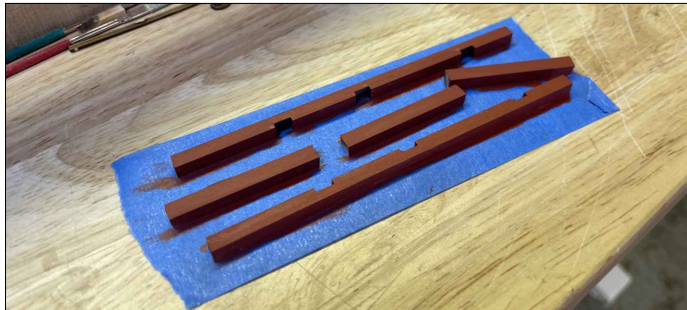


Chapter 4 will focus on the main gundeck beginning with the partial orlop decks below. Now that we have the insides of the hull faired out lets start adding the laser etched partial orlop pieces. these decks will barely be seen through the strcuture of the decks above the the detail is important. I gave them a quick sand with 320 before gluing them down. Once in place i gave them a coat of WOP. The orlop pieces are marked fwd and aft with etched arrows dictating their direction.

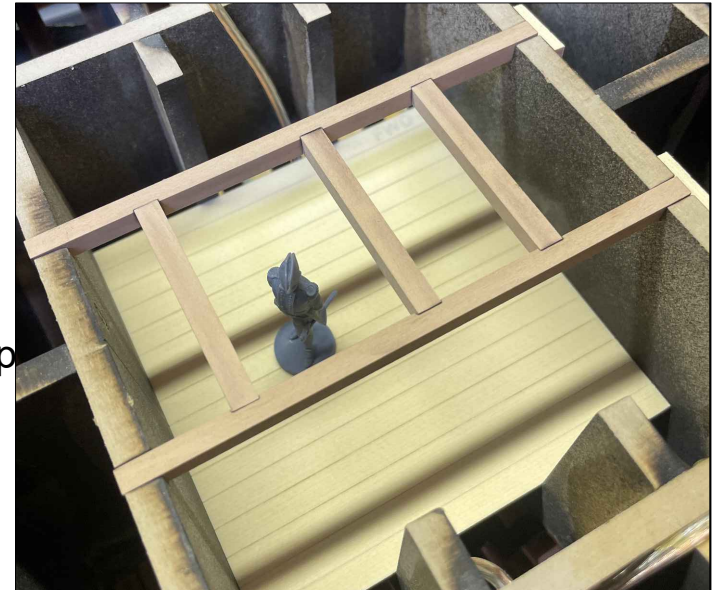


Etched decks with FWD and AFT etched in them, the model is showing the forward orlop in place.

The hoops in the aft orlop well can be removed, make sure to block sand down the remaining hoop so it is flush with the tops of the bulkheads. Once the etched orlop decks are added we can now proceed to the deck beams. To the left we can see the laser cut beams, they are arranged on the sheet in the direction they face on the model with etched arrows. Below you can see I test fit all of mine dry and made sure they had tight joints, i then painted the three sides of them with the tops exposed. Blue tape made them easy to paint with the exposed side down.

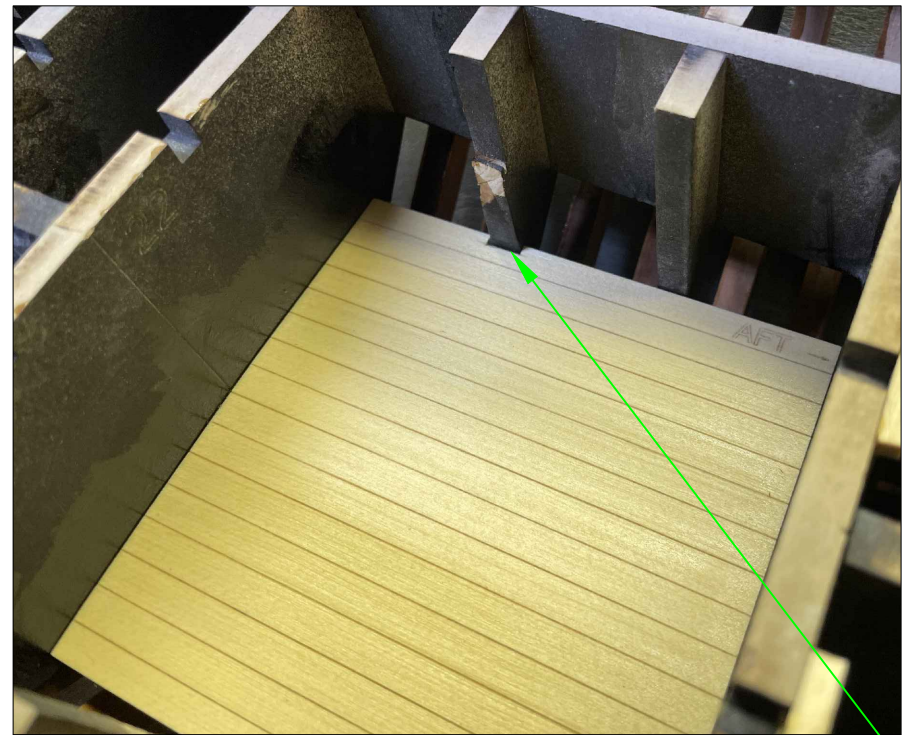


Beams after painting with the top sides down on the tape, keep note of their orientation relative to the model.

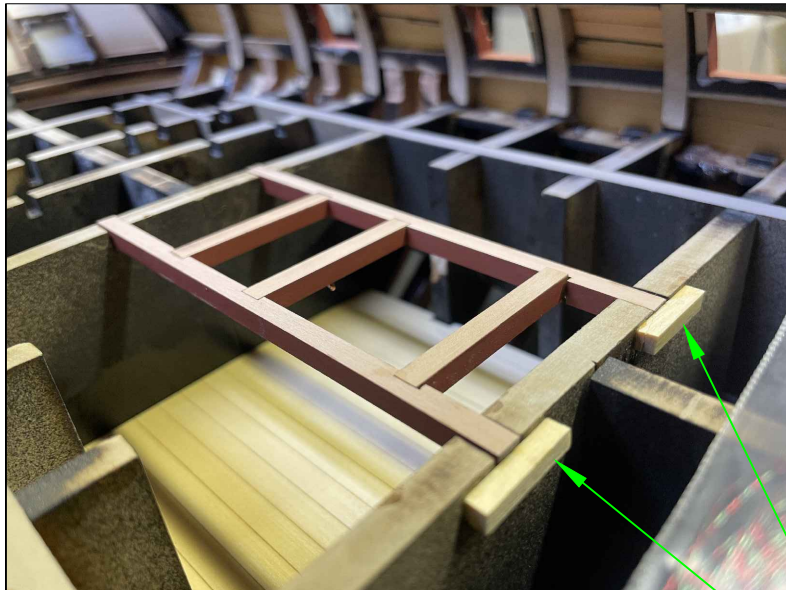




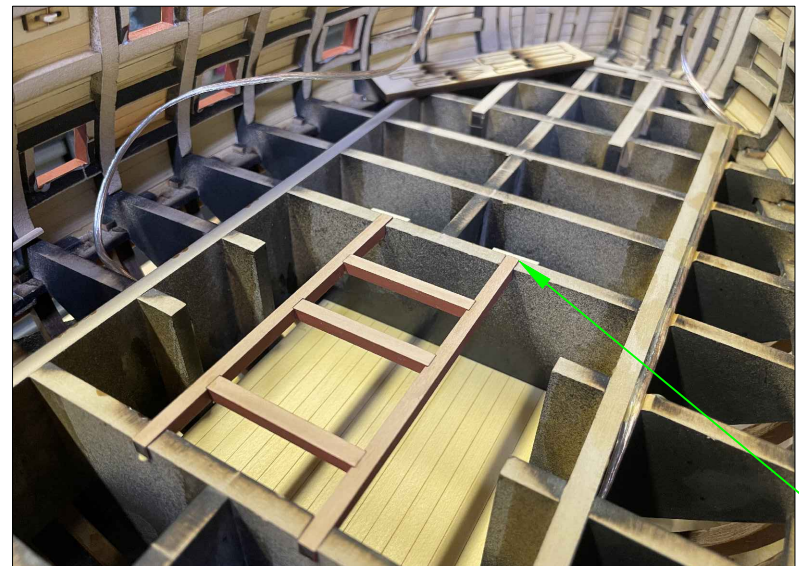
Aft orlop hoop supports being removed prior to orlop installation.



Aft orlop deck in place, notice the notch required to fit the deck, this does not occur past kit #11.

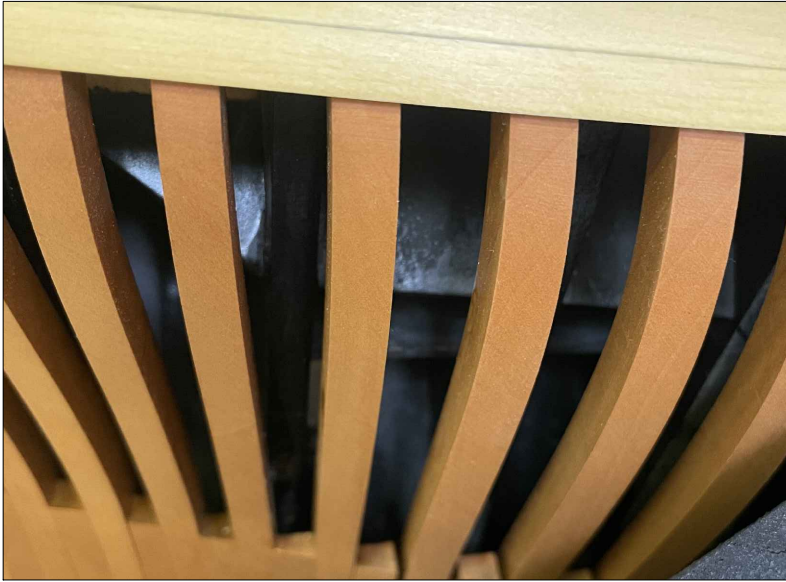


Aft orlop beams in place, looking aft. I added stops on the bulkheads to ensure the beams installed square.



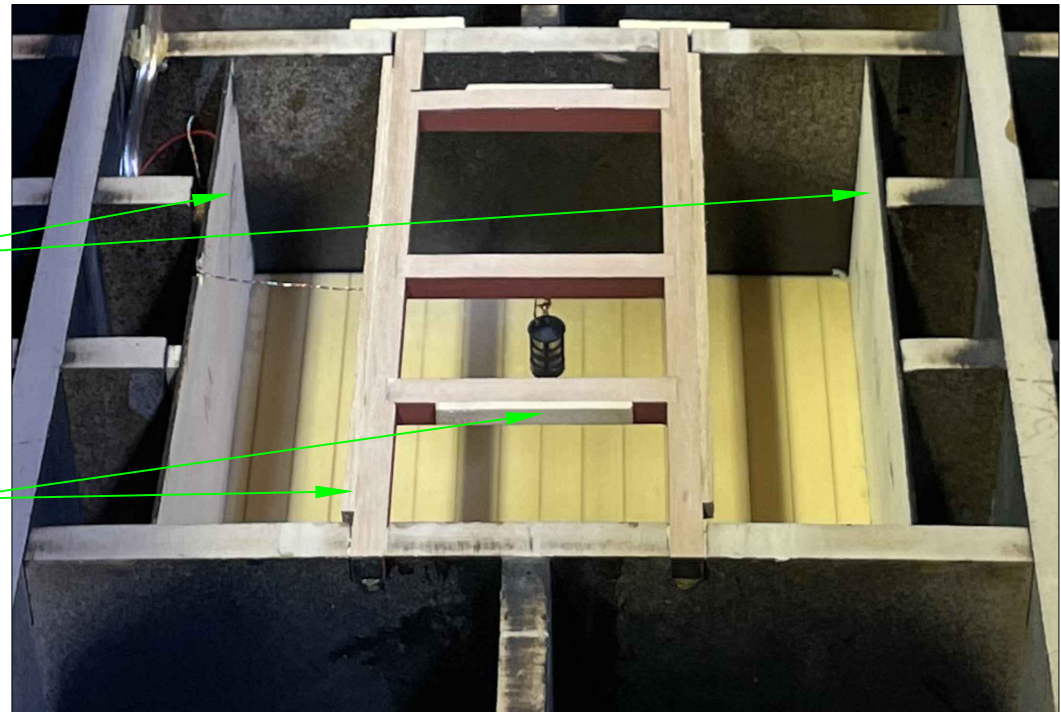
FWD orlop beams in place, looking forward, also notice the stops here as well.

