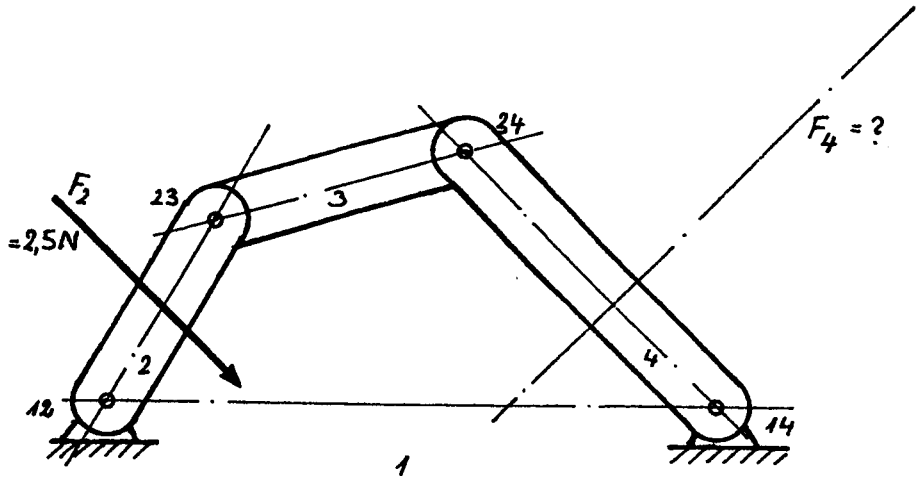
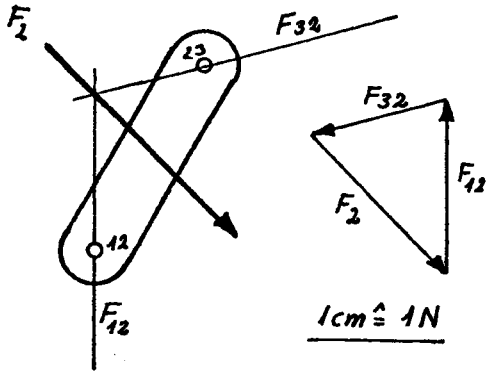
Gelenkkraftverfahren



