Flash Gordon Ray Gun

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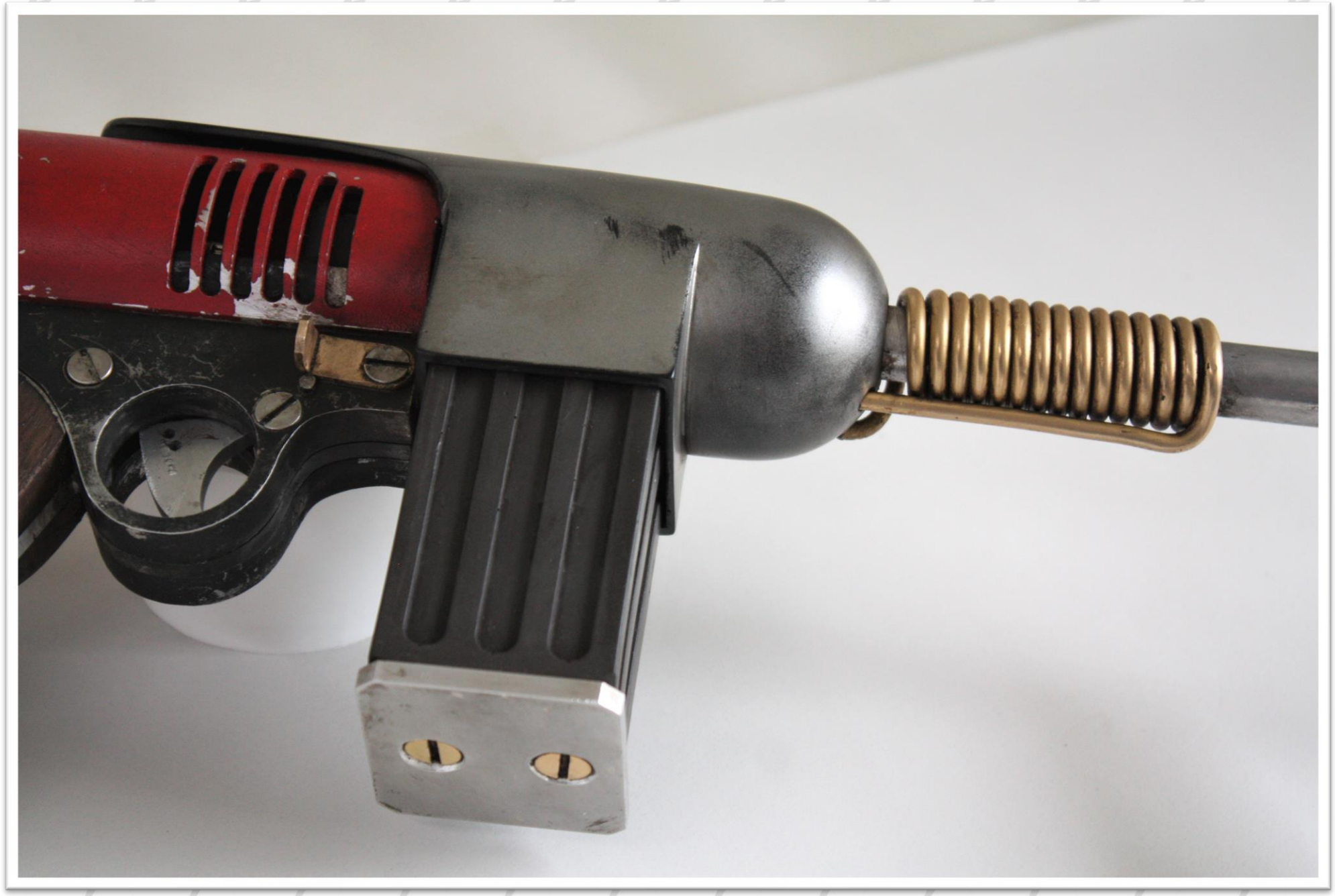
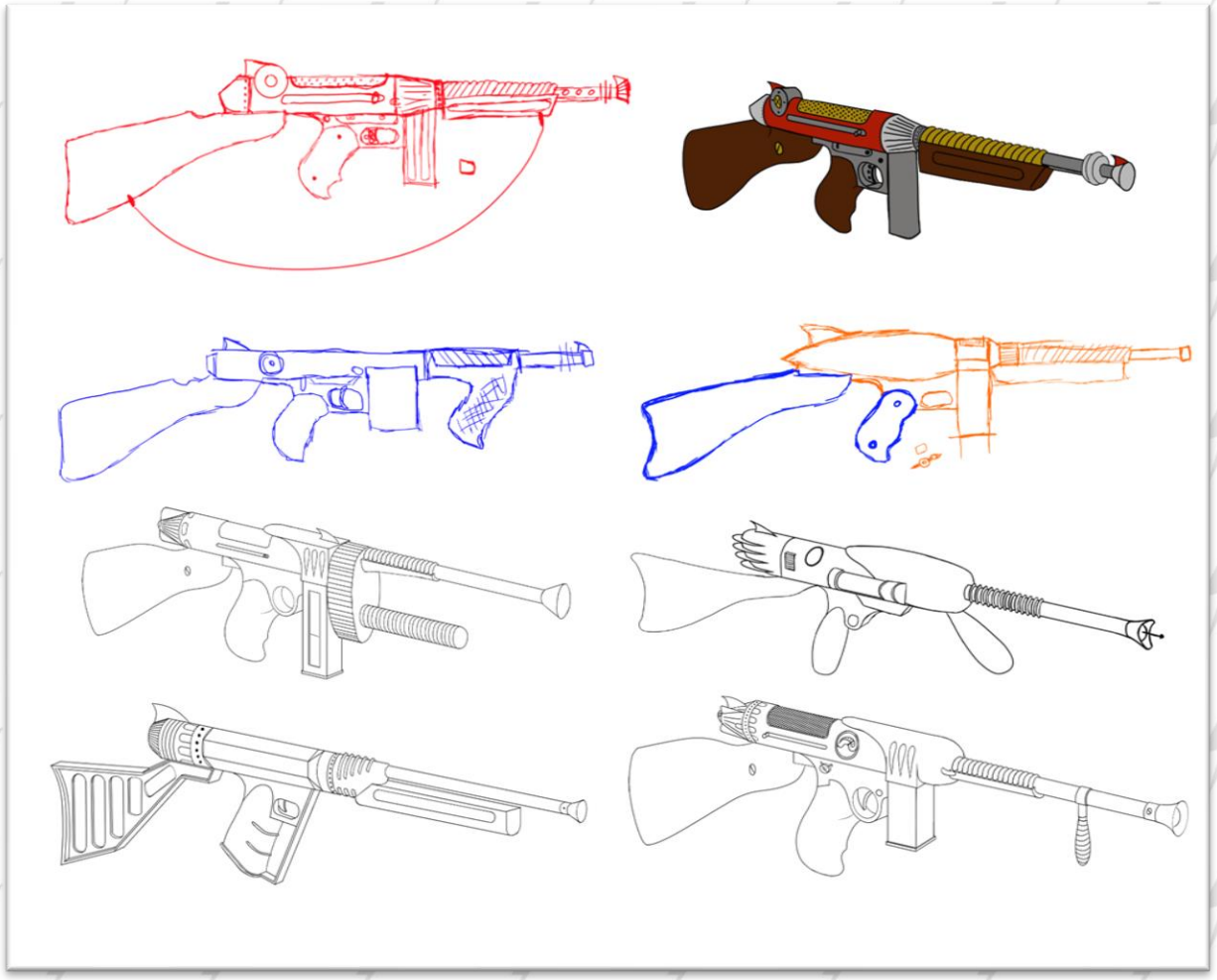
N00161806
15/05/2021