The aft orlop deck level is visible from the outside of the model, this can be a problem especially if you choose to light your model from within or from above. Included in chapter 4 are two simple blackout panels to be installed on the sides of the bulkheads. I painted their outboard faces black and simply glued them in place. Below the same view but with the panels in place.

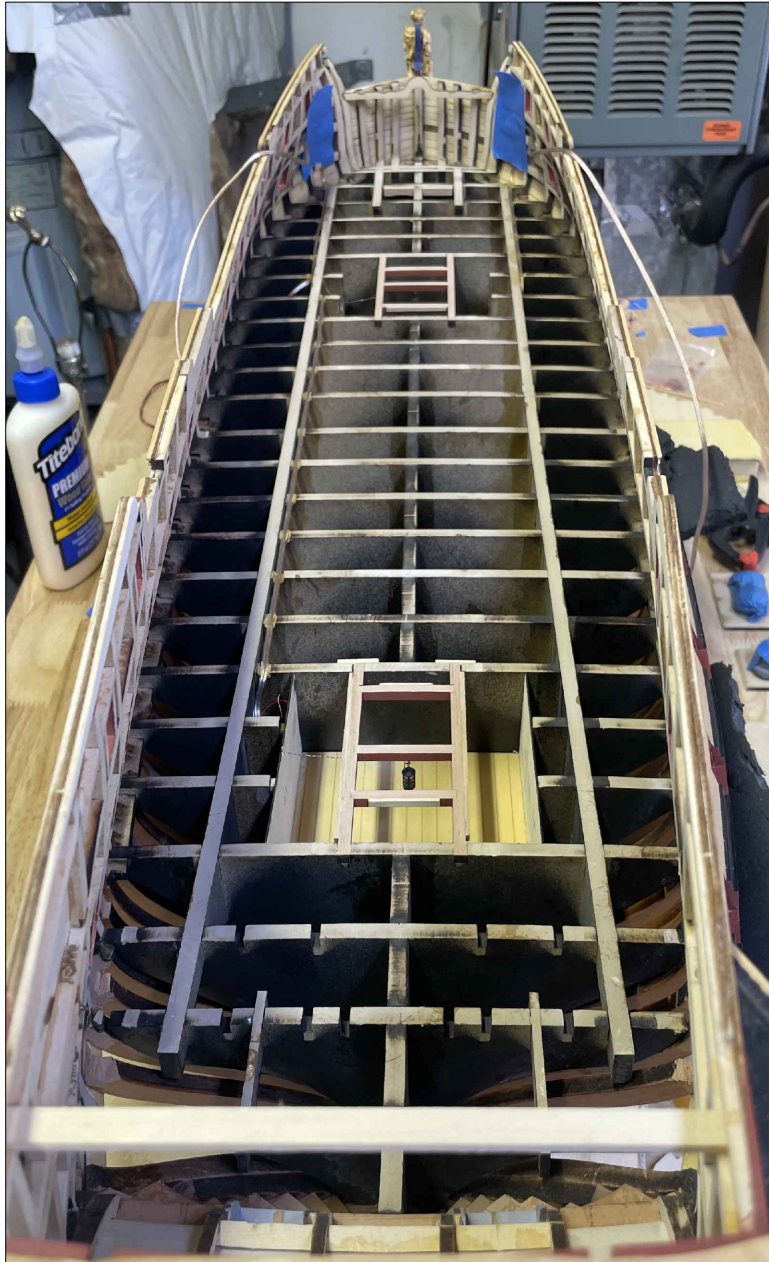


Here we can see the black out panels in place as well as the deck beams.

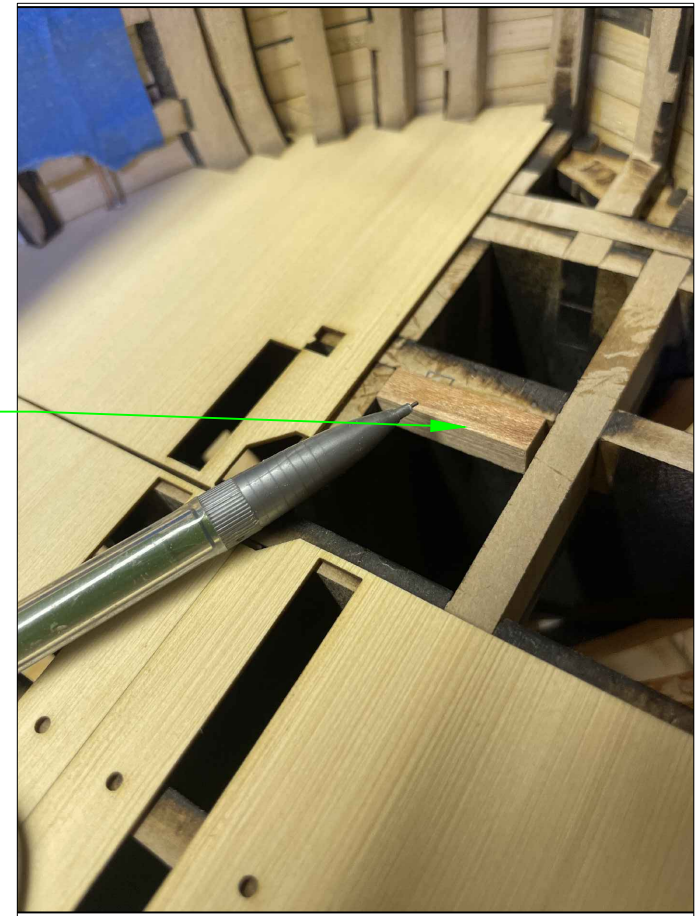
Also notice that i have added some additional strip wood to the outboard sides of the beams to support the sub decks. Kits 016 and beyond will not require this.



Before we proceed with gluing the decks down we need to add some supports to the back of bulkhead #2, just some scraps will work fine I used $\frac{1}{4}$ "x $\frac{1}{4}$ " cherry i had laying around. All this needs to do is support the manger and the forward end of the riding bitts.



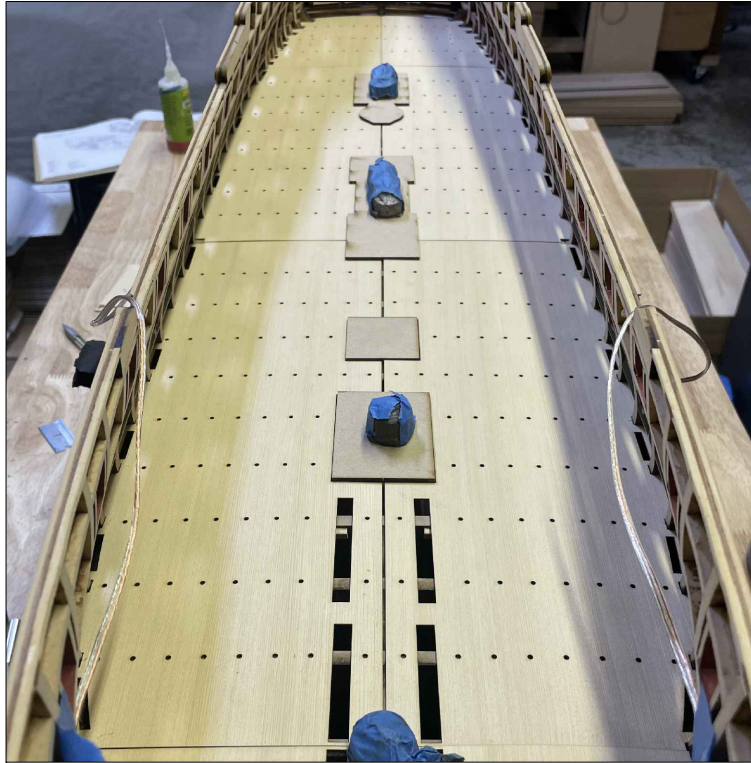
$\frac{1}{4}$ "x $\frac{1}{4}$ " scrap pieces used as supports for the manger and the forward riding bitts.



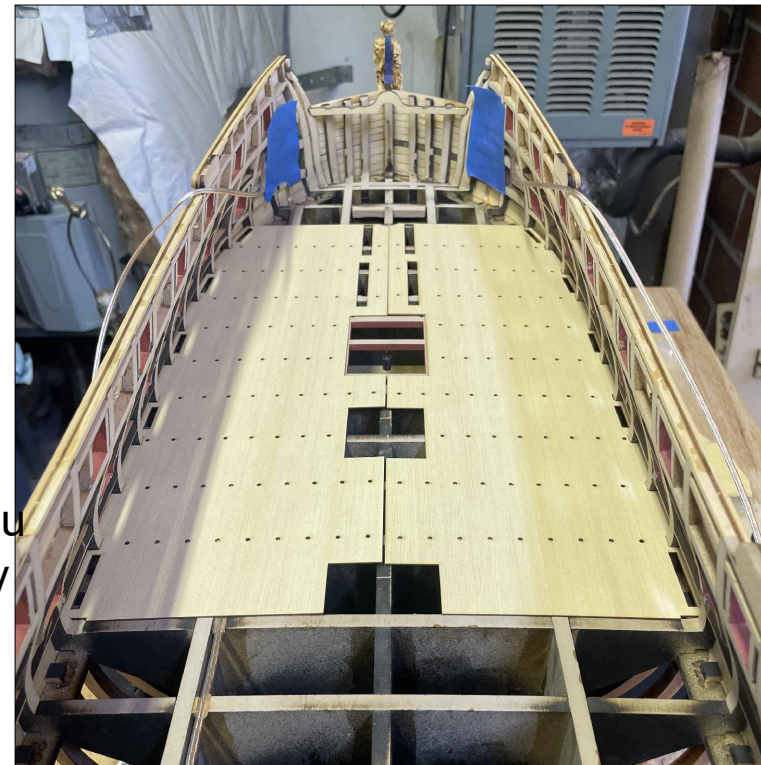
Now that all the sub deck structure is in place along with our two blocks on the back of bulkhead two I went ahead and gave the tops of the bulkheads and formers a quick block sand to prep it all before the sub decks go in place we want to avoid any high spots when the sub decks go down.

Its also worth noting that you may want to black out the bottom of the sub deck pieces before attaching them. If you ever plan to display your model high up, with a mirror bottom where it could be viewed from the keel up through the frames then i would recommend doing this.

With the orlop decks complete we can now start laying out the laser cut sub decks, the sub decks are slotted on the sides to fit into their respective bulkheads, i began by fitting the two large forward ones followed by the larger aft set. Shown to the right are the large forward facing pair.



