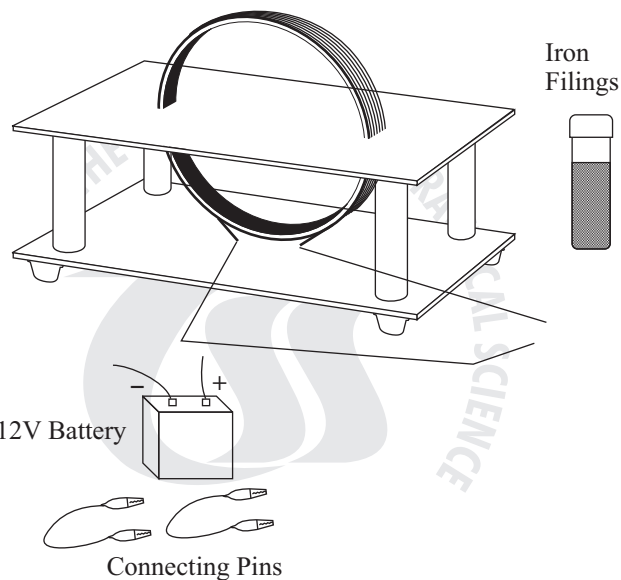


## FIELD DUE TO A CURRENT CARRYING CIRCULAR COIL

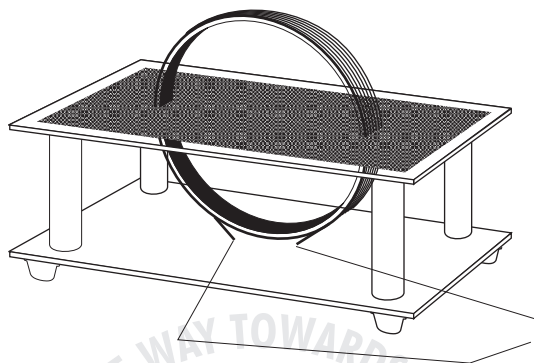
**Assembly :** Consists of a circular coil made of insulated copper wire of several turns wound on a metallic circular frame. (Copper wire is of 20 guage and no. of turns are 40). The coil is fixed in verticle plane on a clear plastic base. A clear plastic platform is also provided at the centre of the coil in the horizontal plane. This platform is useful to sprinkle iron filings.

Circular coil of several turns



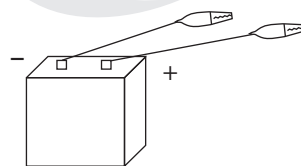
### To do and observe :

Step 1 :



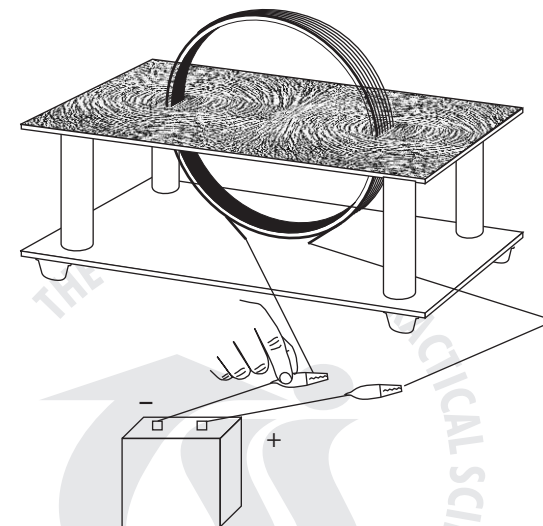
Sprinkle some iron powder on the platform. See that the powder is spread uniformly all over the platform.

Step 2 :



Connect the connecting springs to the terminals of the 12V battery. (Normally used in two wheelers).

Step 3 :



Connect one clip of the battery to one end of the coil and just touch the other clip of the battery to the another wire of the coil. You will notice that the iron filings gets aligned along the direction of magnetic field magnetic lines of forces around the coil.

### What is going on?

When you touch the battery clip to the coil wire, current flows through the coil. This current produces magnetic field. The magnetic field produced around the coil is indicated by the alignment of the iron filings.

The magnetic field lines will be circular in nature around the edges of the coil and they will be straight at the centre of the coil.

### Followup :

Perform the experiment with small compass needles in and around the circular coil.

NOTE : The magnetic field produced due to the current carrying coil is directly proportional to the strength of the current passing through it. Therefore higher is the strength of current through the coil, greater is the strength of the strength of the magnetic field produced. Therefore use a battery of high current rating for better results with iron powder.

(Note : Coil is of 20 gauge, it must not cross its current limit)

Note : The direction of the magnetic field at a point depends upon the direction of the current in the coil.



# FIELD DUE TO CIRCULAR COIL

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