Mechanical Concept

Pantographs (Scissor mechanism)

University of South Australia

http://alphanippon.com/scissor-lift.html

http://en.wikipedia.org/wiki/Pantograph

http://houseandhome.com/blogs/house-home-daily/editors-pick-18karat-pendant

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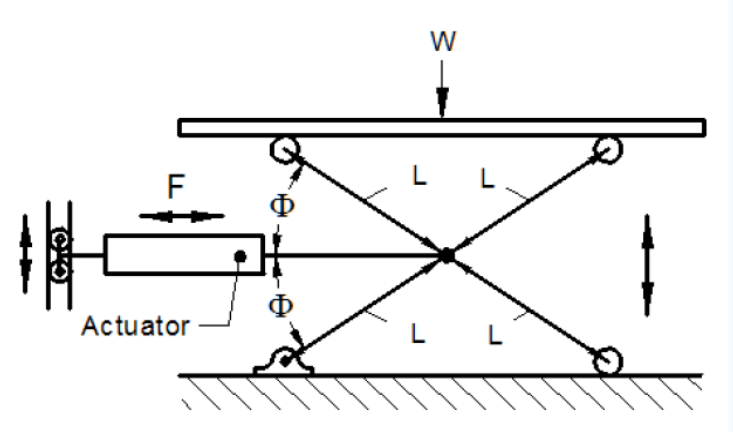
$$\text{Force} = \frac{W + \frac{W_f}{2}}{\tan \emptyset}$$

W = 50 kg, W(frame) = 10 kg



Wf = weight of the mechanism

5° $\text{Force} = \frac{50+10}{\tan 5^\circ} = 685$ N

30° $\text{Force} = \frac{50+10}{\tan 30^\circ} = 104$ N

60° $\text{Force} = \frac{50+10}{\tan 60^\circ} = 35$ N

http://www.engineersedge.com/mechanics_machines/scissor-lift.htm

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What is the biggest design FAIL for scissors lift systems ***built*** by students.

Note: I did not use the word ***designed***

- Manufacturing
- Material selection
- Pour calculations
- Tolerances