



Museumuffins Design

Bushnell's Turtle.

The Worlds First Combat Submarine.

This is the bit where I guess I should go on about the actual history off Bushnell's Turtle.

PLACEHOLDER

UNDER CONSTRUCTION! Well, sort of.

I still need to add some part numbering and a few notes. I got ahead of myself, I guess.

Have a read through and let me know if anything may need further clarification.

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About The Kit.

The Kit you have in your hands has been designed with computer aided software and printed with a resin based printer. While Every effort possible has been made to create an enjoyable experience and best possible fit, it must be said that 3D printing technology is not perfect. There may be some slight deformation of parts Which will require some attention with a file for best fit. Parts will need to be carefully removed from their support material with sharp clippers and cleaned up with a small file or sandpaper. The Resin is brittle an chips easily but is otherwise quite tough.

IT IS IMPORTANT NOT TO BREATHE IN ANY DUST THAT OCCURS AS A RESULT OF SANDING OR FILING. Breathing in particulate matter is not good for you and I highly recommend wearing a mask. Fortunately simple dust masks are pretty easy to come by in the current climate.

Parts will need to be glued with a cyanoacrylate (superglue) for best results. Solvent based plastic glues will have no effect.

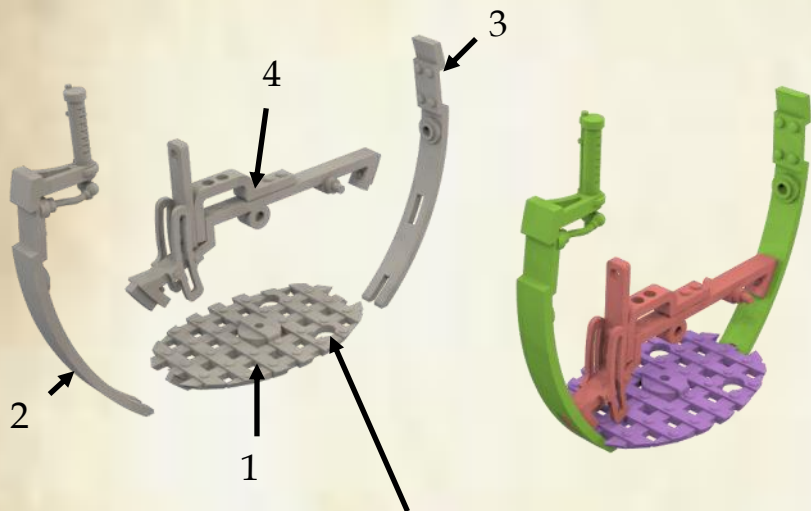
Painting Your Kit.

The resin can be painted with any model or miniature paint. The example kit was painted (mostly) with acrylics. I strongly suggest painting in sub-assemblies for ease of access.

You can use the colour pictures on our website as a guide, but there are no real rules as to what colours should be used. Obviously the real thing was built from wood, forged metals and brass. The inside may have been painted white to help reflect what little light there was about, and evidence suggests the outside had a generous layer of black pitch covering pretty much everything. Which would be quite boring and offensive to my inner steampunk. Have fun. Make things up.

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STEP 1



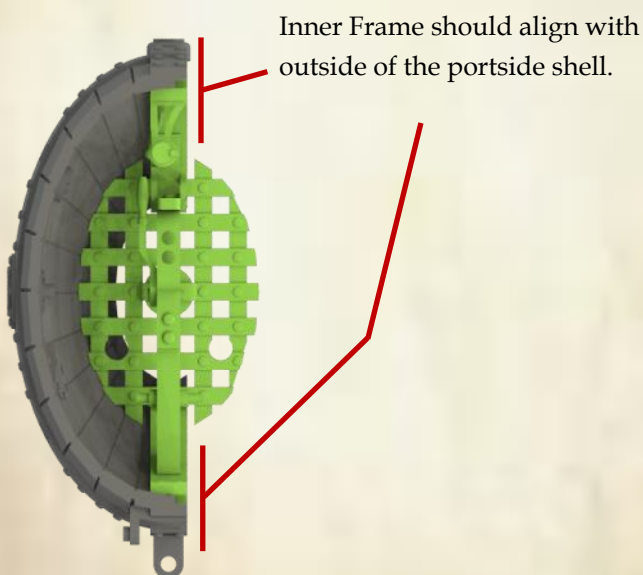
Note Location of holes!
You don't want to put
this on backwards.

Test fit the port and starboard halves with the
Inner frame. They may need some slight adjust-
ment for a good fit.

DO NOT GLUE THEM AT THIS TIME !!!

