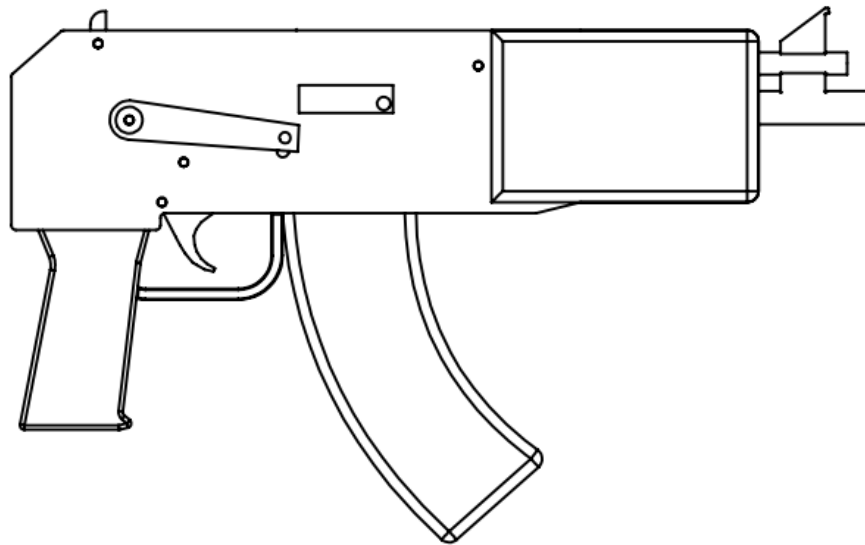


SO YOU WANT TO PRINT THE THING I MADE



A Guide

By u/AVeryHappyTeddy

Step One

Picking a scale

One of the main objectives of this project was to keep it accessible to smaller printers and I can say confidently this has been achieved. On my Ender 3 I was able to print this at 85% scale by carefully rotating the largest pieces so they would fit on the 230x230mm bed. The smallest I printed this design was 85%, if you try to print it at a smaller scale it may not work, so proceed at your own risk. If you have a larger printer that can accommodate the full size, you may still want to stick with 85% because full size will require an uncommon rubber band size that you may struggle to find. I may create an extended barrel though if someone finds a larger rubber band that works well.

Step Two

What to print

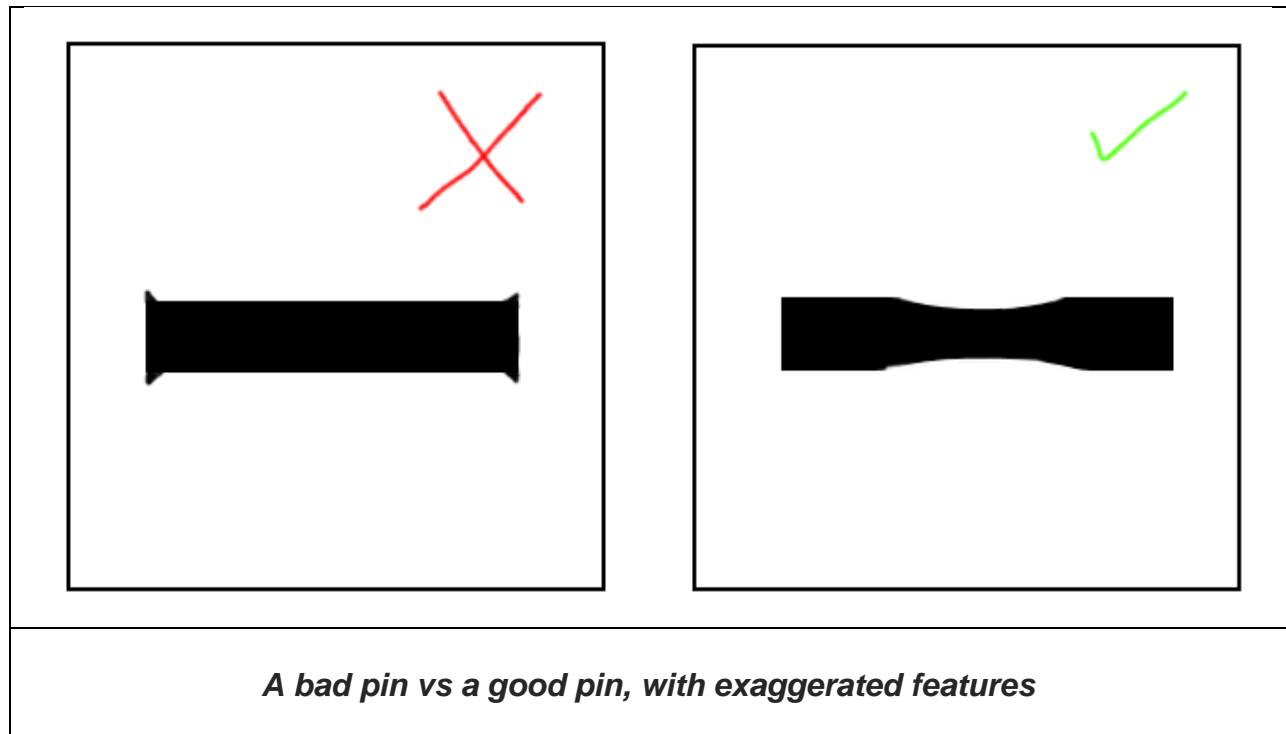
Some pieces are optional, and you may want to delay printing them until you have printed and assembled all the functioning pieces. What follows is a table of parts, quantities, and additional notes:

