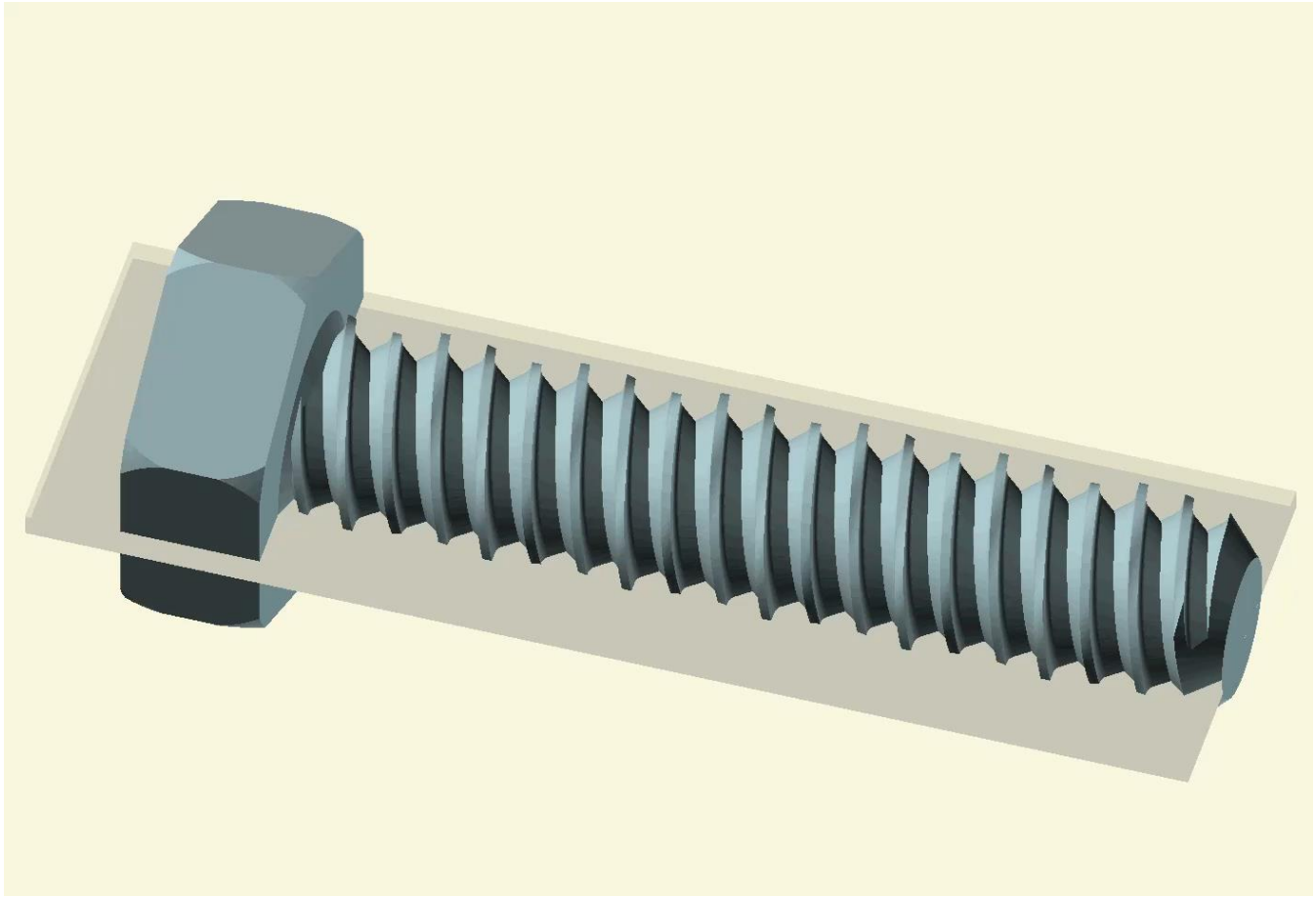
DeuxNuts

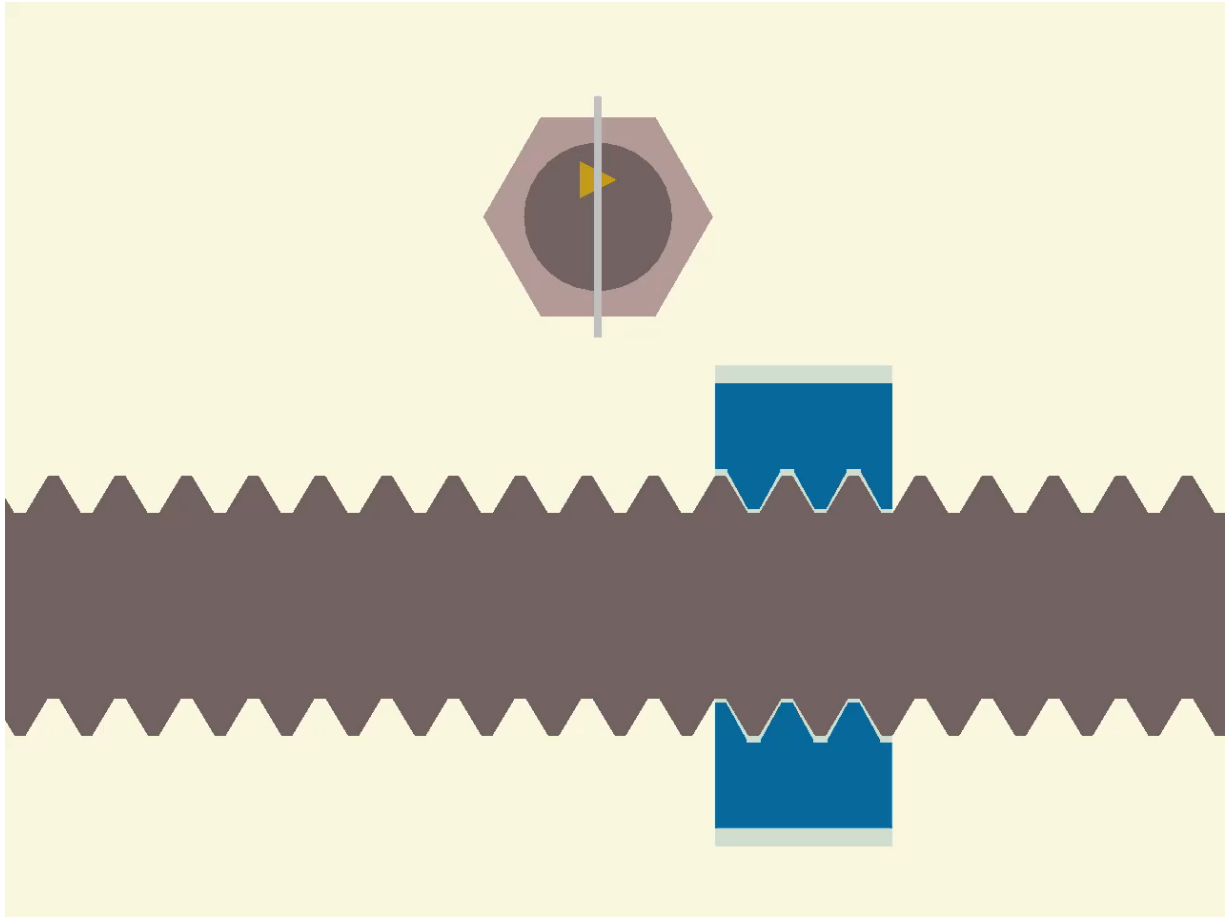
