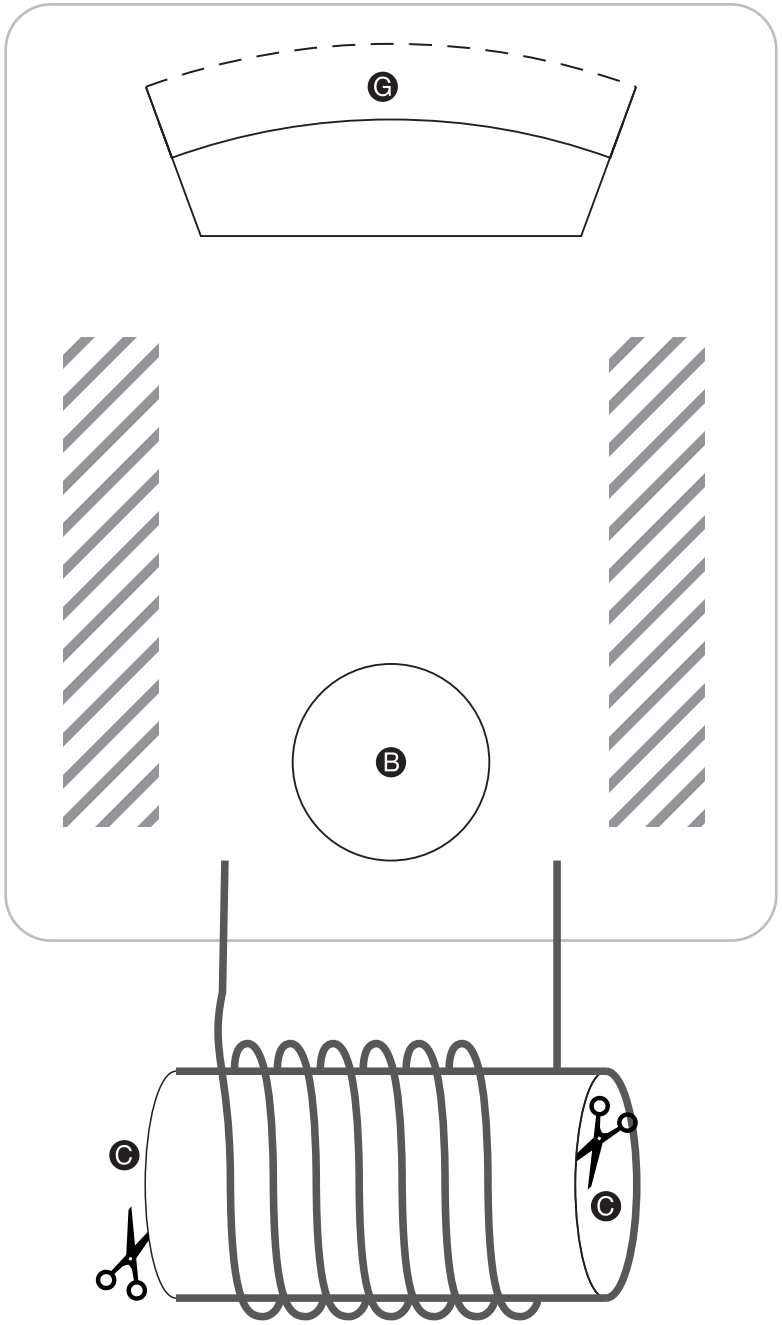
Faraday's Law of Induction

In 1831 Michael Faraday discovered that moving a permanent magnet into and out of a coil of wire induced an electric current (Electromotive Force, or EMF) in the wire. He further discovered that the magnitude of the EMF induced is proportional to the rate the speed of motion of the magnet, the strength of the magnet and the number of turns of wire.

Lenz's Law

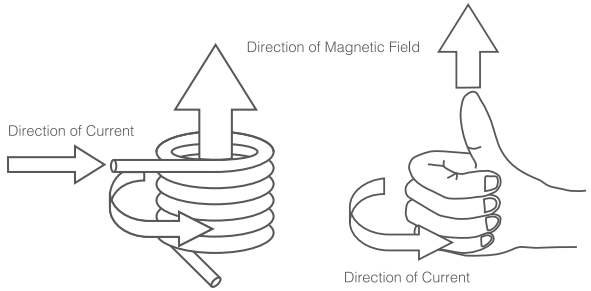
The galvanometer measures not just the magnitude of EMF, but also the direction. This is where Lenz's law may be applied. in 1834 Heinrich Lenz published his findings that the induced EMF of an inductive circuit produces a current that opposes the change in flux. The direction may be determined by Fleming's Right Hand Rule.