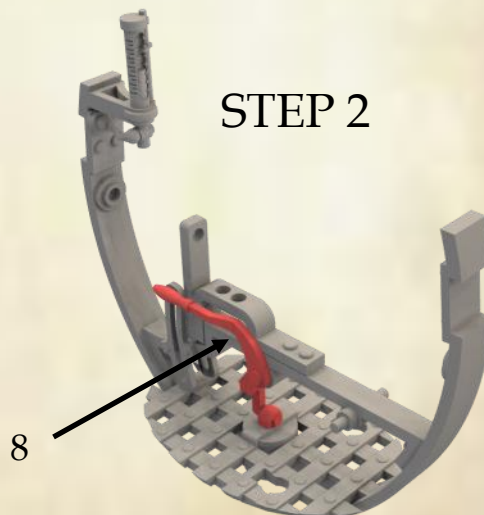


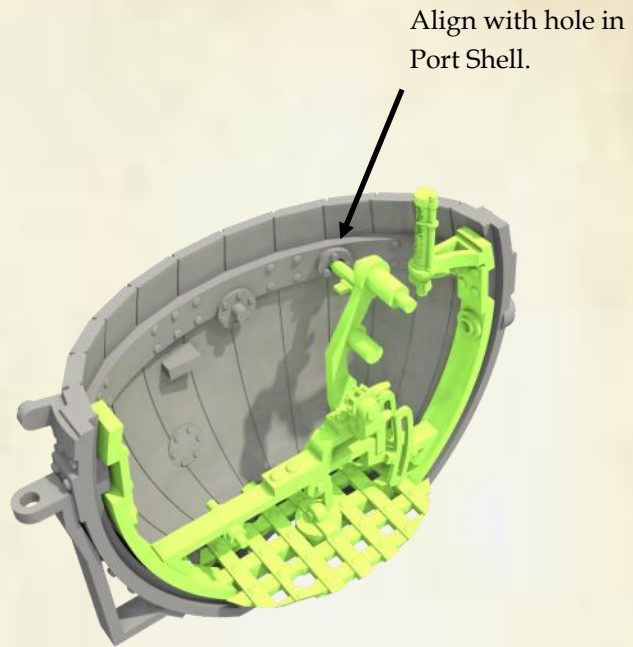
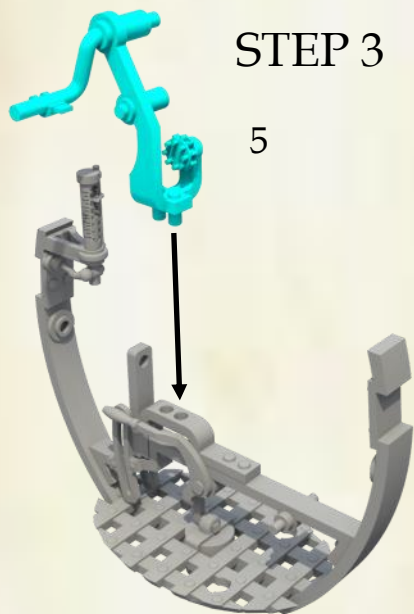
NO GLUE!!!!



Inner Frame should align with
outside of the portside shell.

STEP 2

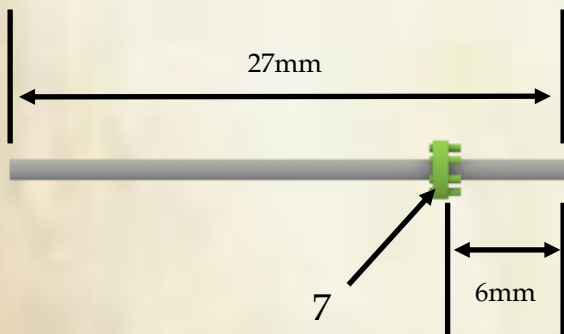




Attach Handwheel support onto Inner Frame (use Port shell to ensure angle.)

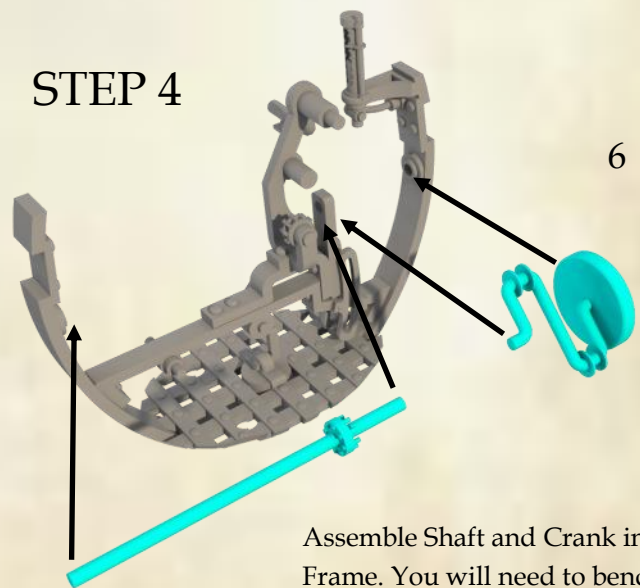
Don't glue to port shell at this time.

trim brass rod to length and glue cage gear (7) into position.



Part 7 is really tiny. There is a spare.

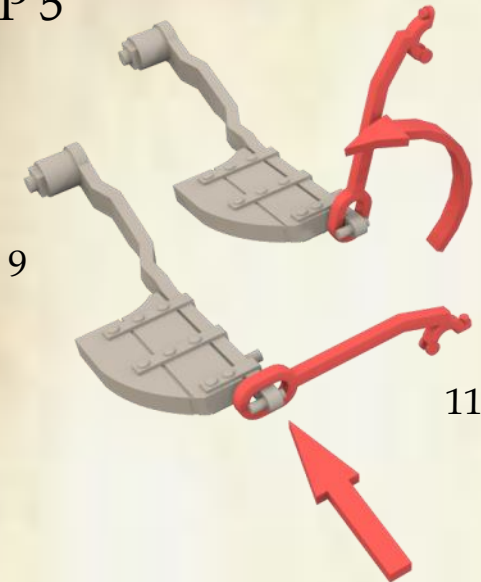
STEP 4



Assemble Shaft and Crank into Frame. You will need to bend them a tiny bit to spring them into position.

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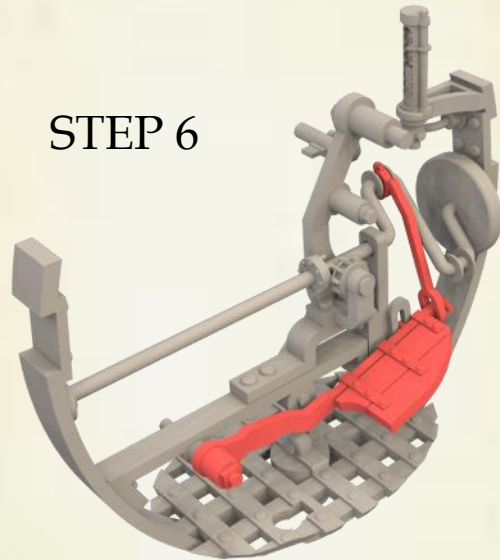
STEP 5



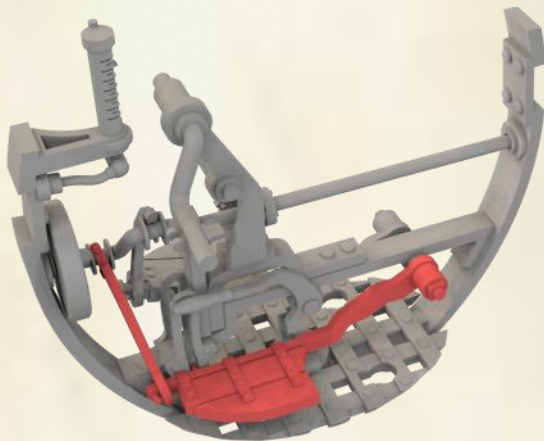
CAREFULLY push part 11 onto the front of part 9, and rotate into a vertical position.

