## Couple.

A special combination of forces even when the entire body is free to move can rotate it. This combination of forces is called a couple.

(1) A couple is defined as combination of two equal but oppositely directed force not acting along the same line. The effect of couple is known by its moment of couple or torque by a couple  $\vec{\tau} = \vec{r} \times \vec{F}$ .



(2) Generally both couple and torque carry equal meaning. The basic difference between torque and couple is the fact that in case of couple both the forces are externally applied while in case of torque one force is externally applied and the other is reactionary.

(3) Work done by torque in twisting the wire  $W = \frac{1}{2}C\theta^2$ .

Where  $\tau = C\theta$ ; C is known as twisting coefficient or couple per unit twist.