Fleming's Right Hand Rule

This is a way of indicating and remembering the direction of current flowing in a wire in relation to the direction of movement of a permanent magnet. It was named after John Ambrose Fleming.

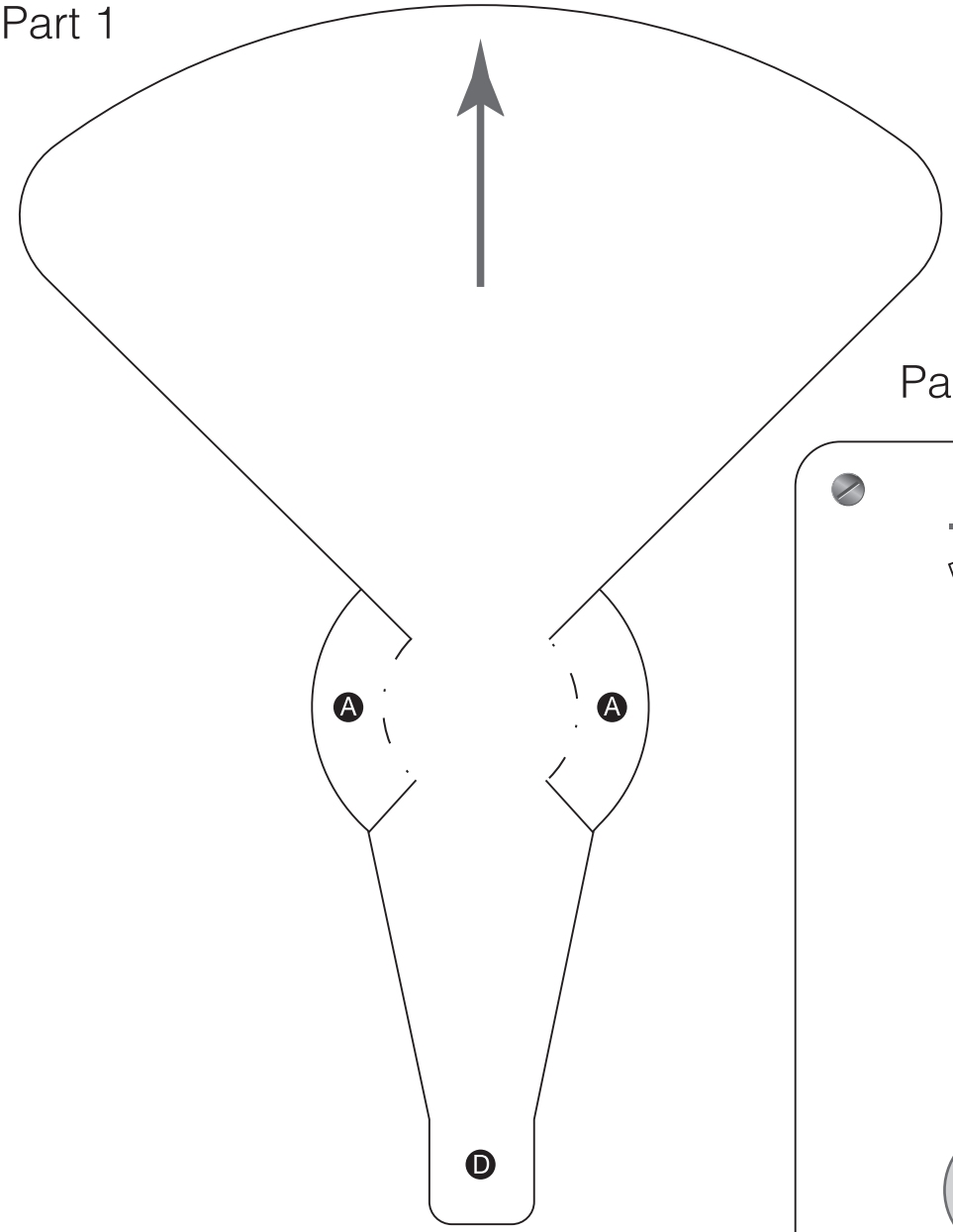
In this example you can show the direction of the current by making a 'thumbs up' sign with your right hand. Here, your thumb represents the direction of movement and your fingers represent the direction of the current.



Limitation of the Model

This model helps to illustrate Faraday's Law of Induction and the direction of flow in a coil. In a real experiment, there would be no current flowing when the magnet is at rest.