Maths of the Mk3 trick thread

All slides view a slice through bolt

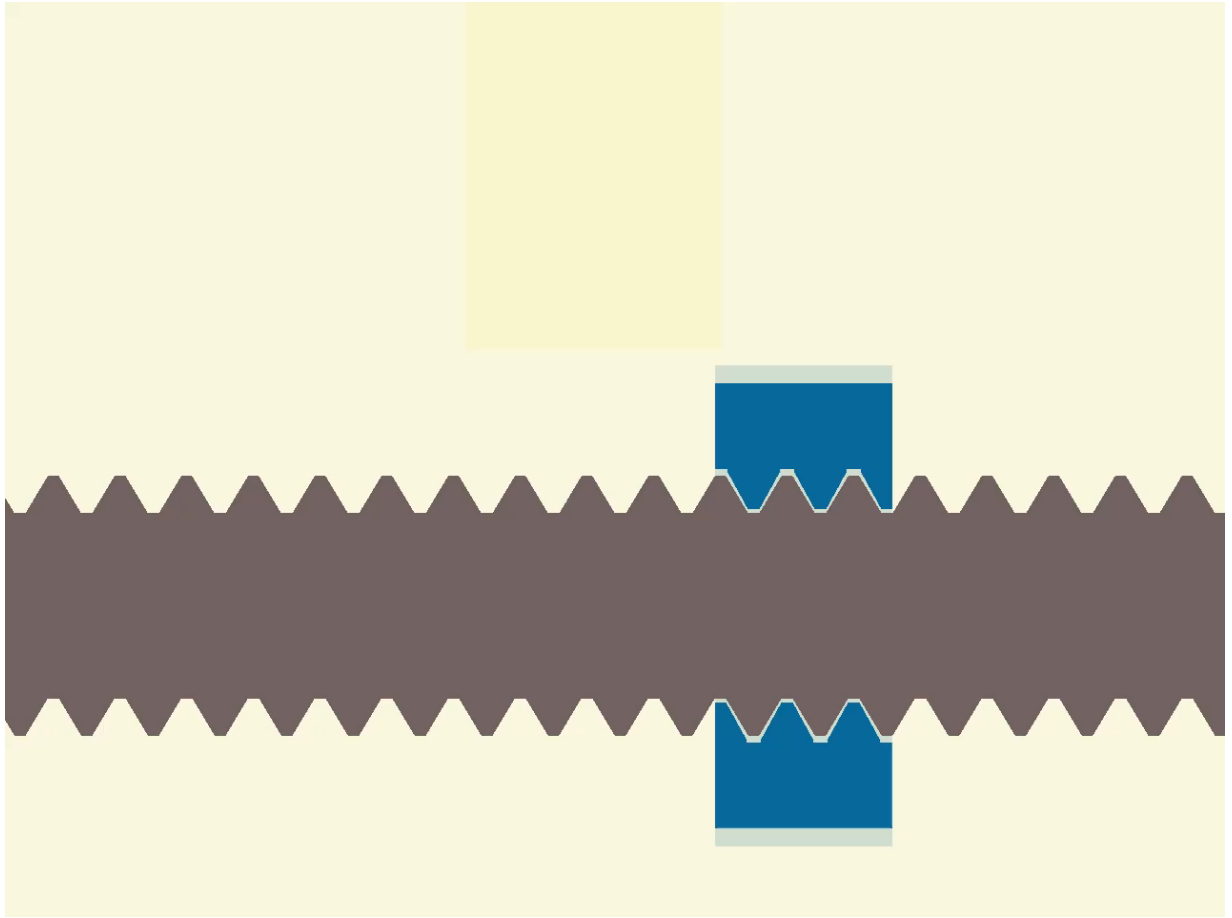
