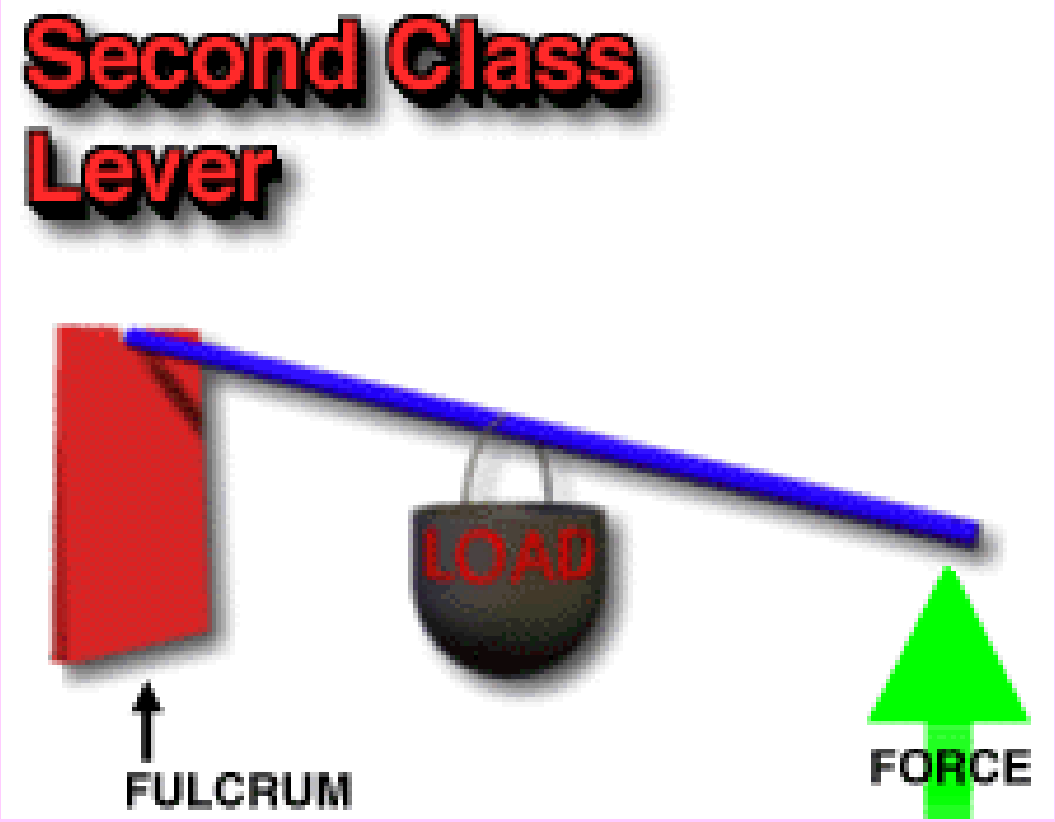

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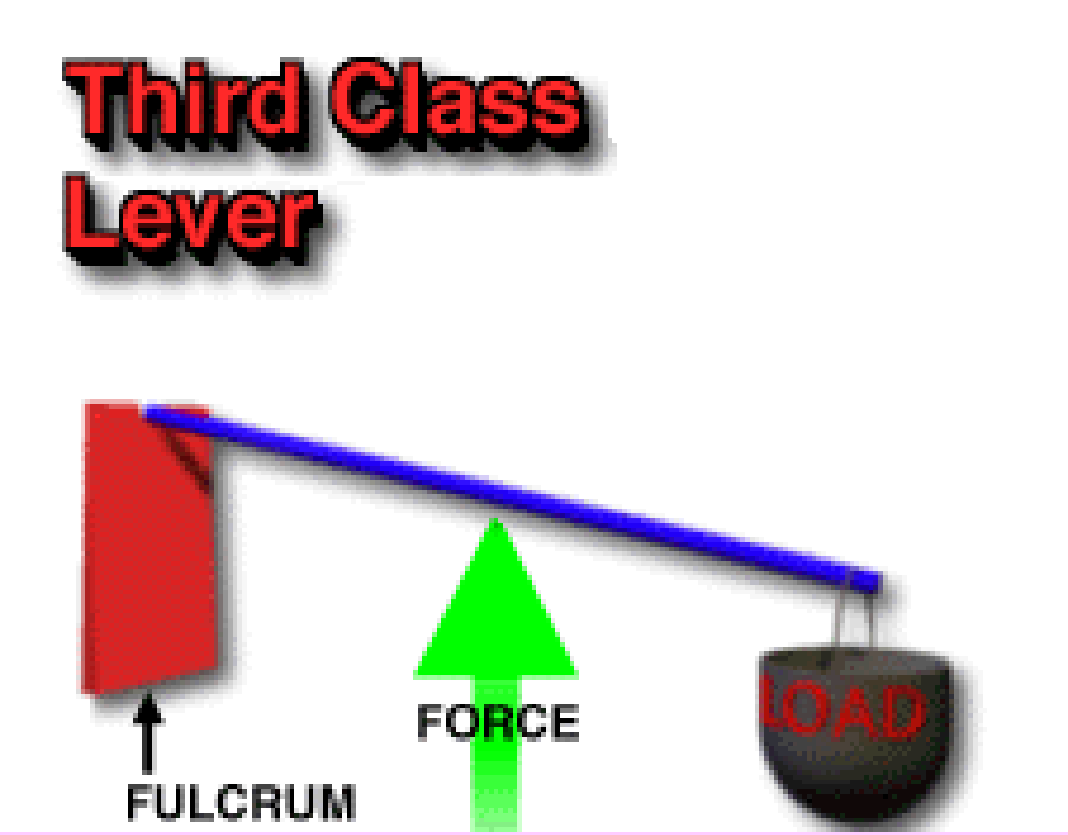