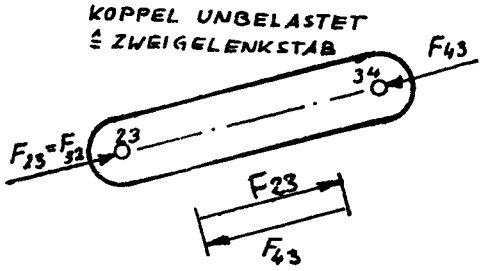
1

DREIKRÄFTEVERFAHREN

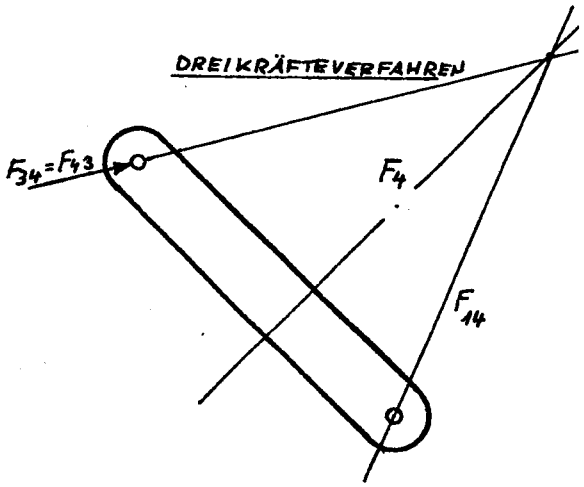


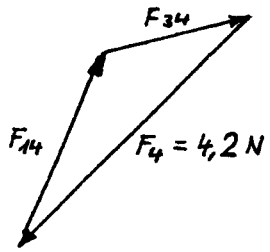
1cm ≙ 1N