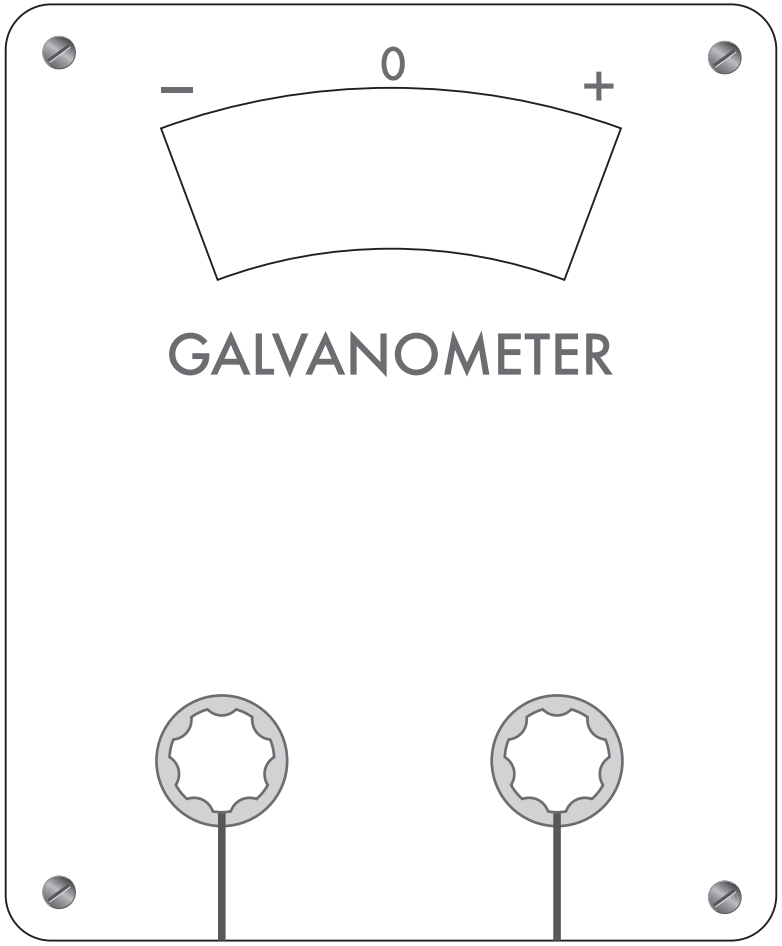
Part 1



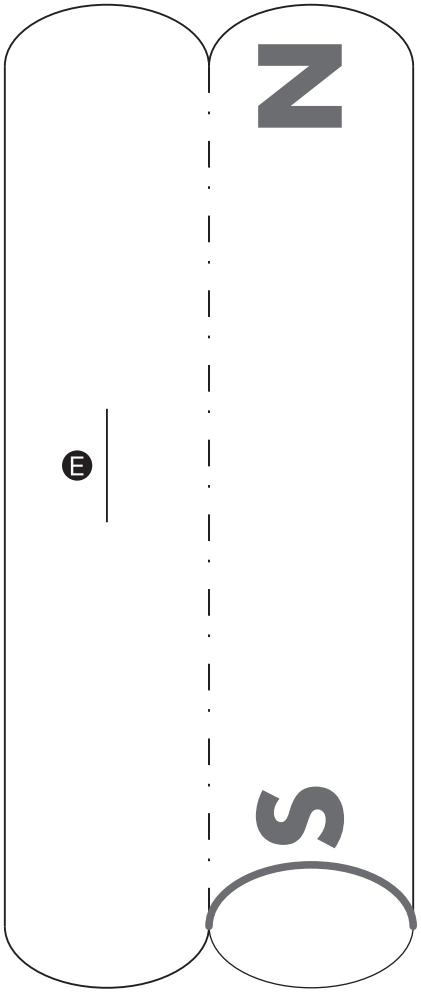
glue zone
valley fold line
mountain fold line
cut line

① Cut out all parts as shown
② Cut out slot Ⓔ in Part 3, fold in half along mountain fold and push through slots Ⓒ
③ Insert flaps Ⓐ of Part 1 through hole Ⓑ on the main card
④ Insert part Ⓓ of Part 1 into the slot Ⓔ of Part 3 and tuck in under flap Ⓖ
⑤ Glue Part 2 on to the main card paying attention to the marked glue zone