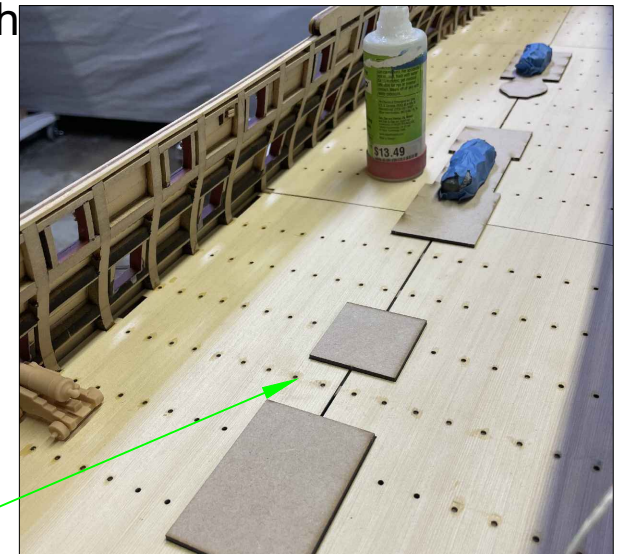
I have included MDF blanks of the combings and partners to ensure that the sub decks are all aligned correctly, once you have all the sub decks dry fit in place go ahead and set the blanks down in their respective positions.

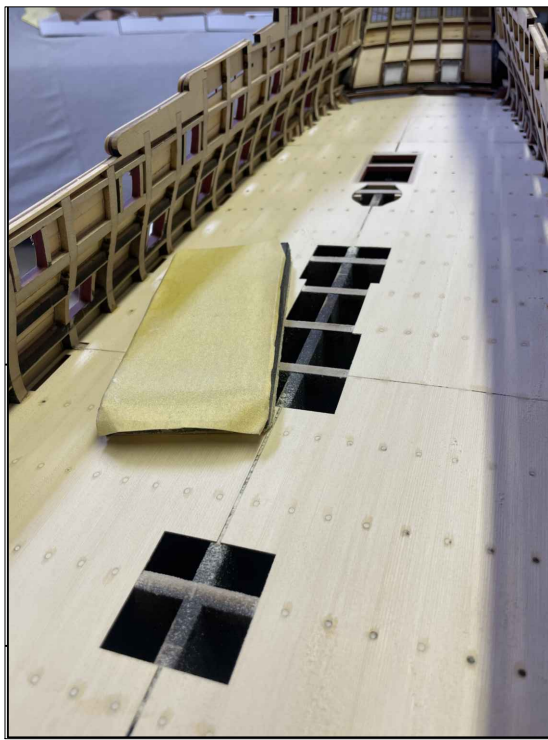


To the left you can see i used lead weights to hold the blanks in place, I made sure that everything looked good and then glued them in place. I was concerned about using PVA on $\frac{1}{32}$ " yellow cedar sheets, these things curl up instantly and it would have just made a mess especially with

everything already being lined up the way i wanted it. I decided to laser cut small holes along all the attaching surfaces and use CA to glue it down while maintaining everything in position. All the fittings on the lower gun deck will affect their respective upper deck counterparts so proper alignment is critical at this stage!

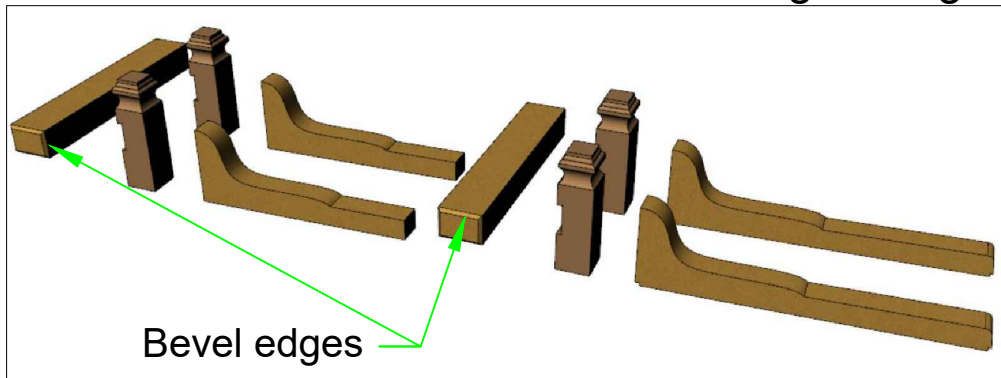
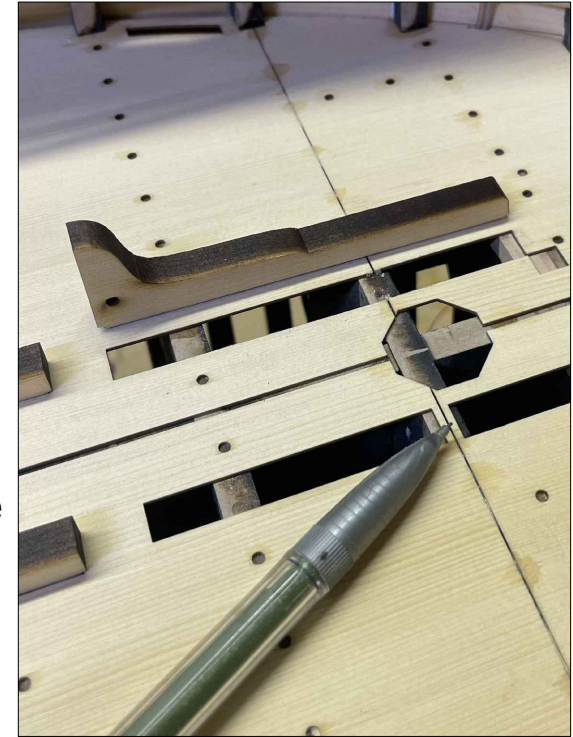
You can see the "stitch gluing" of the sub decks, you can glue them down however you choose but this method worked well for me. You may also notice my decks are not etched for planking, this feature was added to production versions after I assembled the prototype, we will still be planking the gundeck!!





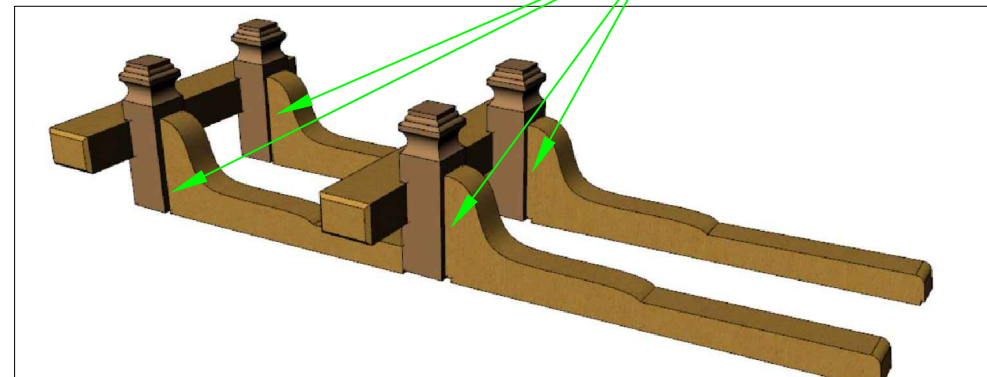
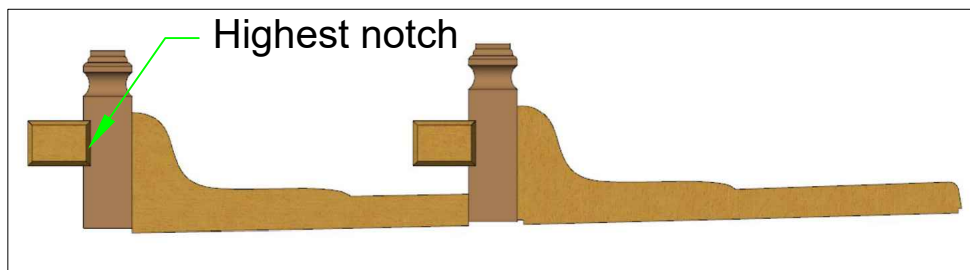
With the decks now glued down i gave the entire deck a nice block sand with 150 to ensure that everything is all flat, also the blanks can now come out and we can begin adding the combings, riding bitts and partners.

I began with the riding bitts, the sub decks are designed so the wooden base of the bitt sits down into sub deck. Each riding bitt is comprised of 5 parts, the two uprights for each bit is 3D printed and the other components are laser cut cedar. Below you can see the two adjoining decks being notched out so the bit will fit in place. I assembled the bits in place but did not glue them to the model, I plan to remove all the deck fittings and give it a good sand.

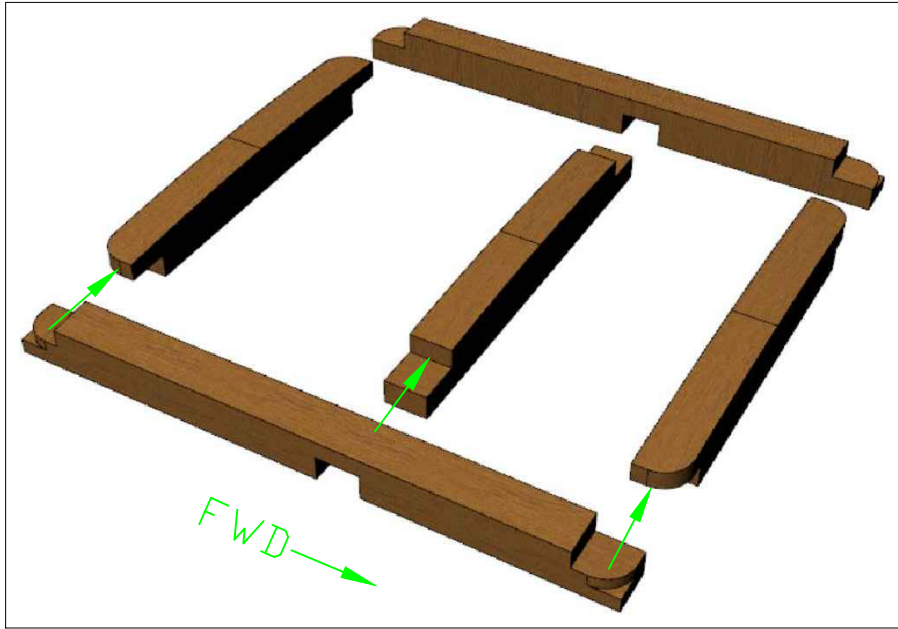


Riding bitt assemblies to the left, please note that the uprights with the highest notch are located aft.

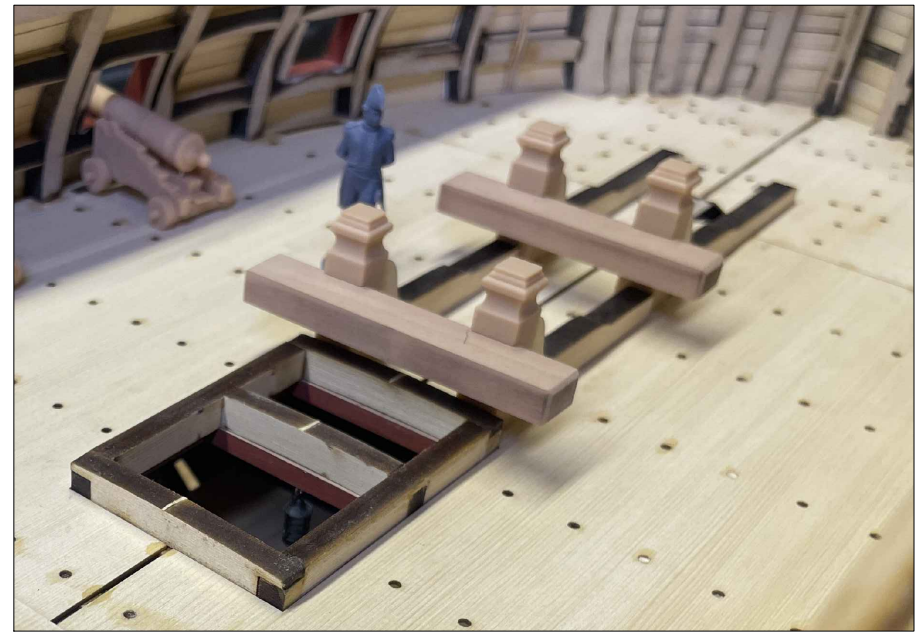
Below shows the completed bitts, the uprights are centered on the horizontals.