KOPPEL UNBELASTET
≙ ZWEIGELENKSTAB

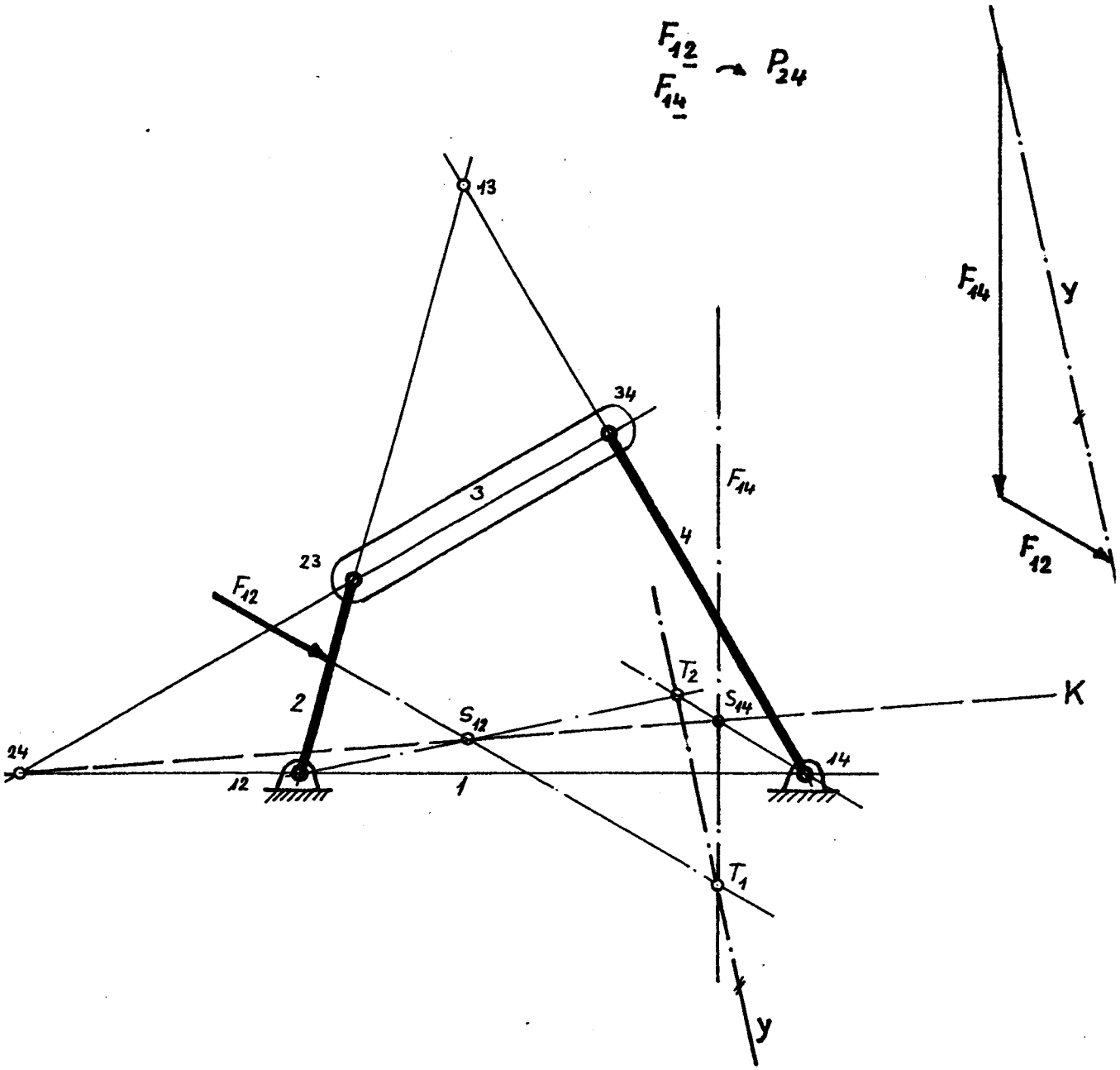


DREIKRÄFTEVERFAHREN

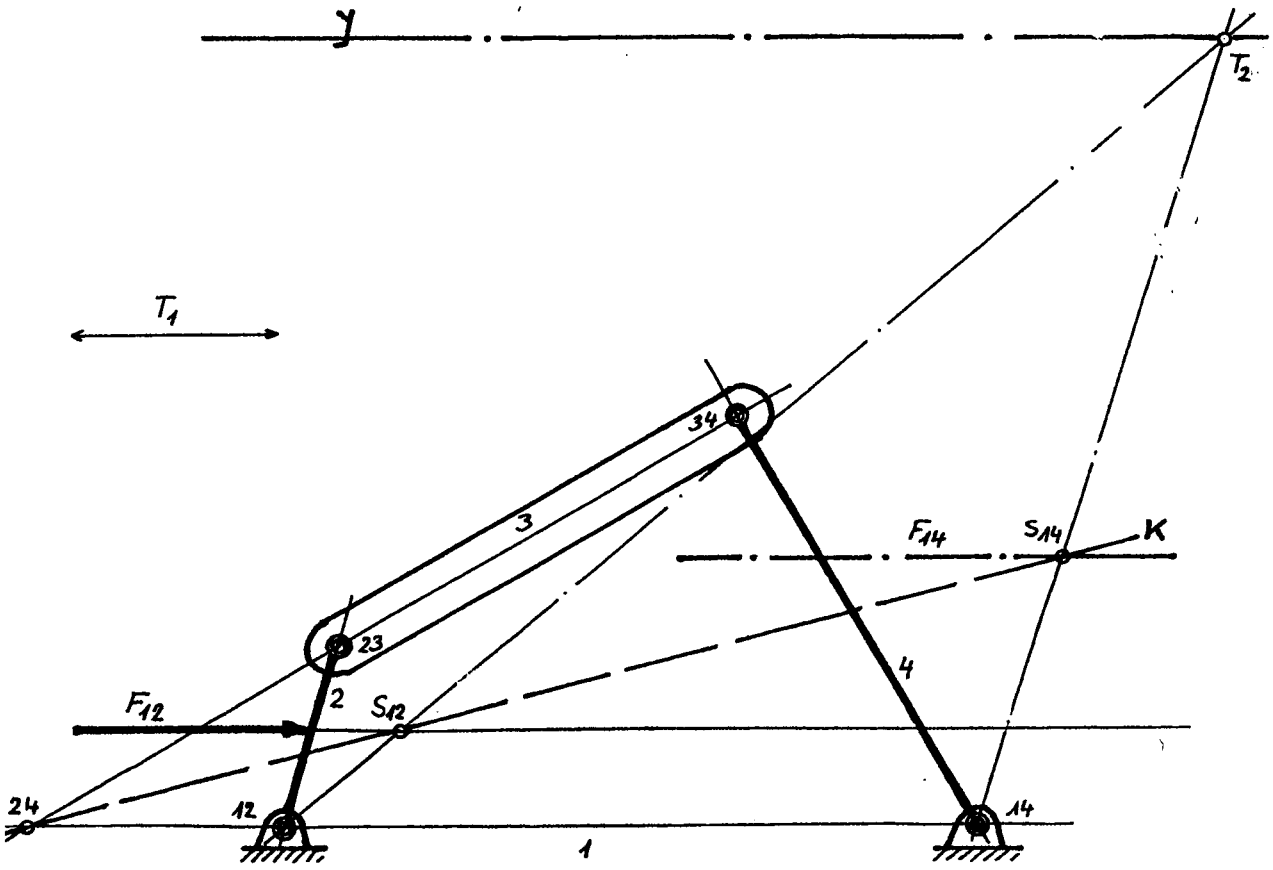




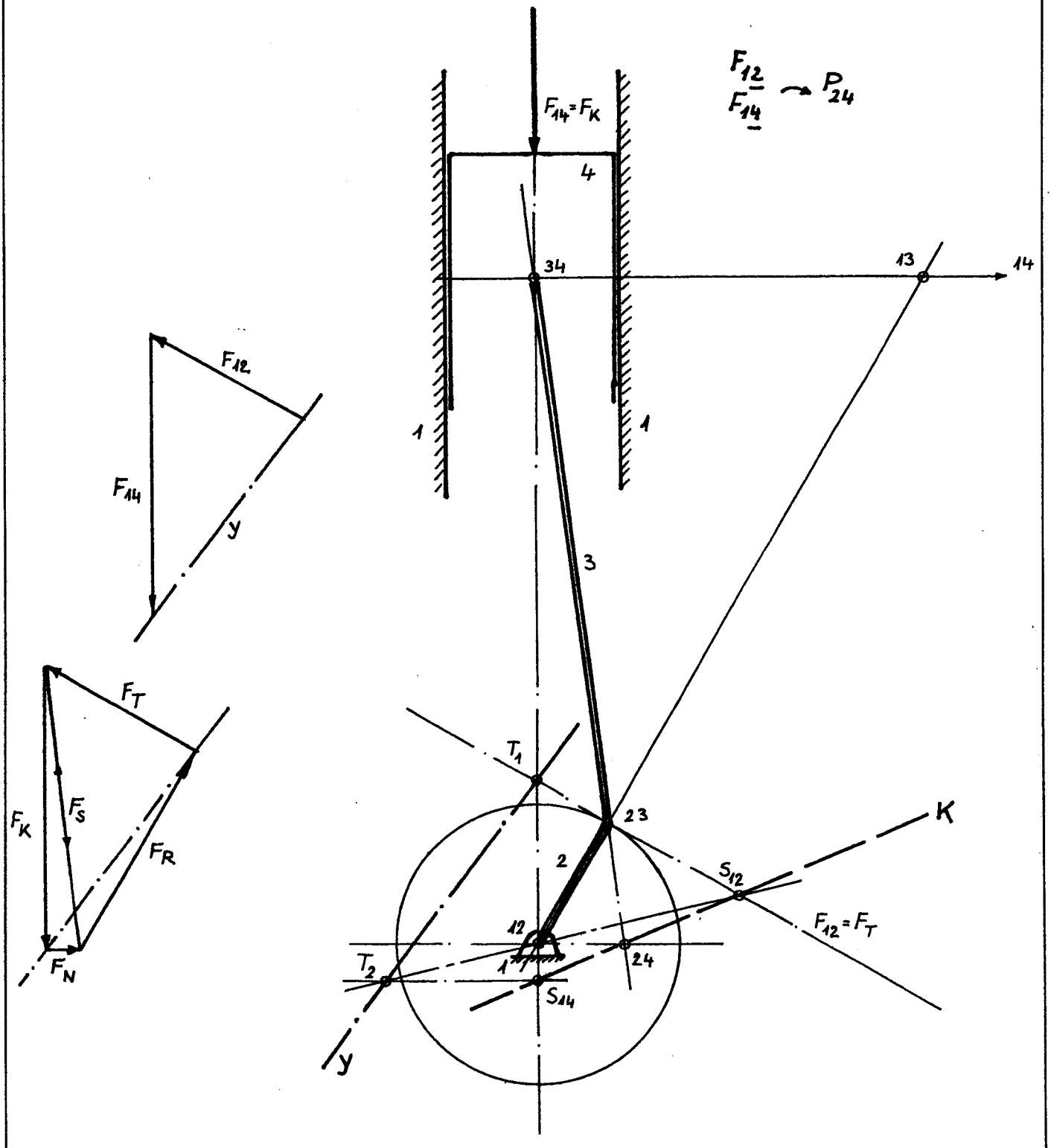