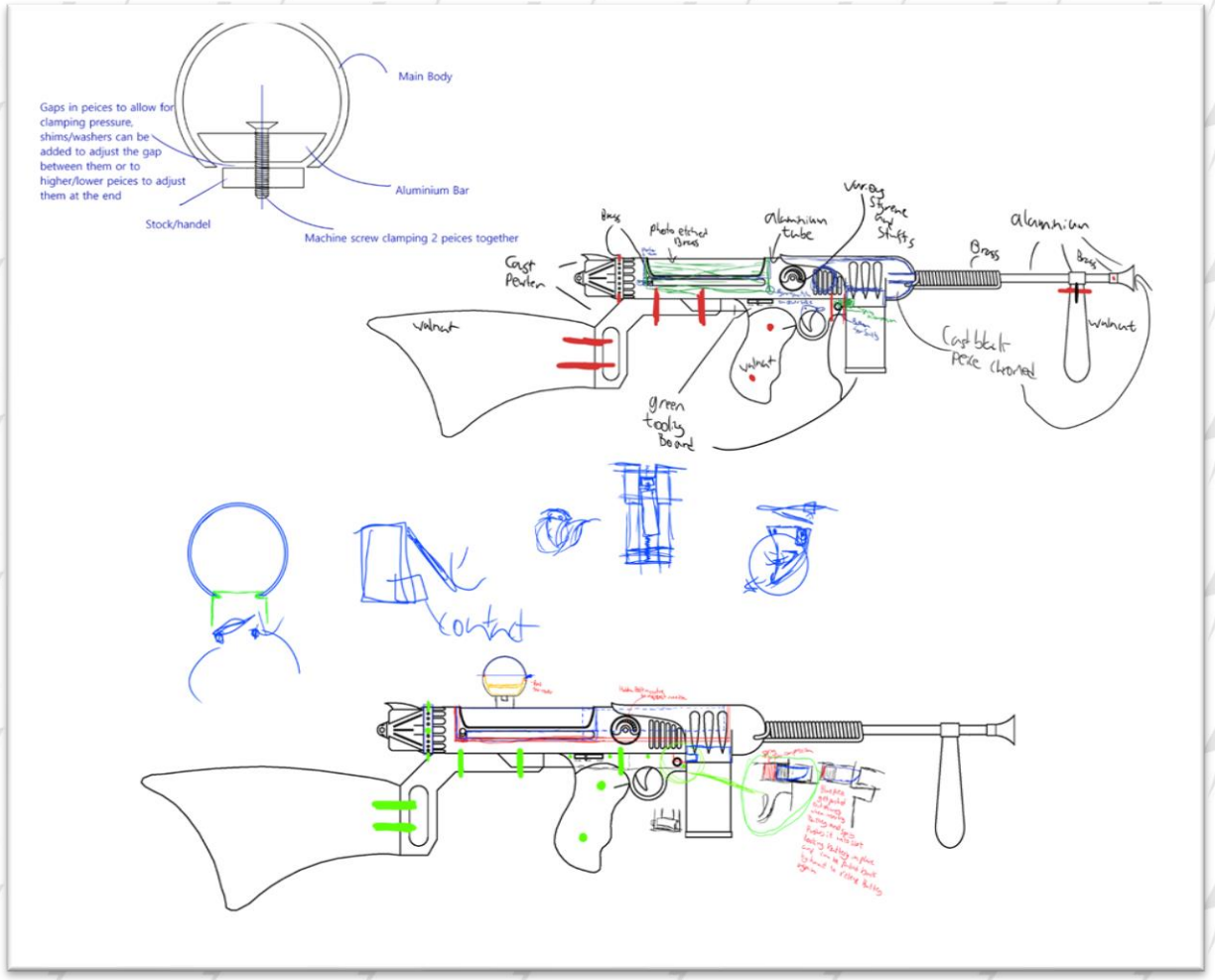


Notebook

Sketchbook

Digital Sketches



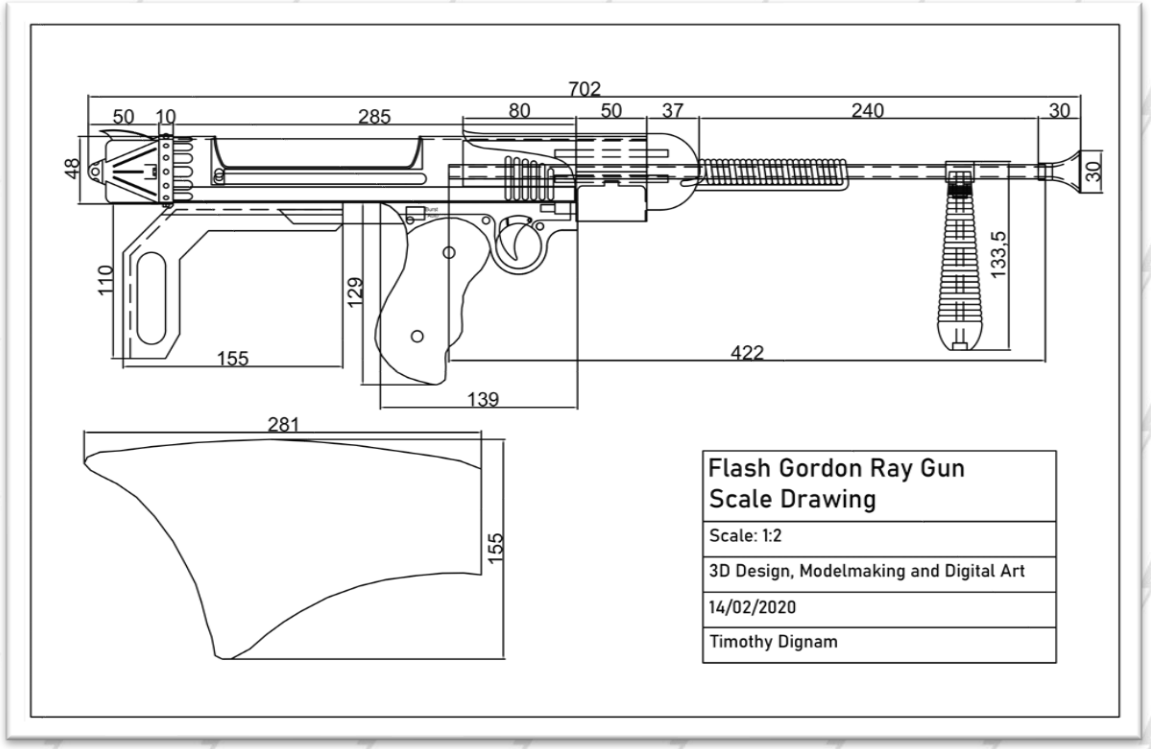


Sketch Models

These sketch models were done at the start of the project to give me a good idea of what the whole thing will feel like in the end before I finalized the design and moved on with Project. After making one I ended up changing a few details so that it would fit better.

There was also many grip sketch models from the initial project that influenced the design.

Final Design



Walnut Stock

The wooden stock was one of the first parts I worked on. All the wooden parts are made from American walnut.