Part Name	Quantity	Notes
Wheel	1	
FrameA	1	
FrameB	1	Optional
FrameC	1	
Toggle	1	Needs supports
Release	1	Needs supports
Trigger	1	Needs supports
Reciever	1	Needs supports
Receiver_swingybit	1	
Lever	1	Optional
Pin_fitting	1	Optional - 100% infill
pinA	4	100% infill, print on side
pinB	1	100% infill, print on side
pinC	2	100% infill, print on side
pinD	1	Optional - 100% infill, print on side
Bolt	1	100% infill, print on side
Sight	1	
BarrelA	1	Print standing up, supports optional
BarrelB	1	Print standing up, supports optional
Grip	1	Needs supports
SidingA	1	Optional - Cosmetic
SidingB	1	Optional - Cosmetic
Mag	1	Optional - Cosmetic

Step Three

Assembly Prep

This is where the nightmare begins. You will need either a vice or a drill press to press the pins into their respective holes, if you have a drill press, *congratulations*, you get to assemble this on easy mode. However, before you insert any of the pins into their respective holes you should sand the middle of each pin and if they are badly elephant footed on the ends then that should be sanded down as well. Also, obviously all of the supports need to be removed, the supports for the receiver can be somewhat annoying to remove, the best tactic I've found is to jab out the supports in the holes with a small screwdriver and then pry the supports out with that same screwdriver. These surfaces that had supports will need a good amount sanding.



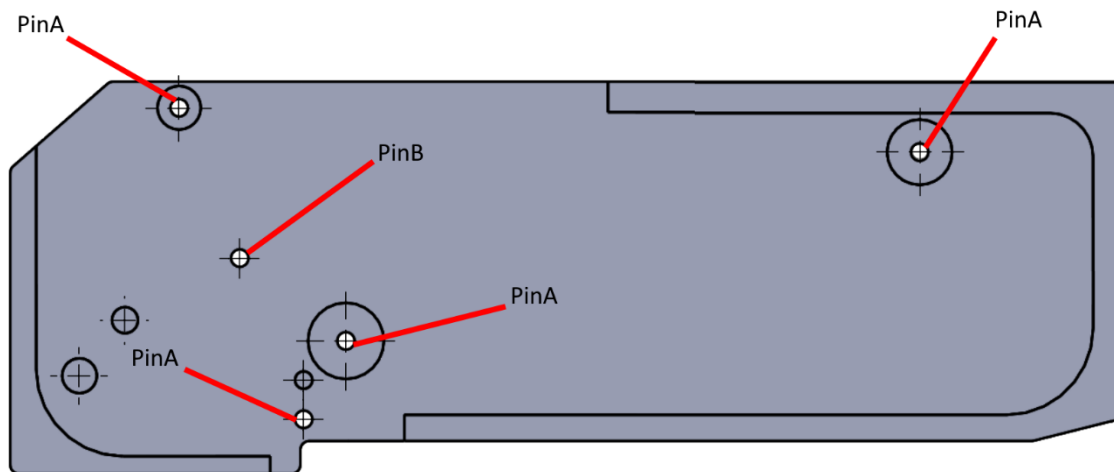
Step Four

How do you assemble this nightmare??