Learning objectives:

- ❑ What is a mechanism?
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Explanation

What is a cam?

Learning objectives:

- ❑ What is a mechanism?
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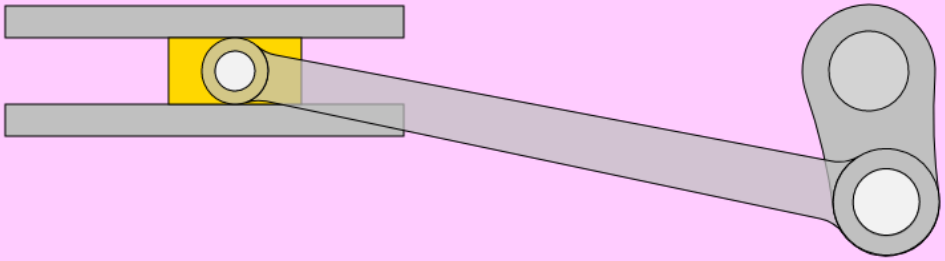
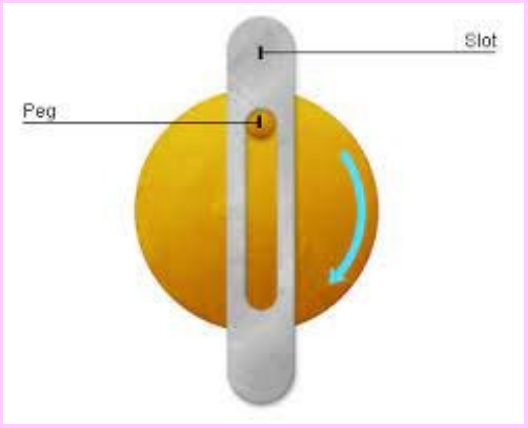
Explanation

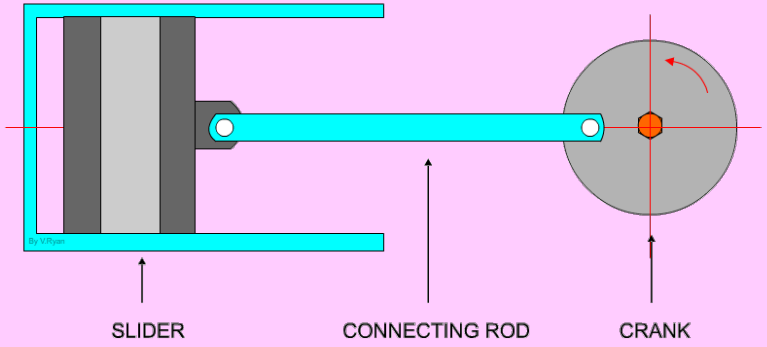
What is a crank and slider?