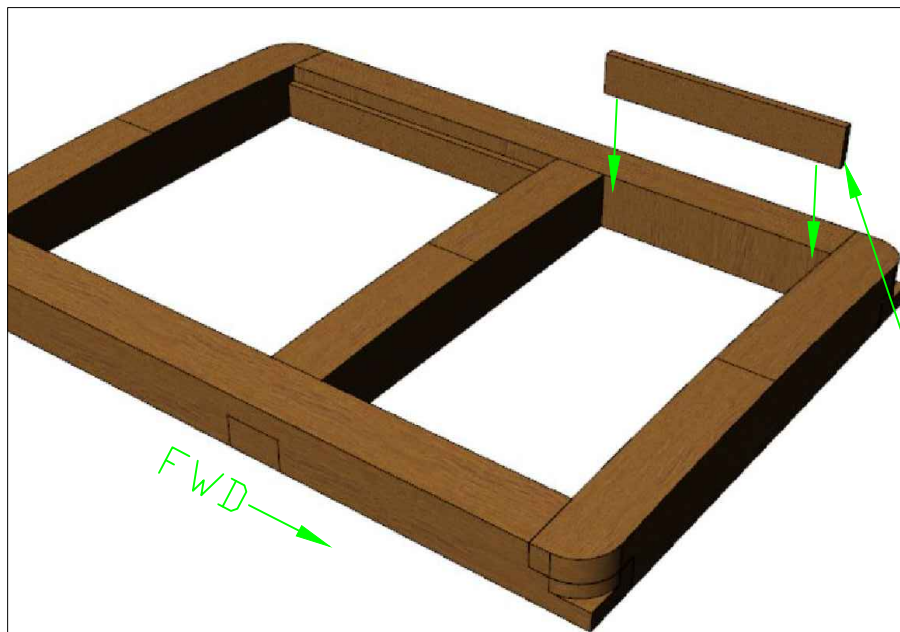
To the right we have the riding bits in place on the model but only dry fit, the way they sit in the sub deck they should stay there just fine when planking the gun deck. Also I have began assembly of the coamings, these are laser cut yellow cedar and quite easy to assemble, below we can see the assembly breakdown. I assembled them sitting in the subdeck sort of like a jig this will also ensure they fit snug where they belong.



Shown to the right, a laser cut $\frac{5}{64}$ " radius tool is provided to sand the radiuses into the coamings, for you Winnie builders this is the exact same process. I used a small block sander with 90° sharp edges to sand a $\frac{1}{8}$ " radius into each corner. Once your coaming is assembled you will also need to block sand the top, the sides of the coamings will need to be sanded to match the parts that have the camber laser cut into them already.



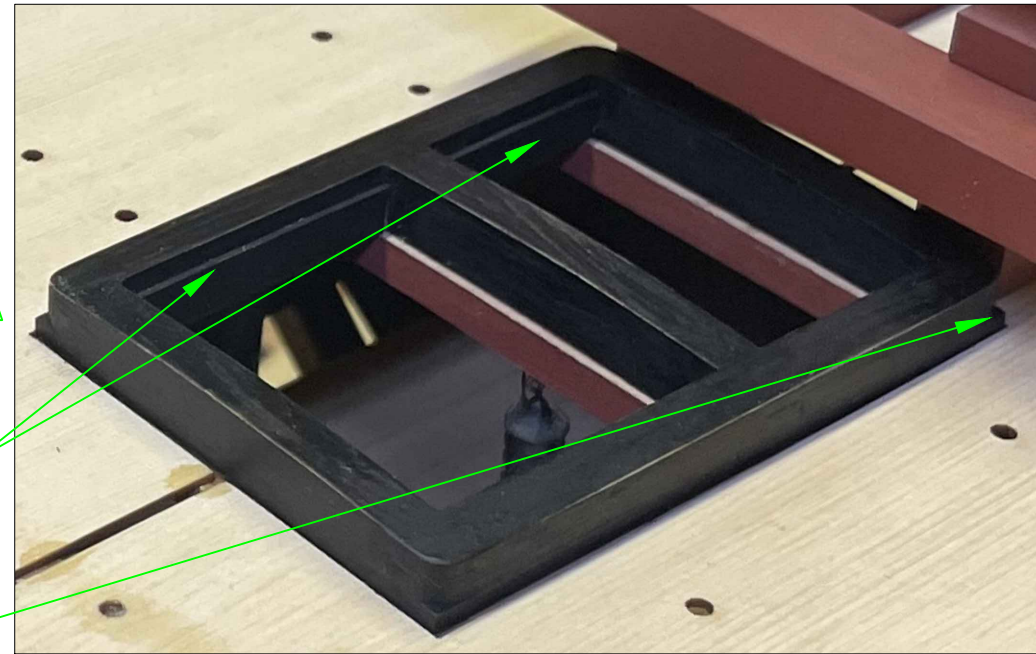
Above you can see the radius tool in place, make sure to sand your radiuses in on a stable flat surface.



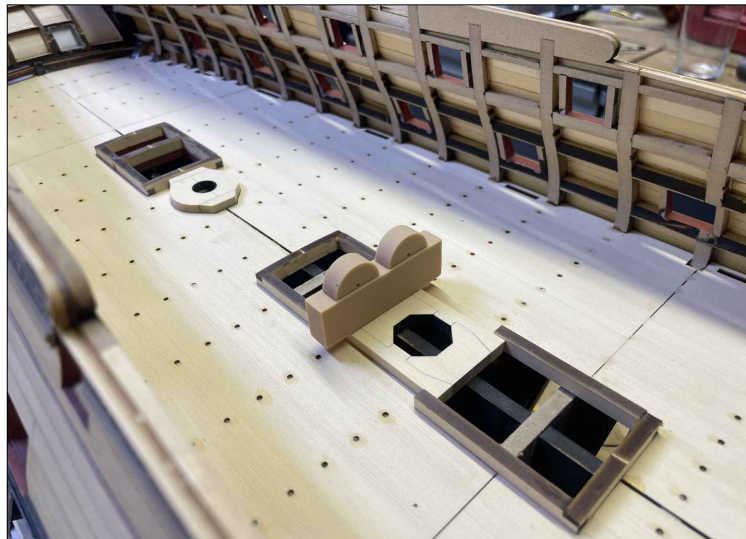
With our coaming assembled and radiuses completed we need to add the rabbet strips for the grating to sit on, this is just a $\frac{9}{64}$ " x $\frac{1}{32}$ " cedar strip. i kept it about $\frac{1}{16}$ " from the top edge of the coaming to allow for the completed grating to sit on. Once completed the whole coaming assembly can be painted black.

Above the rabbet strips installing in the digital model.

To the right you can see the rabbet strips in the completed coaming.



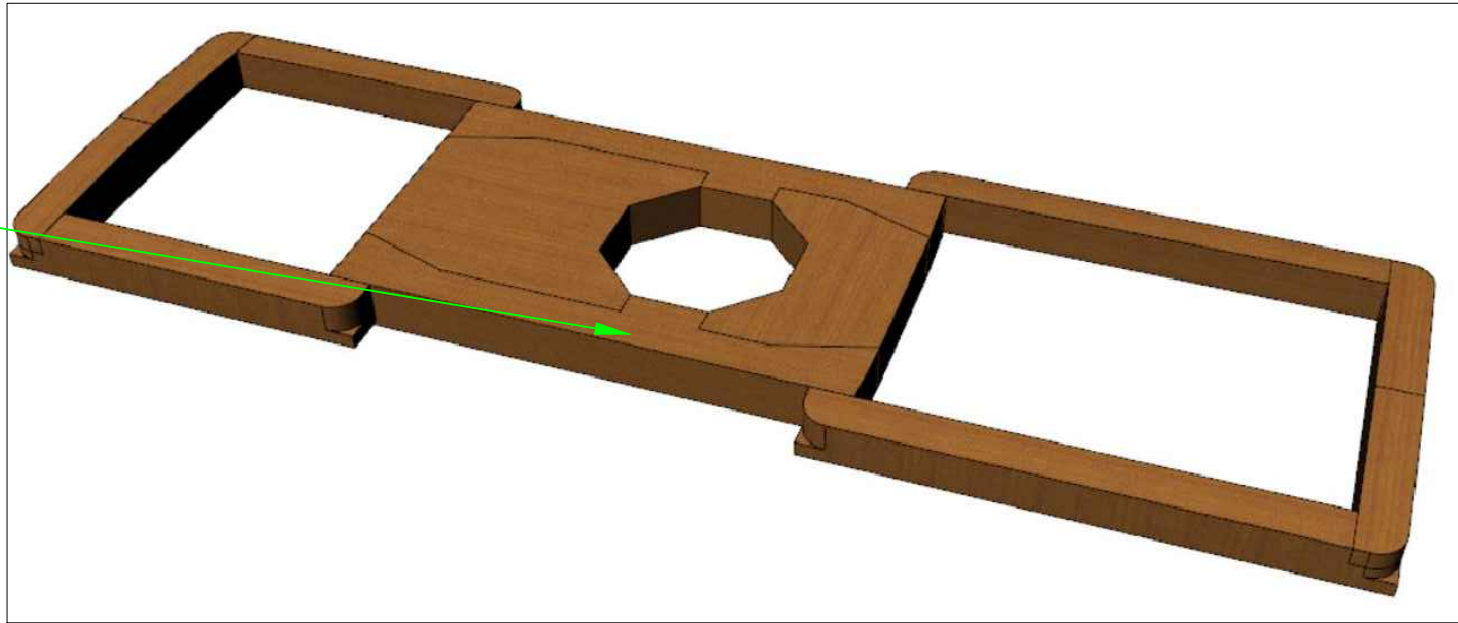
Also notice the completed radiuses, they still appear high but we still have $\frac{3}{64}$ " decking strips to lay down.



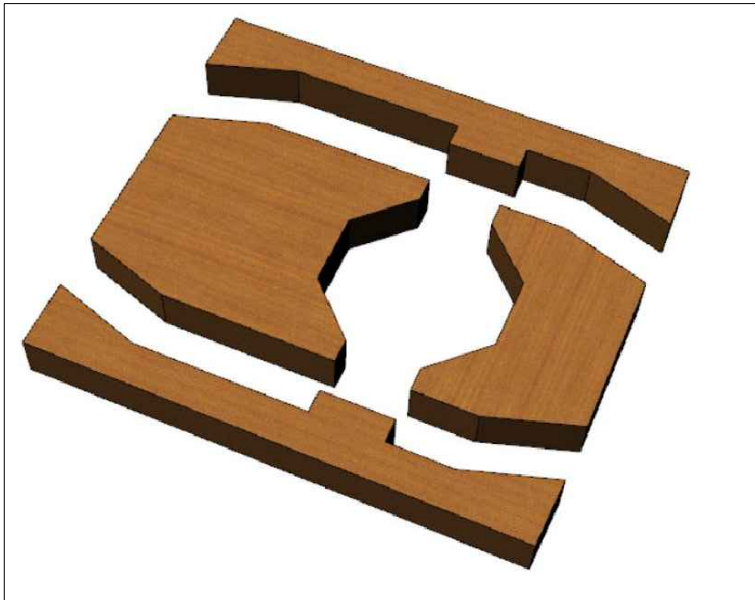
The remaining two coamings shown below, the aft coaming to the orlop assemblies just like the forward one, all of them using the same process.

