# The Next Bicycle Revolution
## Food For Thought.

    This article is not for the fixed gear purest as it is quite far from the minimalist approach to mechanical engineering. It is however an interesting idea, a mesmerizing mechanical process, and completely unpractical. The plan is to develop a power train with three modes of locomotion. The first being a fixed gear train (peddle forward, peddle backwards, no coast), second mode being a regular bicycle train, mountain, road, BMX, ECT (peddle forward, coast, no peddle in reverse). The third mode however is very different, in this "bi-directional" mode you may peddle forward, coast, and peddle backwards, except by peddling backwards you will still develop forward moving power. This means the cyclest does not have to worry about perfect cadence when he or she may just reverse peddling direction and use compound leverage on the opposite sit of muscles. If it were a good cyclest this mode would not be needed for this reason because they are using there muscles at top efficiency already. Another reason to be in mode three are the inevitable surprises that arise causing you to unclip, when the caution is over you may clip back in while peddling in either direction, This is safer engagement, quicker engagement, and a bike that recovers speed faster because you are still peddling.
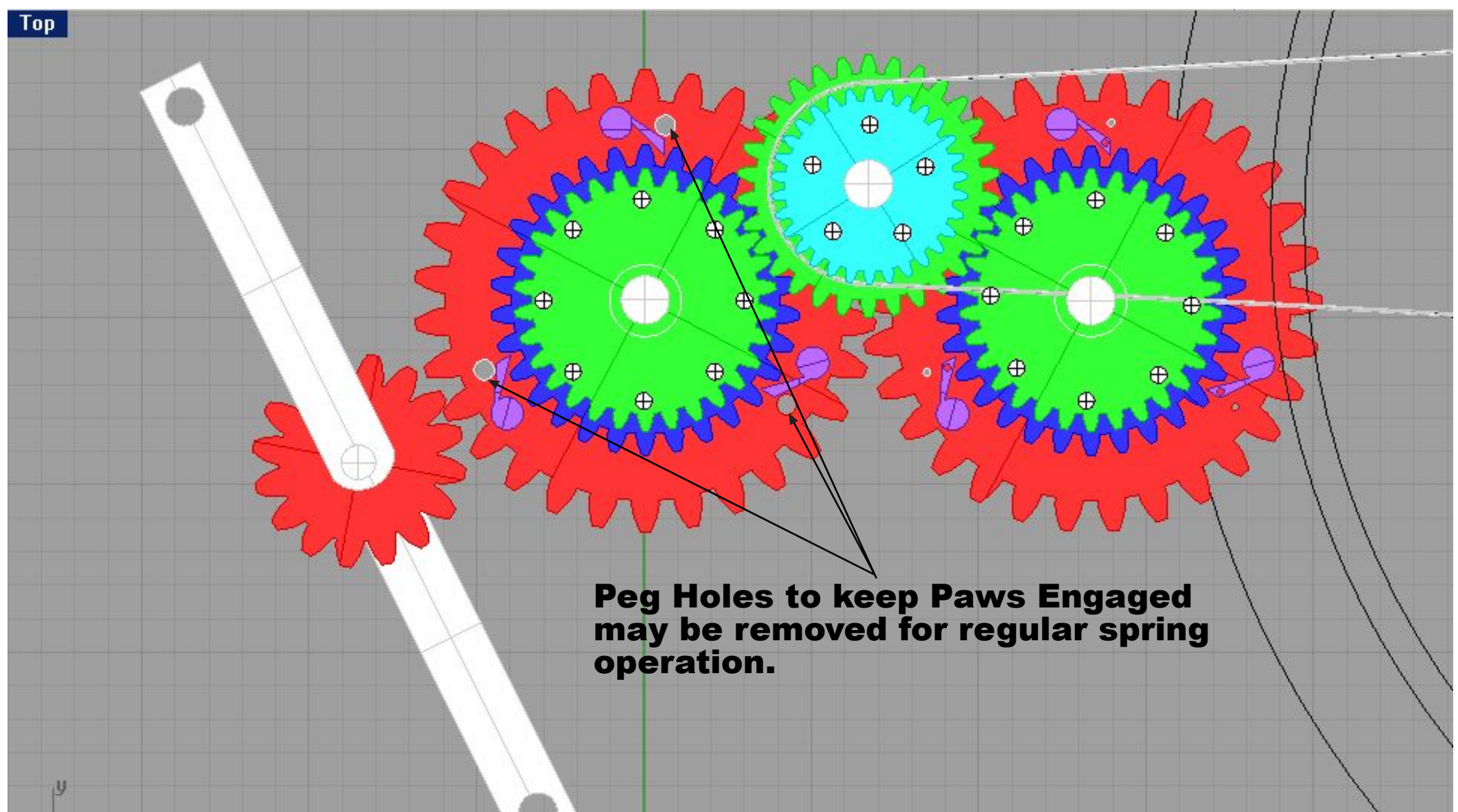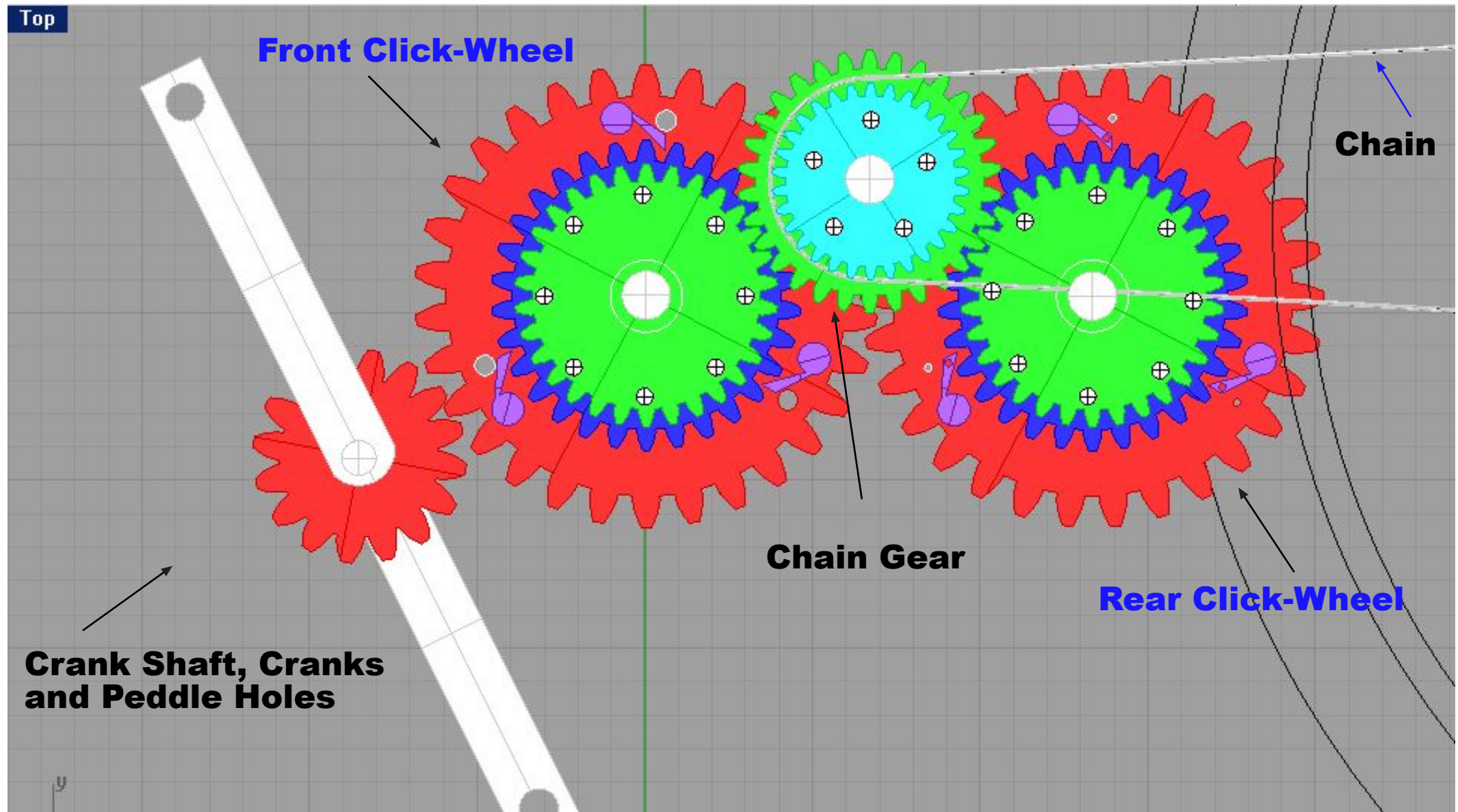
Here is how it works:
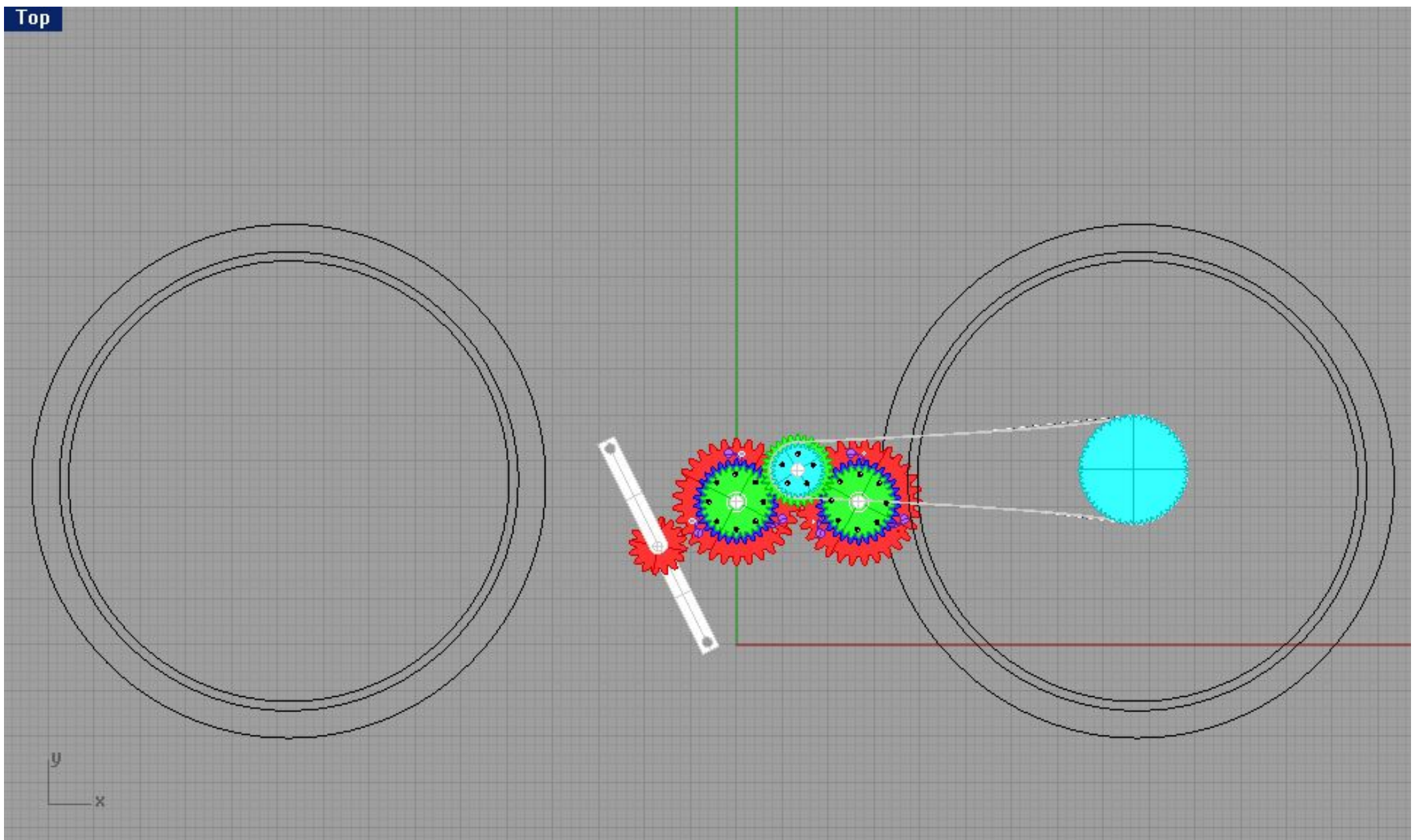
