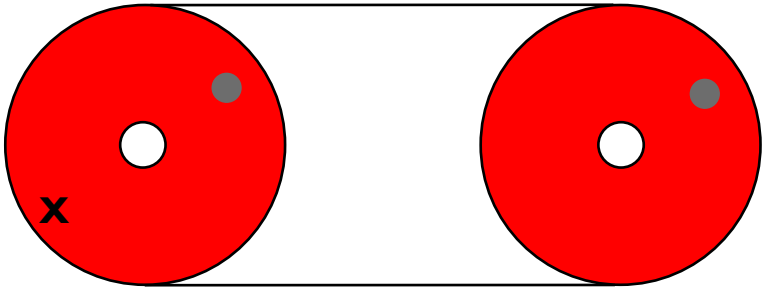
School Project Sheet

Cams, Pulleys and Levers

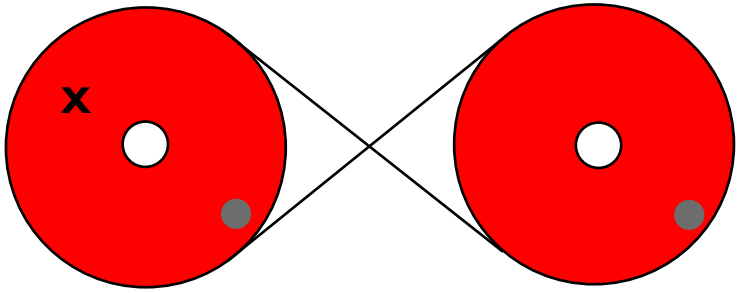
Issued ~ 22 September 2013

Educational visits to Combe Mill are organised jointly by the Combe Mill Society and the Blenheim Palace Education Department.
Contact details can be found at the end of this document.

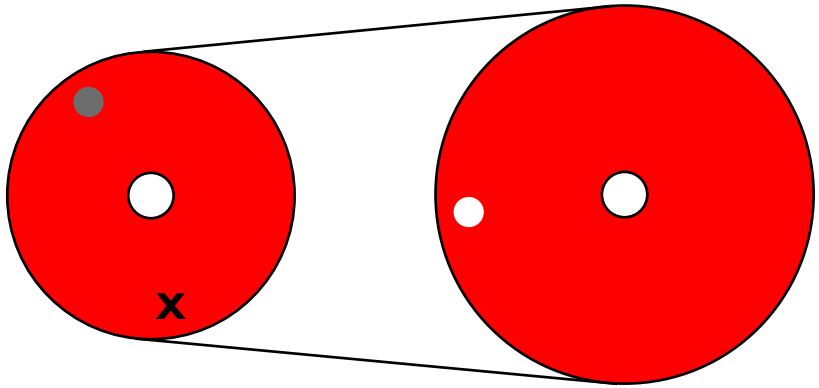
Pulley Demonstration Board



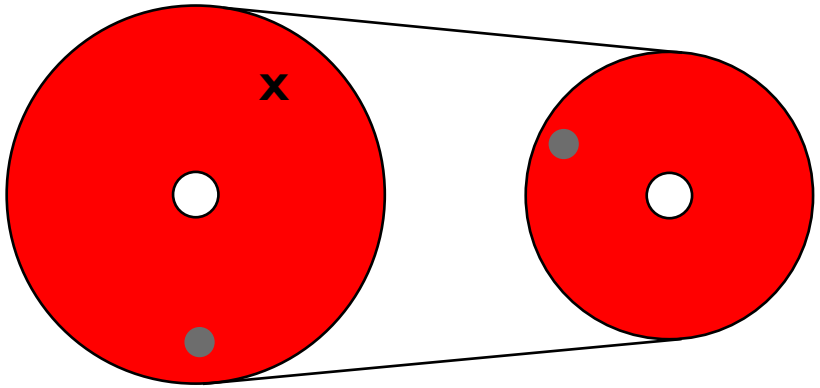
1. One pulley will drive a second pulley in the same direction
2. Two pulleys of equal size will rotate at the same speed.