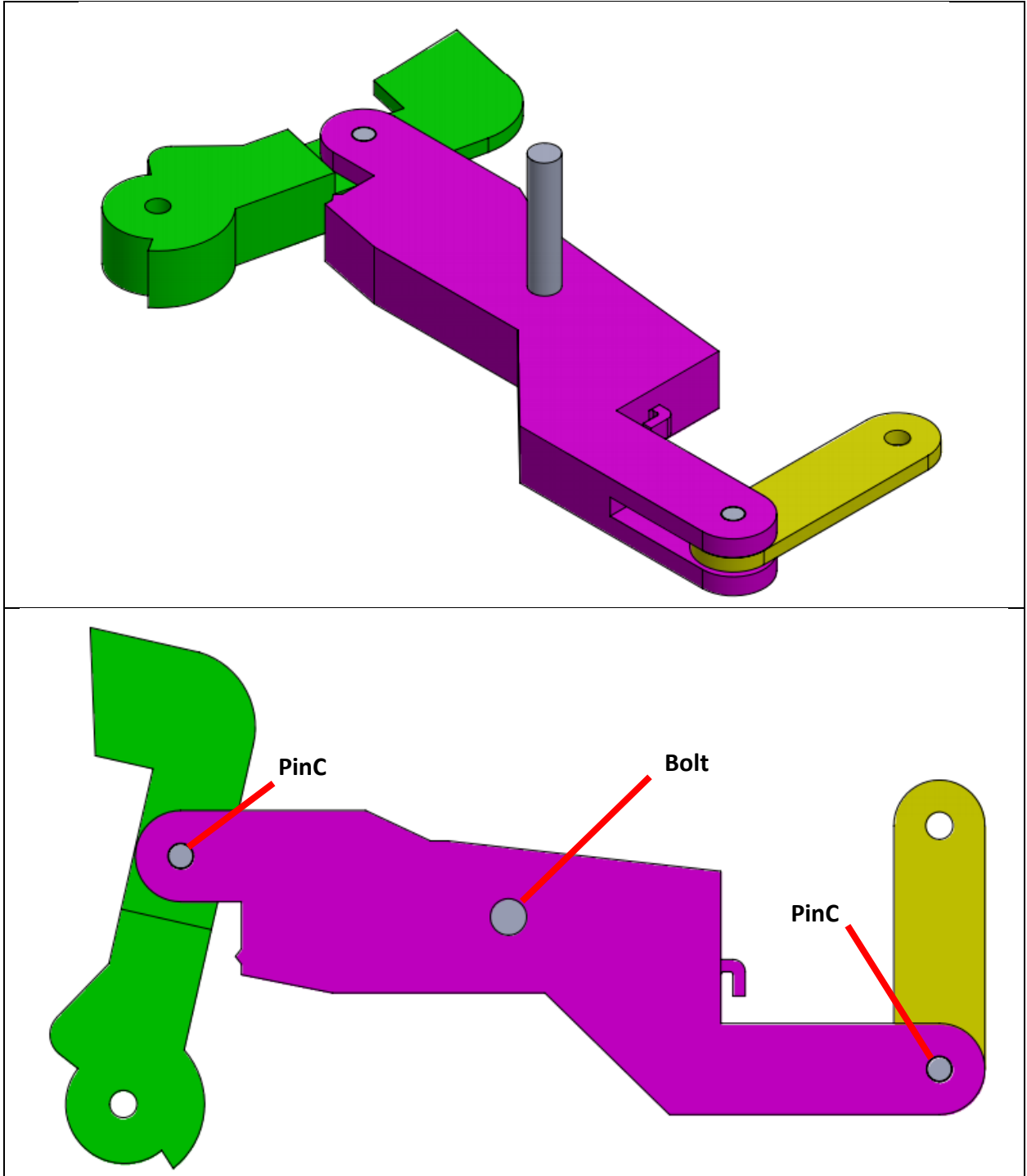
You will need either a vice or a drill press to press the pins into their respective holes, if you have a drill press, *congratulations*, you get to assemble this on easy mode. I didn't have any issue with pins breaking while being pressed in, but please wear eye protecting just in-case. PinB is also quite long and may bend if not pressed straight into the hole. What follows is a table with the sizes of each pin so you can sort out your parts, remember to factor in your scaling:

Part Name	Quantity	Diameter (mm)	Length (mm)
PinA	4	4.00	24.00
PinB	1	4.00	32.00
PinC	2	4.00	12.00
PinD	1	5.00	38.00
Bolt	1	6.00	40.00

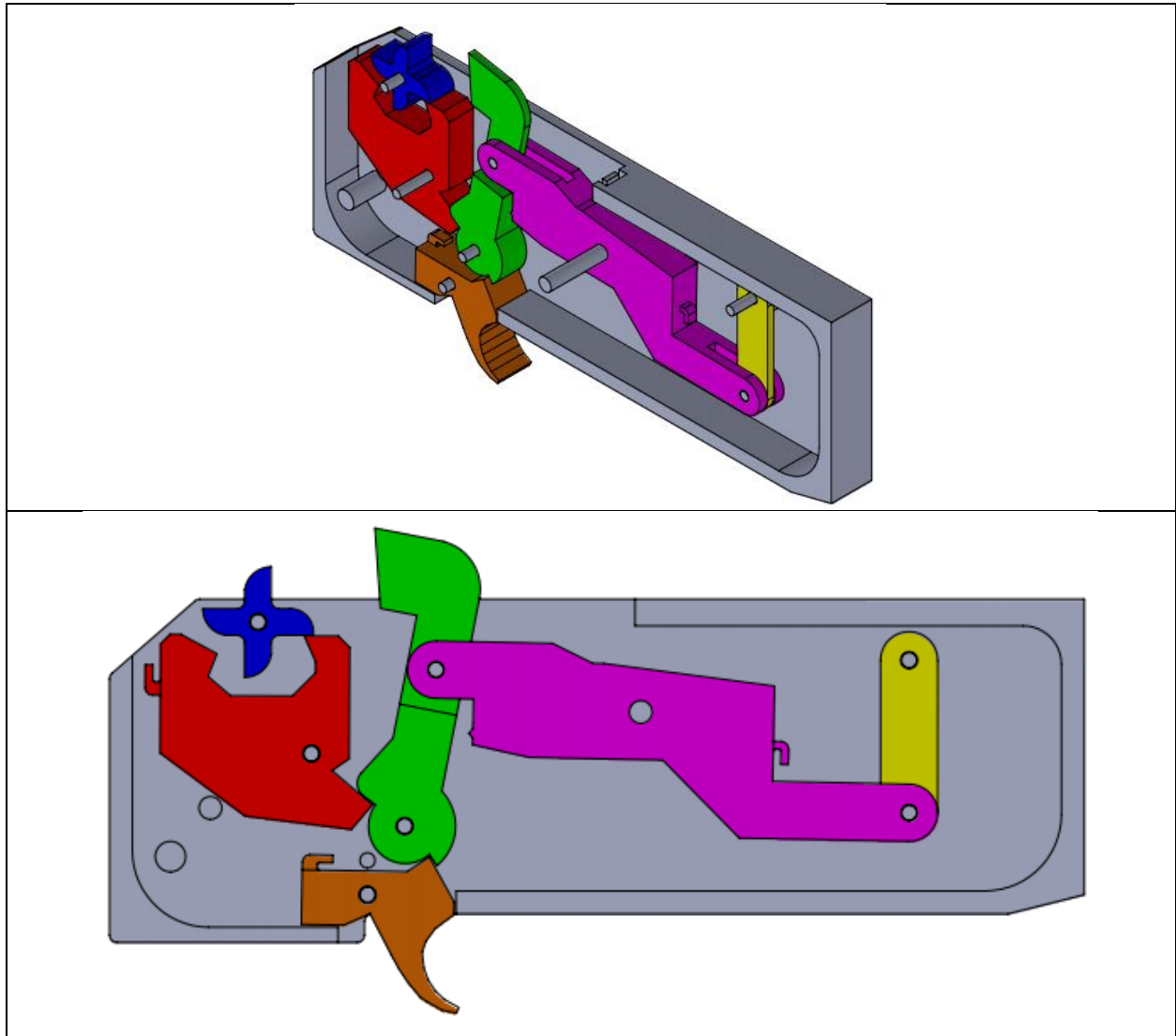
Now it's just putting pins in holes, I've created a few images to show you what pins go where:



The receiver is the only sub-assembly of the design, to assemble this you need to push the two PinC's through both parts at the same time. Lining these up can be a little annoying, it's easiest if you push it partly through the purple piece then look through the other side to see if you have it aligned and then push it the rest of the way through.