Each click-wheel consists of three gears. Eight bolts fix the top two gears to each other. The bottom gear retains the top gear assembly, but still allows it to rotate. The bottom gear also has three spring loaded ratchet paws. These ratchet paws only turn the top gear assembly in one direction. If the bottom gear is turned in a counter-clockwise direction, the paws will just slip past the top gear assembly, not turning it.
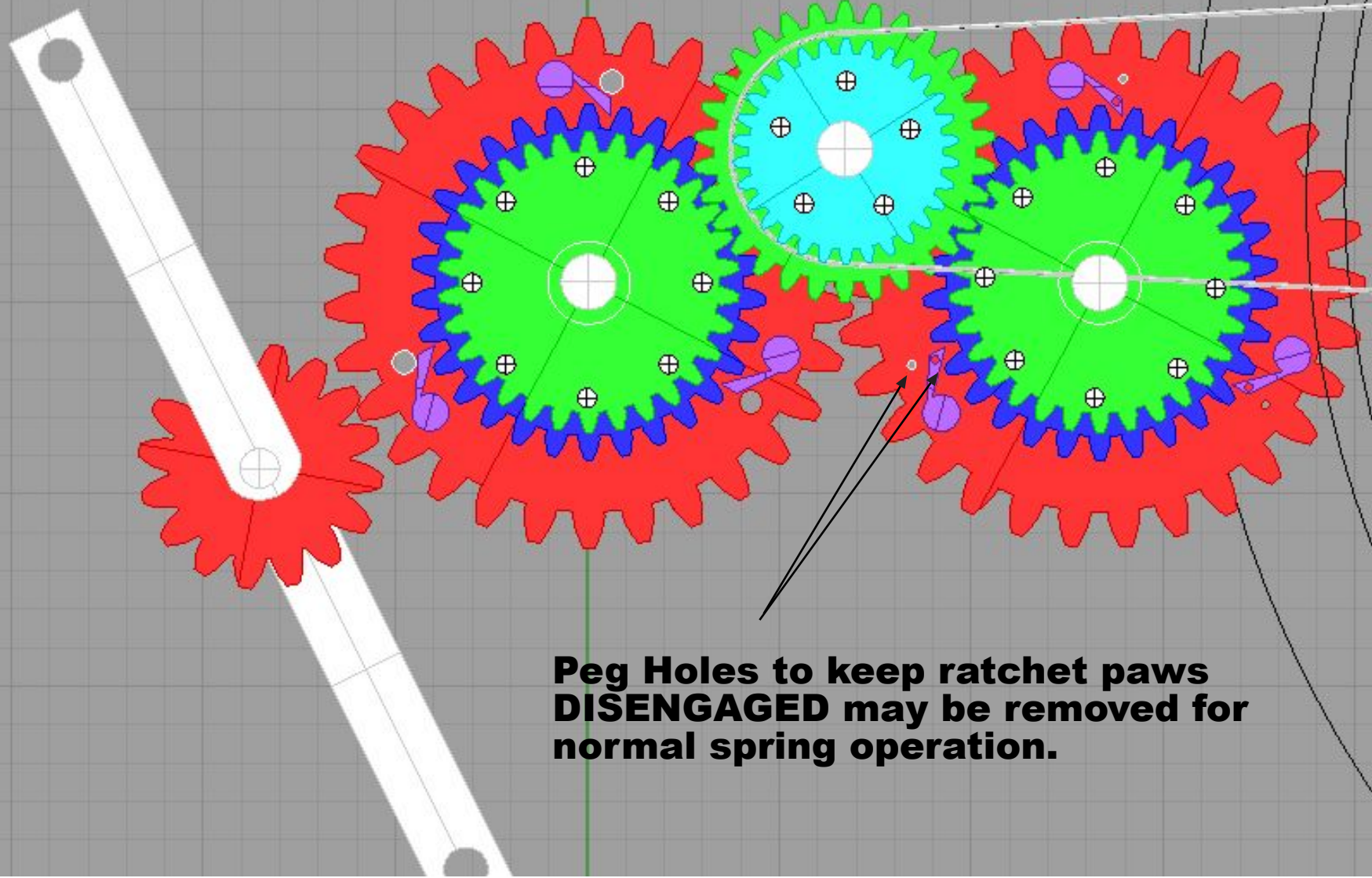
Perspective
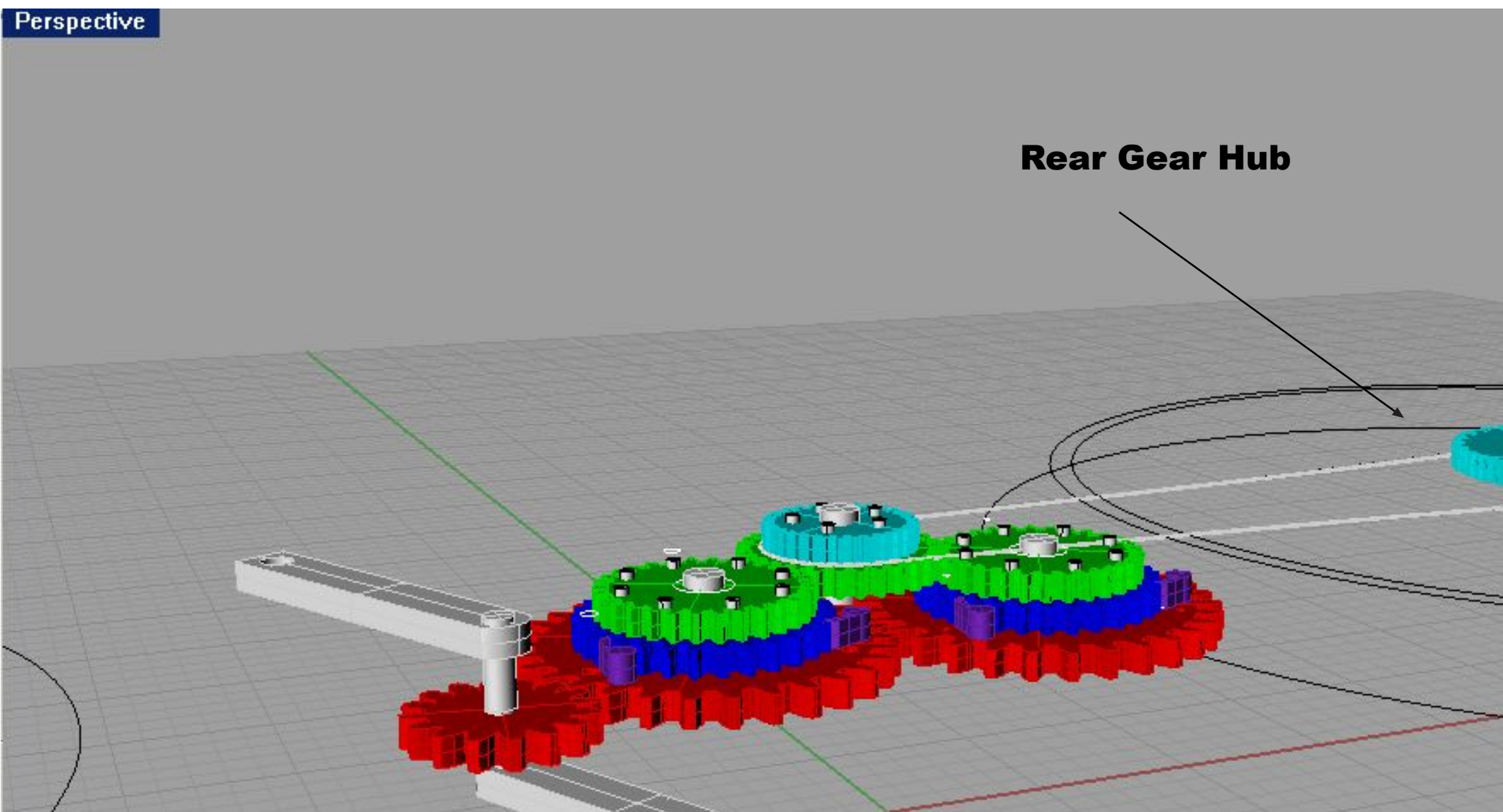
Rear Gear Hub