Polkraftverfahren



Beispiele Polkraftverfahren

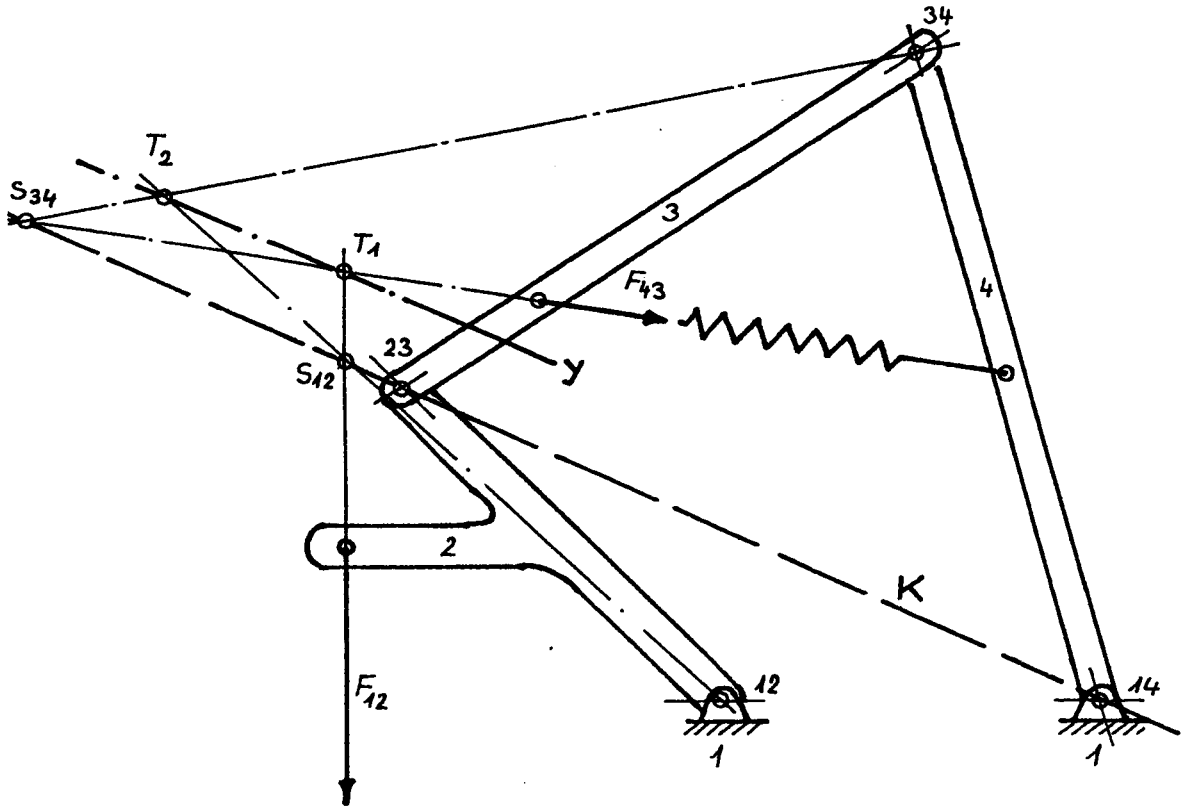


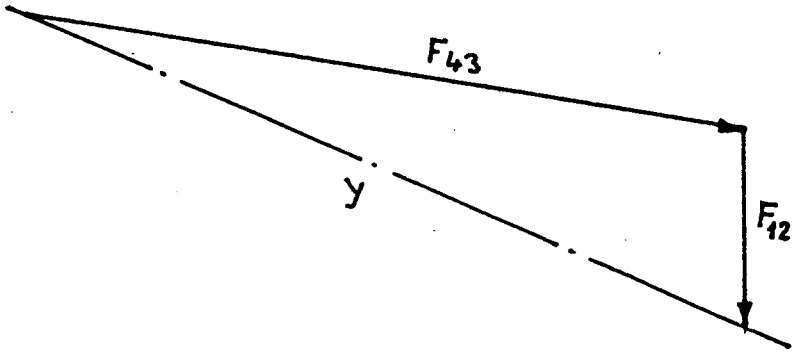
Beispiele Polkraftverfahren