3. If the drive band is twisted the driven pulley will rotate in the opposite direction.



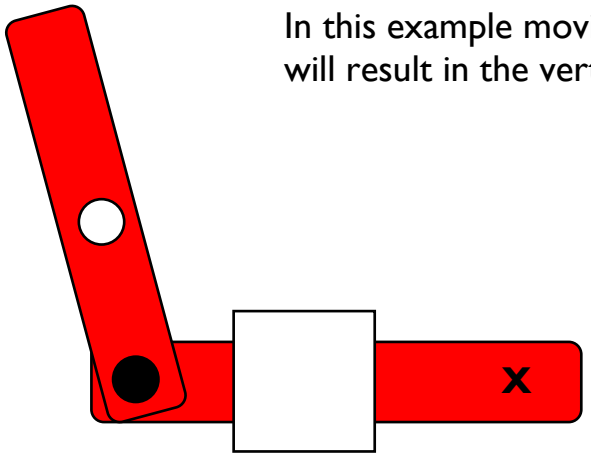
4. A small pulley will make a larger pulley rotate more slowly.



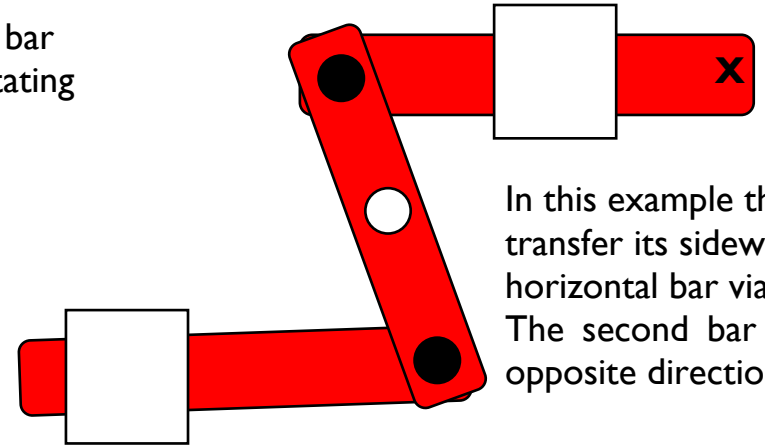
5. A larger pulley will make a smaller pulley rotate faster.

KEY
X Driving handle
○ Centre of pulley
● Spot mark

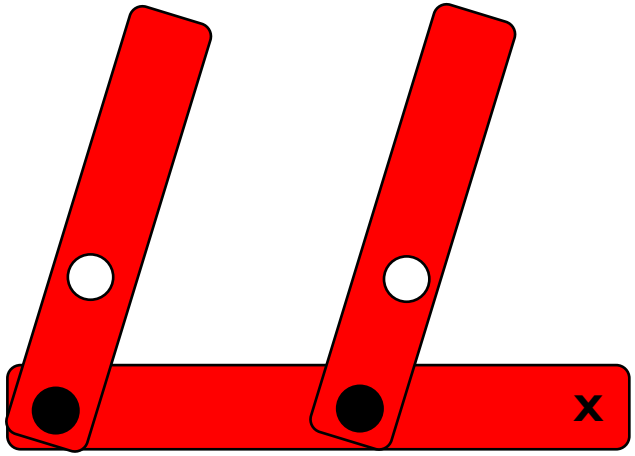
Lever Demonstration Board



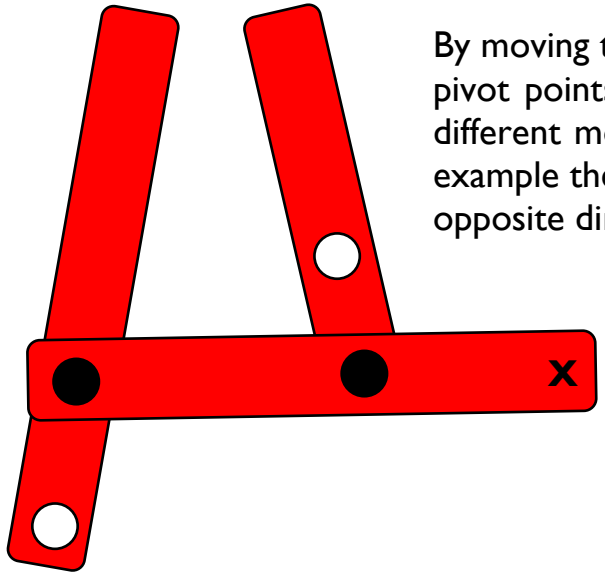
In this example moving the horizontal bar will result in the vertical bar partly rotating



In this example the higher horizontal bar will transfer its sideways movement to the lower horizontal bar via the centrally pivoted link. The second bar will always move in the opposite direction to the first bar.