The middle coaming assemblies are slightly different as we have a mast partner wedged in the middle. So lets begin with assembling the two coaming sections just like we did prior. Use the subdeck as your guide to start the two assmblies, go ahead and glue them up and wait for them to dry.

The completed assembly to the right, when complete this should fit into the subdecks nice and snug, just like the MDF blank did.

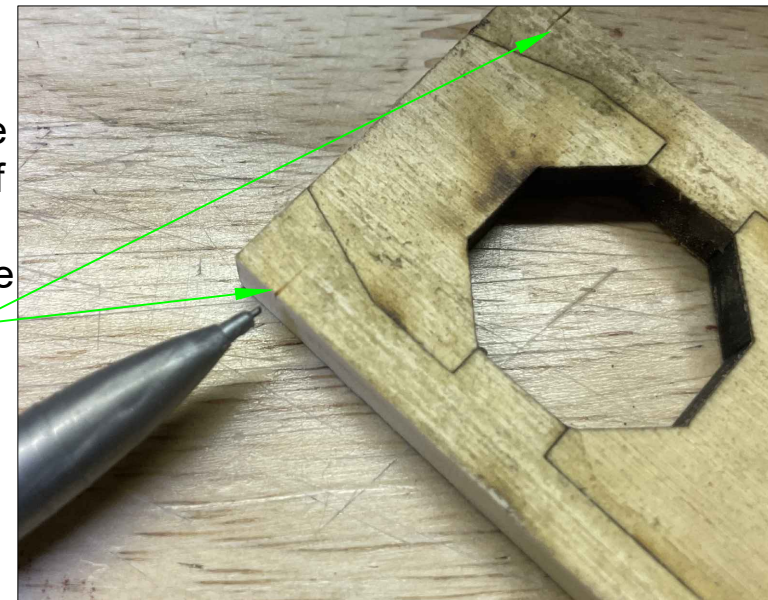


The middle coamings above showing the main mast partner assembly complete. Once we have the two coaming assemblies glued together and in place we can now build the main mast partner.



The main mast partner consists of 4 laser cut pieces, the two outer pieces will have a light line etched into them, go ahead and flip them over to their opposite side, we need those lines facing down, this will also help with the joints when assembling.

To the right you can see the etched line on the bottom of the assembled partner, the lines will help us position the partner correctly.

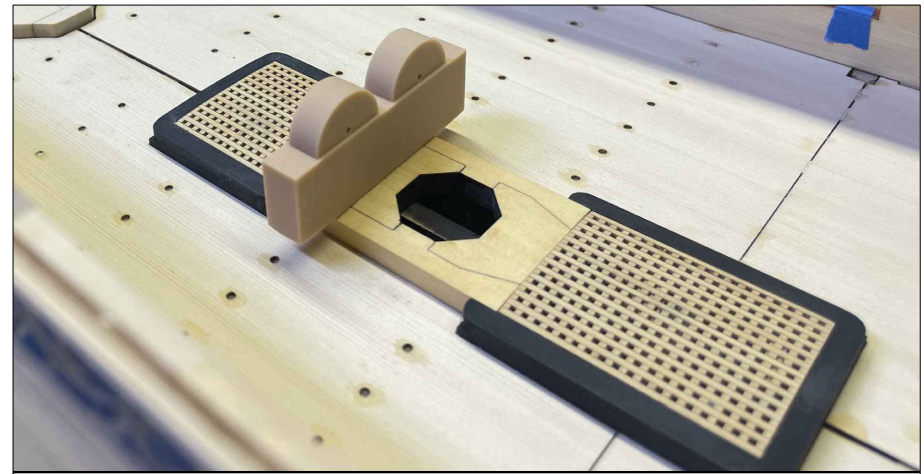
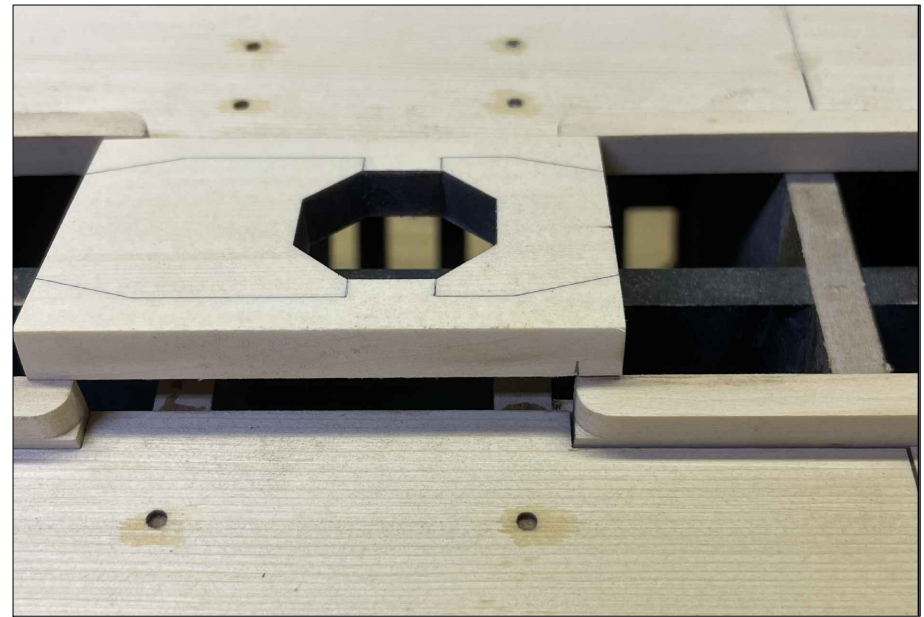


Above the main mast partner assembly, I used multiple clamps to hold it tight while drying.

To the right we can see the partner ready to drop in place, notice the pencil lines that I transferred to the sides from the etched lines below, this line meets the back of the forward coaming section and gets you about where you need to be with the gratings. Once the main mast partner has been dry fitted where you want, go ahead and leave it for now.

I then proceeded to make up the gratings and test fit them before fully gluing them to the coamings. For the forward end of the coaming assembly (the long end) I used 19 grating pieces and the aft section required 13 to produce the grating. Once I was satisfied with how things looked I painted the coaming assemblies black and then glued the gratings to the coaming assemblies while taking care to not glue them down permanently.

To the right the center coamings and main mast partner assembly in place with the gratings. Note the main mast partner is only a tight fit between the two coaming assemblies, after the decking is complete I will pull all three pieces out to sand the deck, after completion the three assemblies can all glue in permanently.

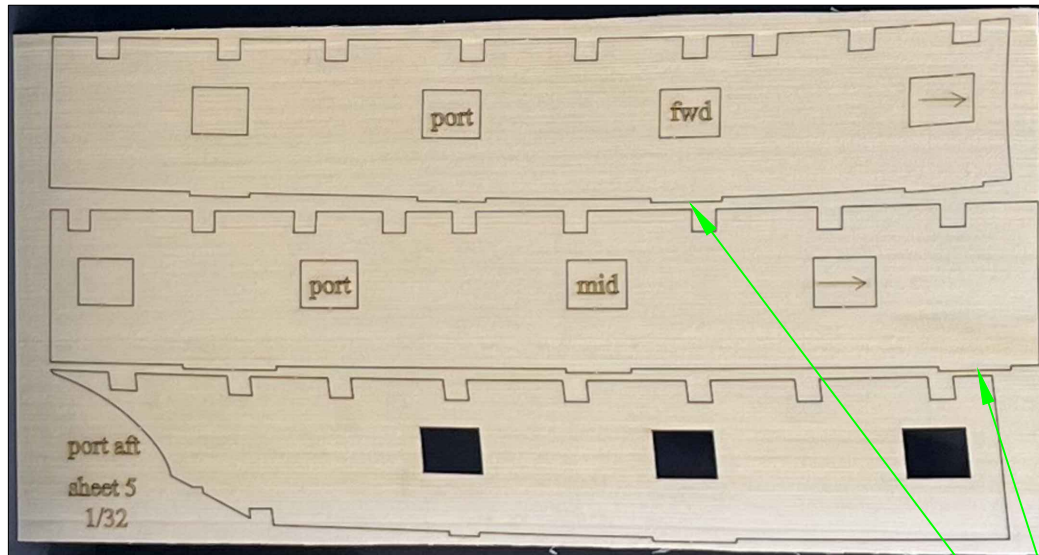
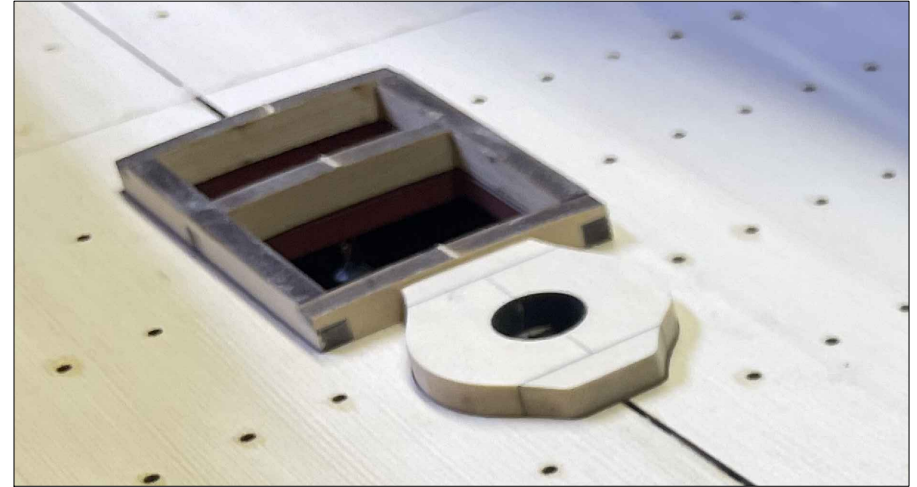


I glued down the gratings with the coaming assemblies dry fitted in place, along with the main mast partner, once dry each of these three assemblies remains removable for sanding of the decks later in chapter 4.

We can go ahead and assemble the aft capstan partner, it is very simple and once dry to ahead and slightly round off the edges. Also keep in mind that the capstans need to be vertical so we need to make sure that the partners attach parallel with the keel, because of the sheer that the decks run you will have to sand the partner to a slight wedge shape until the piece faces up and the capstans are vertical.



