



YOUIMAGINE

# A 3D Printed Snake Automaton.

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Located at: <http://www.youmagine.com/designs/a-3d-printed-snake-automaton>

## Short description:

Assembles and disassembles a two chained "snake".

## Description:

<https://youtu.be/iFTTrJLOSFFk> Just prior to designing an enclosure for "A 3D Printed Snake Automaton", family, friends and followers who viewed the mechanism became mesmerized watching it in action, so mesmerized that they were disappointed that I would hide it from view in an enclosure. So here is "A 3D Printed Snake Automaton" for all to see in "open format" form! During operation, this mechanism assembles two chains into one "pseudo rigid" chain to create a snake and raise it out of its cartridge. When completely assembled and raised, the mechanism mechanically reverses direction and disassembles the snake back into two chains as it lowers the snake back into the cartridge. The mechanism uses a rotary gear carriage for mechanical reversing. When the carriage rotates to the ascend position, the carriage gears drive an ascend gear to assemble and raise the snake out of its cartridge. And when the carriage rotates to the descend position, the carriage gears drive a descend gear to disassemble and lower the snake back into its cartridge. However, without intervention the rotary gear carriage will continually rotate via the gear motor and as such must be paused to drive the ascend and descend gears in order to assemble / raise then disassemble / lower the snake. To pause carriage rotation at the proper positions, the carriage wheel has two stop tabs; one for the ascend position and a second for the descend position. A mechanical switch assembly moves a single pin alternatively between the ascend and descend carriage wheel stop tabs in order to pause the rotation at the ascend and descend positions. The mechanical switch is positioned by an arm attached to the chain drive sprocket that sets the travel limits of the snake as it ascends and descends. At 6VDC, the mechanism draws an average of 15mA, low enough for solar powered operation which was one of my numerous design goals. As usual I probably forgot a file or two or who knows what else, so if you have any questions, please do not hesitate to comment as I do make plenty of mistakes. Designed using Autodesk Fusion 360, sliced using Ultimaker Cura 4.8.0, and 3D printed in PLA on Ultimaker S5s.

If you can, please use the online documentation found at <http://www.youmagine.com/designs/a-3d-printed-snake-automaton> because those may have been updated. Also, there you can interact and provide praise and/or feedback.