The shape was carved out using a Japanese tenon saw and a chisel then was further refined using a straight and round micro plane then sandpaper to finish.

The stock is mounted to the rest of the gun by 2 bolts threaded into the wood.

The finish on all the wooden parts is boiled linseed oil



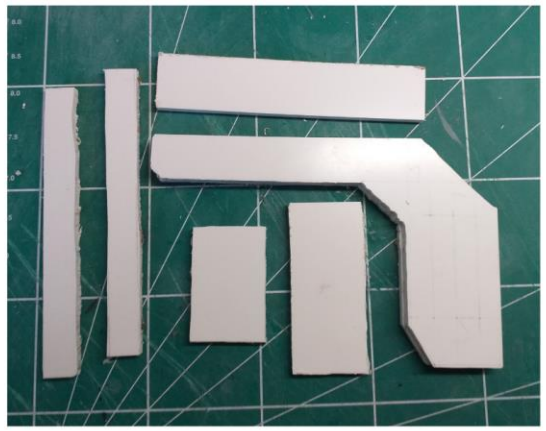


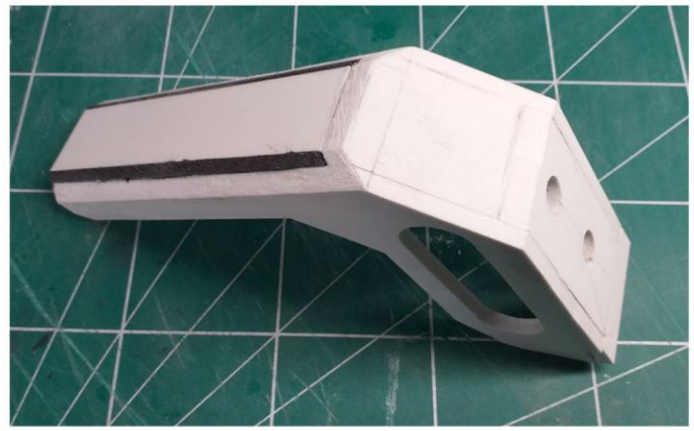


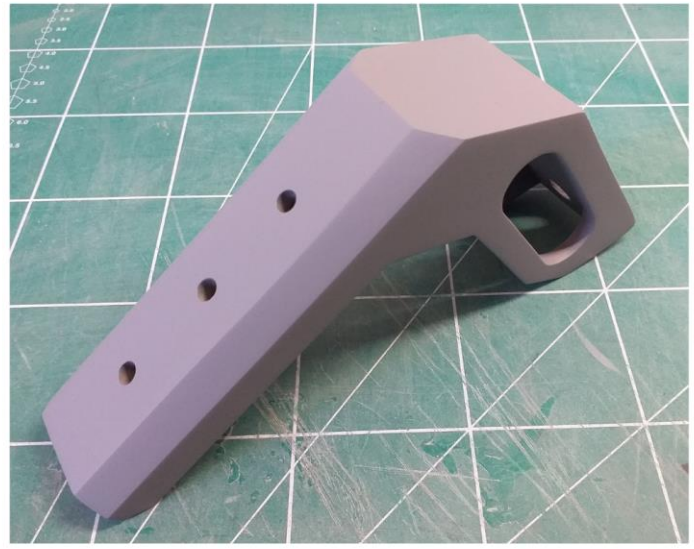
Metal Stock

The Master for the metal portion of the stock was made from 5mm styrene cut out on a bandsaw, glued together then sanded and filled until smooth.

