Force and counterforce (Item No.: P1252100)

Curricular Relevance

Area of Expertise: Physik
Education Level: Klasse 7-10
Topic: Mechanik
Subtopic: Kräfte, einfache Maschinen
Experiment: Kraft und Gegenkraft

Difficulty	Preparation Time	Execution Time	Recommended Group Size
Easy	10 Minutes	10 Minutes	1 Student

Additional Requirements:

Experiment Variations:

Keywords:

Principle and equipment

Principle

Show that a force which acts on a resting body always induces an equally large counterforce.

Equipment

Position No.	Material	Order No.	Quantity
1	Demo Physics board with stand	02150-00	1
2	Hook on fixing magnet	02151-03	1
3	Torsion dynamometer	03069-03	2
4	Pointers f. Demonst.Board, 4 pcs	02154-01	1
5	Marker, black	46402-01	1

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Set-up and procedure

- Place the hook on fixing magnet and a dynamometer onto the demonstration board.
- Attach the traction cord of the dynamometer to the hook. Adjust the dynamometer and then shift it to the right until it indicates 2 N (Fig. 1, upper part).
- After the question as to why the dynamometer indicates 2 N (cf. Result (1)) has been answered, replace the hook on fixing magnet with the second dynamometer. Hook the two traction cords together, and adjust the dynamometers (Fig. 1, lower part)
- Shift the left dynamometer to the left until the right dynamometer against indicates 2 N. Read and record the force indicated by the left dynamometer (Result (1)).

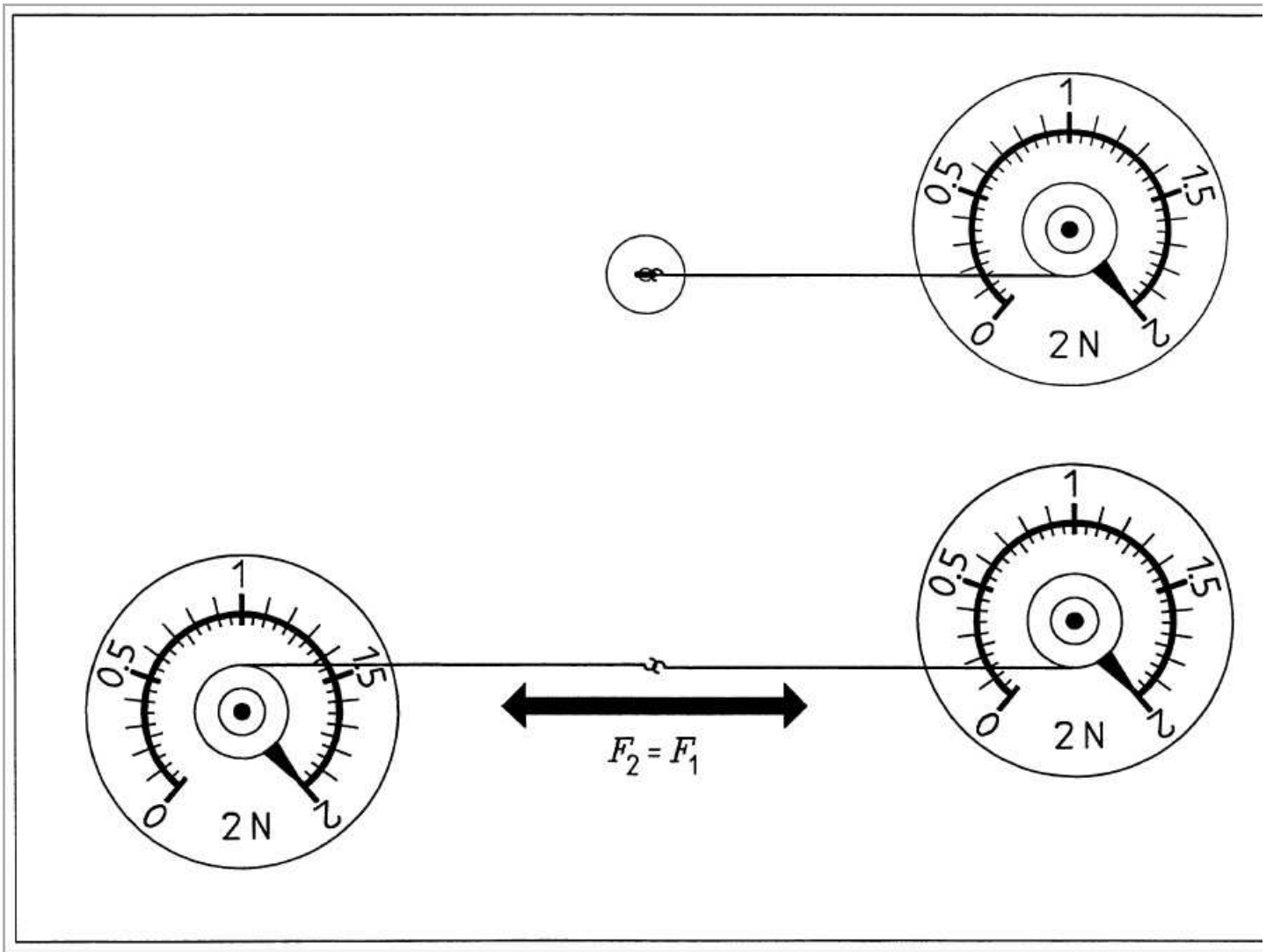

Fig. 1

- After determination of the results, place the pointers for the demonstration board (one red and one blue one) onto the board. Label them with the white board pen (cf. Fig. 1, tower part).

Observation and evaluation

Observation

1. The dynamometer putts with 2 N on the hook. The hook remains at rest. Obviously it is able to withstand the 2 N force, i.e., it putts - also with 2 N-on the dynamometer.
2. The left dynamometer indicates a force equal to that on the right one, i.e. 2 N.

Evaluation