The rear gear hub is fixed. The chain is in light gray.

Perspective
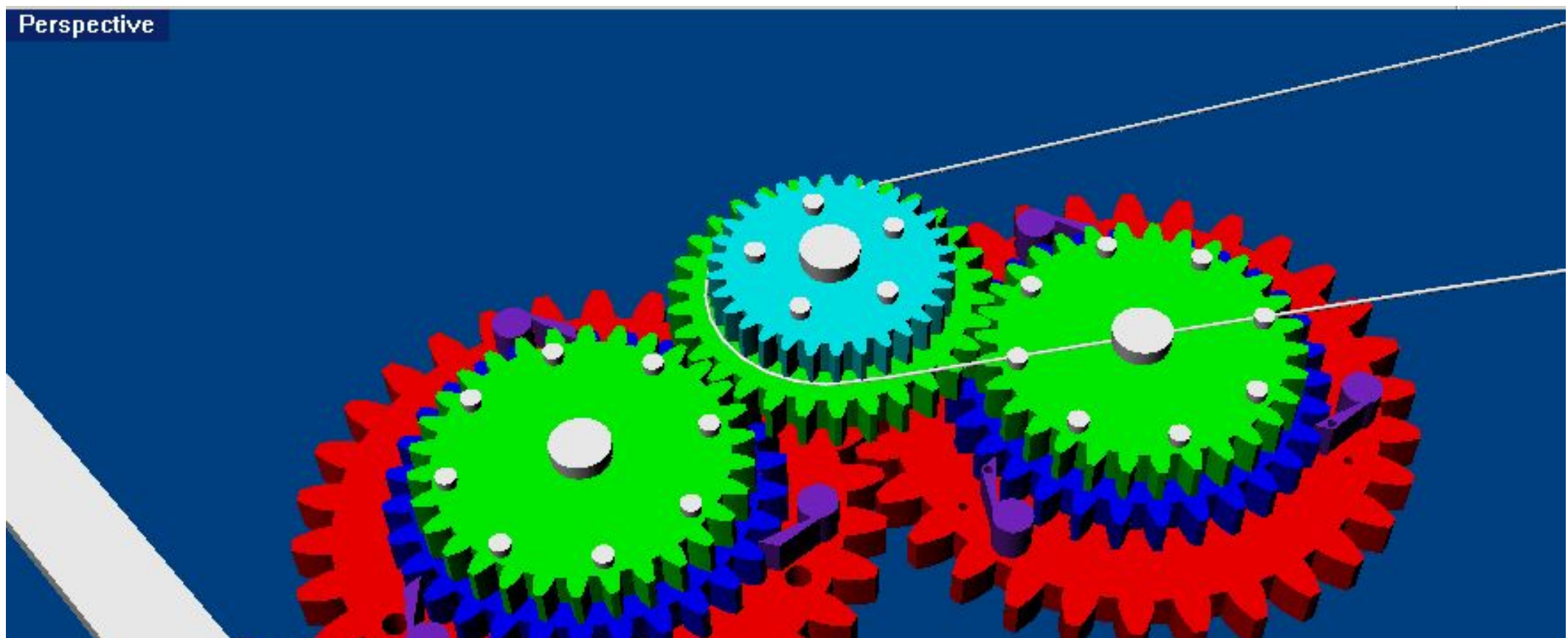
Both click-wheels are identical except the front (closest to the peddles) click-wheel has three peg holes to keep the paws ENGAGED when rotating in either direction. The rear click-wheel has three peg holes to keep the paws DISENGAGED when rotating in either direction. These holes are for pegs to be inserted when changing modes. With no pegs inserted, this is mode three, the bi-directional mode.