This part was later molded and cold cast with aluminium powder





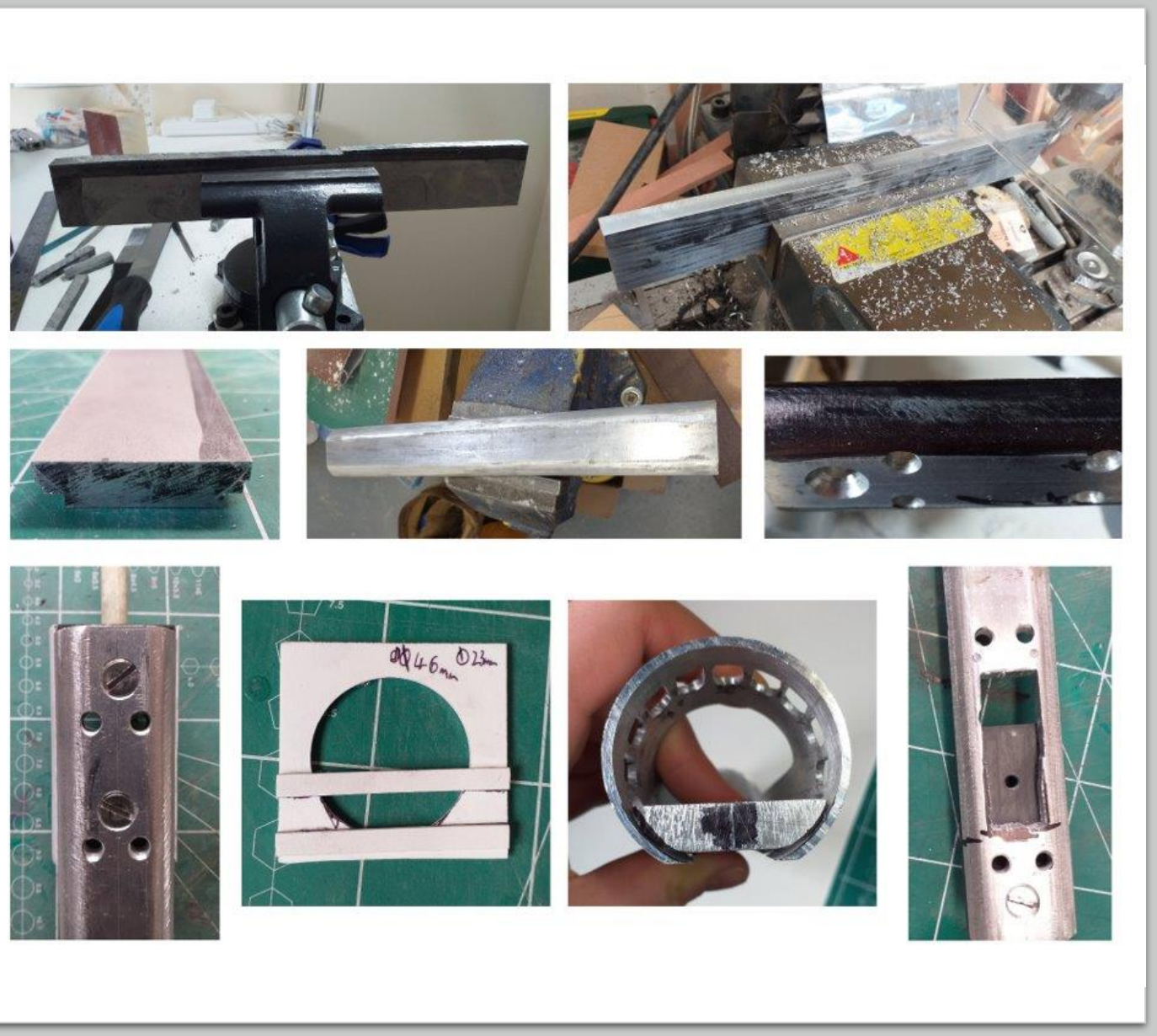


Support Bar

This is a 10mm aluminium bar that was used to hold everything together. Everything on the prop is screwed to this bar using machine screws and the body is held in place using the clamping pressure between the bar and the pieces screwed to it.

The bar was made by firstly making it narrower using a hacksaw, then cleaned up with a milling machine. The curve was the achieved with a template and mostly hand files.

Holes were then cut, drilled and tapped where they needed to be.



Body

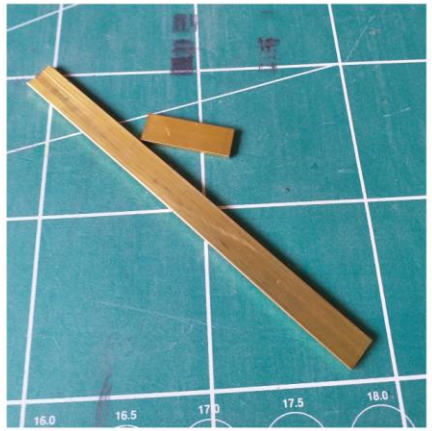
The Body of the prop was made from a section of 50mm aluminium tubing.