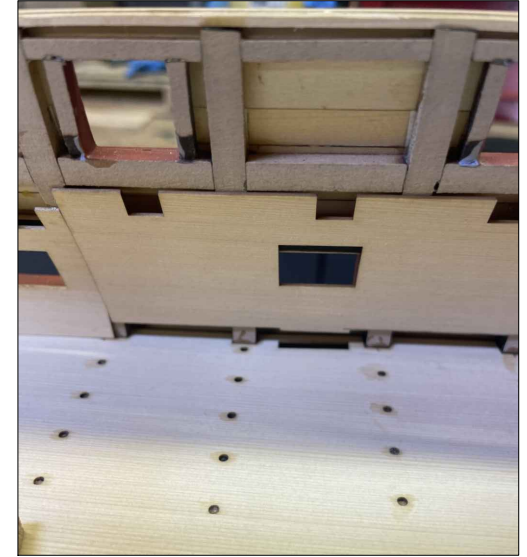
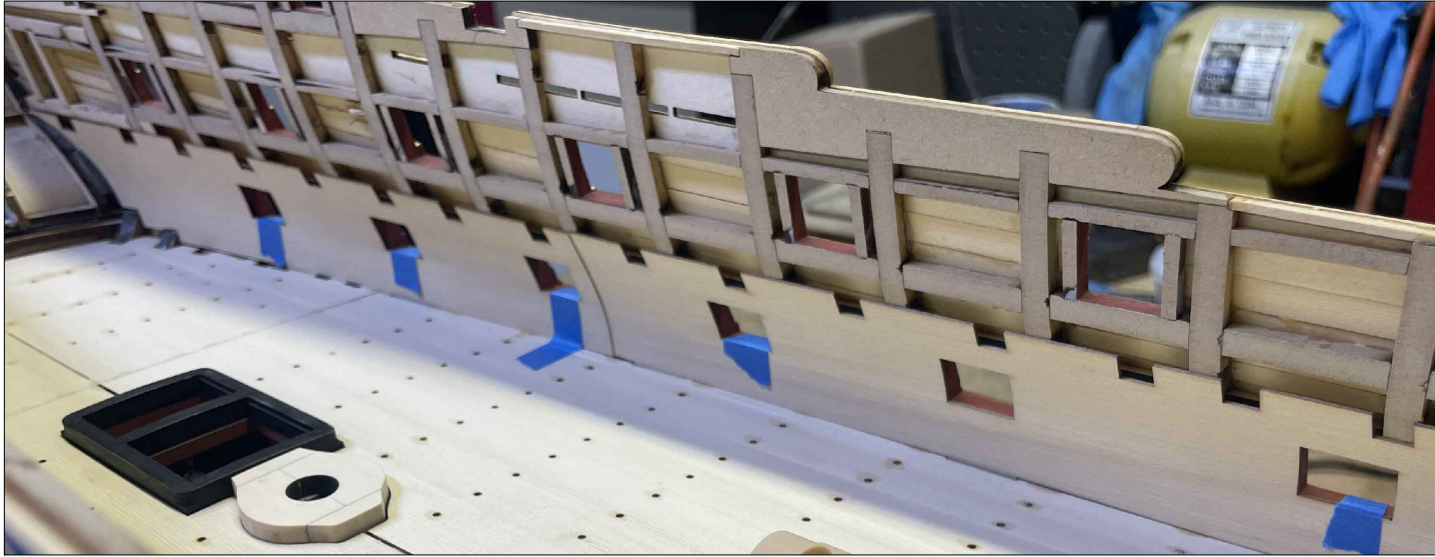
The aft capstan partner in place, it is not attached to the coaming and only dry fit until planking concludes.



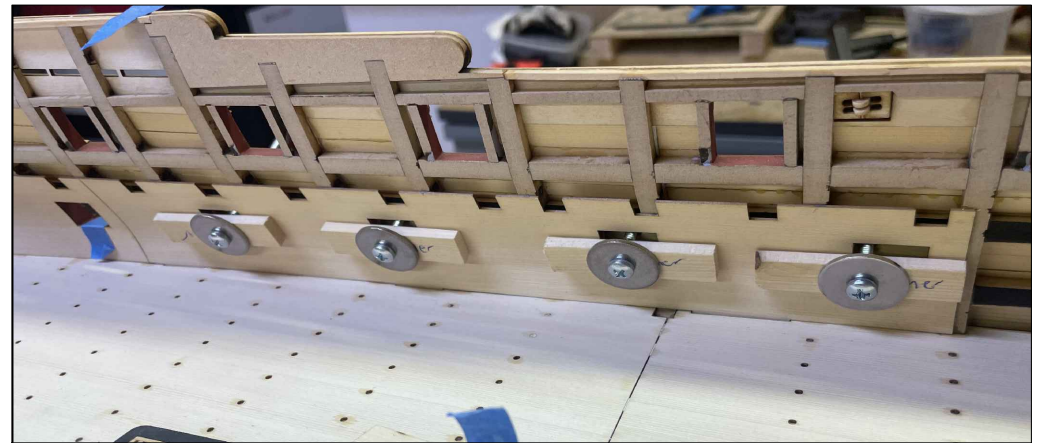
Above, 3 of the portside spirketting panels are shown, their location is identified in the ports as well as their direction. Notice the tabs on the bottom that fit into the sub deck slots. They can only install one way.

Moving forward we can now start adding in the spirketting panels, there are four laser cut panels for each side. The panels have tabs in the bottom to line them up in their proper location. I left the openings for the gun ports a little small so there is plenty of material to cover the port framing. The critical part is the clamps for the deck beams to sit in, these must be lined up perfectly otherwise things will not go well in chapter 6.

I started fitting the spirketting panels with the middle one first followed by the two other larger ones, we won't be using the smaller front ones until the other three are in place. To the right you can see how they fit and how the tabs fit the sub decks. I mocked them all up by using blue tape to pull them from the inside and temporarily securing them to the hull through the gun ports, this way the fit could be checked with them all in place and I could make adjustments if needed.



When securing the panels I used PVA, I wanted a little more working time than CA would allow, also the wood would warp/curl in my favor. I made some small clamps using scrap wood and screws, the inside edges were slightly rounded off to prevent damage to the panels, this seemed to secure them just fine. I had a few instances where the panel decided to pull away



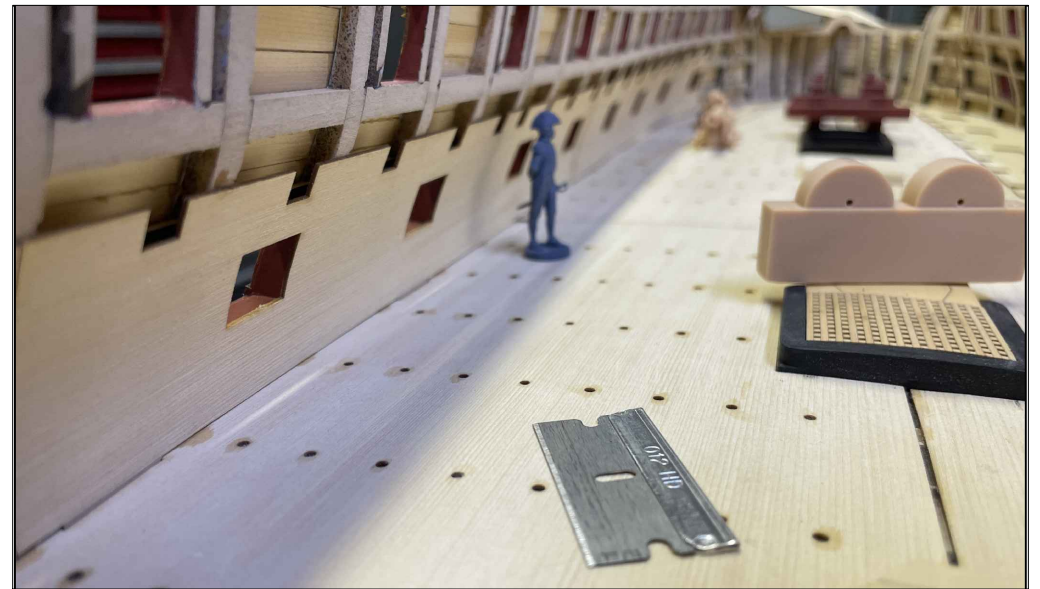
at the top so a little CA did the trick. Notice how I also left the aft panel secured with tape, even with the tabs I wanted a solid reference point to retain how I had them mocked up initially.

Moving aft its the same process, pay attention to the height of the panels, they should be at the same elevation at the joints.

Also we want to keep them at the sub deck level as to keep the upper deck beams in the correct location so if minor adjustments are required then check the sub deck for high spots first and then bring the panel down slightly by sanding the high spot. The forward panel is the same as well, just take your time to fit them all nicely.



To the right we can see the first three portside panels all secured and the run of the top is a nice curve following the sheer of the deck, also the joints are pretty tight to the sub deck, this will ensure that our upper deck is located at the right elevation.

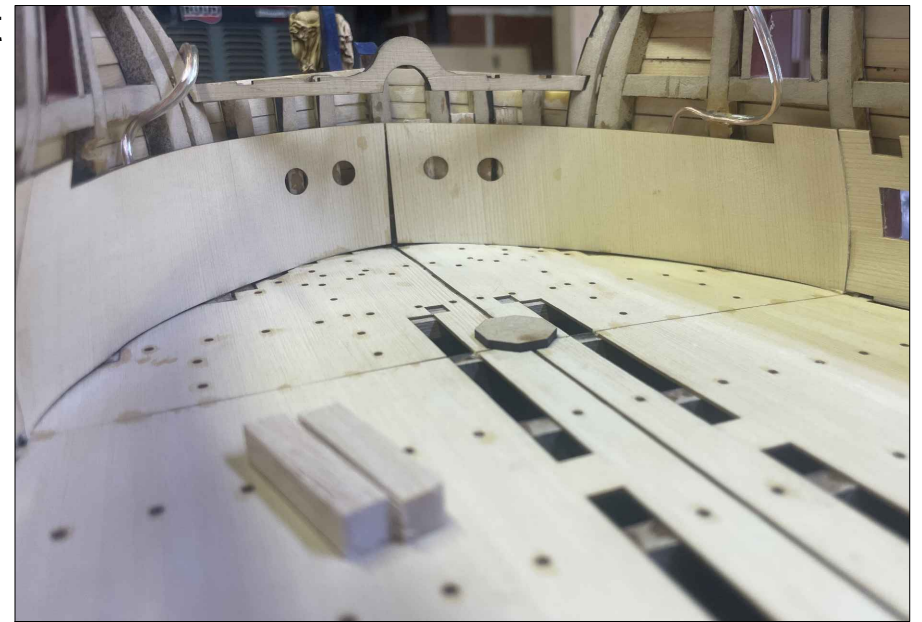
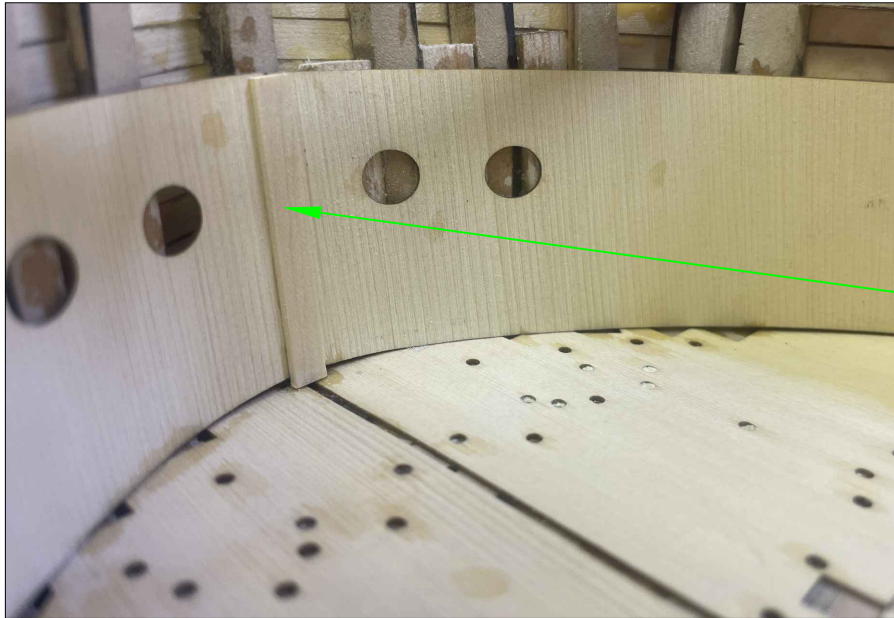


Next we will be adding the forward panels but first we need to add fillers for the hawse holes.

I just cut up some balsa blocks and sanded them to fit between the MDF hawse timbers, to the right you can see how they go in. While mocking up the forward panel you get a pretty good idea as to where they go, they do not have to be perfect just something to drill through later in the build when we move to the cheeks and hair brackets.