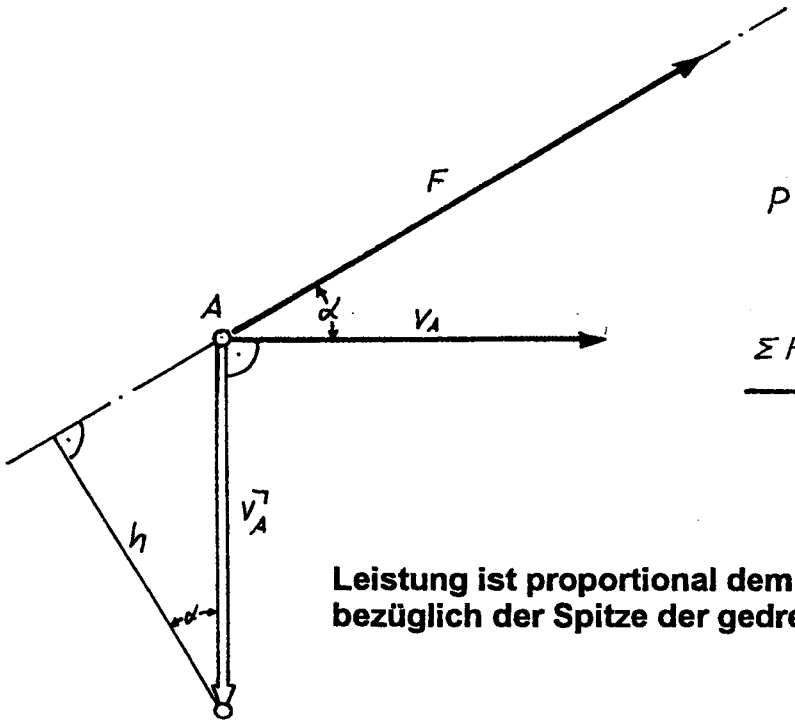
Erweitertes Polkraftverfahren

F_{12}, F_{43} ⇝ P_{14} P_{23}





Leistungsprinzip

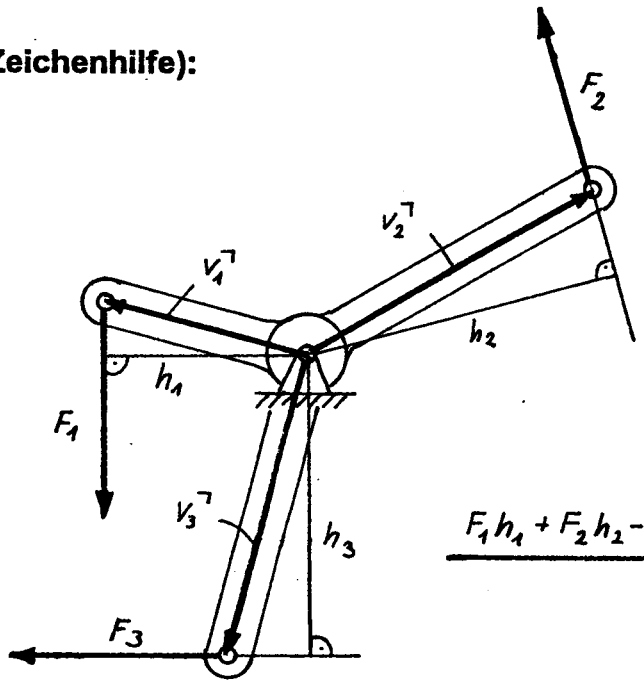


$$P = \underset{\sim}{F} \cdot \underset{\sim}{v} = F \cdot v \cdot \cos\alpha$$
$$= F \cdot \vec{v} \cdot \cos\alpha$$
$$= F \cdot h \cdot m_v$$