(But no bolts were harmed)



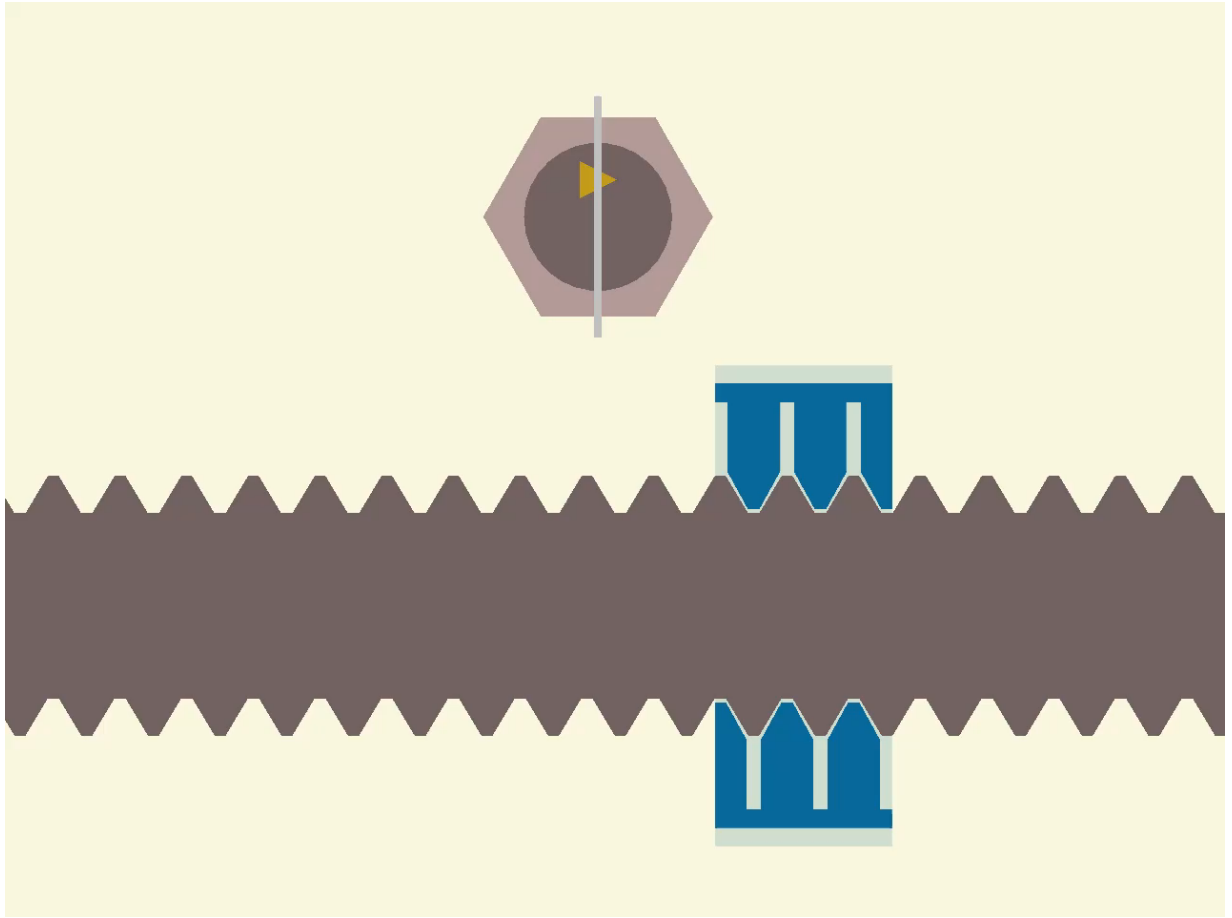
Start with ordinary nut and bolt threads



