

Problem Solving: Food Mixer Mechanism

Learning objective

To develop students' problem solving capability by guiding them through a mechanical systems problem.

Situation

Food ingredients are often whisked to a froth as part of the food preparation process. Hand whisks conserve energy resources but they are labour intensive.

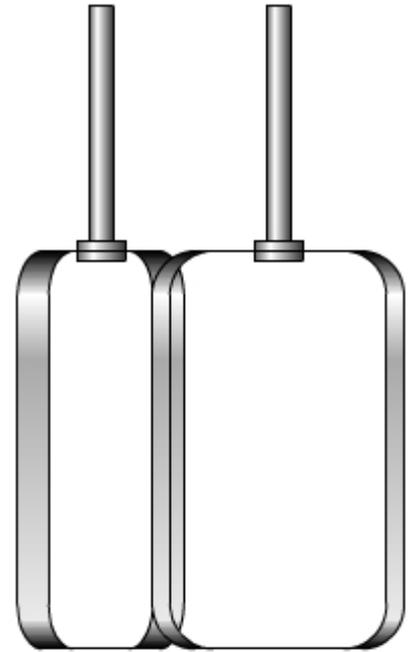
A food mixer mechanism that is driven by Human energy is required.

The food mixer system

The known parts of the mixer system are:

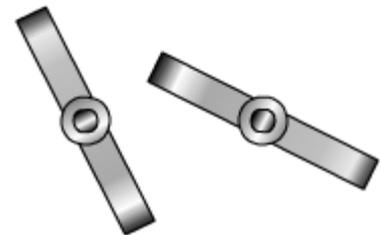
- the input will be Human energy
- the output will be one or two rotating blades.

(Click the start button to view the animation).



Problem solving

- Devise a mechanism that will make a rectangular hoop rotate.
- Devise a mechanism that will make two rectangular hoops rotate without colliding as they rotate.
- Devise a structure that will hold the various parts of the food mixer in place.



What you must do

- Analyse the problem so that you understand it fully.
- Make a list of mechanisms that output rotary motion.
- Decide how each of your mechanism choices could be powered by Human effort.
- Use notes and sketches to record your ideas and to evaluate them.
- Draw your best design.
- Evaluate your design and modify it if necessary.

You may use research methods to find information about suitable mechanisms, e.g.

- product analysis
- library search / computer software search
- internet search
- experiments - model your ideas
- interview - ask an expert.

Success criteria

You have:

- Analysed the problem and have worked independently and with others to find solutions to it.
- You have used research methods to find information.
- You have recorded ideas and your research findings.
- You have used your research and other ideas to develop a solution to the problem.
- You have produced an accurate drawing or model of your solution to the problem.
- You have evaluated your solution to the problem and modified it if necessary.