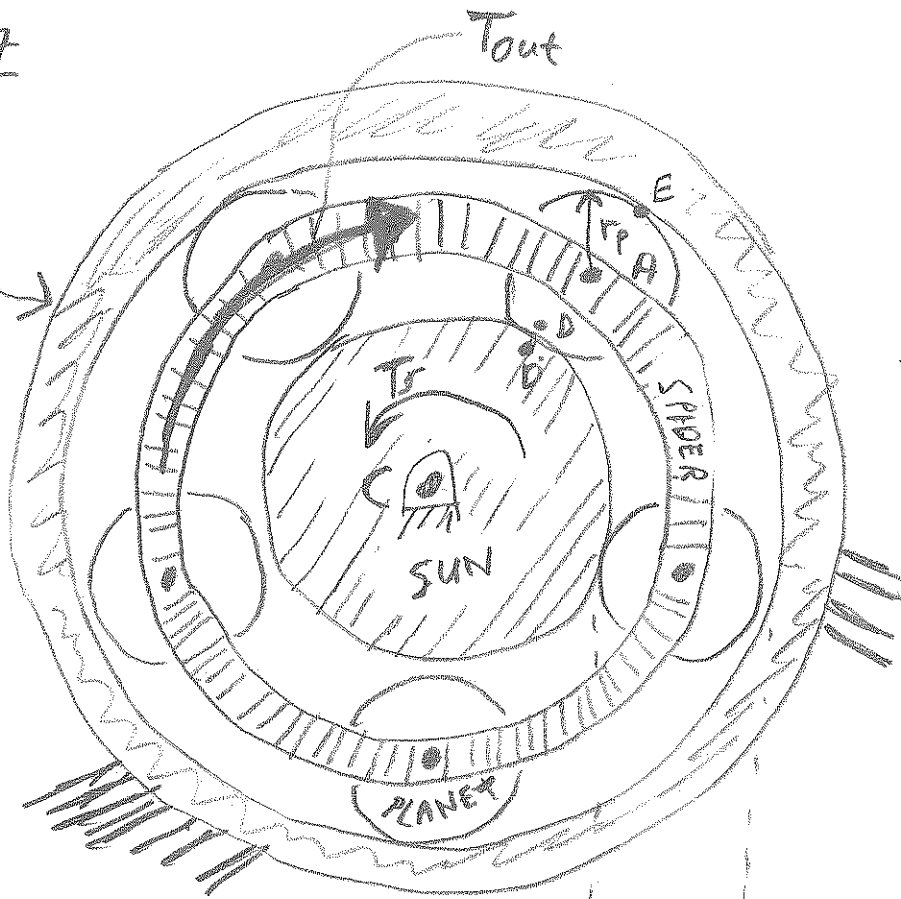


RP6.2.17

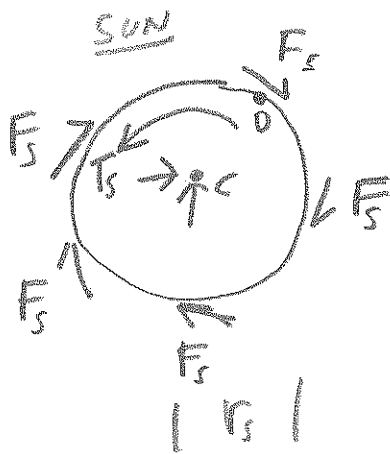
Fixed ring



$r_p = 50 \text{ mm}$   
 $r_s = 2r_p = 100 \text{ mm}$   
 $T_s = 2000 \text{ Nm}$   
 = torque on sun

$T_{out} = ?$

FBDs

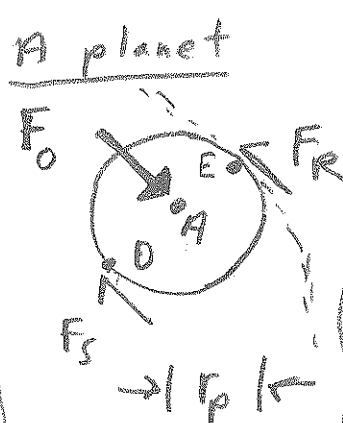
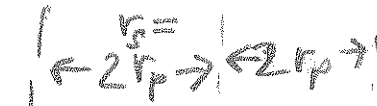


$$\sum M_C = 0 \Rightarrow 5F_s r_s = T_s \quad (1)$$

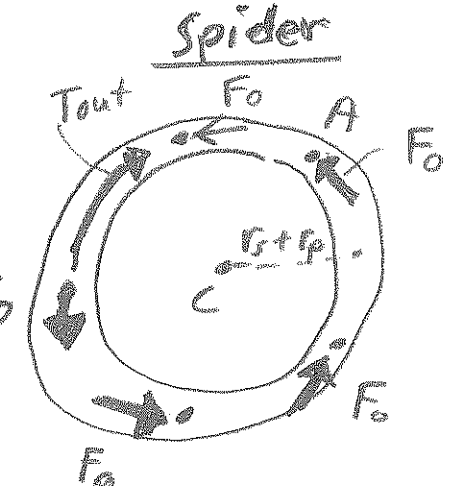
$$(1), (2) \Rightarrow F_0 = \frac{2T_s}{5r_s} = \frac{2T_s}{10r_p} \quad (4)$$

$$(3), (4) \Rightarrow T_0 = 5 \cdot 3r_p \cdot \frac{2T_s}{10r_p} = 3T_s = 3 \cdot 2000 \text{ Nm} = 6000 \text{ Nm}$$

$$T_0 = 3T_s = 6000 \text{ Nm}$$



$$\sum M/E = 0 \Rightarrow F_0 = 2F_s \quad (2)$$



$$\sum M/C = 0 \Rightarrow 5F_0(r_s + r_p) = T_0 \quad (3)$$