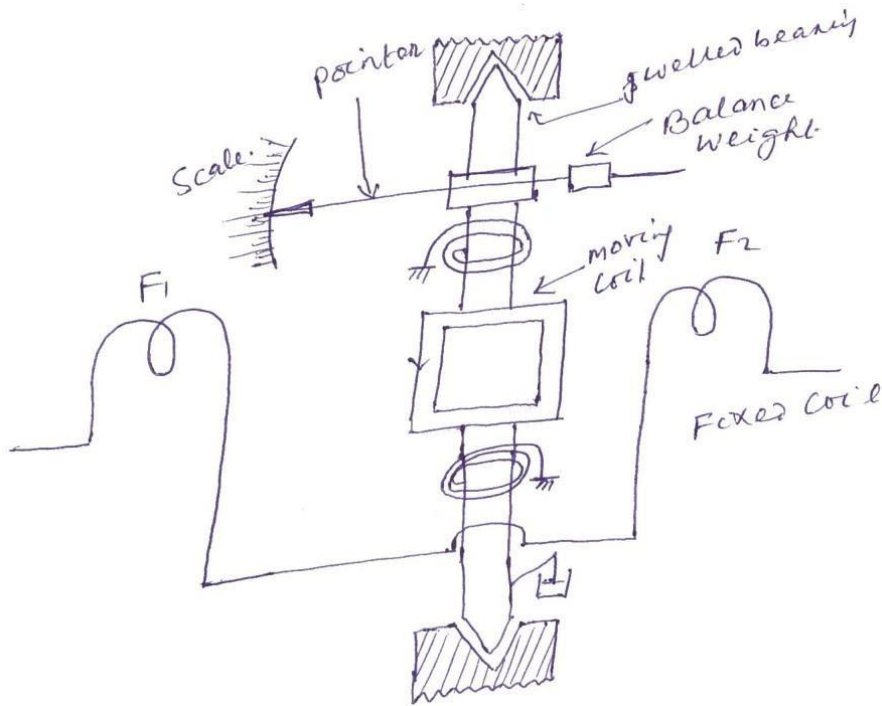


## Dynamometer (or) Electromagnetic moving coil instrument (EMMC)



**Fig. 2.13 Dynamometer (or) Electromagnetic moving coil instrument (EMMC)**

This instrument can be used for the measurement of voltage, current and power. The difference between the PMMC and dynamometer type instrument is that the permanent magnet is replaced by an electromagnet.

**Construction:** A fixed coil is divided into two equal halves. The moving coil is placed between the two halves of the fixed coil. Both the fixed and moving coils are air-cored. So that the hysteresis effect will be zero. The pointer is attached with the spindle. In a non-metallic former the moving coil is wound.

Control: Spring control is used.

Damping: Air friction damping is used.

**Principle of operation:**

When the current flows through the fixed coil, it produces a magnetic field, whose flux density is proportional to the current through the fixed coil. The moving coil is kept in between the fixed coil. When the current passes through the moving coil, a magnetic field is produced by this coil.

The magnetic poles are produced in such a way that the torque produced on the moving coil deflects the

pointer over the calibrated scale. This instrument works on AC and DC. When AC voltage is applied, alternating current flows through the fixed coil and moving coil. When the current in the fixed coil reverses, the current in the moving coil also reverses. Torque remains in the same direction. Since the current  $i_1$  and  $i_2$  reverse simultaneously. This is because the fixed and moving coils are either connected in series or parallel.

