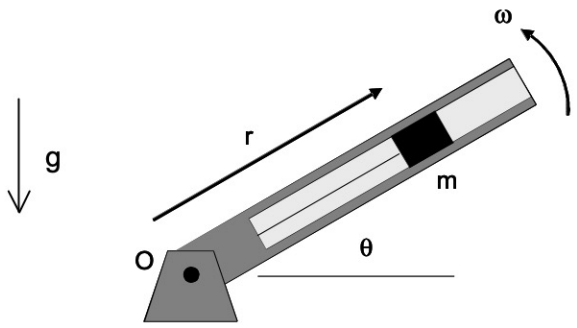
Homework H.4.B

Given: The mechanism, shown below, consisting of a rotating arm, frictionless slot, and block of mass m, is driven at a constant speed ω by a motor attached at point O.

Find: Determine:
(a) The tension in the cable at the instant shown provided $\omega = 10$ rad/s;
(b) The normal force exerted on the block provided $\omega = 10$ rad/s;
(c) The minimum angular velocity ω necessary to keep the cable taut at the instant shown.



Use the following parameters in your analysis: $r = 0.3$ m, $m = 12$ kg and $\theta = 60°$.