To machine this on the milling machine it was filled with resin. The bottom and the step at the top end were machined flat along with most of the vent holes which were later cleaned up with needle files.

The cutout on the top was cut using a hacksaw and cleaned up with a file and the bolt slot was drilled out and cleaned up with a file as well.

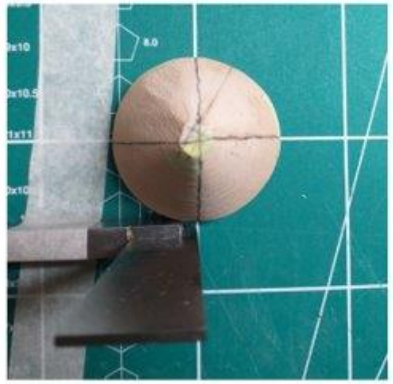
Brass Ring

The brass ring at the back of the body was just shaped out of brass bar stock. I had a anneal it a few times then I soldered it together and polished it up. The holes have matching screws with hold the end cap in.



End Cap

The end cap master was made from a chunk of tooling board that I cut from the master of the initial project.
It was shaped into a cone and details were carved into it, then some styrene was cut and glued onto the piece. It was quite difficult to shape this into a cone without a lathe or 2 square edges to work from so I used a light to project the shadow of a square onto it and found the center point of the cone using the shadow and the lines on the cutting mat.
The final part was cold cast using aluminium powder.


Interior

The frame of this part was just a styrene construction. The copper pieces The detail pieces were cold cast copper and bronze.

The piece connected to the tube was scratch build using a pepper grinder and some other found bits.

The tubing was heated over a candle and stretched to get that shape. There is space for 2 LEDs on either end and a hole for wires to run through.

Metal Cover

The cover for the interior piece is a sheet of perforated 1mm aluminium sheet that was cut and bent to shape until it fit nicely.

The bolt is a found piece from a coffee grinder with the correct sized nut epoxied into it. This section moves nicely with the addition of some 3in1 oil

Barrel Parts

The details on the barrel were 3D printed. I wanted the two to be machined in brass but unfortunatly I didn't get access to the metal lathe. I tried to cold cast them in brass but I coulde't get a cast that I thought would work so I ended up just printing them and painting the with alclad brass.

The wooden foregrip was turned on the lathe and a section of 8mm prass rod was tapped and epoxied into it so that it would screw into the 3D printed piece and clamp onto the barrel when screwed tight.

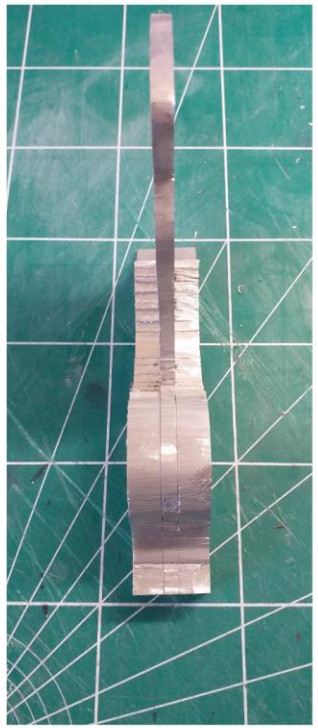
The brass coil was a brass rod that was heated and bent into a coil.

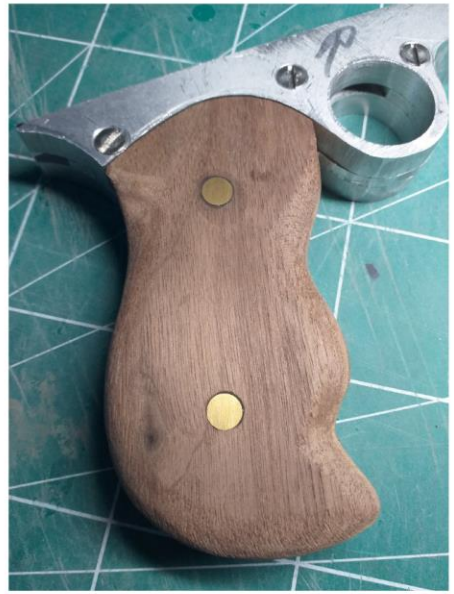
Grip

The grip was made from 3 layers of aluminium that was cut into shape with a hacksaw then refined with a file and a power file. The hole for the trigger was cut using a forcener bit in the milling machine. The grip screws together and has a space in the centre of the trigger to fit.

