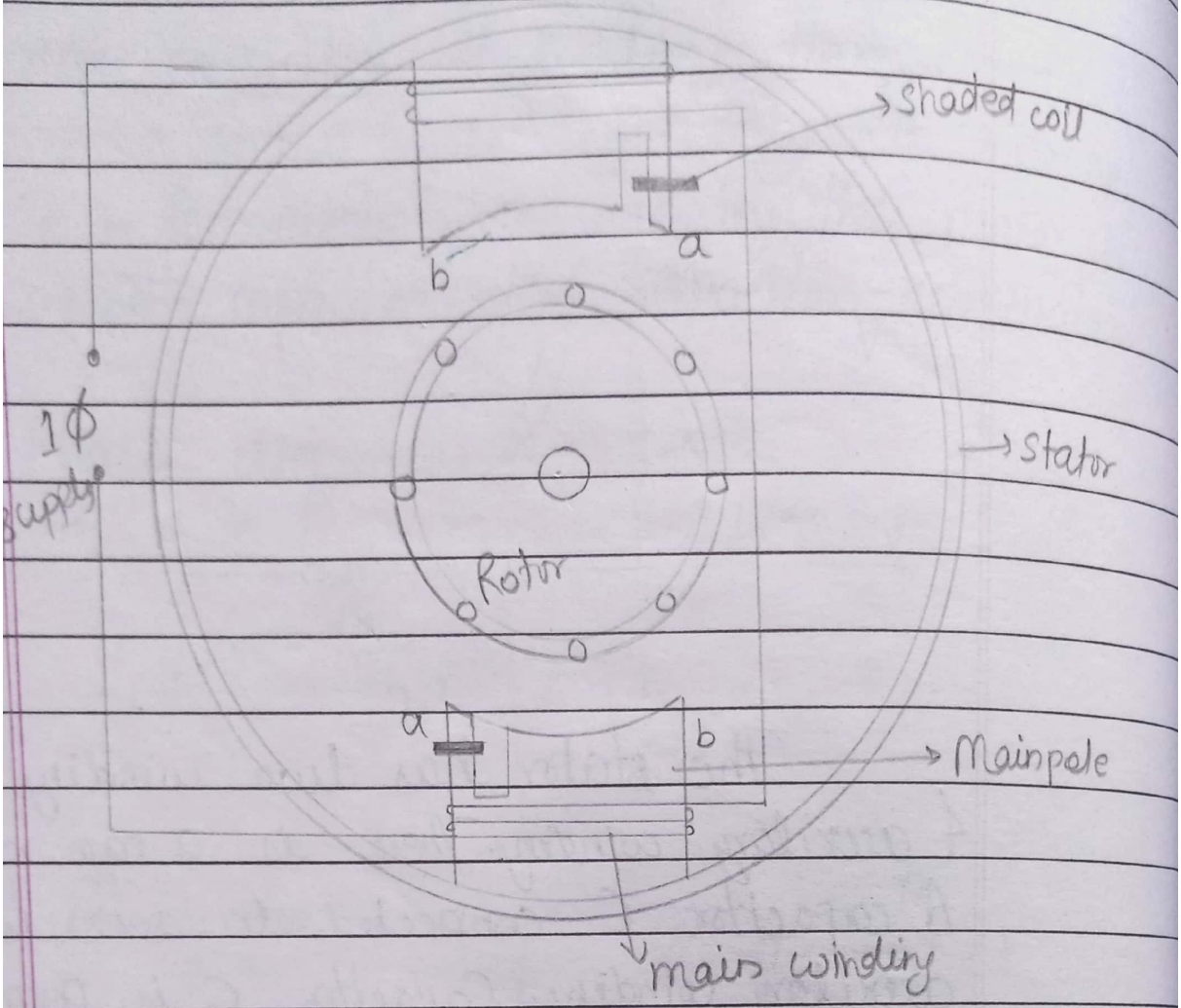
(5) → Shaded-pole motors



Shaded pole 1ϕ I.M. consists of a stator & a cage rotor. The stator is made up of salient poles. Each pole is slotted on side and a copper ring is fitted on the smaller part (a) called the shaded pole and the single turn coil i.e., ring is known as shading coil.

When current flows in main winding a flux produced. This flux links with shading coil, which acts as short circuited secondary of a transformer. A voltage induced in shading coil & circulates a current in it. This shading coil current

produced flux which is induced flux and opposes the main core flux. Thus it causes the flux in shaded portion lag behind the flux in unshaded portion of the pole. At the same time the main flux & shaded pole flux are displaced less than 90°.

Due to these two fluxes rotating magnetic field produced which develops starting torque. The direction of rotation is from unshaded to shaded portion of the pole.

In a shaded pole motor the reversal of direction of rotation is not possible.

Application—

(i) Very cheap.
(ii) Low power factor, high losses.
(iii) Starting torque is very low.
(iv) Record players, tape recorders
(v) Projectors
(vi) Photo copy machine.
(vii) Electric clocks.