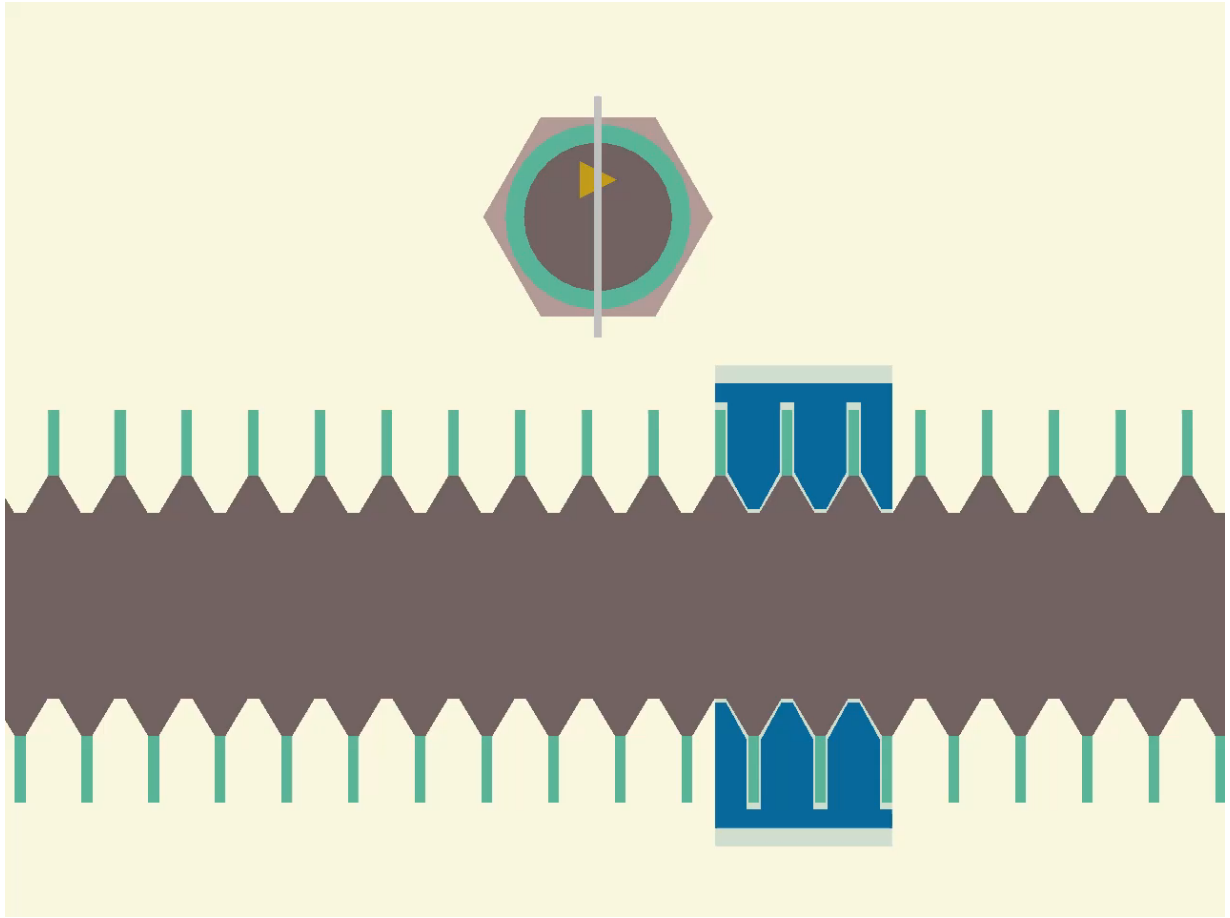
Cut notches into blue ‘normal’ nut