$$\Sigma P_i = 0 \rightarrow \Sigma F_i h_i = 0$$

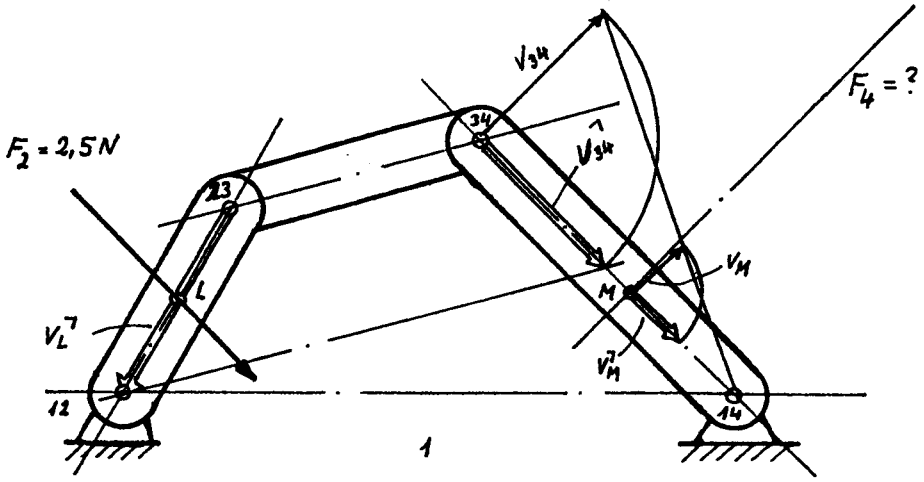
Leistung ist proportional dem Drehmoment der Kraft bezüglich der Spitze der gedrehten Geschwindigkeit.

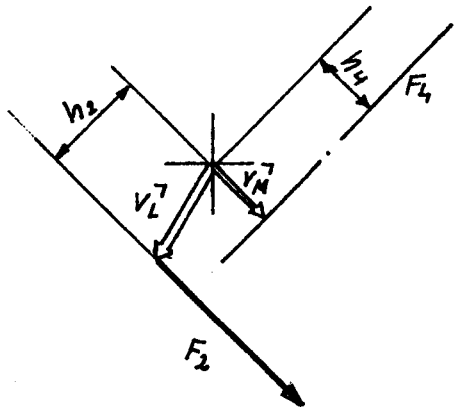
Jukowsky-Hebel (Zeichenhilfe):



