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Experiment : 5

Object :

To understand the construction , principle of working, electrical circuit, dismantling, assembling , possible faults testing methods of electrical appliances.

Roomheater
Heat convertor

Theory :

Room heater



Parts of electric heater

- 1 Metal body of heater made of cast iron or casted aluminium sheet
- 2 Heater plate made of China clay or porcelain or plaster of paris generally very nice between 5to10th india meter depending upon the power of the heating element.
- 3 Element made of round nichrome wire to to move the element of 750-1000 watt having the length of about 40inch
- 4 Terminals with nut sand washers
- 5 Porcelain beds for insulating purpose
- 6 An iron strip to support the heater plate
- 7 Nuts,bolts and washers to tight the heater plate
- 8 3 or 4 iron strips riveted with the heater body for tripod stand
- 9 Supply cord ,plug and connect to give supply to element

Construction

The electric heater, mostly consists of metal body of thick iron sheet, heater plate made of China clay or porcelain, heating element made of nichrome wire terminal housing in which the terminals are fitted with nut and sand insulated with porcelain sheets. The ends of elements are insulated with porcelain braids each other. There is also one end plate which covers all the assembled parts of the electric heater. The metal body is supported with stands made of iron sheet or bonite. The wooden handles are fixed on the side of the heater to make it portable for operation. The wire select record with three pin plug and connection is required.

The electric heaters mostly have 3 rivetted strips or iron grades on the upper portion of the metal body which protect the heater plate and prevents the utensils from touching the element and save the operator from severe shocks.

Testing

By connecting the two ends of the testing leads to the two terminals of heater, if the lamp does not glow it means there is an open circuit i.e. Breakage in the element or disconnecting of connecting wires or strips inside at the terminals are touching together. If the lamp glows dimly, now to perform the earth testing when end of testing leads to one terminal of the another wires of testing lead to the metal part of the heater. If the lamp glows it means there is an Earth fault i.e. any part of the element or connecting wires or strip is touching the metal part of the heater. If there is parking on the body it means there is leakage i.e. insulating material is leaking. The other faults maybe in Cord or in plug top or in the connection i.e. breakage or disconnection of wires ends.

Heat converter

This consists of capacitor start motor on parameter capacitor motor along with the blades fitted on the shaft of the motor which through air out of the converter heating element is also arranged in it with the help of which is the air is heated and heat the room the heating element of motor is operated with operates switch and regulation it is used for cooling and heating the room. The fan is arranged with tangential flow system to throw equal share in all direction in the room to warm it very soon. This is very useful because it serves two purposes i.e. cools the room and warms the room.

Result

Construction, working principle testing possible faults of ordinary type room heater and heat converter have been studied successfully.

Precaution

- 1 Avoid loose fitting of parts.
- 2 Insulate yourself on a dry wood before testing.
- 3 Heater body should be properly Earthed.