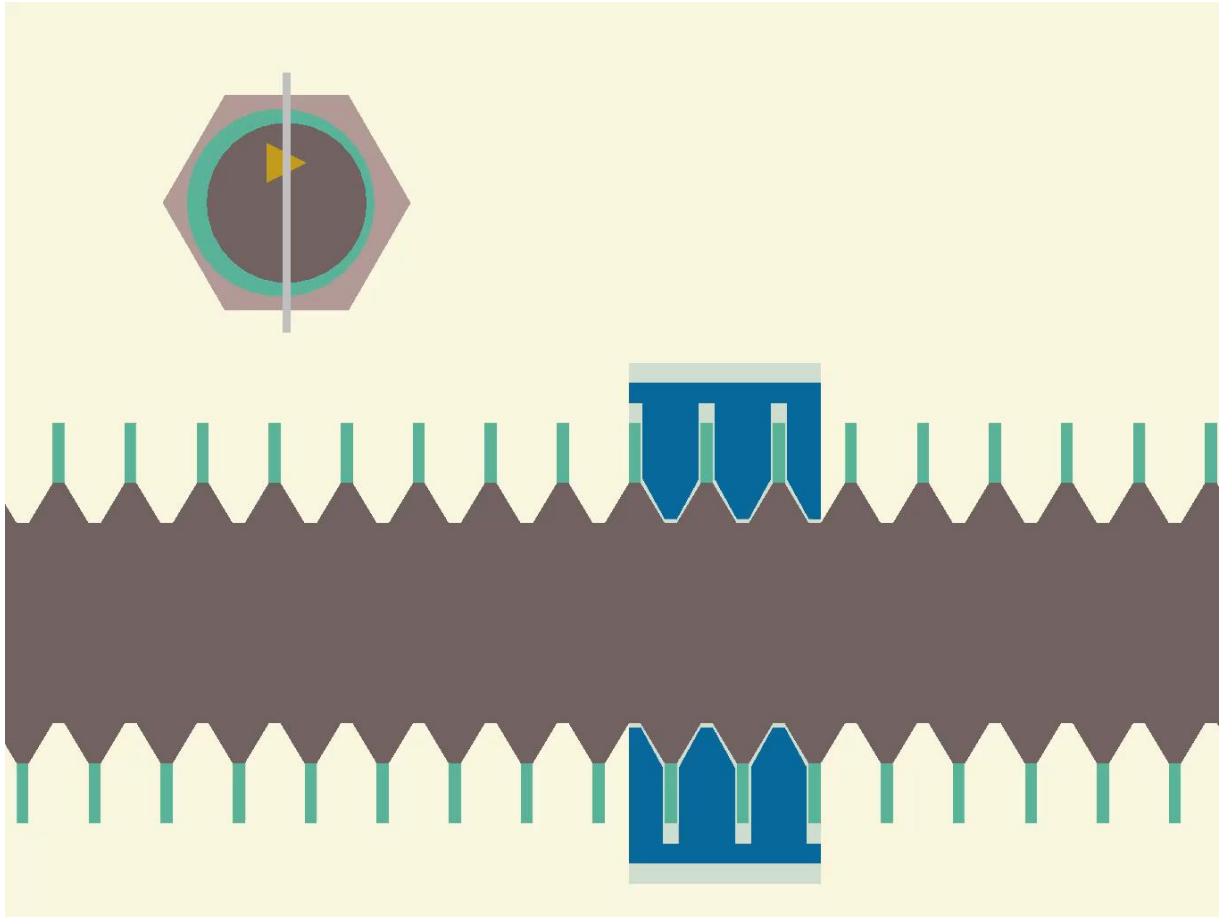
Notched nut still works normally



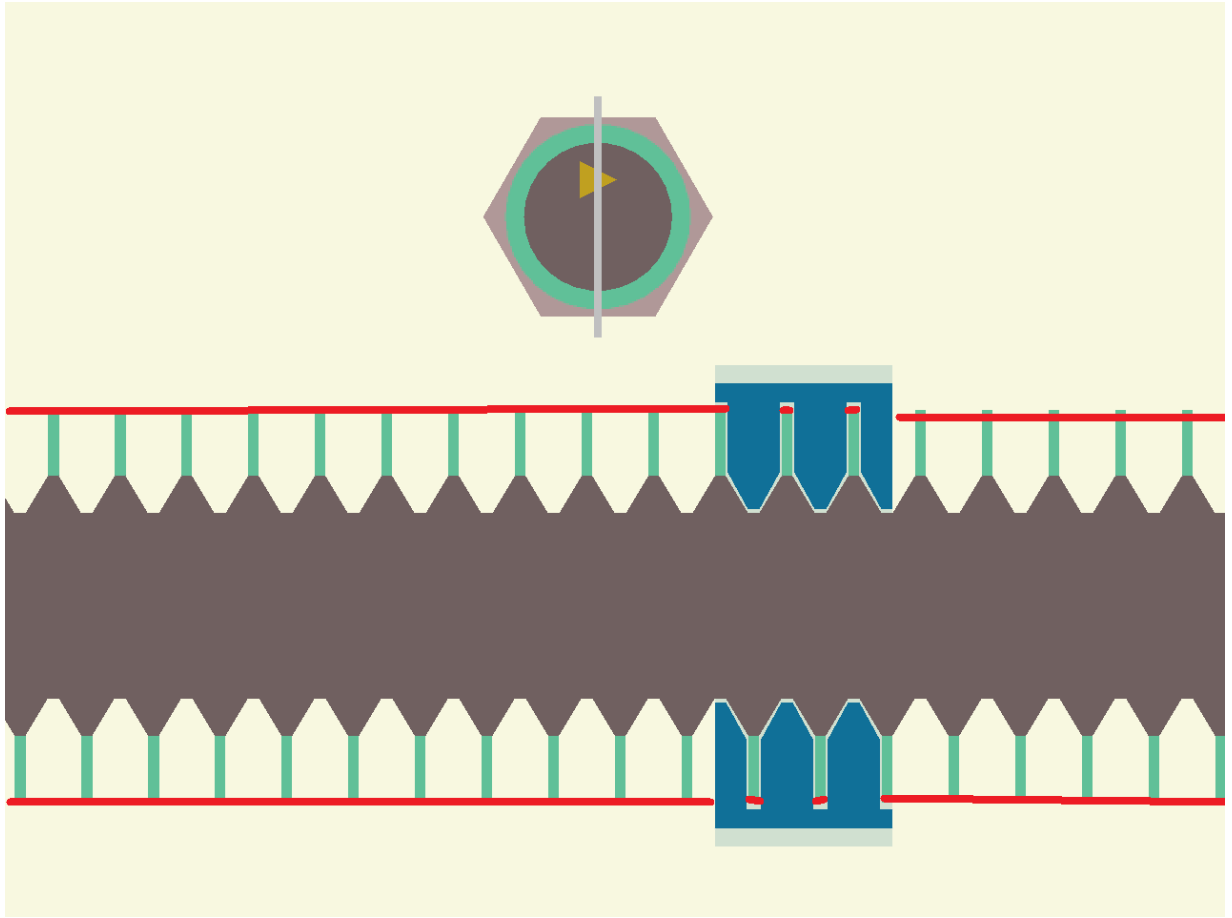