Top

Front Click-Wheel

Chain

Chain Gear

Rear Click-Wheel

Crank Shaft, Cranks and Peddle Holes

Top

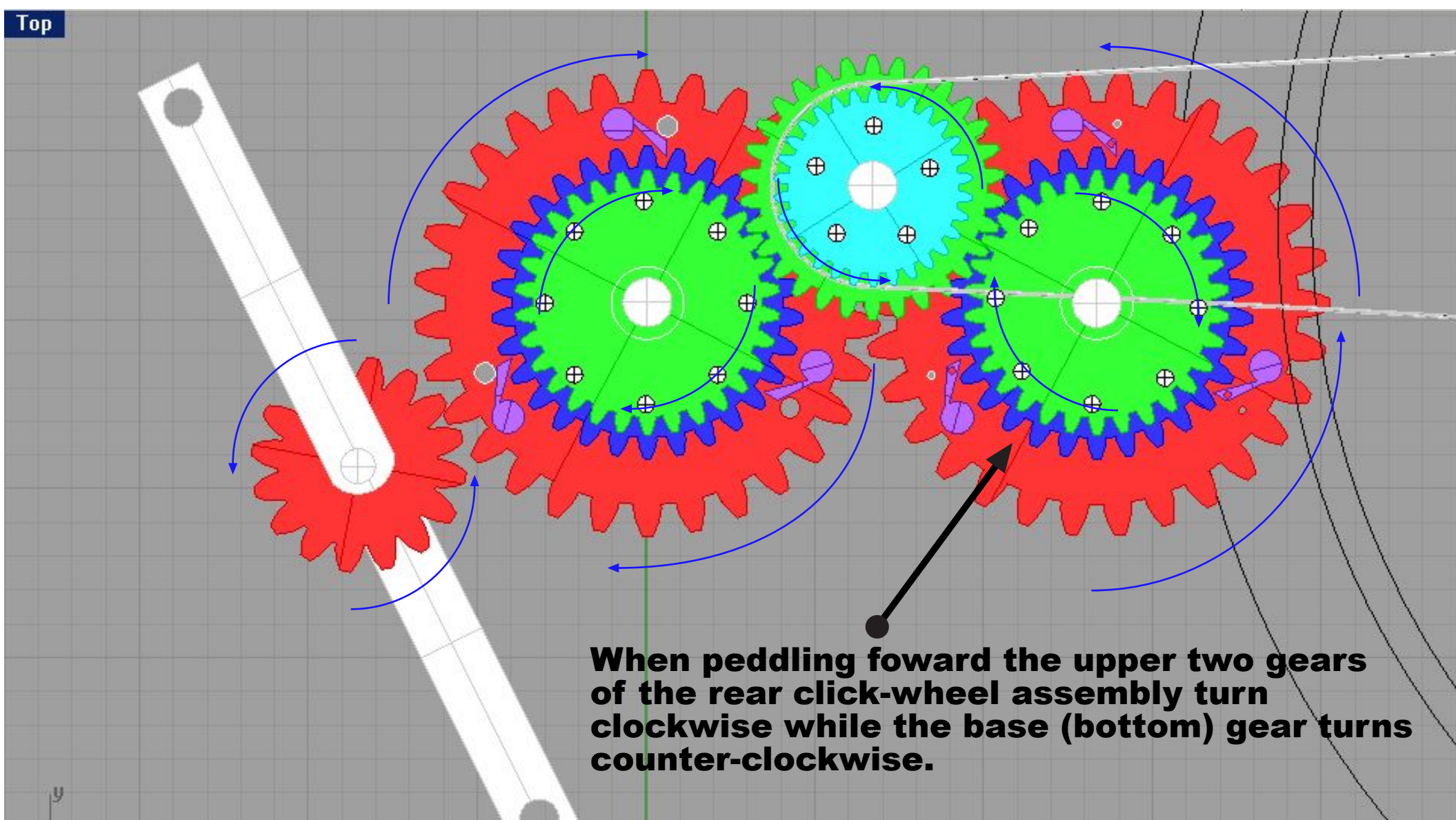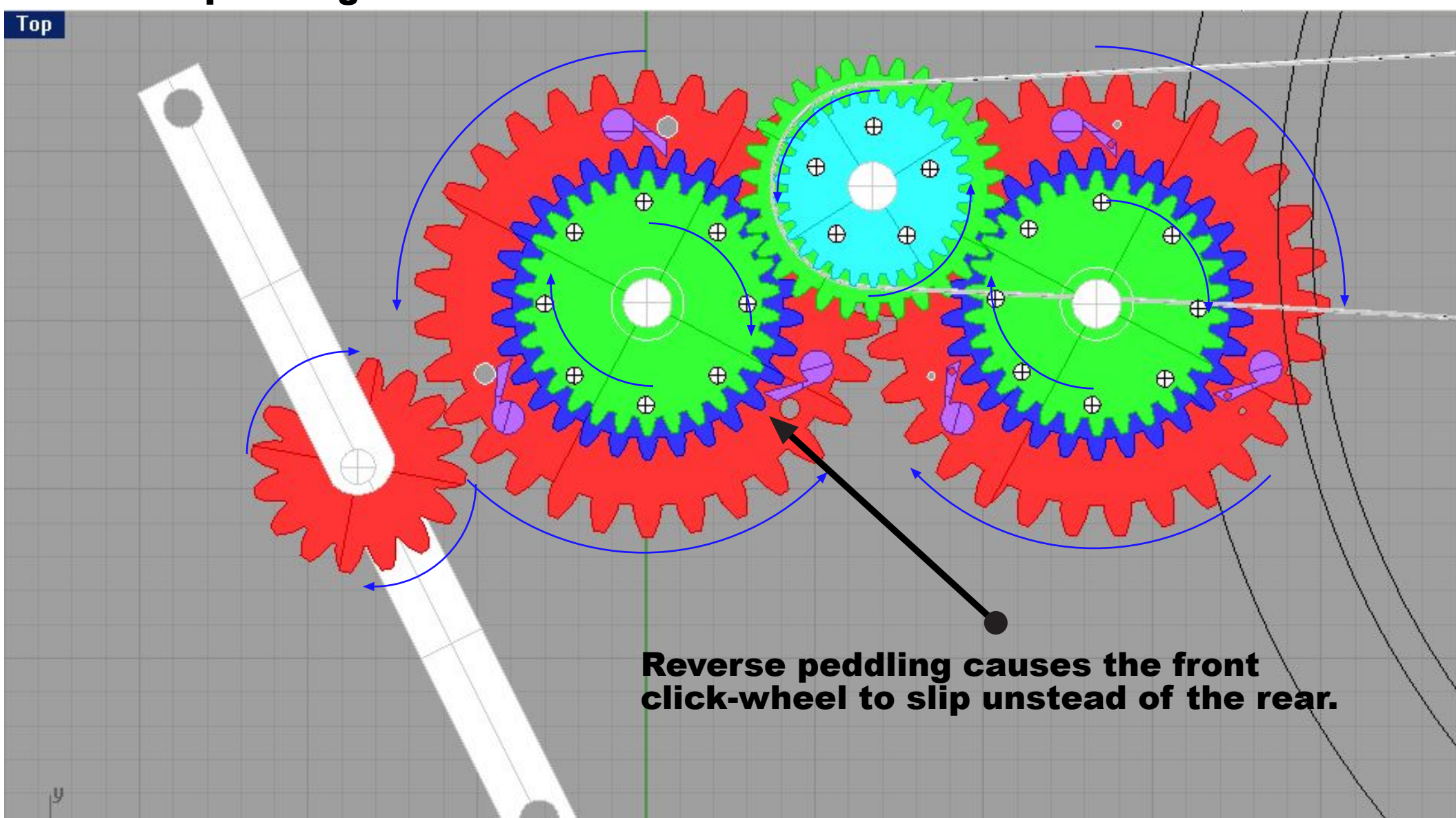Peg Holes to keep Paws Engaged may be removed for regular spring operation.