DON'T GLUE.

STEP 6



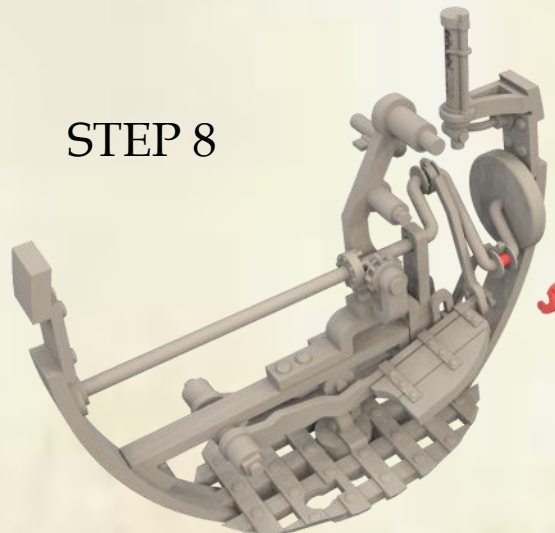
STEP 7



Position the pedal assembly so the connecting rod fits snugly into the crank.

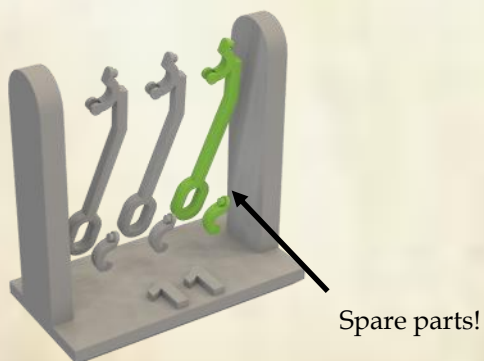
This is a bit tricky.

STEP 8



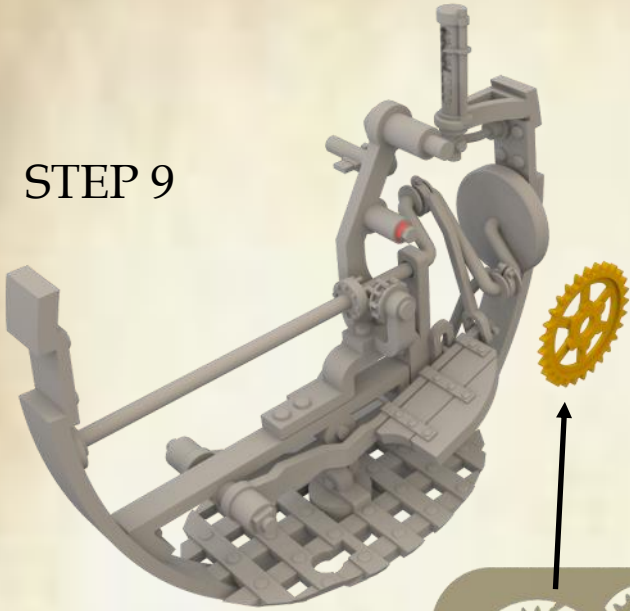
Glue the super tiny clamps to the ends of the connecting rods.

This is even trickier.



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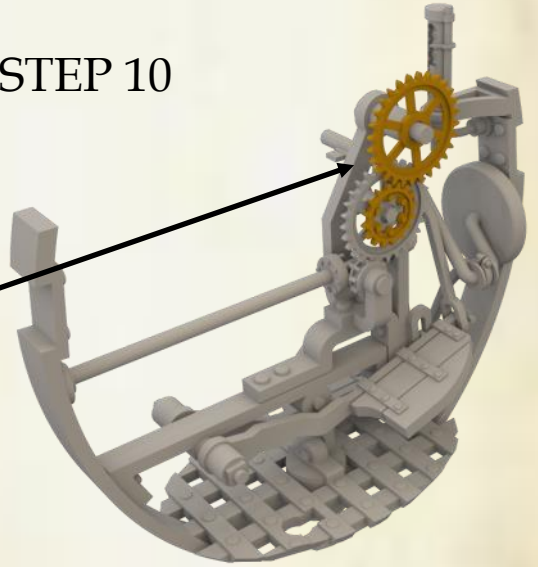
STEP 9



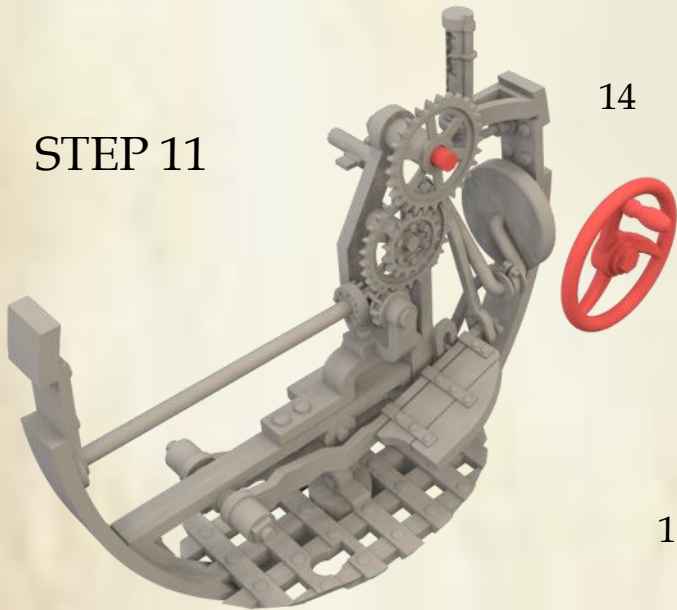
Glue the Photo-etched cogs into position as shown. Position the Large, Loer cog First. Positioning the top, large Cog before the tiny lower cog makes this a bit easier. It's still fiddly though.