Extend ridges atop threads



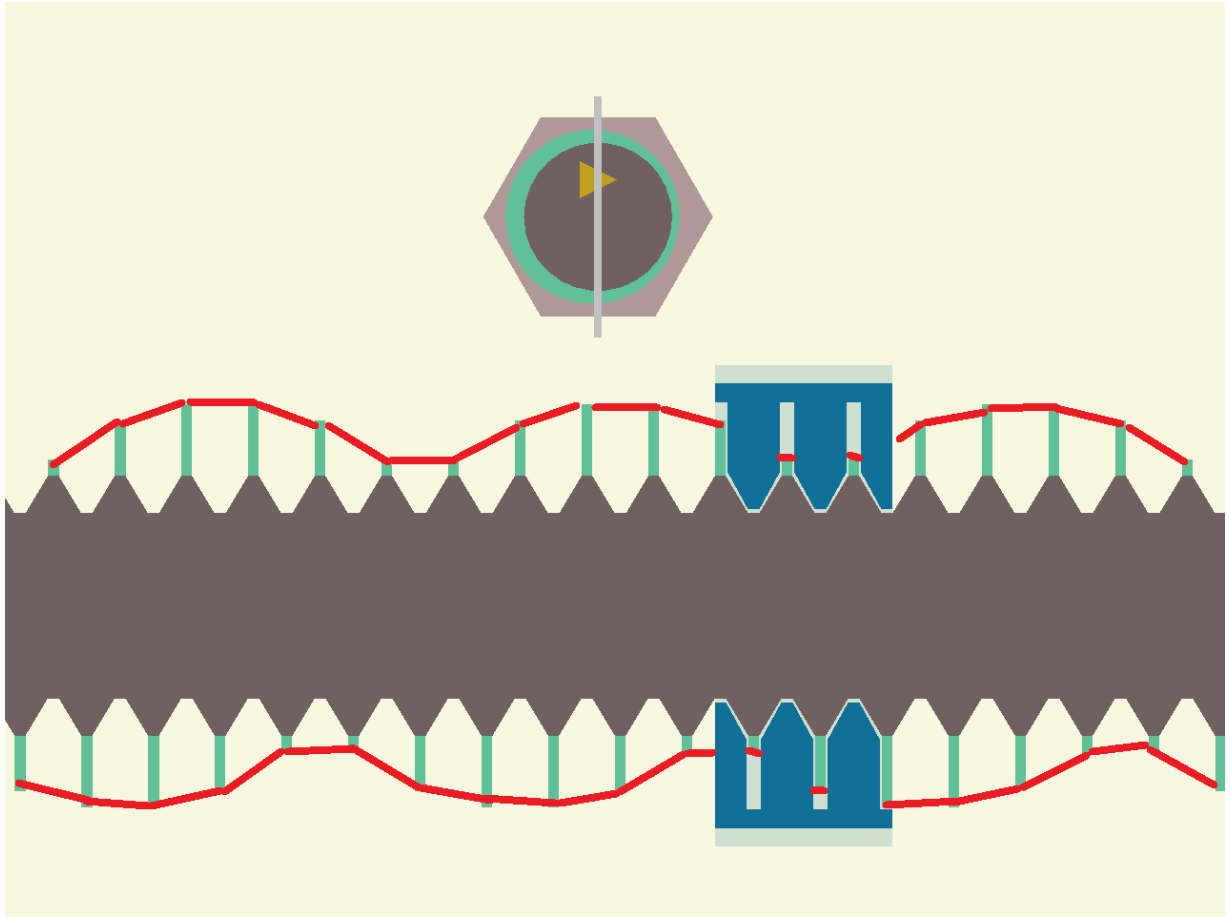
Ridges of all heights pass through