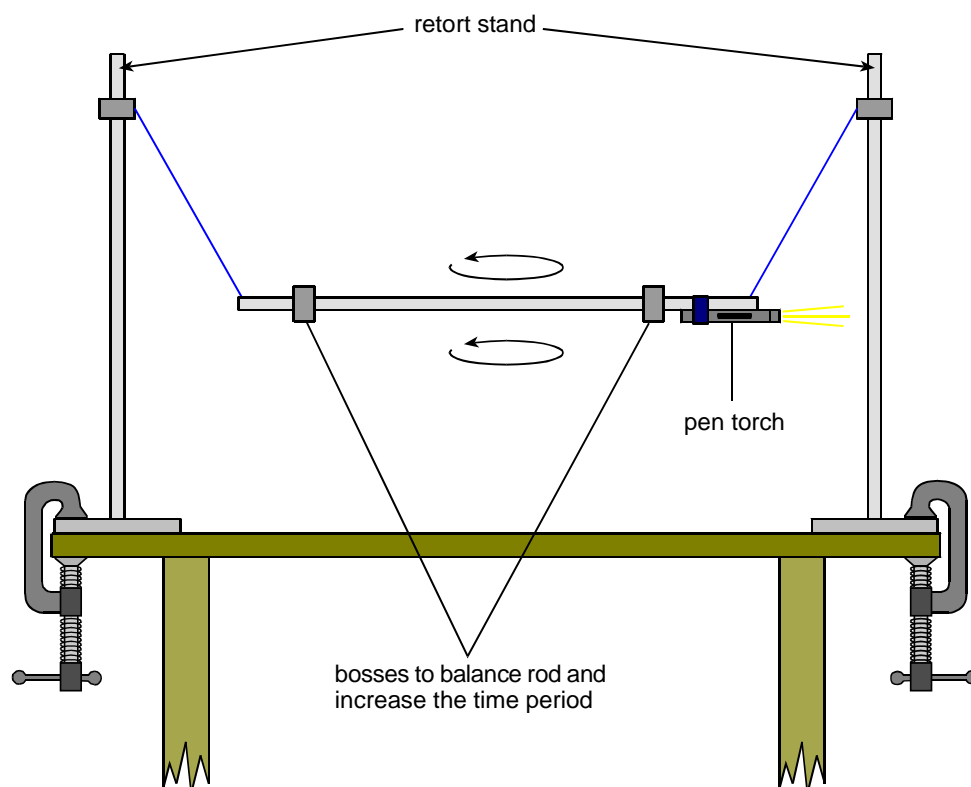


TAP 301- 4: Swinging bar or torsion pendulum

Twisting motions can set up oscillations. In this activity you observe the oscillation of a torsion pendulum, to decide if it is isochronous or not.

You will need

- ✓ two each of retort stands, bosses and clamps with pairs of wood or metal strips to clamp strings
- ✓ retort stand rod
- ✓ two extra bosses
- ✓ two 0.5 m lengths of string
- ✓ hand-held stopwatch
- ✓ pen torch
- ✓ graph paper



What to do

The pen torch, suitably focused, will allow you to see a magnified representation of the motion on either graph paper or a distant wall.

1. Time how long each five oscillations take and enter the results in the table. Is the oscillation isochronous?

Oscillations	Time / s
1–5	
6–10	
11–15	
16–20	
21–25	

2. Can you think of a way to produce a displacement–time record of the motion, or take results that will lead to such a record?
3. As an extension, you might like to investigate how the distance between the strings affects the periodic time.

You have seen

1. The oscillation is approximately isochronous.

Practical advice

This activity shows that torsional forces can lead to oscillation. It may also give imaginative students an interesting practical problem, recording displacement–time results.

Alternative approaches

Students may suggest other interesting oscillators.

External reference

This activity is taken from Advancing Physics chapter 10, 210P