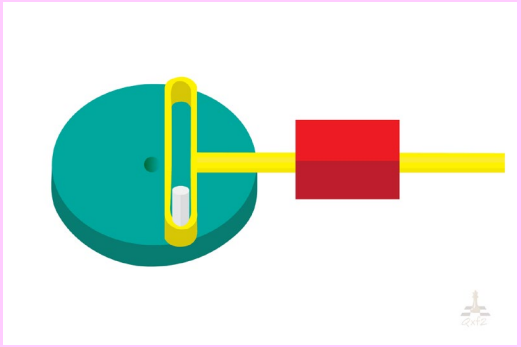
Crank and slider



Peg and slot







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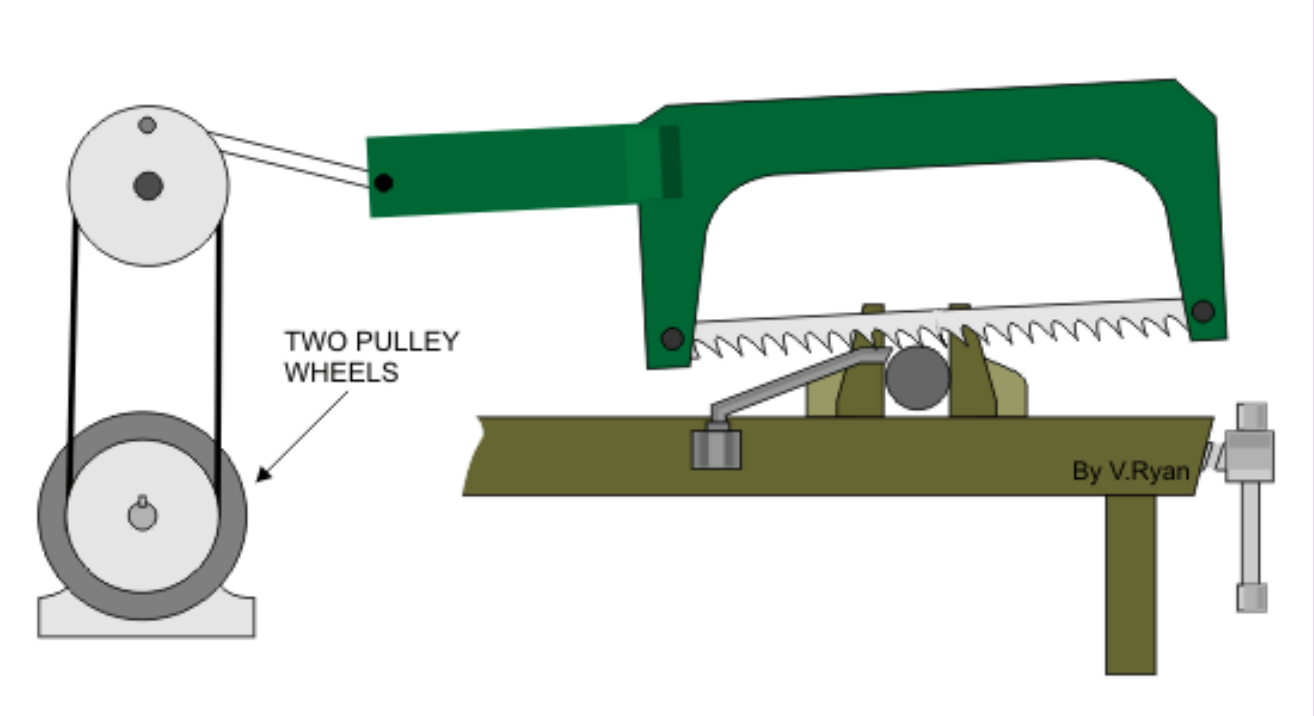
Explanation

What is a crank and slider?



Learning objectives:

- ❑ What is a mechanism?
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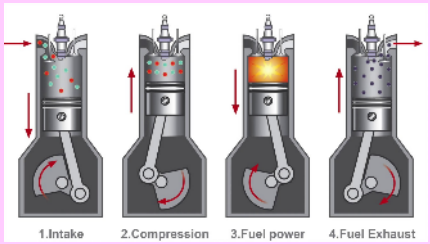
- ❑ How are mechanisms used in products?

Explanation

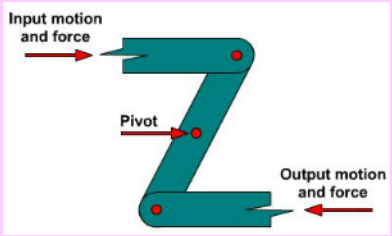
How can mechanisms be used to convert one motion into another?