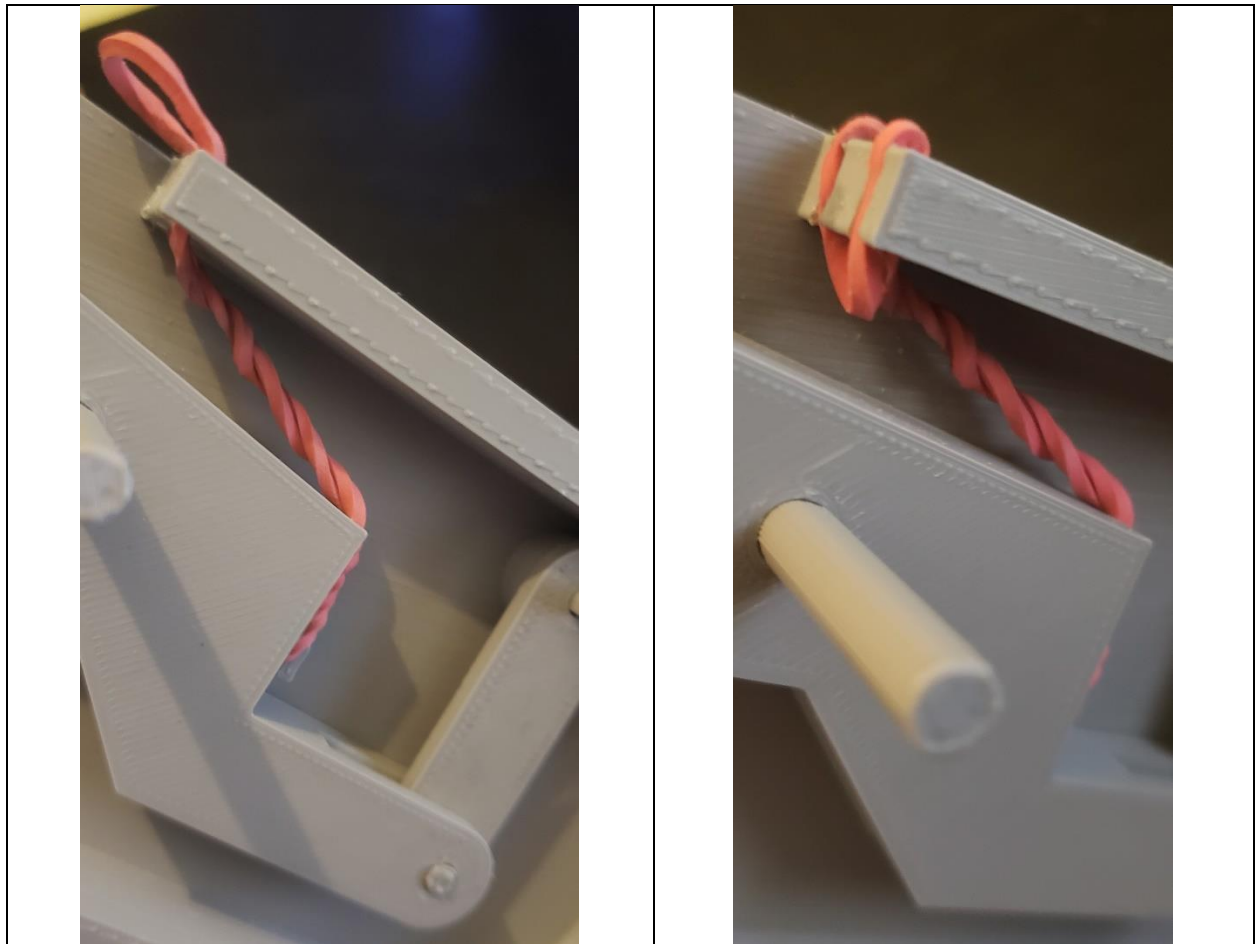


With the receiver assembled and all the pins in the frame you can now put all the pieces into the frame as shown below:

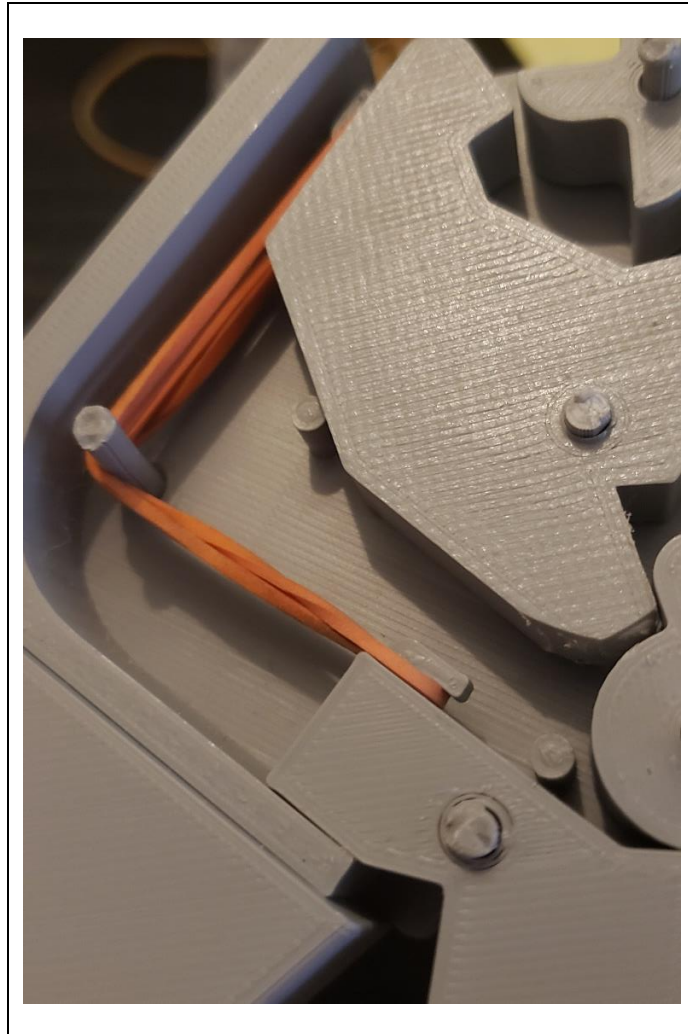


At this stage it is almost functional, all that is missing from making it work is a few size 16 rubber bands (If you have any rubber bands in your home already, they are likely this size). You will need to twist one rubber band until it looks similar to the picture bellow and then hook it onto the reciever and onto the frame. Pull the slack out of this rubber band through the top and then the excess can be tucked away as shown.