Note that the two large cogs are Different!

STEP 10

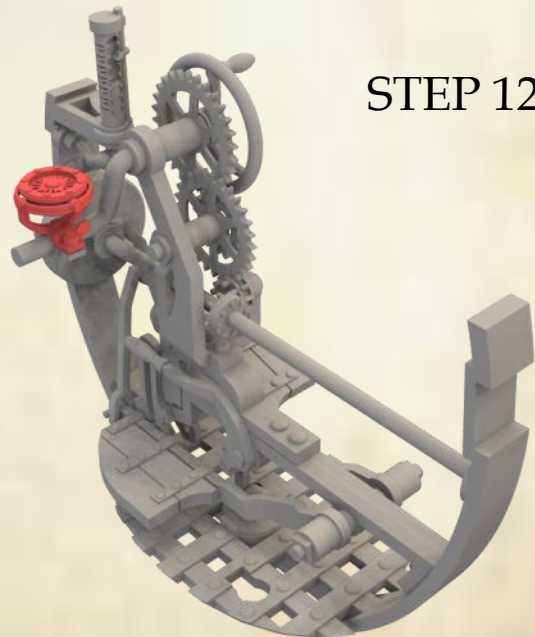


STEP 11



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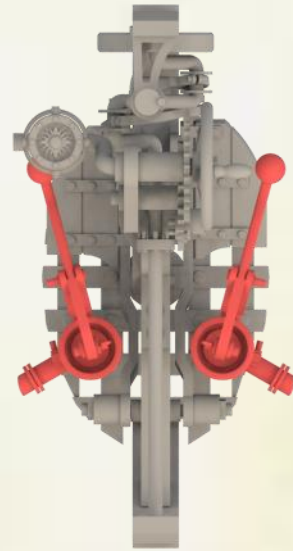
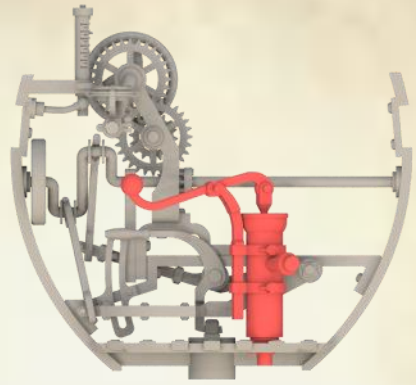
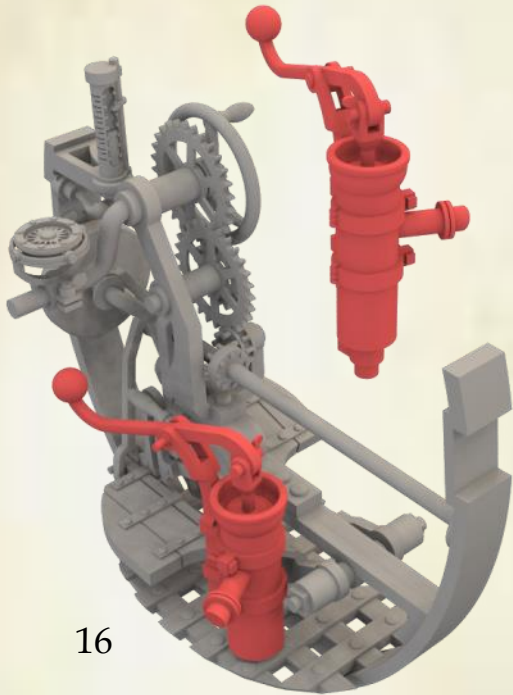
STEP 12



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STEP 13



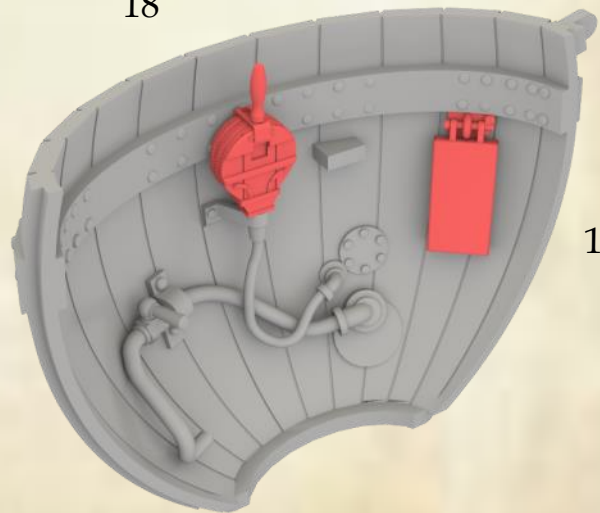
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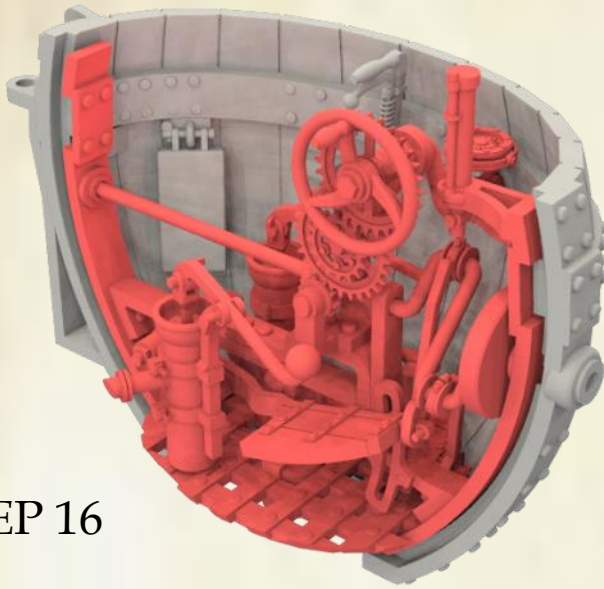


