

CHAPTER - 14

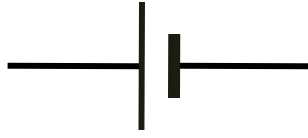
Electric current and its effects

1) Symbols of electric components :-

Electric component

Symbol

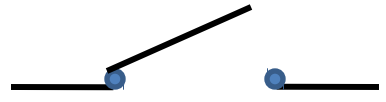
i) Electric cell



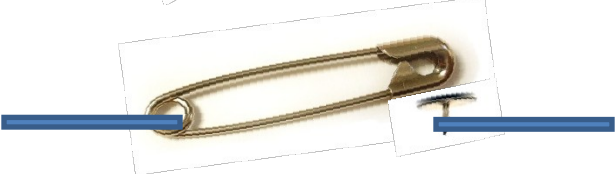
ii) Electric bulb



iii) Switch in OFF position



iv) Switch in ON position



v) Battery

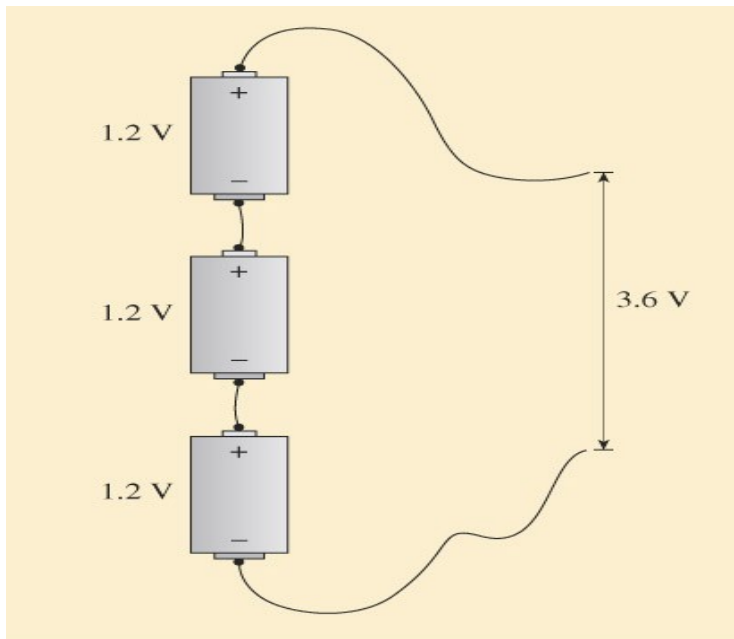


vi) Wire



Electric cell :- has a positive terminal and a negative terminal. The symbol of an electric cell has a longer line and a shorter line. The longer line is the positive terminal and the shorter line is the negative terminal.

Battery :- A battery is a combination of two or more cells. In a battery the positive terminal of one cell is connected to the negative terminal of another cell. Devices like torches, transistors, toys, TV remote controls use batteries.



2) A simple electric circuit :-

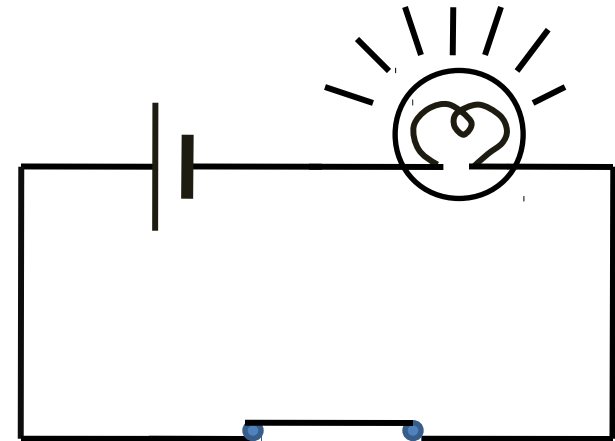
A simple electric circuit can be made by using a cell, electric bulb, switch and wires.

The bulb glows only when the switch is in the ON position and the circuit is closed.