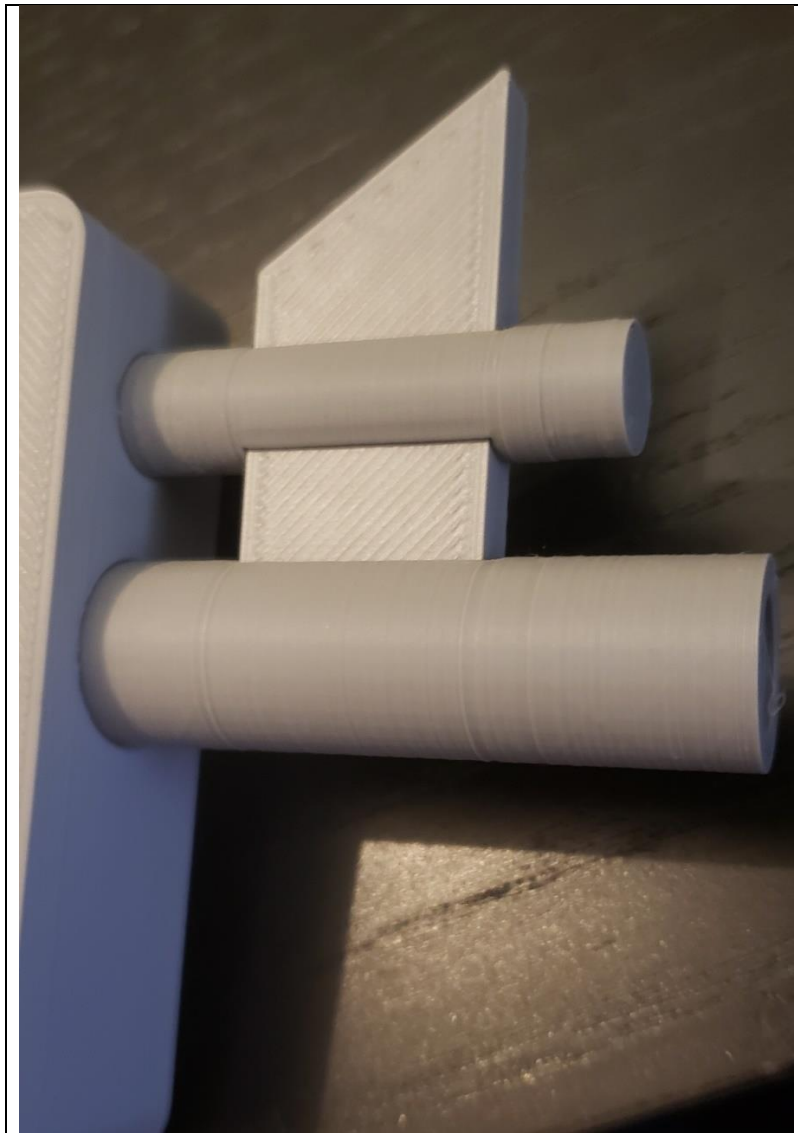
Also these pictures are all of v0.5, because v1.0 consisted of lots of small changes to the frame which I didn't want to waste filament reprinting. This means that there are some small differences from what you will have printed, don't worry, it all assembles the same.



Then connect two rubber bands (No twisting necessary) to the trigger and toggle as shown bellow. Make sure to have the rubber band go around the pillar in the bottom left of the frame.



Lastly the barrel pieces need to be assembled and slotted into FrameC, this is extremely straight forward, and the fit with the frame is quite good so no glue should be necessary. However, the fit isn't as tight as the pins so this should all be able to be assembled by hand, no tools needed.



Step Five

Glue

FrameC will be glued to the front of the assembly, one edge should be flush with the bottom side of FrameA while the other will have a gap. The grip can also be glued on at this point, its exact positioning isn't critical, and you can check if you have it in a good position by testing out the trigger.



Step Six

Test it out!

The rest of the pieces are not necessary in order to shoot it, so it's now ready to fire. I've found the best size rubber band to fire are 1/16th thick size 19 rubber bands, there's a lot of them available on amazon. Loading it is simple, hook the rubber band on the sight at the front and then draw it back onto the wheel. Once the band is on the wheel rotate it back until it clicks, another rubber band can now be loaded. To fire pull the bolt back until there is a click and a rubber band lands on the release. Now you can pull the trigger to fire.

If you decide to print FrameB, Lever, Pin_fitting, and pinD the loading process changes slightly. Before loading any rubber bands, you need to first pull the trigger and push the bolt all the way forward, now flick the lever into the up position. Now you can load it as described previously. To fire it just flick the lever down and the release should pop up and load a band, now pull the trigger to fire.

If the release fails to load the next rubber band, pull back on the bolt until the wheel clicks and a rubber band lands on the release.

Credits

The idea for this mechanism was not my own, that credit goes to RBguns, he has a YouTube channel with lots of cool wooden rubber band guns and a website (<https://www.rbguns.com/>) with all of his projects and PDF's for each. This video in particular was what inspired this project, and since both designs load the same way you can use this as loading instructions if you didn't understand my written instructions: https://www.youtube.com/watch?v=4iUp_duHT6w

Expansion

Looking at the model should make it clear I am not a 3D designer, it's all functionality and no beauty. That's why I am including the drawing for FrameC so someone more proficient in modeling may easily create a better-looking version, it's all in basic dimensions so you don't need to know GD&T. The step files for all the parts will also be available on the GitHub page.

