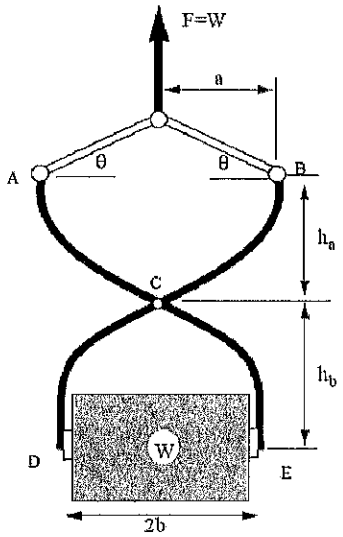
FUNCIONAMENTO DE UMA "PINÇA" PARA SUSTENTAÇÃO DE CARGA

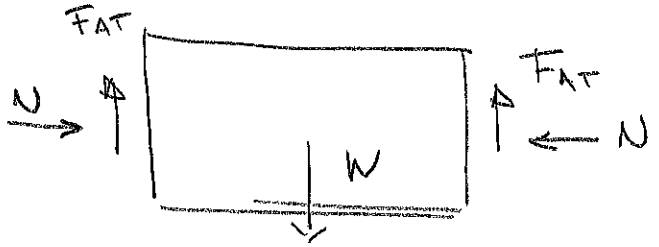


$$\theta = 30^{\circ} \; a = b = h_a = h_b$$

A MECÂNICA DA PINÇA

- PEQUENAS DEFORMAÇÕES: GEOM. DEFORMADA ≈ GEOM. REFERÊNCIA

EQUILÍBRIO DA CARGA:



SIMETRIA

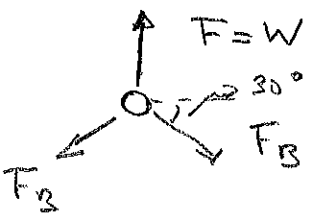
$W = 2 F_{AT}$ $\qquad$ $F_{AT} = \mu N$

MODELO DE ATRITO

$$W = 2 \mu N$$

i) ADMITINDO $\theta = 30°$, $a = b = h_a = h_b$, CALCULAR O COEFICIENTE DE ATRITO ("FIXAR N")

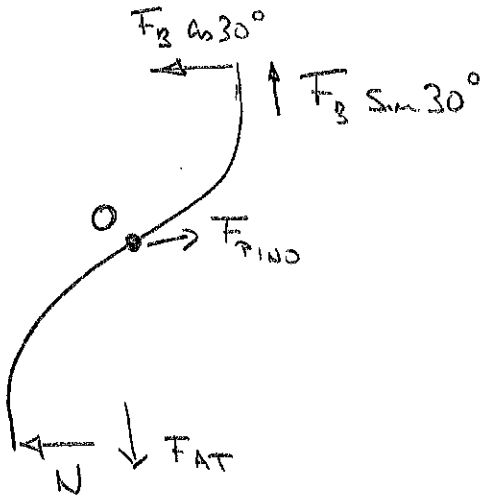
EQUILÍBRIO NO SISTEMA DE ACIONAMENTO



LOGO:

$$F_B = \frac{1}{2 \operatorname{sen} 30^\circ} W = W$$

DO EQUILÍBRIO EM UM DOS COMPONENTES DA PINÇA



$$\sum M_o = 0 \rightarrow -N \not{\ell} + F_{AT} \not{\ell} + F_B \cos 30^\circ \not{\ell} + F_B \operatorname{sen} 30^\circ \not{\ell} = 0$$

$$(\mu - 1) N + F_B (\cos 30^\circ + \operatorname{sen} 30^\circ) = 0$$

$$N = F_B \frac{(\cos 30^\circ + \operatorname{sen} 30^\circ)}{(1 - \mu)}$$

ASSIM: $N = W \frac{(\sqrt{3}+1)}{2(1-\mu)} = W \frac{(\sqrt{3}+1)}{2(1-\mu)} = \frac{(\sqrt{3}+1)\mu N}{(1-\mu)}$

$$\boxed{\mu = \frac{1}{2}}$$

(ii) FIXANDO $\mu = \bar{\mu}$

TEMOS: $$N = \frac{W}{2\bar{\mu}} = \frac{F_B(\cos\theta + \operatorname{sen}\theta)}{(1-\bar{\mu})}$$

$$\frac{(1-\bar{\mu})}{2\bar{\mu}} = \frac{(\cos\theta + \operatorname{sen}\theta)}{2\operatorname{sen}\theta} = \operatorname{cotg}\theta + 1$$

$$\operatorname{cotg}\theta = \frac{1-2\bar{\mu}}{\bar{\mu}} \quad \text{ou} \quad \operatorname{tg}\theta = \frac{\bar{\mu}}{1-2\bar{\mu}}$$

LOGO $\bar{\mu} < \frac{1}{2}$ (PORQUÊ???)

E

$$\frac{\pi}{4} \leq \theta < \frac{\pi}{2}$$