STEP 14

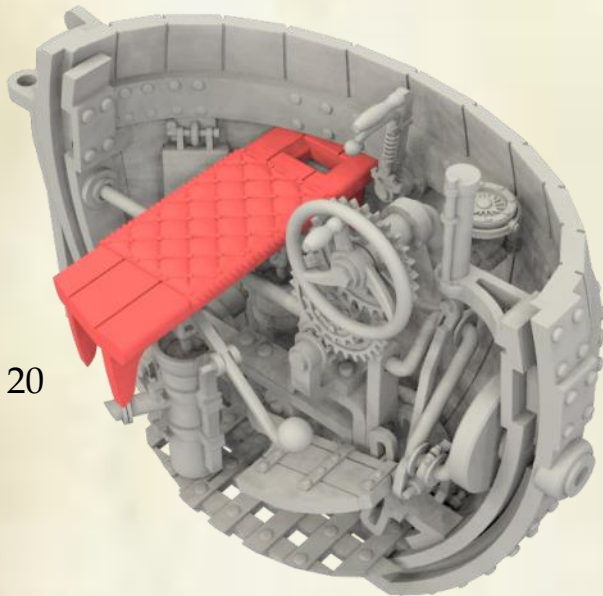
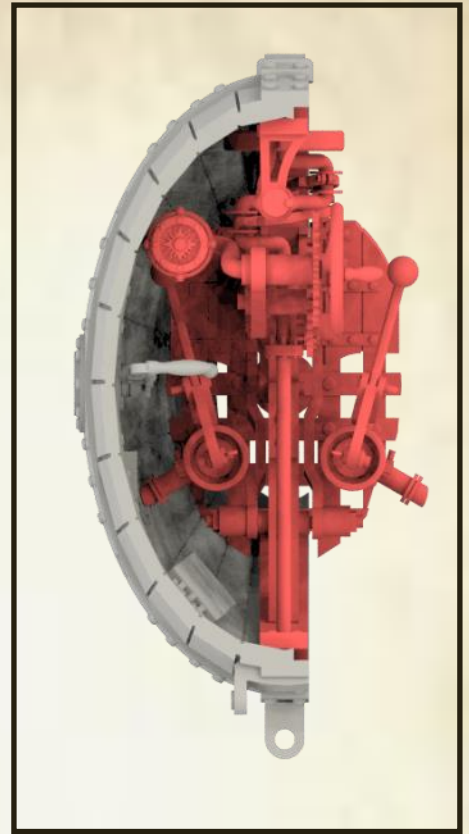
STEP 15

18



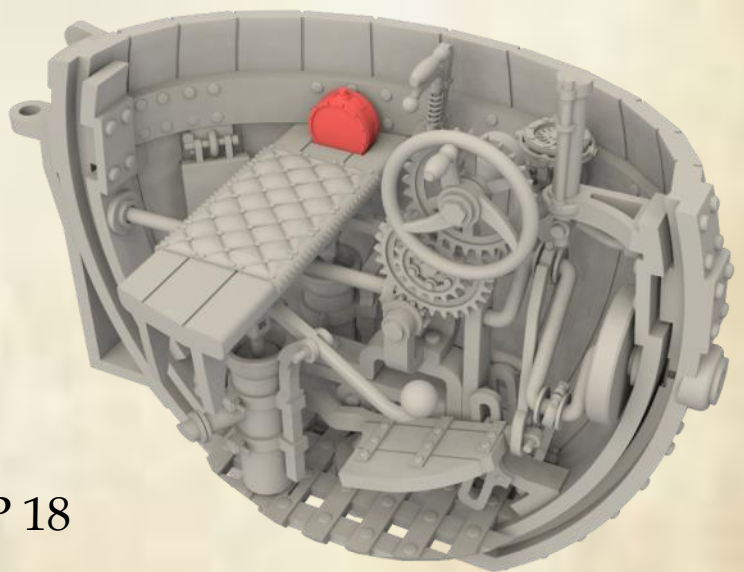


STEP 16



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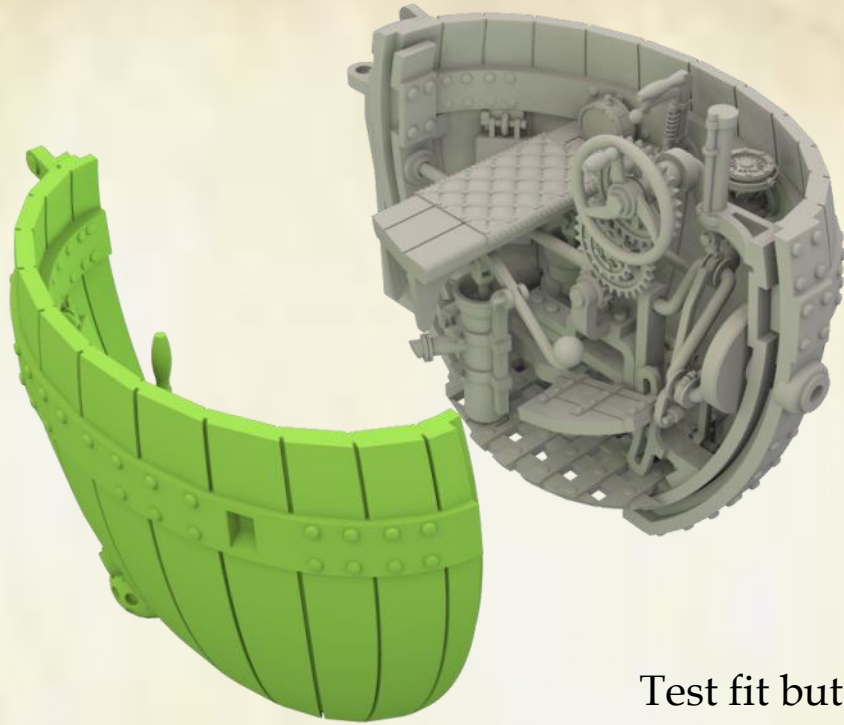
STEP 17