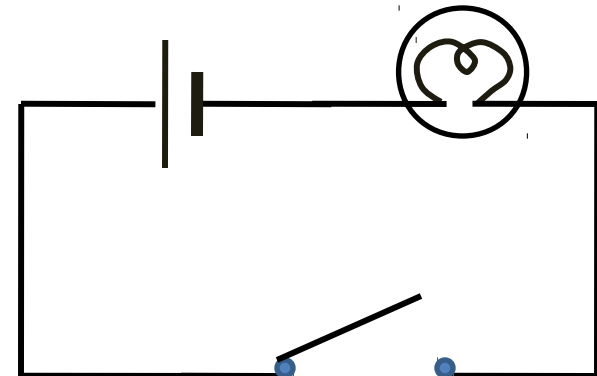
An electric circuit



Closed electric circuit



Open electric circuit

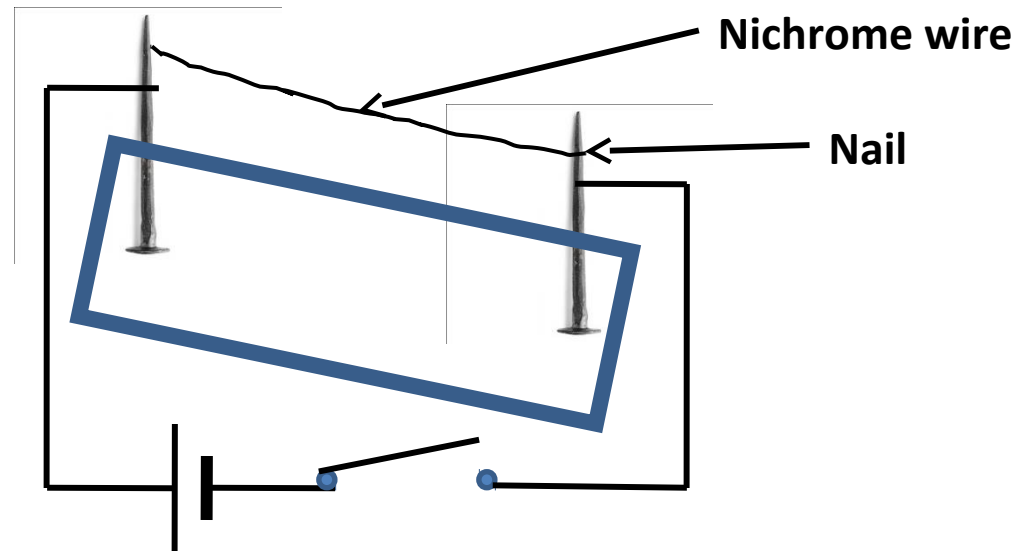


3) Heating effect of electric current :-

When electric current flows through a wire, the wire gets heated. This is called the heating effect of electric current.

Activity :-

Make an electric circuit as shown in the figure. Take a 10 cm long nichrome wire and tie it between the two nails. Switch on the current. After a few seconds touch the wire. The wire feels hot. Then switch off the current. After a few seconds touch the wire again. It does not feel hot. This shows that when electric current flows through a wire, it gets heated.



4) Uses of heating effects of electric current :-

The heating effect of electric current is used in electrical appliances like electric heater, electric iron, electric room heater, immersion heater, electric kettle, hair dryer etc.

All these appliances have a coil of wire called an element. When electric current flows through the element it becomes hot and gives out heat.

The amount of heat produced in a wire depends upon its material, length and thickness.

Electric heater



Electric room heater



Electric iron



Electric kettle



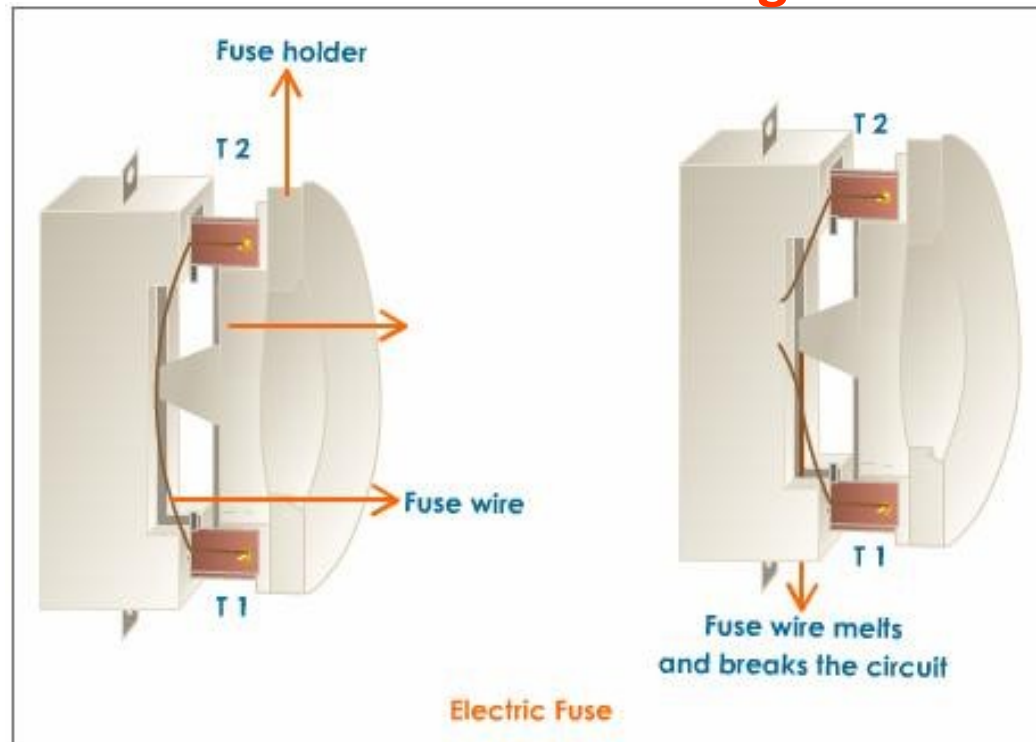
5) Electric fuse :-

Electric fuse is a safety device used in electrical circuits which protects the electrical circuits and appliances and prevents fires.

Electrical fuse is used in all electrical circuits in buildings.

Electric fuse has a wire which melts quickly and break when large electric current flows through it.