Peg Holes to keep ratchet paws
DISENGAGED may be removed for
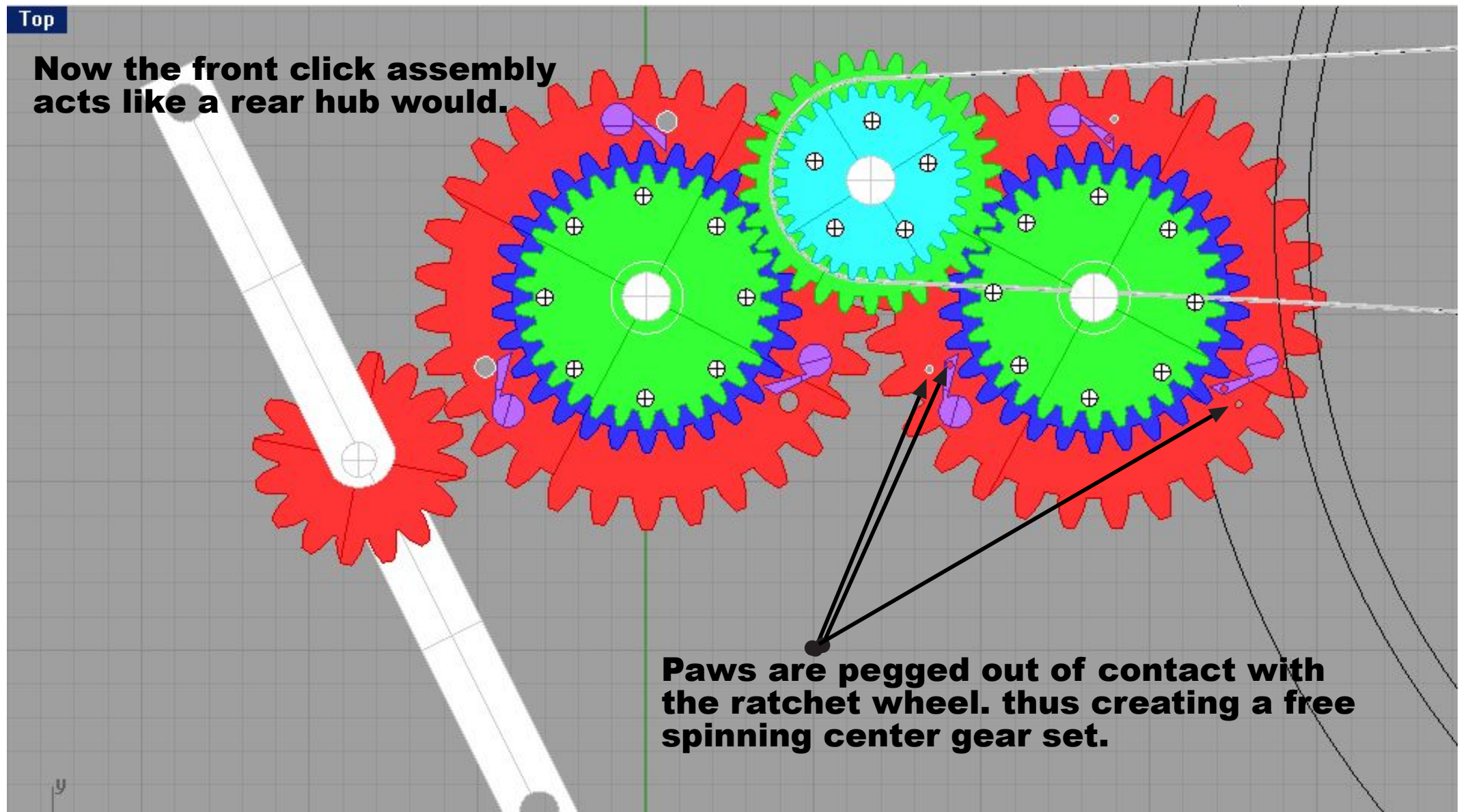normal spring operation.
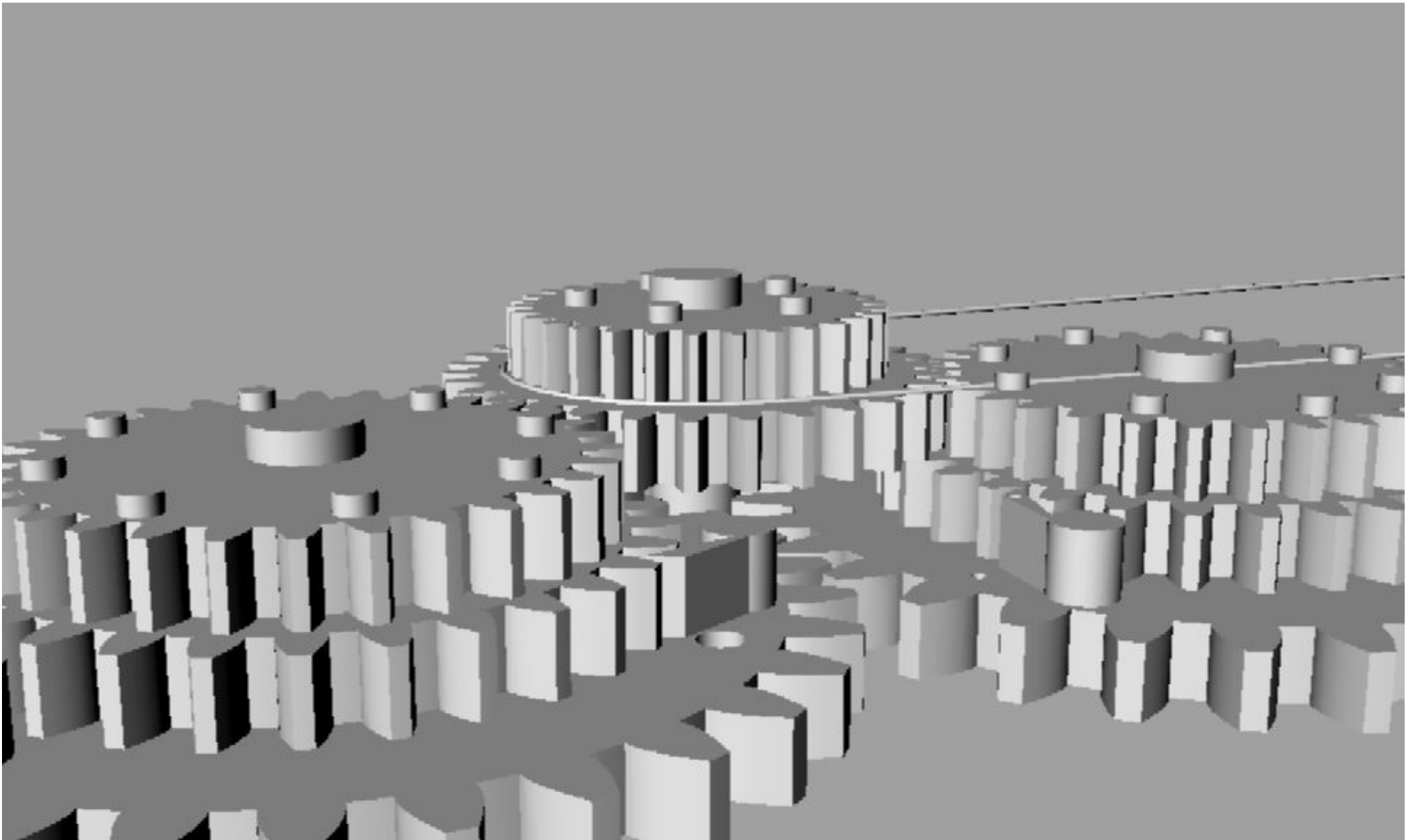
I will first explain the third mode first as it is the whole reason for this mechanism in the first place. When peddling forward (peddle gear moving counter-clockwise) the front click-wheel rotates clockwise, engaging the top assembly there by turning the upper chain gear, moving the bike forward. When peddling backwards (peddle gear moving clockwise) the front click-wheel moves counter-clockwise there by NOT engaging the top gear assembly. However the front click-wheel engages the rear click-wheel, rotating it clockwise. This engages the top gear assembly and turns the upper chain gear counter-clockwise, also moving the bike forward.