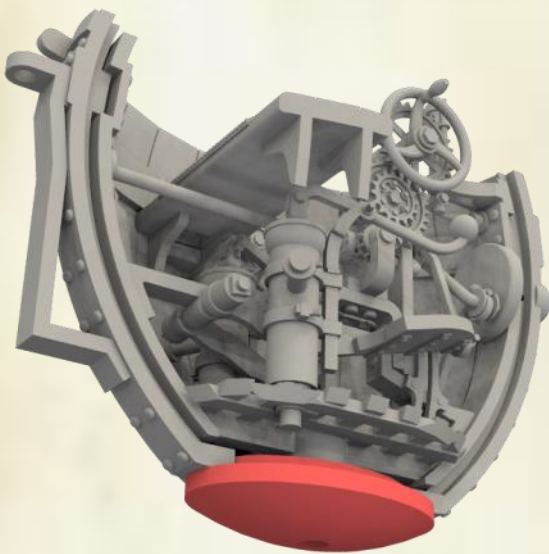
21

STEP 18

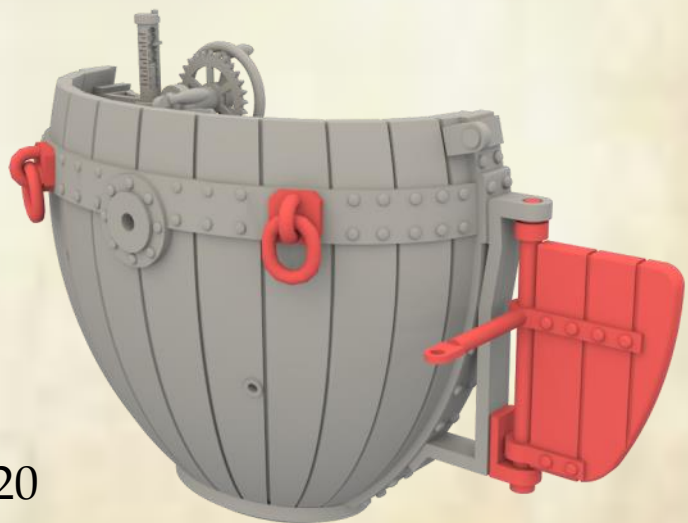
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Test fit but
DO NOT GLUE !



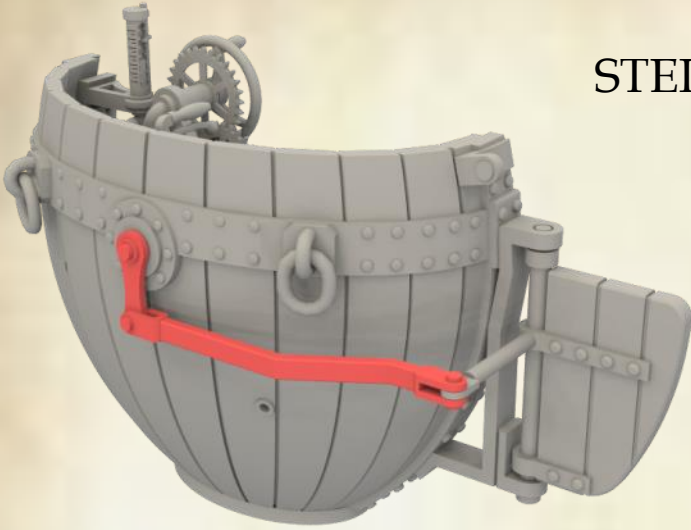
STEP 19



STEP 20

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STEP 21



STEP 22

STEP 23

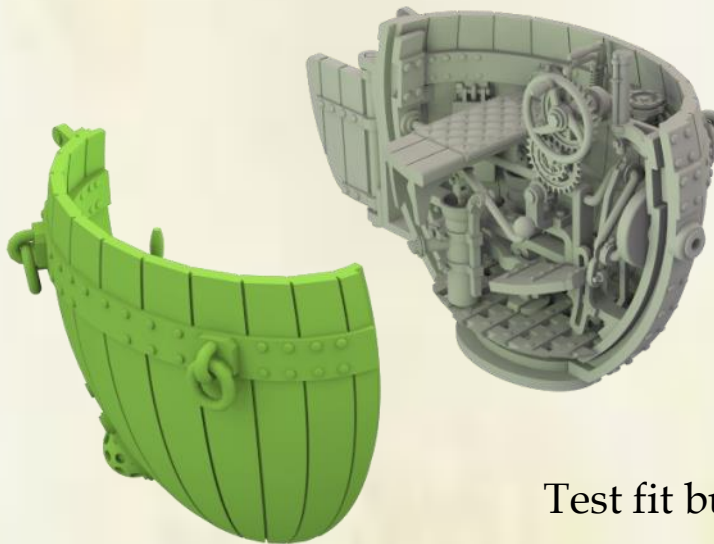


The area shown in blue needs to be flat and smooth.

A small, flat file is very useful for this.

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STEP 24



Test fit but
DO NOT GLUE !

Test fit the Major Assemblies and make
sure everything fits snugly.

STEP 25

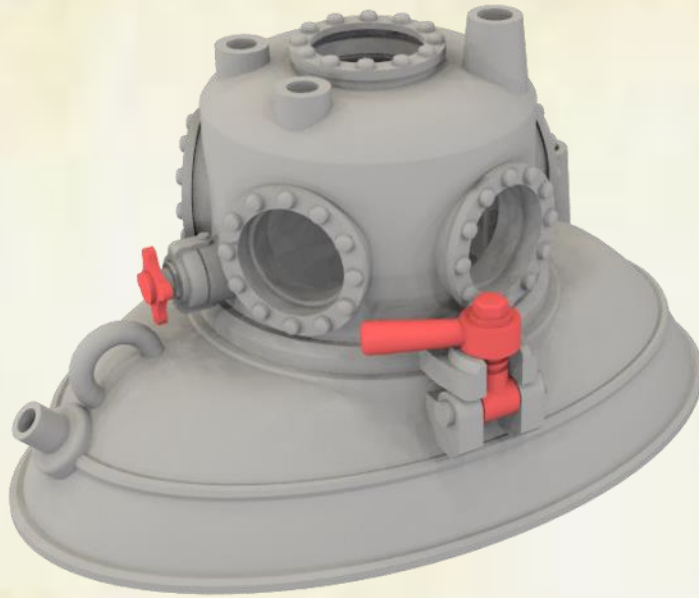


Attach the Auger release latch way up inside the hatch cover. You will need tweezers for this.