Rotary to reciprocating

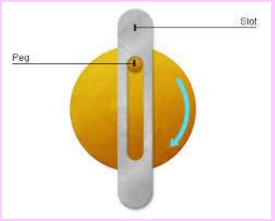


Rotary to linear

Reversing motion



Rotary to oscillating



Turning motion through 90 degrees

Learning objectives:

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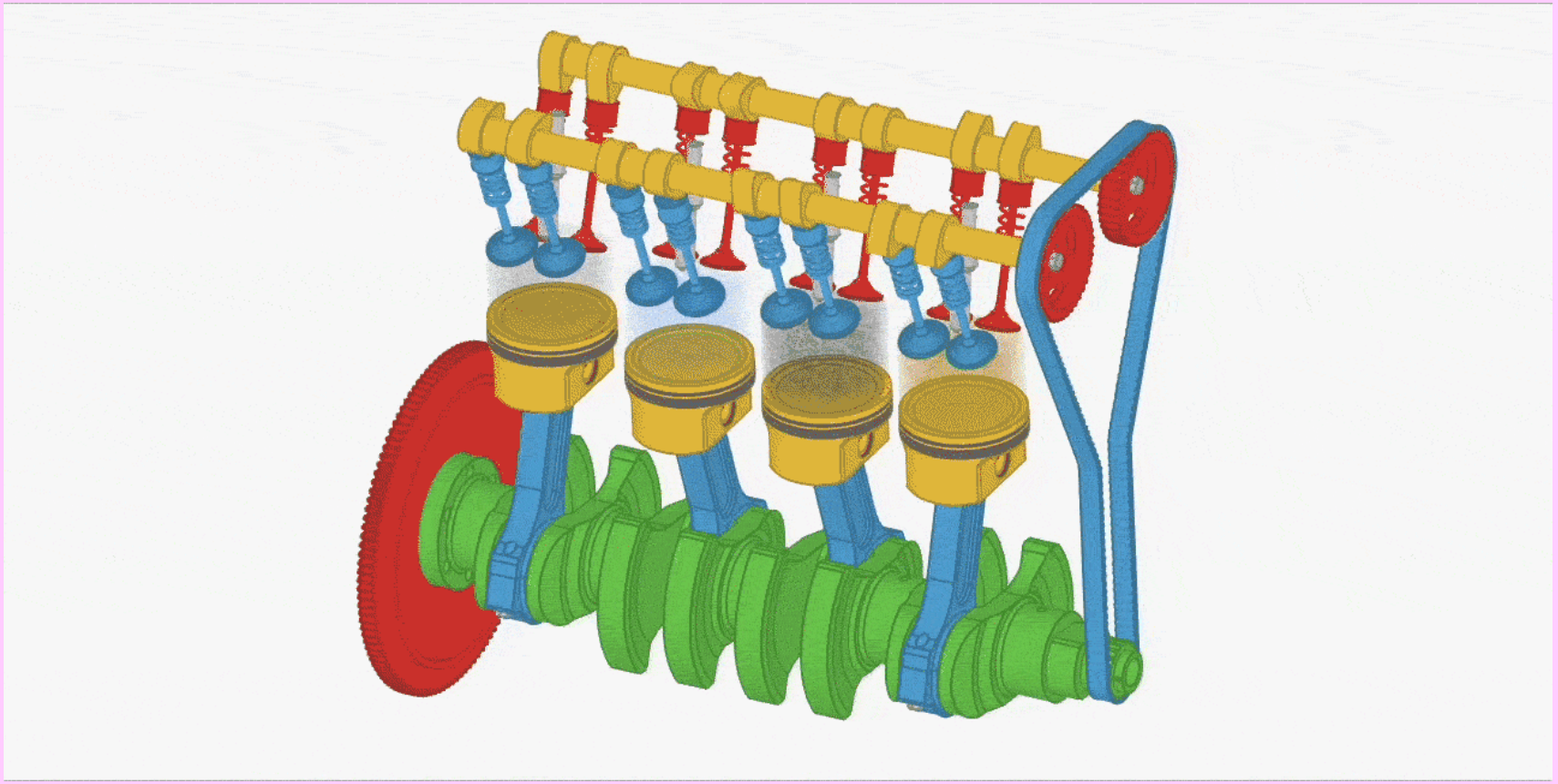
Explanation



Learning objectives:

- ❑ What is a mechanism?
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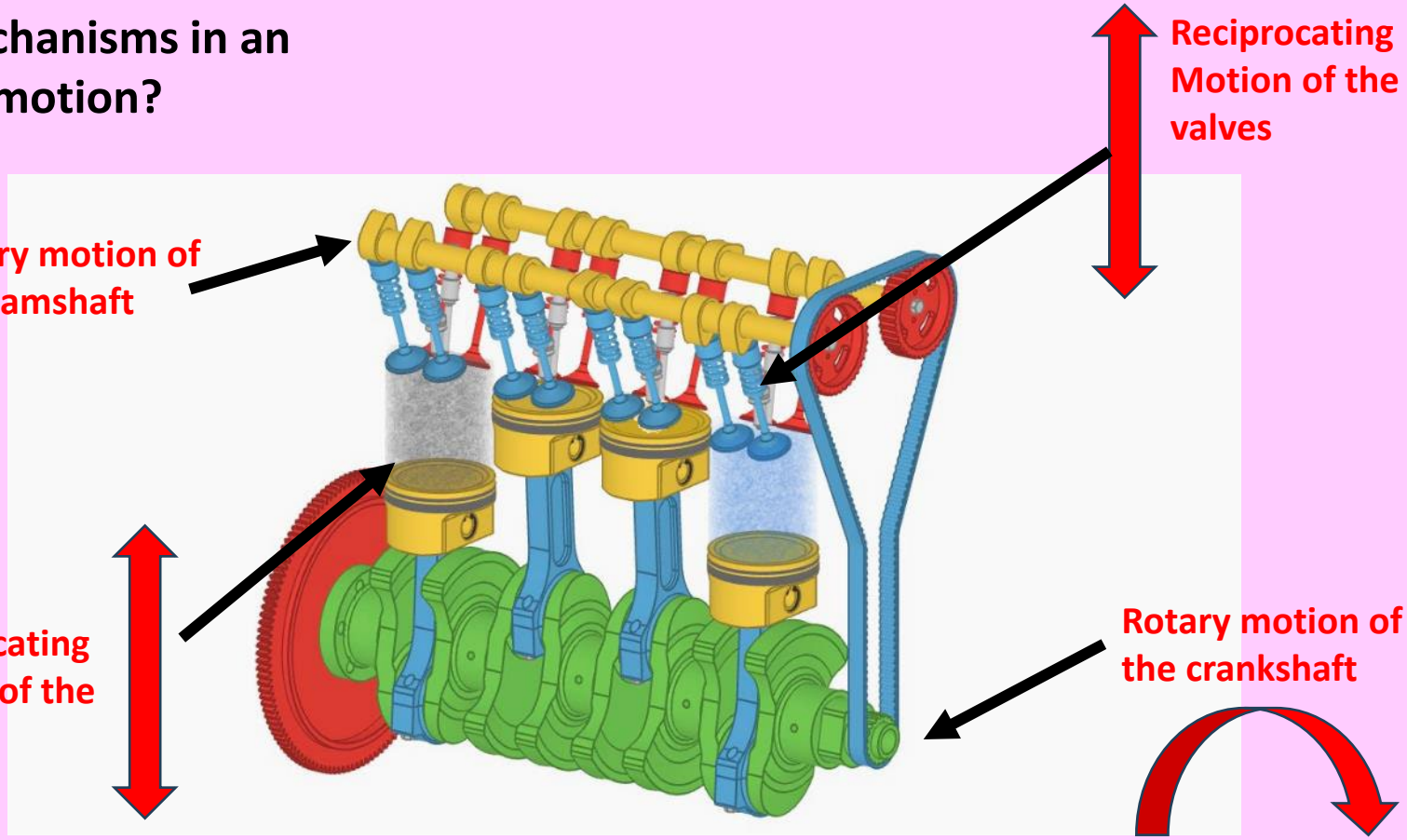
Explanation

How are mechanisms used in products?

How do the mechanisms in an engine convert motion?



Learning objectives:

- ❑ What is a mechanism?
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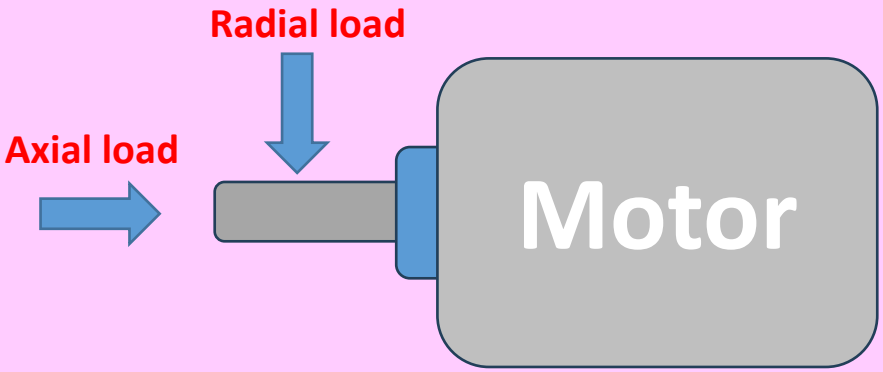
Explanation

What are bearings? Why are they used?

How do forces act on rotating axles?



Bearings are used to support the axle.

Bearings…
-Reduce friction
-Reduce wear

Learning objectives:

- ❑ What is a mechanism?
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Explanation

What are the types of bearing?