The wooden part was cut to shape and glued in place with 2 brass pins and epoixe, it was then shaped until it felt comfortable to hold.



Grip Mechanisums

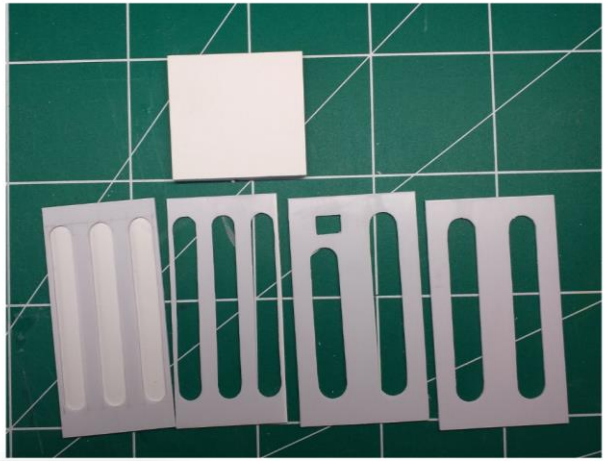
The Trigger work by pivoting on a pin and pressin down a detector switch and the battery realese is a brass pin with a spring behind it that can be pulled backward to realese the battery. The grip sides were hollowed out to give more room for the electronics.

The black finish on the aluminium is aluminium black and was weathered with some steel wool.

Battery

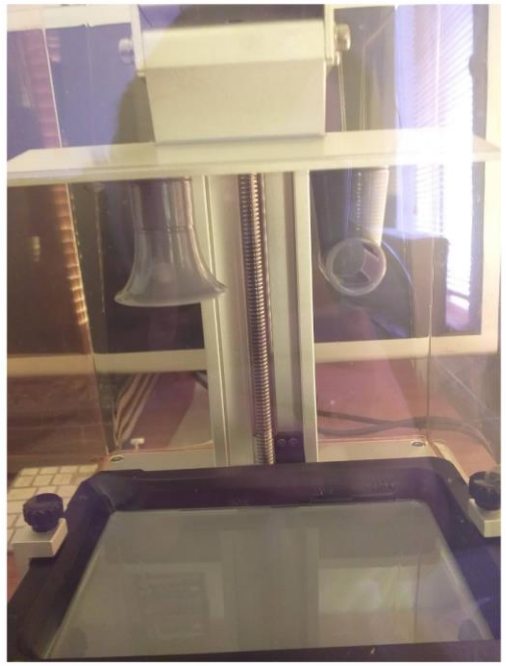
The original Battery was a sheet styrene construction that was then cold cast with iron powder. Unfortunatay it ended up being a small bit too large, so I had to remake it.

Printing it was the quickest and simpilest solution. The bottom diden't come out well in the cold cast so I cut it off and made a piece of aluminium to replace it