STEP 26



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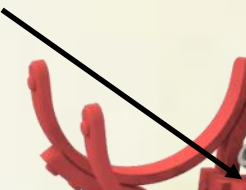


Glue Torpedo Cradle to the rear of the upper shell.

Use the lower hull assembly to assist in aligning the part but DON'T glue.



Glue



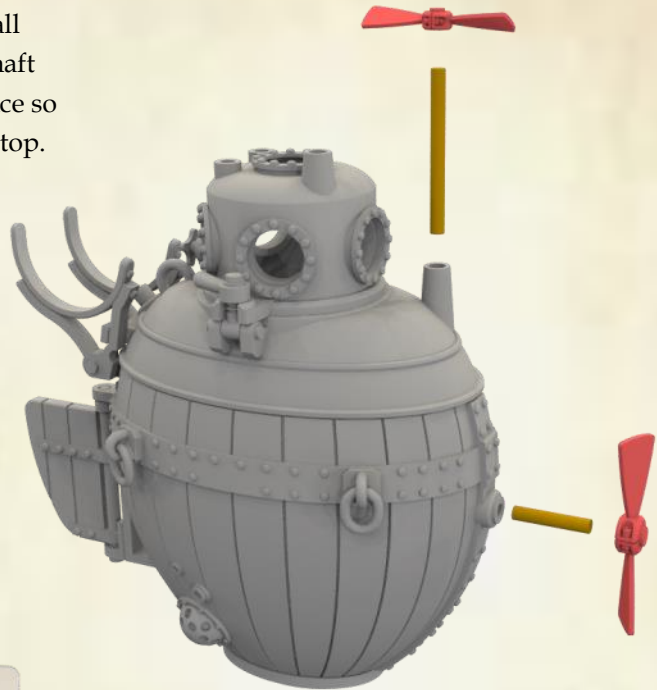
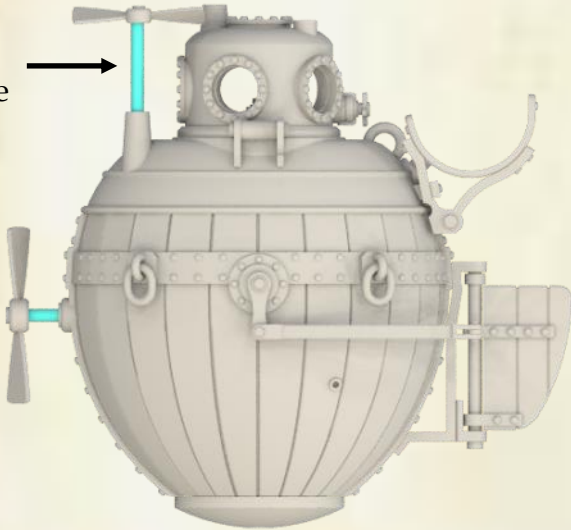
Don't Glue!



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Cut Brass Rod to length. The overall size is not critical, but the upper shaft should have at least 21mm clearance so the propeller doesn't hit the hatch top.

22mm
clearance



Trim off the skirt and sand flat. Sorry, The bottom edge may be a little warped, but should sand out okay.



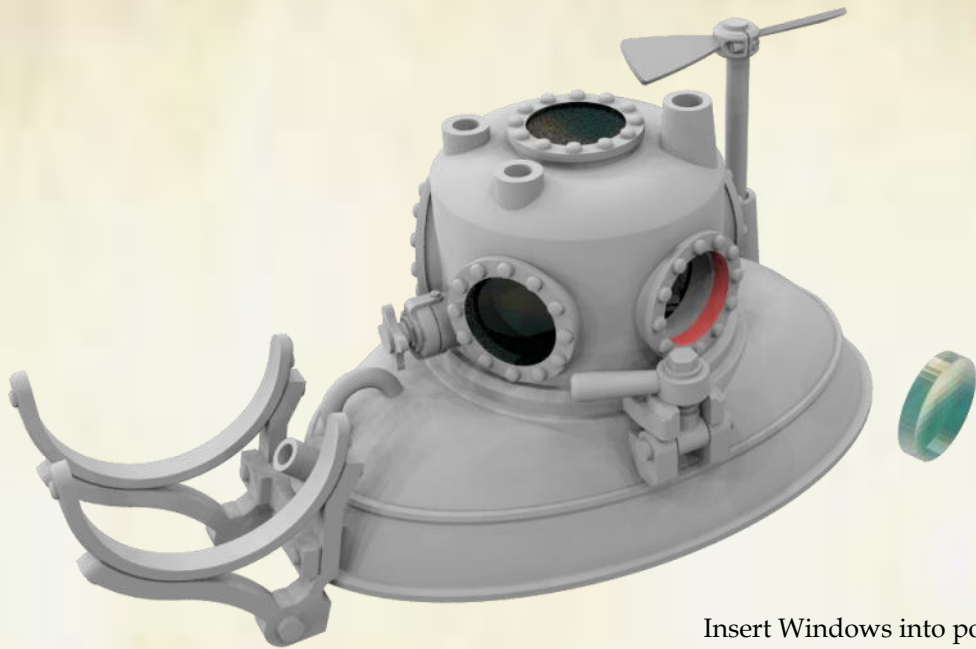
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2mm Brass
rod.