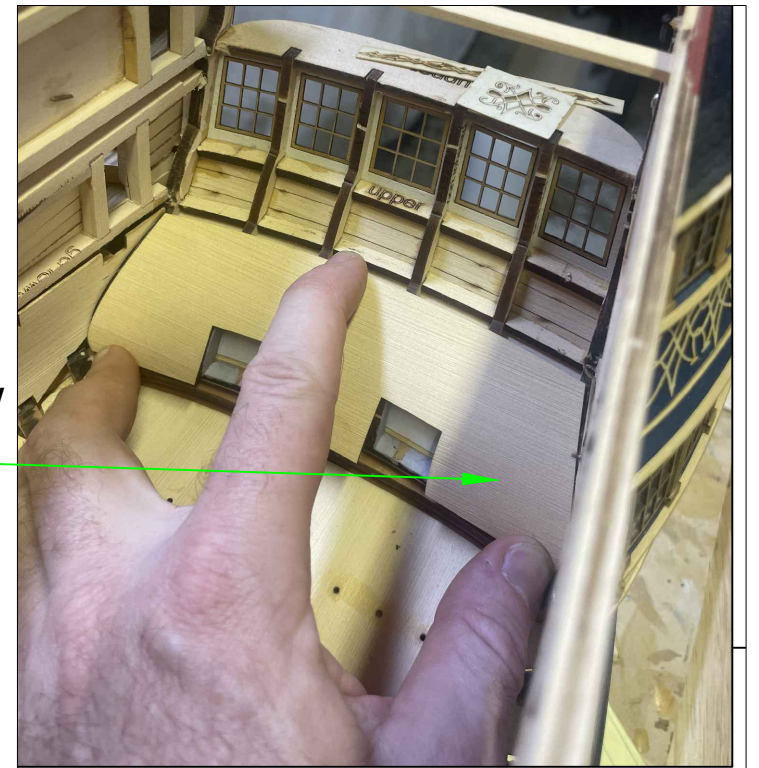


The two forward spirketting panels in place, the gap at the centerline is ok as we will be covering it with a strip of cedar. Below you can see the strip in place, this is a $\frac{3}{16}$ " x $\frac{3}{64}$ " piece of yellow cedar but really anything will work as it will all be painted red after the next layer of spirketting goes in place.



A $\frac{3}{16}$ " x $\frac{3}{64}$ " cedar strip was cut to run the centerline between the two panels.

In order to continue with the deck clamps and the remaining spirketting we need to add the laser cut panel for the inside of the lower counter. The piece comes cut pretty close to the required fit but it will likely need adjustment depending on how the aft spirketting panels went on.

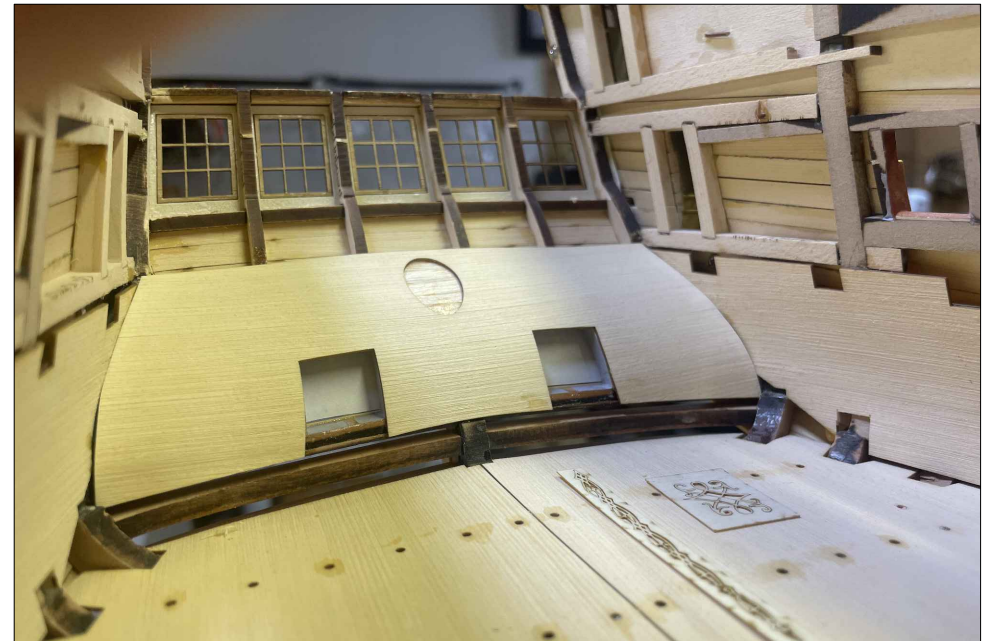
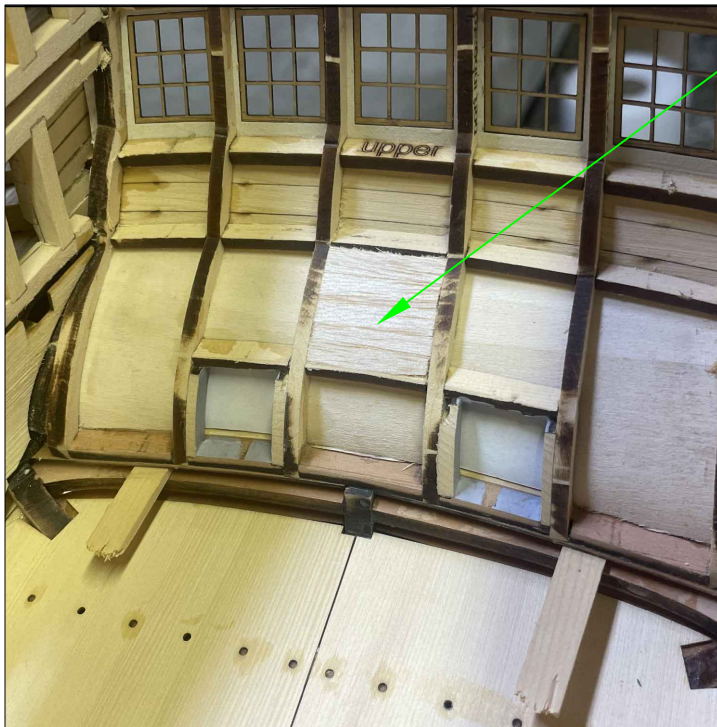




Prepping the stern frames for the laser cut panel, I first gave them a light fairing job so that the panel lays down smooth. Since the panel needs to stop at the bottom of the gun port wing transom I made some wedges from scrap that fit between the two wing transoms, this turned out to be a big help when test fitting the panel and eventually attaching it.

Next I took scrap balsa and cut several pieces out as filler for the eventual drilling for the rudder stock, you will also need to fair this in as well.

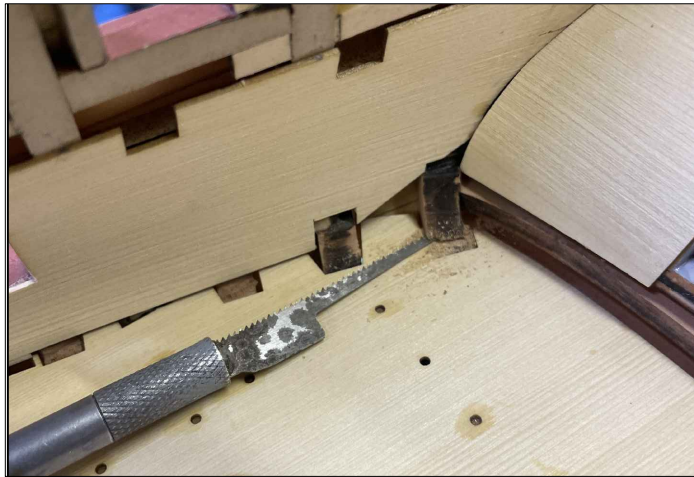
The wedges in place and the fillers below. The framing is prepped for the laser cut panel.



The inner counter in place, you can see the balsa fillers where the laser cut opening is for the rudder stock. There are some gaps on my panel but these will be covered by the spirketting and deck clamps.



Before we can finish the spirketting we need to make some room, the last three frames need to be trimmed to accommodate the lower spirketting and the deck planking. I made quick work of this using the x-acto mini saw and a No.11 blade. The pearwood carves out the way pretty easily.

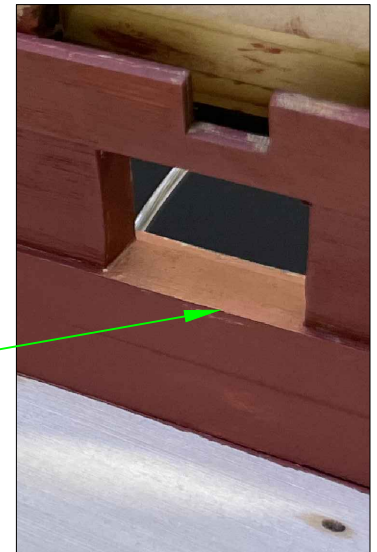
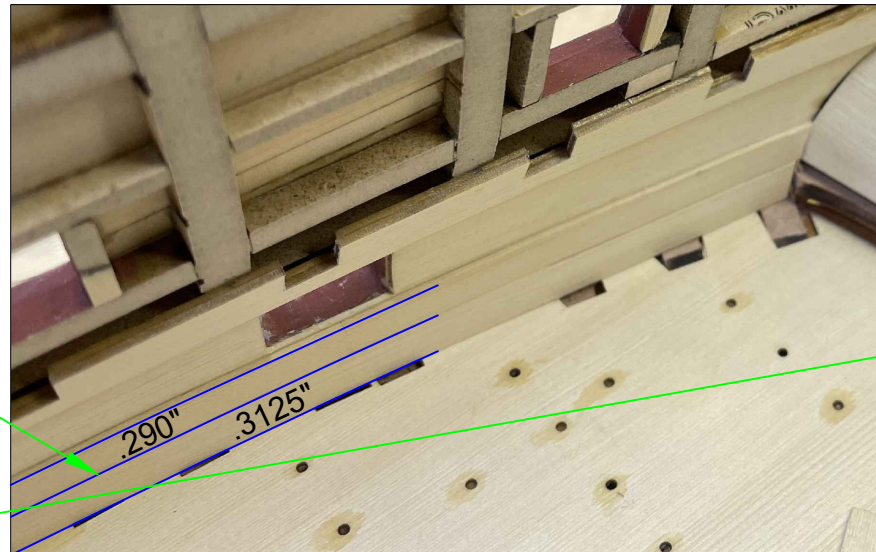


Once the bulk of the frame pieces are removed then you can start checking it with scrap planks, the two strakes of planking need to lay flat onto the panels. Below you can see the two strakes in place, for the two strakes I used a $\frac{5}{16}$ " wide strake and the other one was .290" wide, planking thickness should be $\frac{3}{64}$ " or .046875"