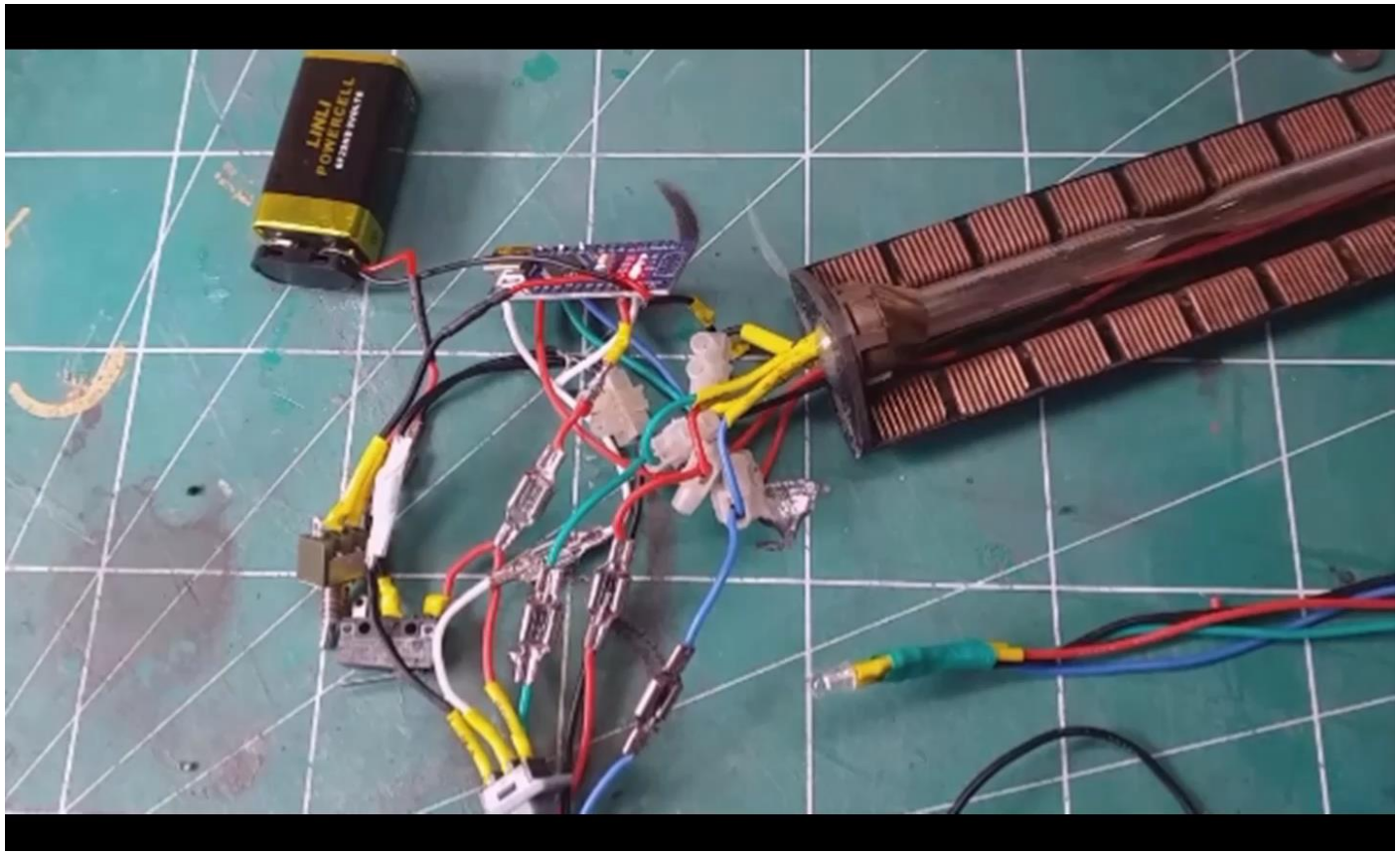


3D Prints

All the 3D prined parts were deigned on Fusion 360 and printed on a Photon mono resin printer.

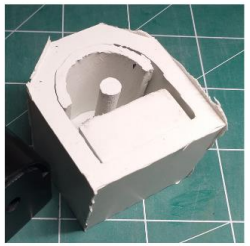


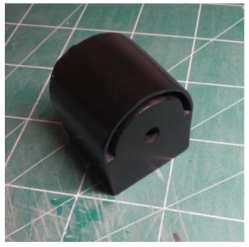
Electronics

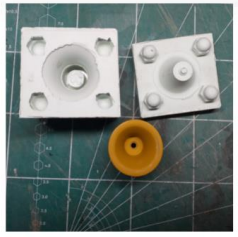


Molds and Casts

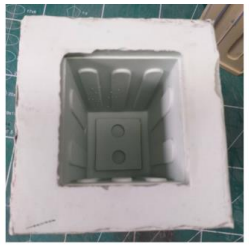
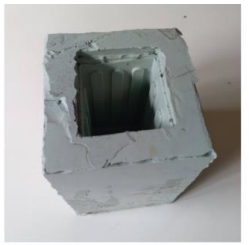








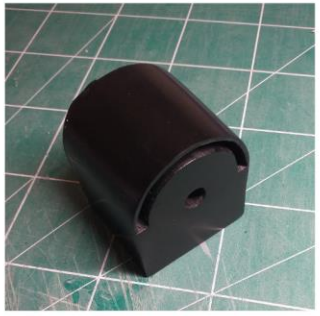




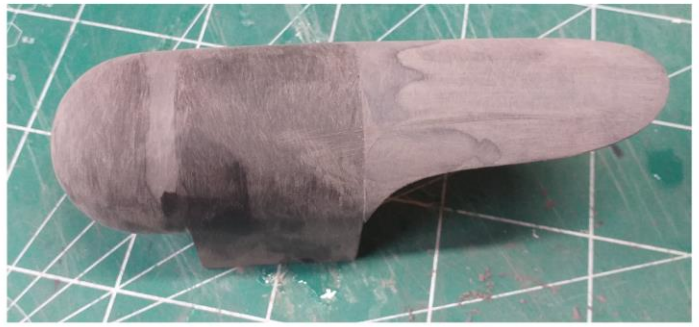


Front Cap








Progression

Progression

March 14th

Progression

March 23rd

Progression

April 2nd

Progression

April 25th

Progression

May 1st

Digital Files & links

- AutoCad Files
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