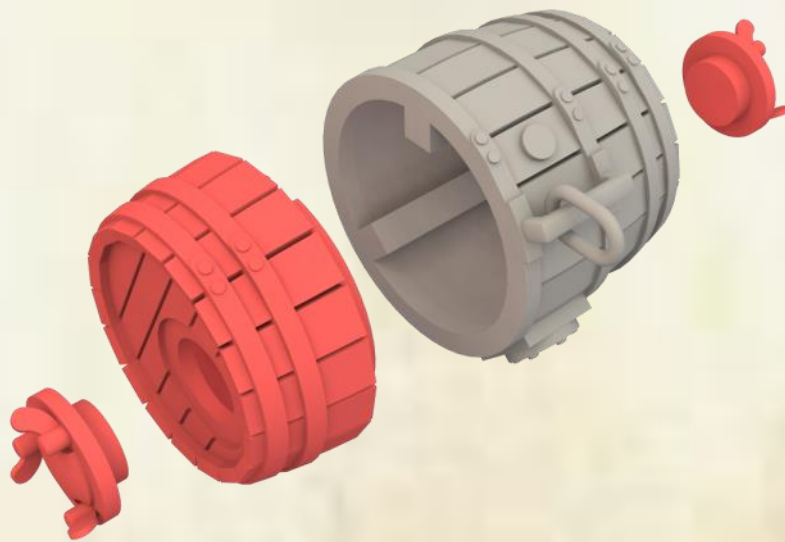


Mousemuffins Design

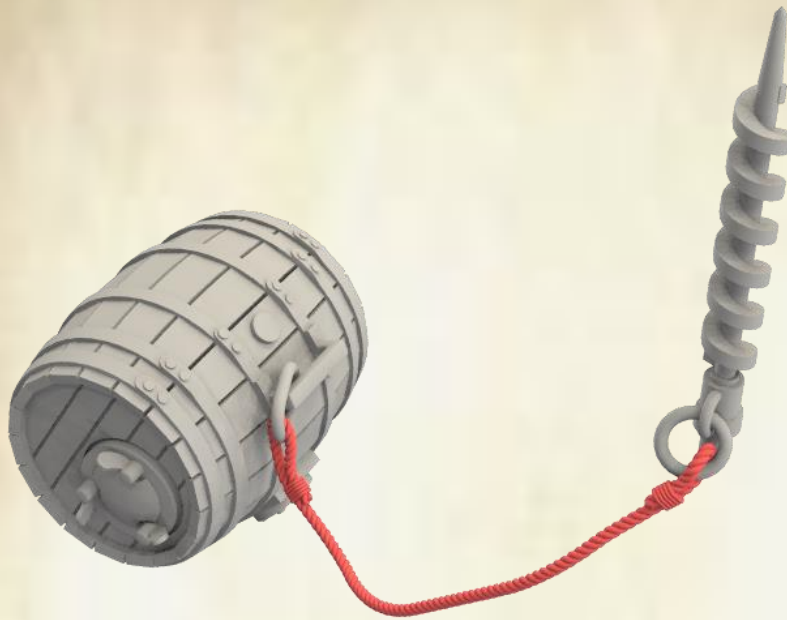


Insert Windows into portholes. Depending on how many layers of paint you already put on your model, these may be a very tight fit. You may need to sand a little around the edges.

Don't use superglue to fix them, it may result in unsightly cloudy transparencies. Use a bit of PVA/white glue instead.



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I found it MUCH easier to tie the line between the Torpedo and Auger before fixing them to the rest of the model. You will want about Four centimeters between knots.

It's also a great opportunity to practice your knot tying! I've used an Anchor Bend. It seemed historically appropriate.



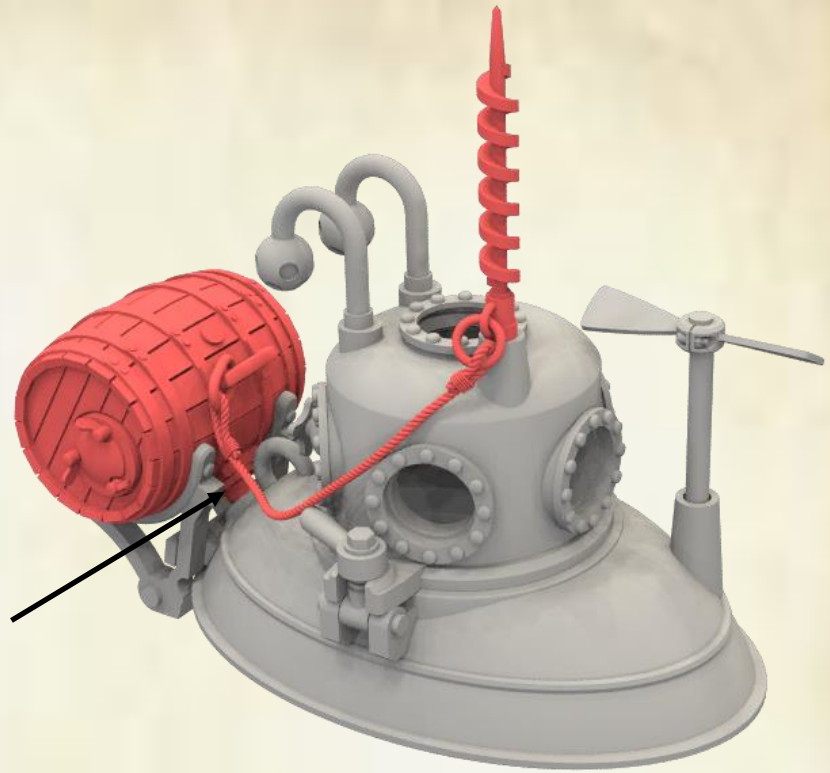
The beautiful Rope can be purchased separately from ropesofscale.com. It's awesome, hand laid and looks like real rope!

Ropes of Scale



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Attach the torpedo so that the round hole lines up with the spigot on the hull.



The Auger is the Last piece for a good reason.
It's super easy to snap. That's also why I've
given you two.



And finally.....

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Complete!

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