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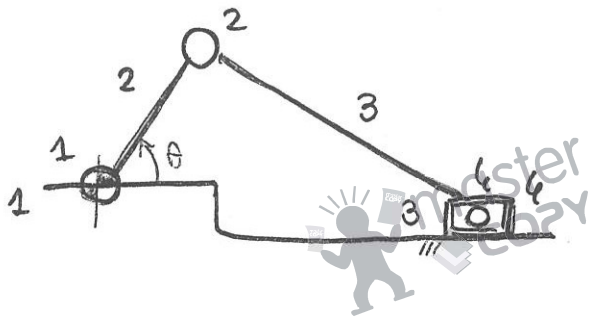
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CAPITOLO 1: [MACCHINE E MECCANISMI]

① GDL manovellismo di spinta



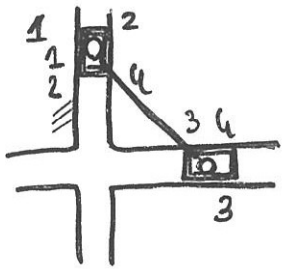
$$N \geq 3(m-1) - 2u_2 - u_1$$

m = n° dei membri del meccanismo incluso il telaio

u_i = n° di coppie presenti nel meccanismo che tolgono i gradi di libertà

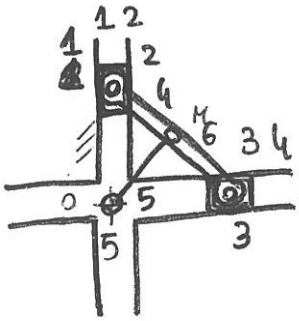
$m = 4$
$u_2 = 4$
$u_1 = \emptyset$
→ $N \geq 1$

② GDL giunto a croce:



$m = 4$
$u_2 = 4$
$u_1 = \emptyset$
→ $N \geq 1$

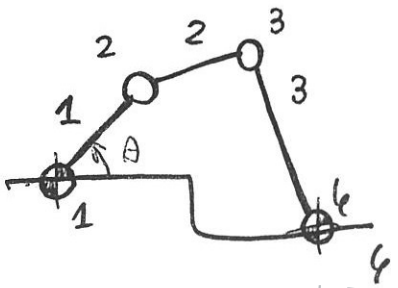
③ GDL giunto a croce con vincolo ridondante:



$m = 5$
$u_2 = 6$
$u_1 = \emptyset$
→ $N \geq 3(5-1) - 2 \cdot 6 - 0 = 12 - 12 = 0$

$N \geq 0$

④ GDL quadrilatero articolato:

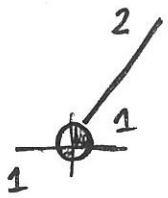


$$\left.\begin{array}{l} m = 4 \\ n_2 = 4 \\ n_1 = \emptyset \end{array}\right\} \rightarrow (N \geq 1)$$

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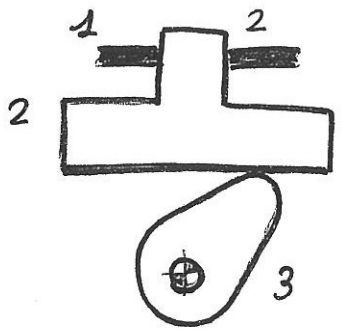
⑤ GDL Asta collegata al telaio con coppia rotoidale:



$$\left.\begin{array}{l} m = 2 \\ n_2 = 1 \\ n_1 = \emptyset \end{array}\right\} \rightarrow N \geq 3(2-1) - 2 \cdot 1 - 0 = 1$$

$(N \geq 1)$

⑥ GDL sistema cuscino pattello:



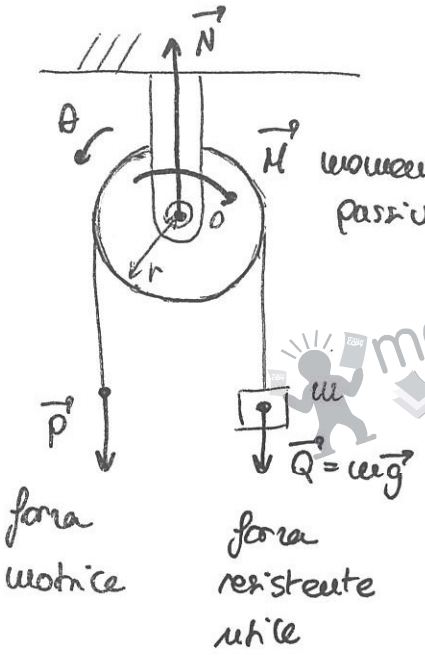
$$\left.\begin{array}{l} m = 3 \\ n_2 = 2 \\ n_1 = 1 \end{array}\right\} \rightarrow N \geq 3(3-1) - 2 \cdot 2 - 1 \cdot 1 = 1$$

$(N \geq 1)$

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⑦ Argani motrici e resistenti carrucola / puleggia:

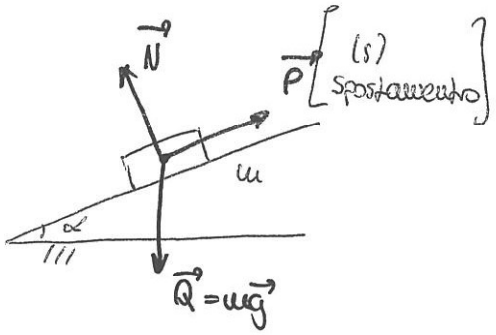


$L_m = Pr\theta$ ← lavoro motore

$L_r = -Qr\theta$ ← lavoro resistente utile

$L_p = -M\theta$ ← lavoro resistente passivo

⑧ Argani motrici piano inclinato:



$L_m = Ps$ ← lavoro motore

$L_r = -Q\sin\alpha\, s$ ← lavoro resistente utile