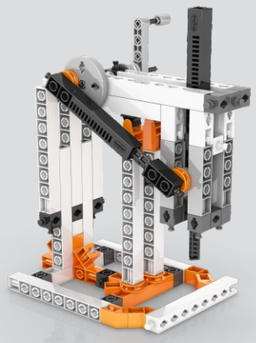
DISCOVERING STEM



build a sewing machine

Build this fully functional model of a sewing machine and transform yourself into a fashion designer. Then change back to a scientist and experiment with motion change.

- What reciprocating and linear motions are.
- How to change motion form.

build an oil pump

Construct a working model of an oil pump and find out how different simple machines work together with cams. Are you up to oil drilling? Turn the crank and see how everything changes position in front of your eyes.

- How you can combine machines.
- What input and output forces are.

build an eagle with flapping wings

This model of a flying eagle is designed to flap it's wings by the use of the cam and crank mechanisms. Turn the crank and discover how rotational motion becomes linear. Follow the movement and observe how the flapping motion is produced by the employment of linkages.

- How cams and cranks work.
- How to change the type of motion.

build a fishing crane

Construct a unique fishing crane and learn how the crank helps to set this device into motion. Compare your model with a real life one and find out the capabilities of a crank when connected to a string for lifting heavy loads.

- How cranks set machines into motion.
- How to lift heavy loads using a crank.

EU OFFICE & FACTORY:
ENGINO-NET LIMITED
P.O.BOX 72100, 4200
LIMASSOL, CYPRUS
Tel.: +357 25821960
Fax: +357 25821961
E-mail: info@engino.com
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DISCOVERING STEM
Science • Technology • Engineering • Mathematics

MECHANICS

cams & cranks

Learn how you can transmit power using Cams and Cranks and how they can be used to convert reciprocal to linear motion. Discover how these mechanisms are crucial elements of many machines even though they are not considered as "Simple Machines". Build 8 working models of cams & cranks such as a fishing crane, an oil pump, a moving figure, a moving bridge, a sewing machine and a flying eagle. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- 12 pages of **theory and amazing facts!**
- 3 pages of **experimental activities!**
- 3 pages of **revision quiz!**
- 4 pages of **step by step instructions!**

Engino

8 models to build
9+
master engineers
7 online instructions
1 printed instructions