notched nut



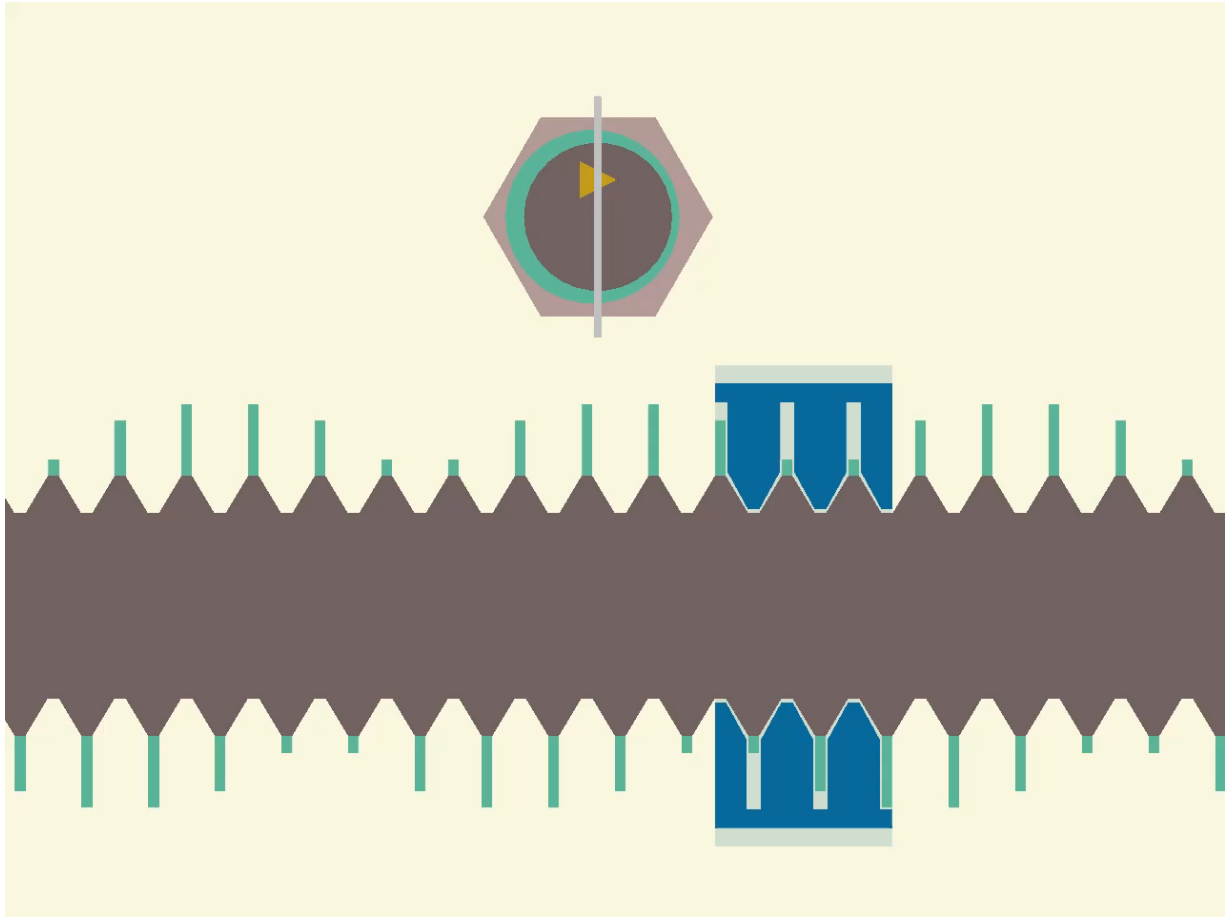
So, why keep all ridges at the same heights?