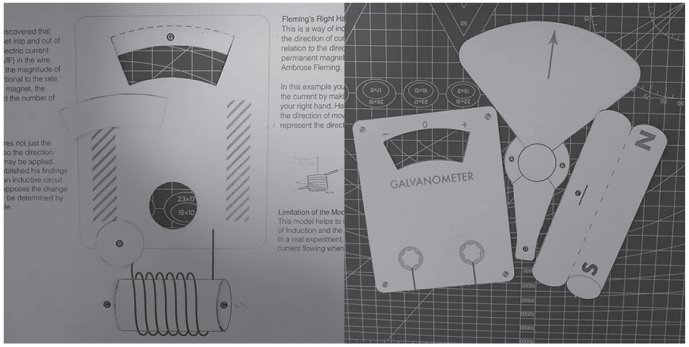
Part 2



Part 3



①



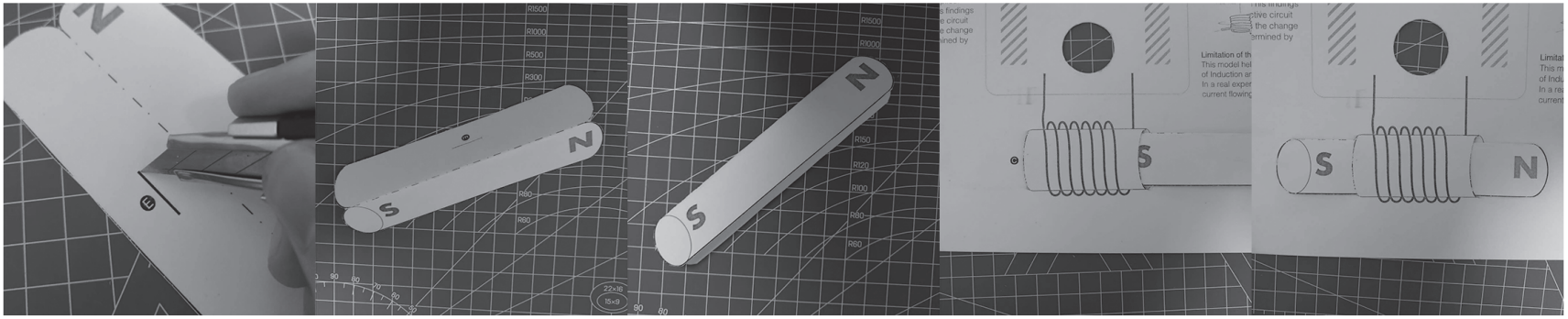
② Cut out slot Ⓔ in Part 3, fold in half along mountain fold and push through slots Ⓒ

③ Insert flaps Ⓐ of Part 1 through hole Ⓑ on the main card

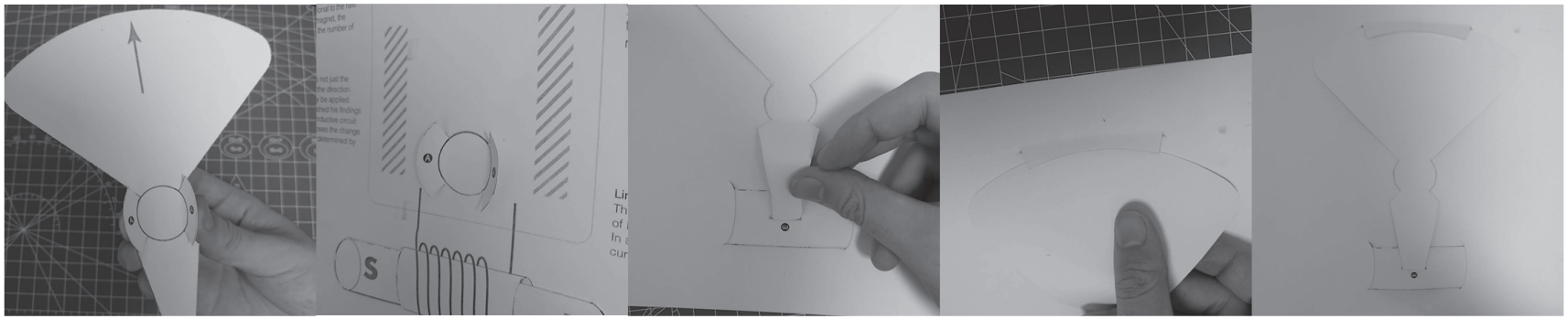
④ Insert part Ⓓ of Part 1 into the slot Ⓔ of Part 3 and tuck in under flap Ⓖ

⑤ Glue Part 2 on to the main card paying attention to the marked glue zone

②



③
④



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