

Electric cell

- Device which produces electrical energy from the chemicals stored in it
Once the chemicals are used up, it stops giving electricity
- Has two terminals
Positive - metal cap
Negative - metal disc

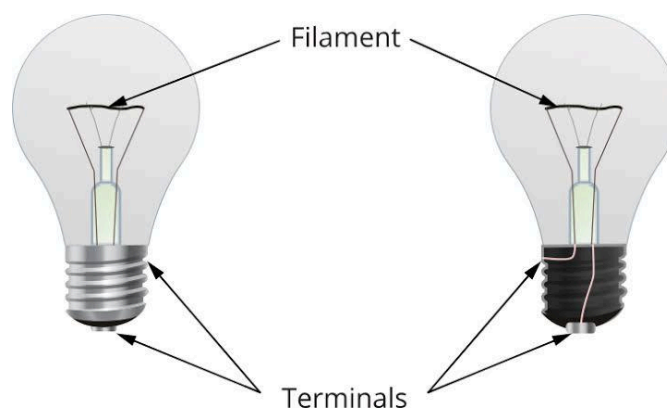


Note

Danger sign present on electric poles and substations given as warning

For small experiments electric cells should be used

Torch bulb



1. Outer case of glass fixed on a metallic base
2. The thin wire called filament (made of tungsten) that gives off light
3. The filament is connected to two thicker wires which provide support
4. One of these thicker wires is connected to the metal case at the base of the bulb.

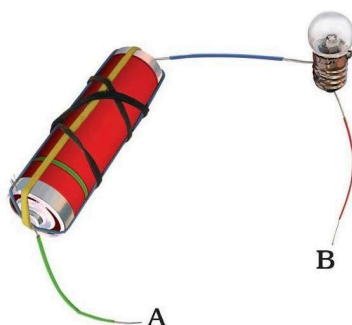
5. The other thick wire is connected to the metal tip at the center of the base.
6. The base of the bulb and the metal tip of the base constitute the two terminals of the bulb which do not touch each other.

Note - 1. The two terminals of the cell should always be connected through a switch and a device like a bulb. If not, the chemical in the cell gets exhausted and the cell stops working.

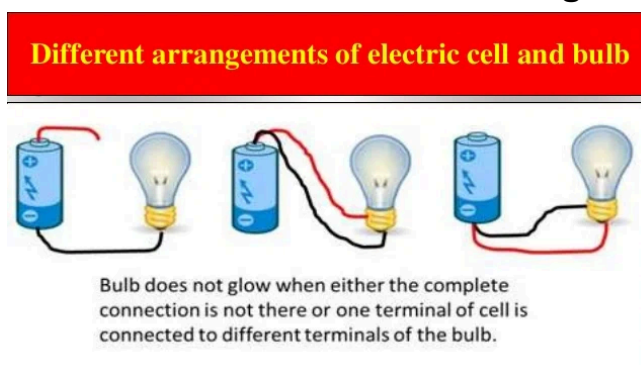
An electric circuit

1. Electric circuit is an arrangement of a source(e.g. - electric cell), a device(bulb) and others.
2. The current flows through the circuit only when there is a complete path for the electricity to pass.
3. The direction of the current flow is from positive to negative terminal of the cell.

1. The bulb glows only when the circuit is complete.



Circuit broken - Bulb does not glow



2. A break in the filament of the bulb means a break in the path of the current. This is known as a fused bulb.

Activity

1. Take a torch bulb and a piece of wire.

2. Remove the plastic covering at the two ends of the wire.
3. Wrap one end of the wire around the base of an electric bulb.
4. Fix the other end of the wire to the negative terminal of the cell with a rubber band.
5. Now, bring the tip of the base of the bulb in contact with the positive terminal of the cell.



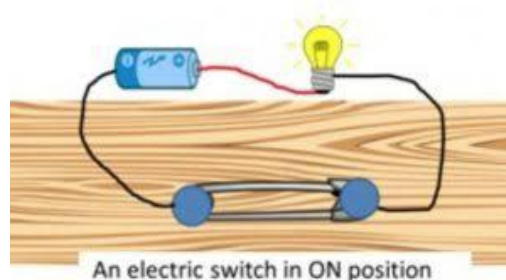
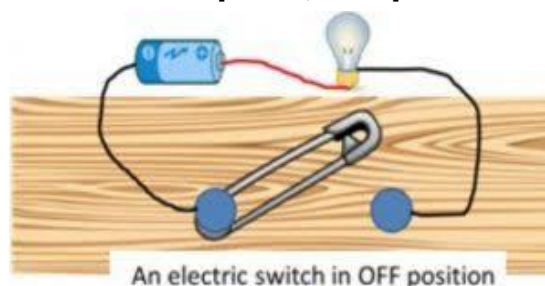
Fig. 12.7 A home-made torch

Observation - Bulb glows

Note - If the positive and the negative terminal of the cell are interchanged, then also the bulb glows.(Fig. B)

Electric Switch

- A switch is a device that breaks the circuit or completes it.
- On position - circuit complete; Off position - broken circuit



In the given figure, the safety pin acts as the switch.

Arrangement of two cells in a torch

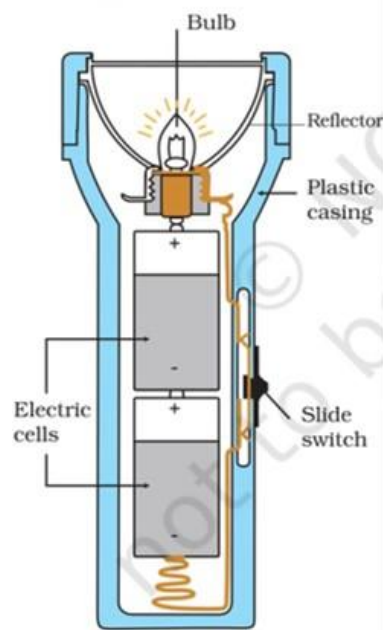
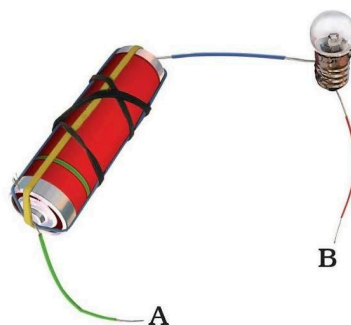


Fig. 12.11 Inside view of a torch

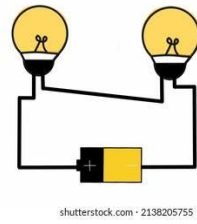
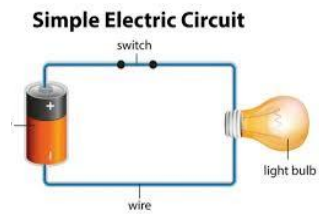
Electrical Conductors and Insulators

- **Conductors** - Allow electric current to pass through them.
E.g. - Metal, Graphite etc.
- **Insulator** - Do not allow electric current to pass through it.
E.g - Wood, Plastic, Rubber, Glass, Air etc.
- Electrical plugs and sockets are made of conductors.
- Covering of electrical wires, plug tops, switches and other parts of the circuit where people might touch - made of insulator(rubber plastic).



If A and B are joined by conductors - bulb glows

If A and B are joined by insulators - bulb does not glow



Two bulbs exhausts the cell faster than when it is connected to a single bulb.