Plain bearing

Ball bearing

Sealed bearing

Tapered bearing

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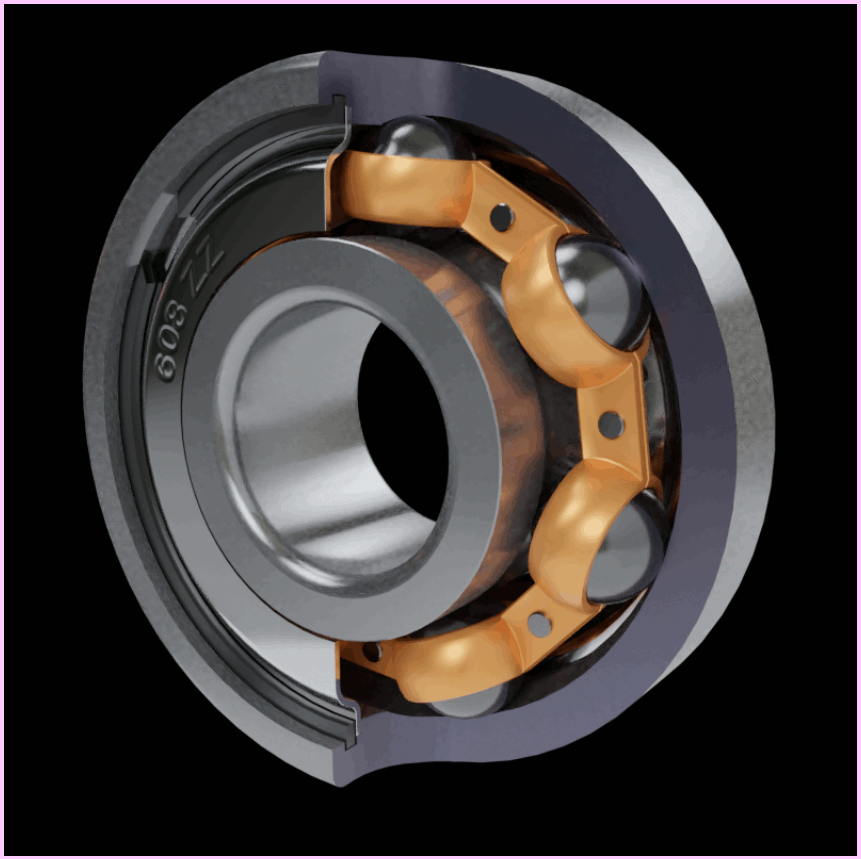

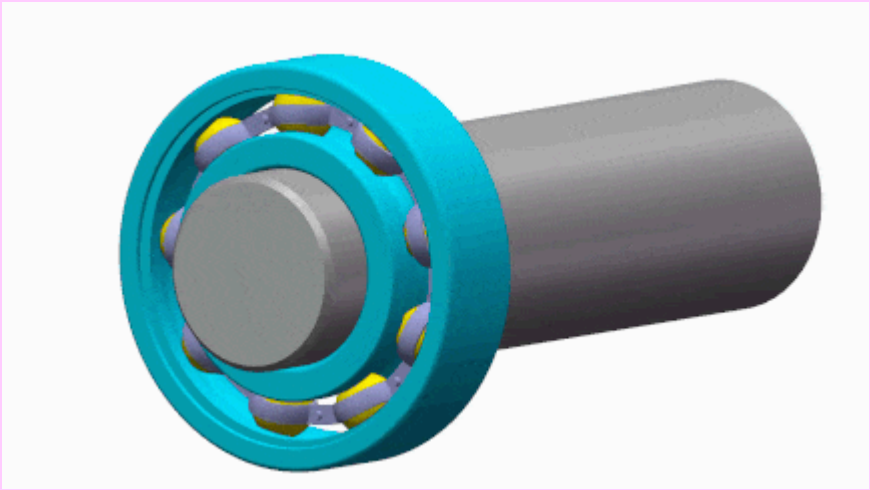

Learning objectives:

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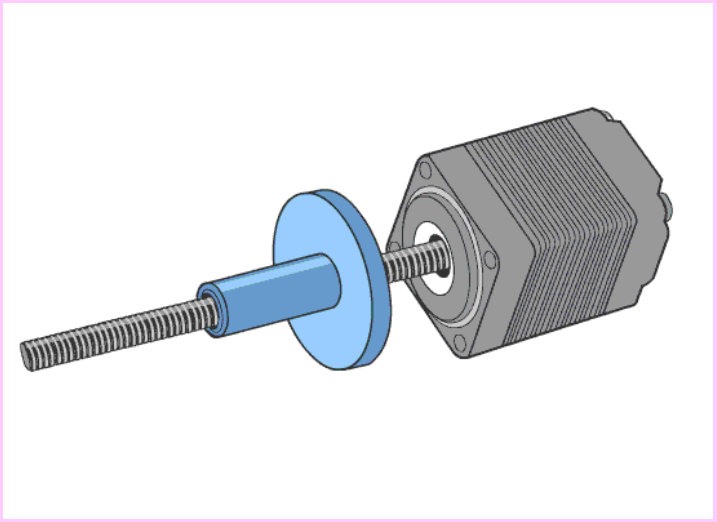
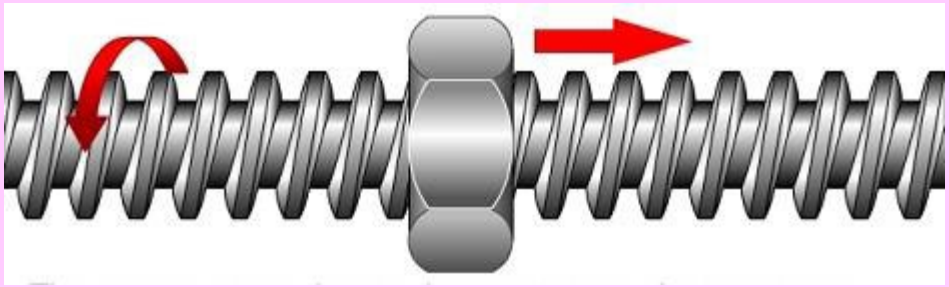
Explanation

How can screw threads create motion?



Rotary motion

Linear motion



Application: window opener mechanism

Learning objectives:

- ❑ What is a mechanism?
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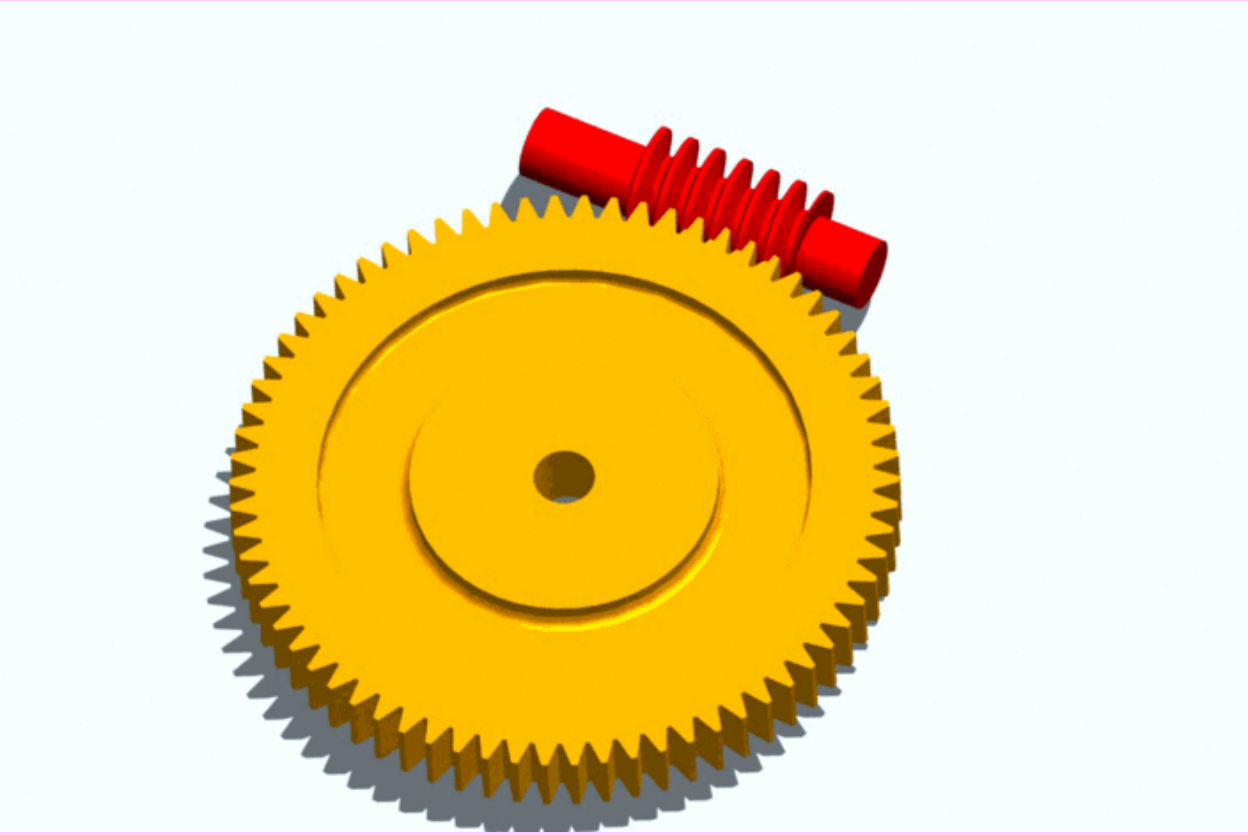
Explanation

How can worm wheels create motion?