Fuse used in buildings

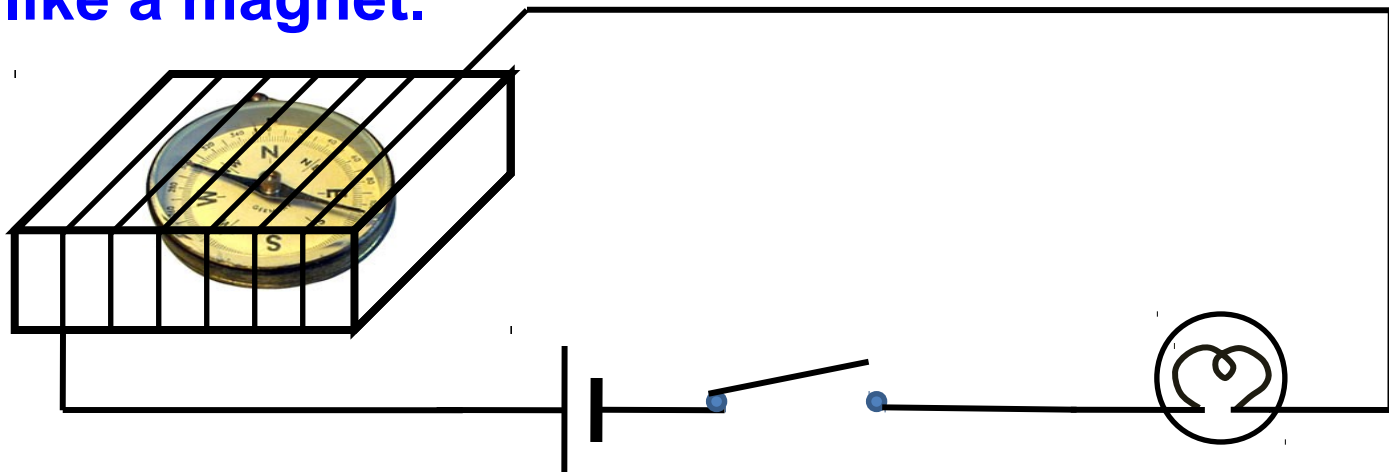


6) Magnetic effect of electric current :-

When electric current flows through a wire, it behaves like a magnet. This is called magnetic effect of electric current.

Activity :-

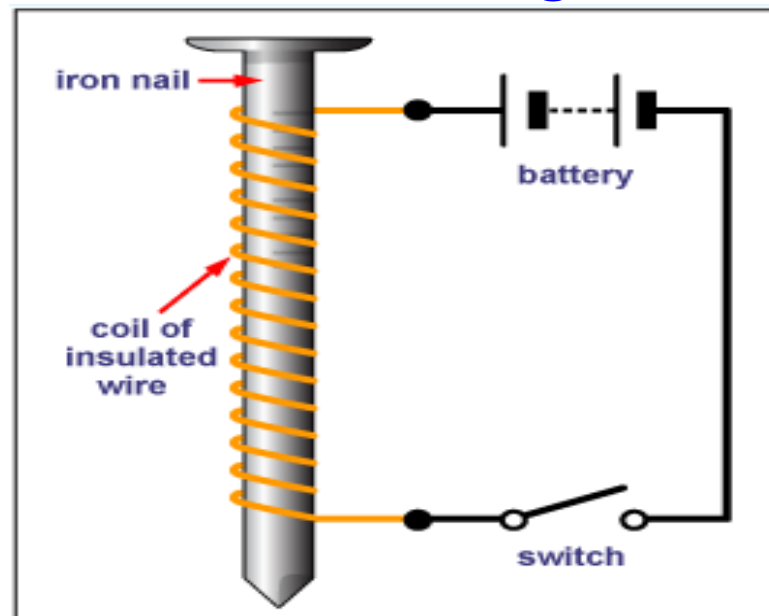
Take the cardboard tray from a match box. Wind an electric wire a few times around the cardboard tray. Place a small compass needle inside it. Connect the free ends of the wire to an electric cell through a switch. When the switch is ON, the compass needle deflects. When the switch is OFF, the compass needle comes back to its original position. This shows that when electric current flows through a wire, it behaves like a magnet.



7) Electromagnet :-

When electric current is passed through a coil of insulated wire wound around a piece of iron, it becomes a magnet. Such a magnet is called an electromagnet.

Activity :- Wind a piece of insulated wire around an iron nail in the form of a coil. Connect the free ends of the wire to an electric cell through a switch. Place some pins near the nail. When electric current is passed, the iron nail becomes a magnet and attracts the pins. When electric current is switched off, the nail loses its magnetism.



8) Electric bell :-

The electric bell has a coil of wire wound around a piece of iron which acts like an electromagnet. An iron strip with a hammer is kept close to the electromagnet. There is a contact screw near the iron strip. When the iron strip is in contact with the screw, current flows through the coil and becomes an electromagnet. It pulls the iron strip and the hammer at the end of the strip strikes the gong of the bell and produces sound. When the electromagnet pulls the iron strip, it also breaks the circuit and the iron strip comes back to the original position and the process repeats and the bell rings.