Top

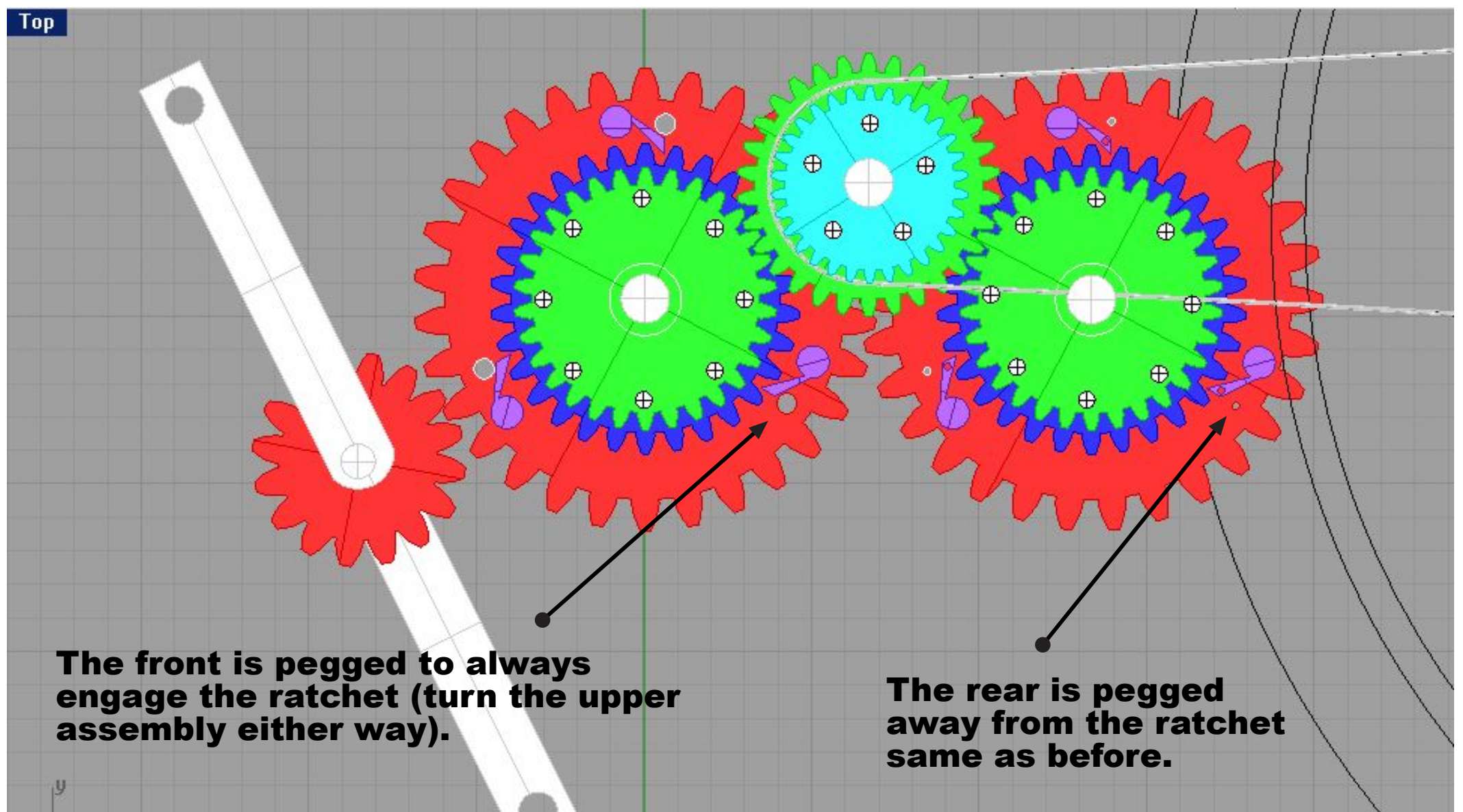When peddling foward the upper two gears of the rear click-wheel assembly turn clockwise while the base (bottom) gear turns counter-clockwise.

And when peddling in reverse...

Top

Reverse peddling causes the front click-wheel to slip unstead of the rear.

The second mode, a regular bicycle. We place the pegs in the rear click-wheel. This prevents the ratchet paws from ever coming in contact with the upper gear assembly. This means peddling backwards will have no effect. Now the front click-wheel acts like a rear one-way hub would.

Now the front click assembly acts like a rear hub would.

Paws are pegged out of contact with the ratchet wheel. thus creating a free spinning center gear set.

Finely, the fixed gear mode. Pegs are to be installed in the rear click-wheel as before, so the rear click-wheel has no effect on the mechanism. Also the front click-wheel will have the pegs installed to keep the paws in constant contact with the upper assembly (turns upper gears in ether direction).

The front is pegged to always engage the ratchet (turn the upper assembly either way).

The rear is pegged away from the ratchet same as before.

I will eventually engineer a mechanism to automatically pin the peg holes on the fly for the three different modes.

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