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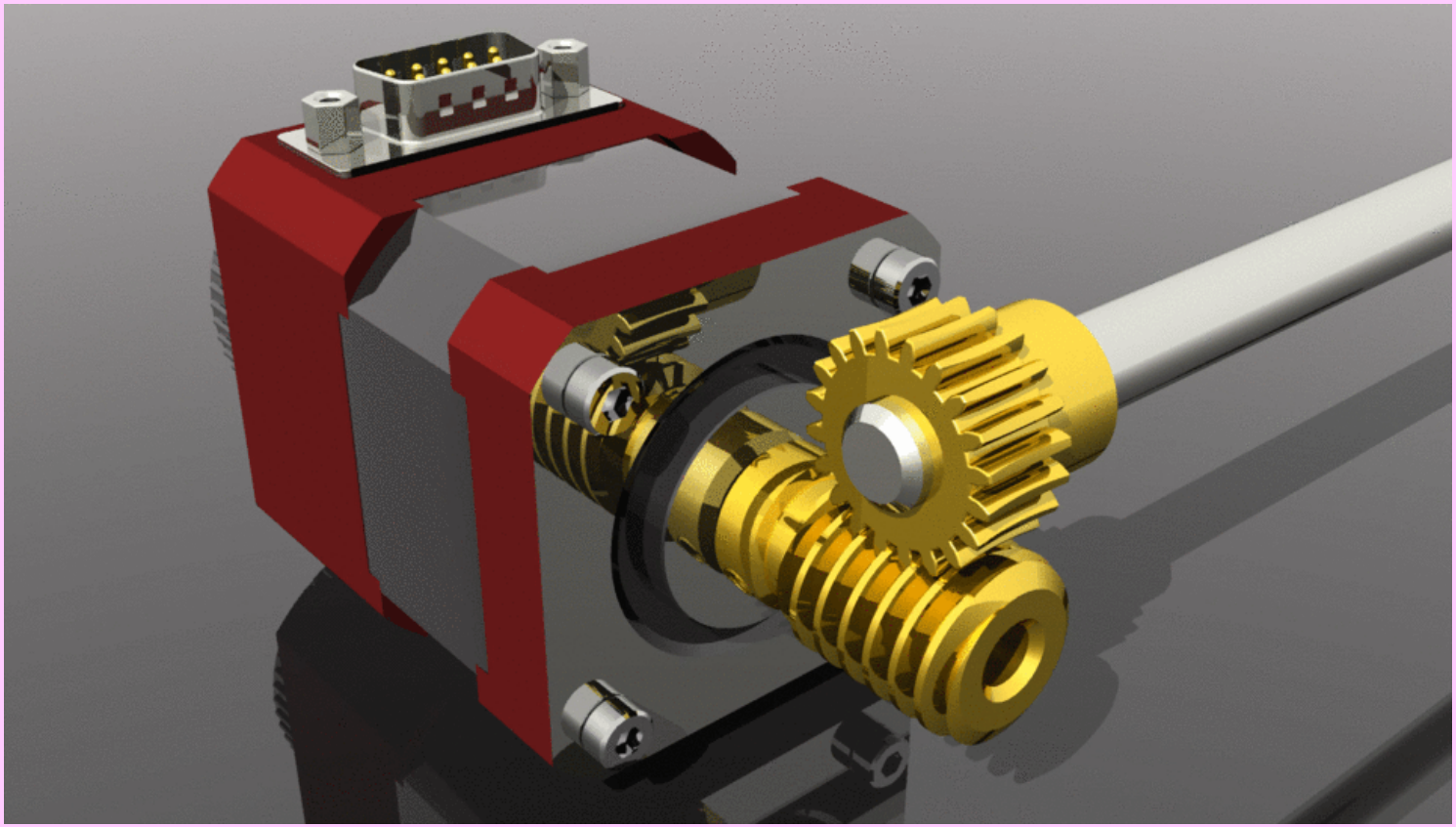

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