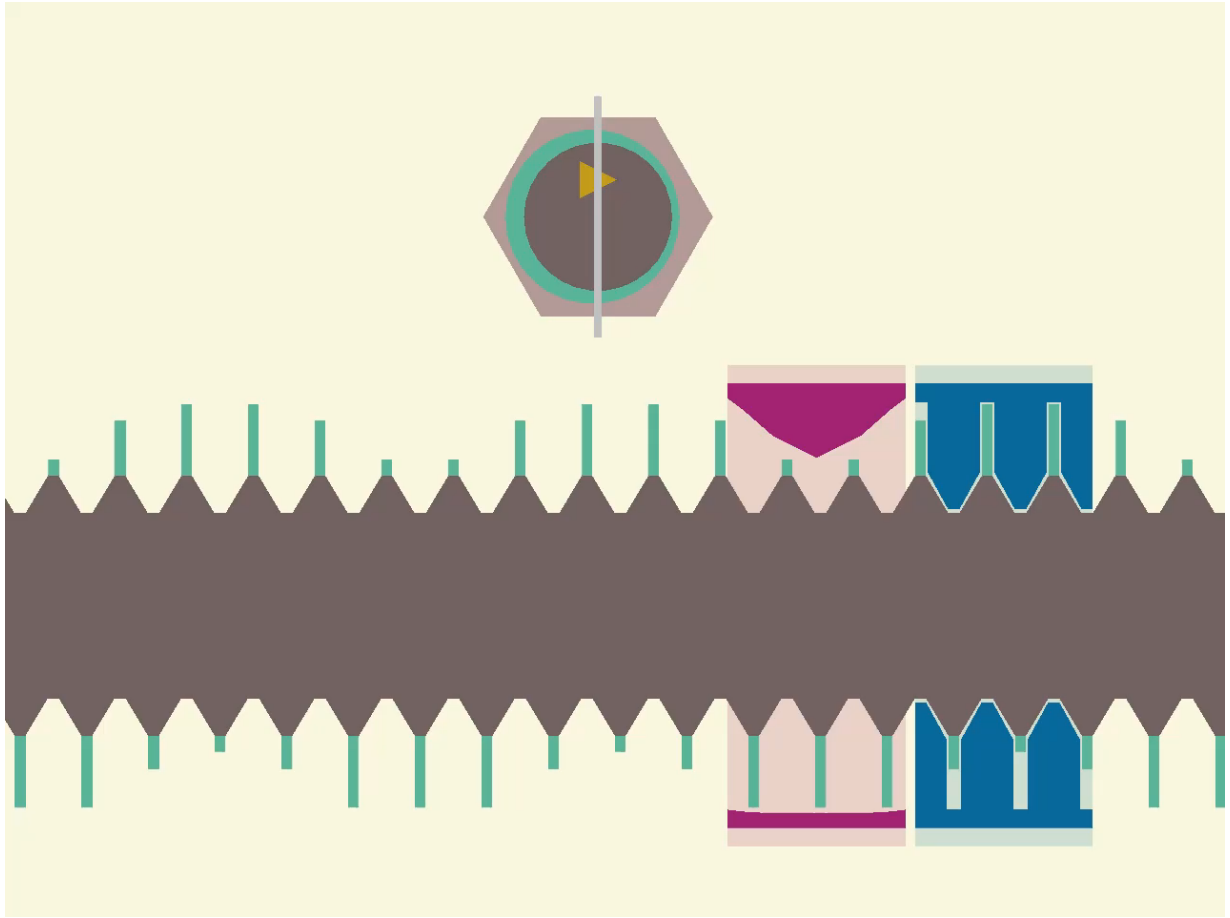
Modulate ridge heights by $sin^{-1/3}\Theta$



Ridges modulate waves in reverse direction



Build red nut that rides waves atop ridges



Red nut rides waves moving left,
Blue nut follows threads moving right