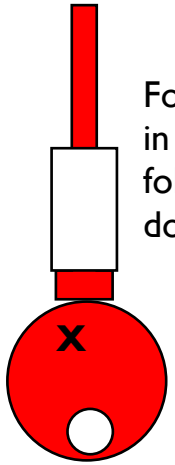
This double lever shows that one action can result in two similar reactions happening at the same time. This example is just two of the first levers fixed together.



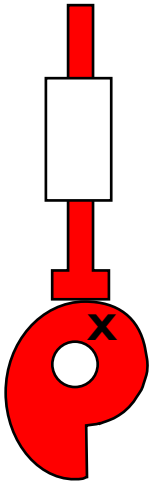
By moving the fixed and loose pivot points you can achieve different movements. In this example the two levers work in opposite directions.

KEY
X Driving handle
○ Fixed pivot
● Loose pivot

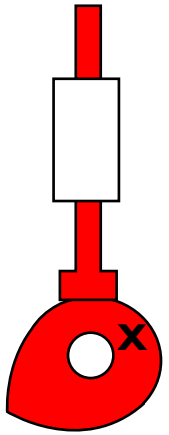
Cam Demonstration Board



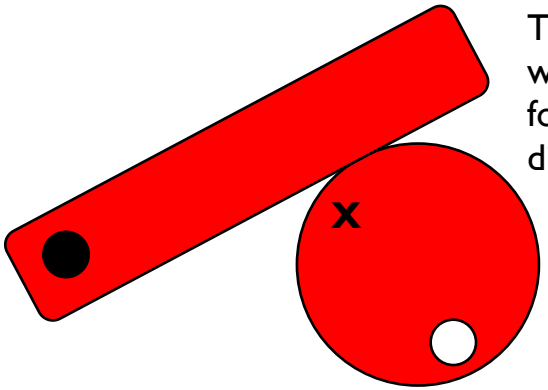
For every rotation of the cam in either direction this cam follower will move up and down evenly once.



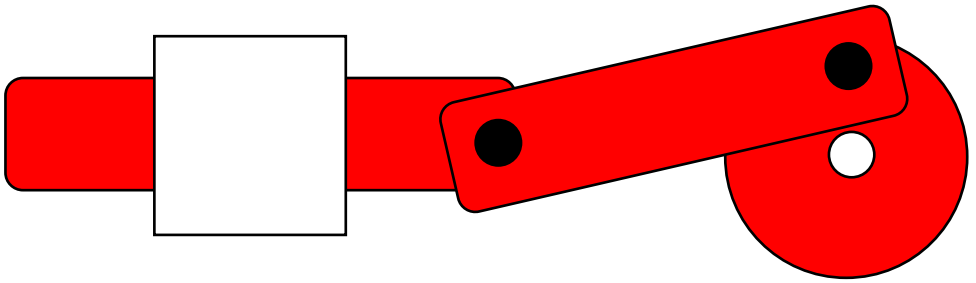
For every rotation of the cam clockwise the cam follower will slowly rise then fall back suddenly.



For every rotation of the cam in either direction the cam follower will stay still, rise then fall and stay still again.



This cam works in the same way as the first cam but the follower is placed in a different position.



This is a peg cam where the follower is fixed freely to the cam with a peg or split pin.

A ‘cam follower’ is anything that rests on the cam and moves as a result of the cam rotating. Other shapes will make other movements, for instance a triangular cam will make the follower rise and fall three times for every rotation of the cam.

KEY
X Driving handle
○ Rotation point of cam
● Loose pivot