$$F_1 h_1 + F_2 h_2 - F_3 h_3 = 0$$

Beispiele Leistungsprinzip





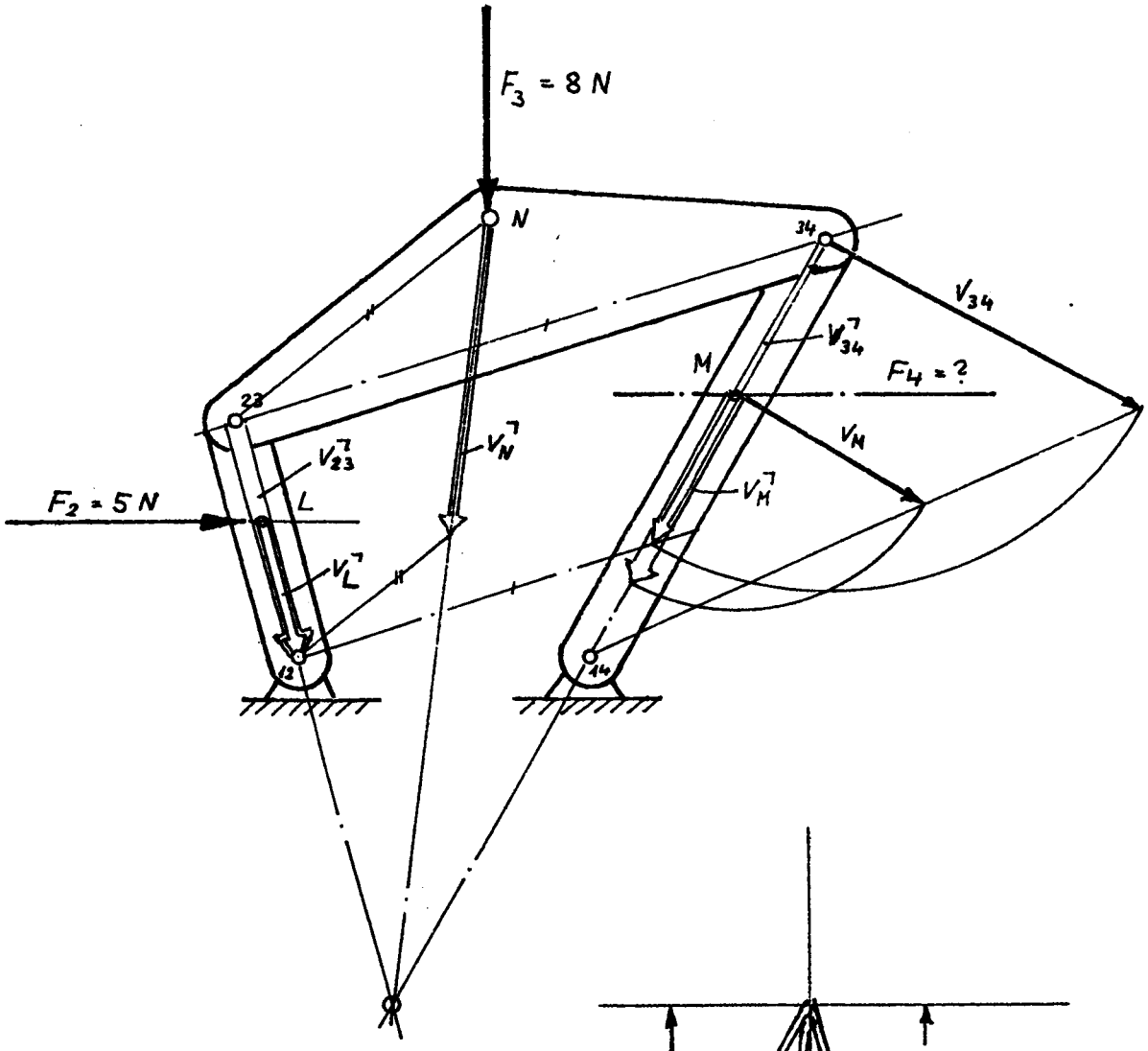
$$\Sigma F_i \cdot h_i = 0$$

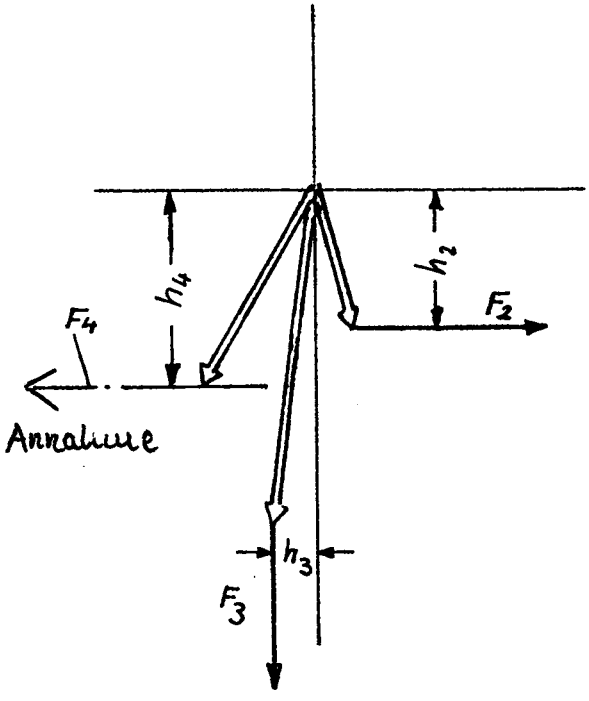
$$F_2 \cdot h_2 - F_4 \cdot h_4 = 0$$

$$F_4 = \frac{h_2}{h_4} \cdot F_2 = \frac{1,5}{0,9} 2,5\,N$$

$$F_4 = 4,2\ N$$

Beispiele Leistungsprinzip





$$F_2 \cdot h_2 + F_3 \cdot h_3 - F_4 \cdot h_4 = 0$$

$$F_4 = \frac{1}{h_4}\left(F_2 \cdot h_2 + F_3 \cdot h_3\right)$$

$$F_4 = \frac{5 \cdot 1{,}8 + 8 \cdot 0{,}6}{2{,}6} = 5{,}3\ N$$