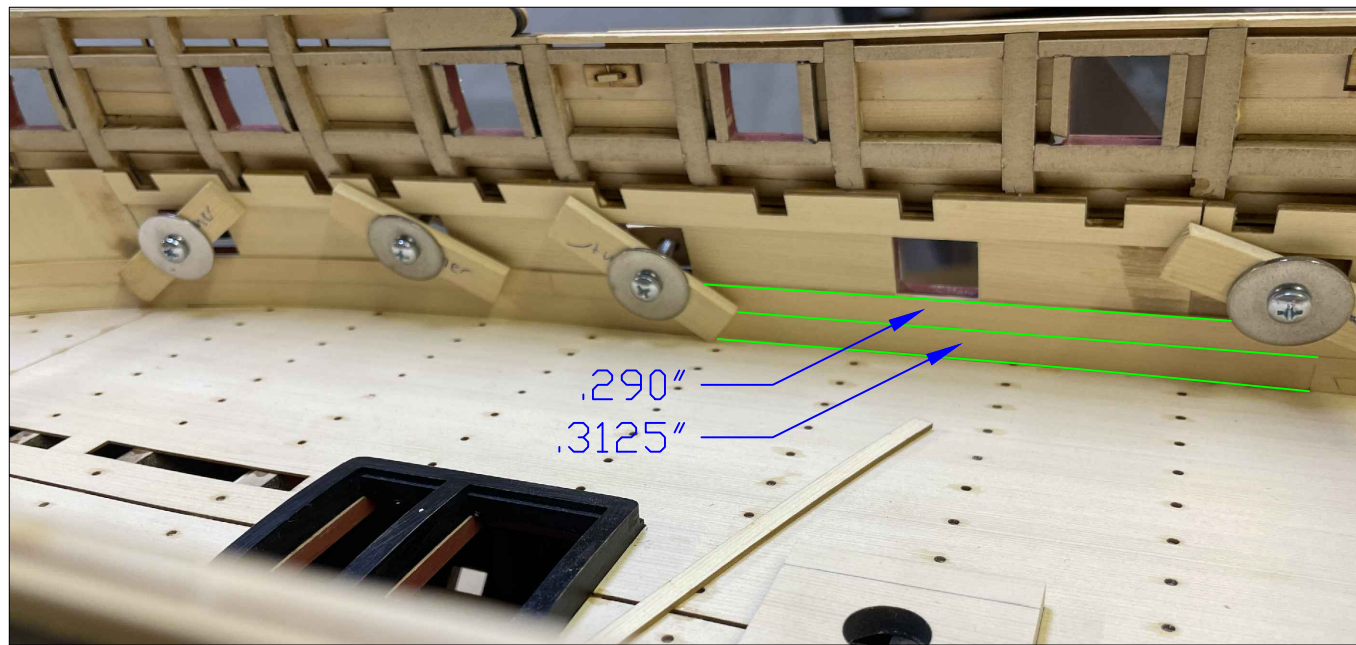
Below you will notice how the run is a smooth curve and follows the inner spirketting panel. Once the two strakes are complete then a light block sand to smooth them out, also the gun ports can now be cleaned up as the spirketting panels had slightly undersized openings. Note the top edge of the lower spirketting should run even with the bottom of the gun port sills.

To the right the two strakes used for the spirketting, $.3125" \times \frac{3}{64}$ and $.290" \times \frac{3}{64}$. I used $\frac{5}{16}$ " as the lower strake as the sub deck will butt up to it and make it even in width to the upper.

Far right you can see the edge of the spirketting level with the lower gun port sill.

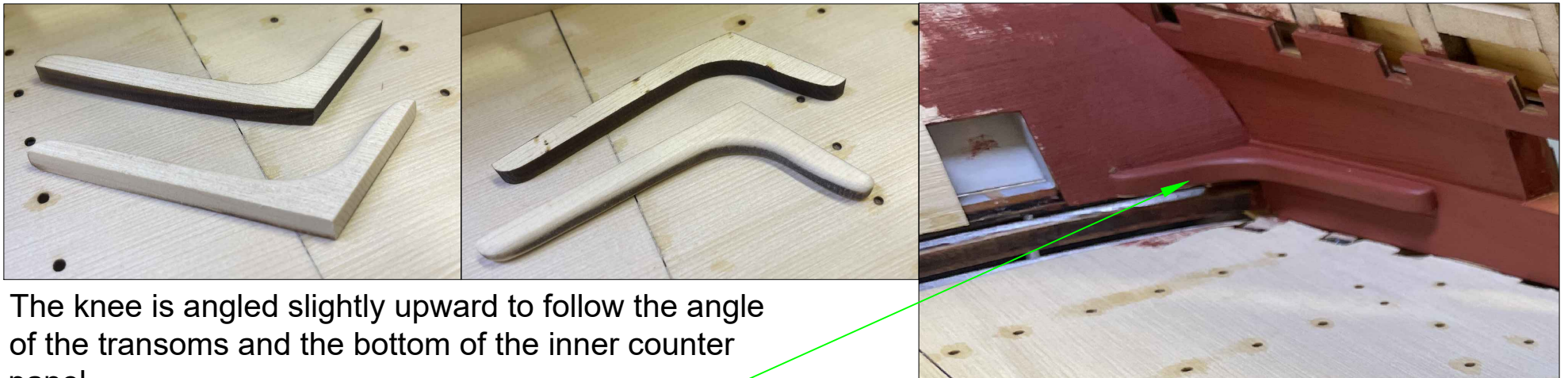


The deck clamps can start going in place, these are fairly easy to install, they line up with the existing slots for the upper deck beams. Again i elected to use PVA on these so i had time to maneuver them into position correctly, you will also notice the same clamps that i used for the spirketting panels. I was able to manipulate them to hold the deck clamp up as well. A few small



separations occurred on the top of the clamps so i used a bit of CA to hold them in place. You will also notice the seams are in the same place as the spirketting panels, i tried to offset these for cosmetic purposes but it threw everything off, so i just used a bit of filler and then block sanded them down just like the spirketting panels.

Next up are the two knees that fit on the inside of the counter, these are laser cut and require a little shaping. I rounded the edges and beveled the backside to fit the counter and the spirketting. The aft end of the knee follows the angle of the transoms as you can see below right.



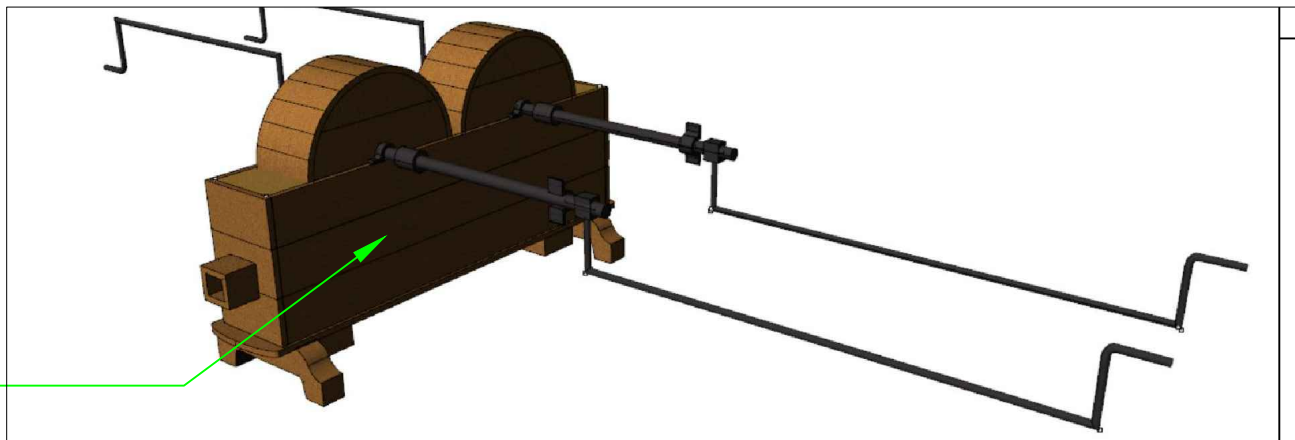
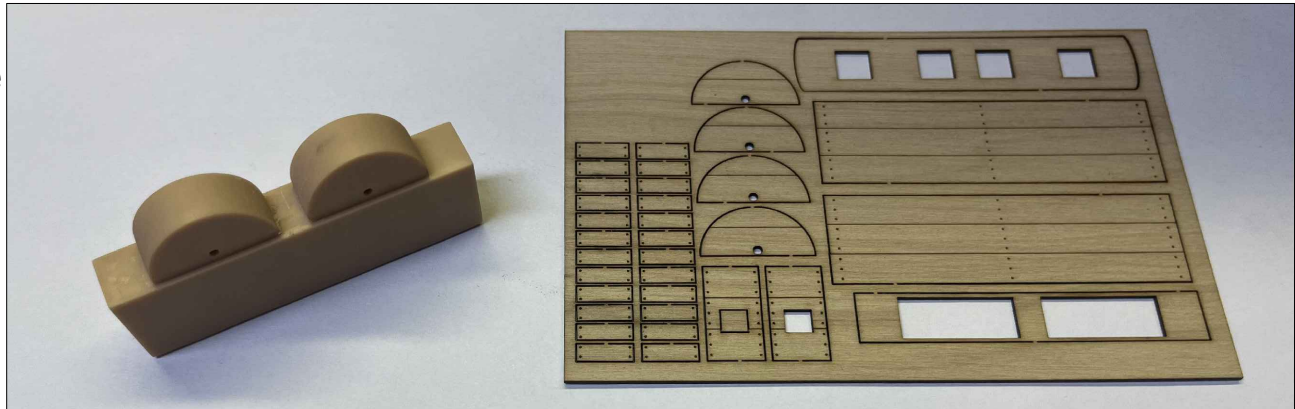
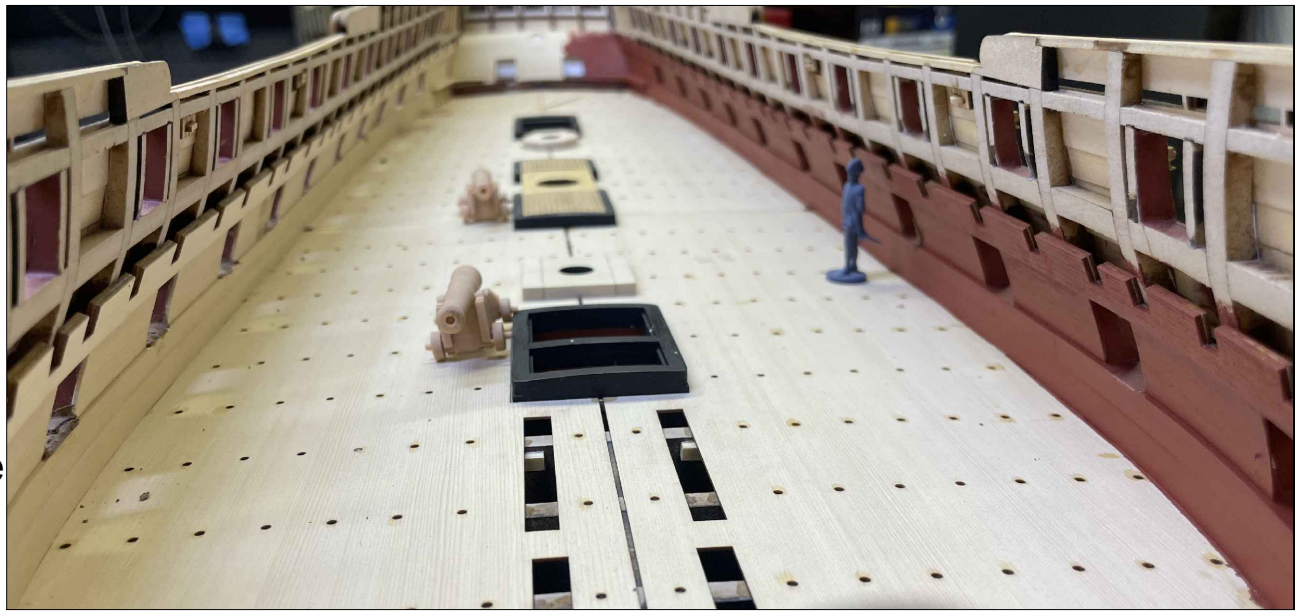
The knee is angled slightly upward to follow the angle of the transoms and the bottom of the inner counter panel.

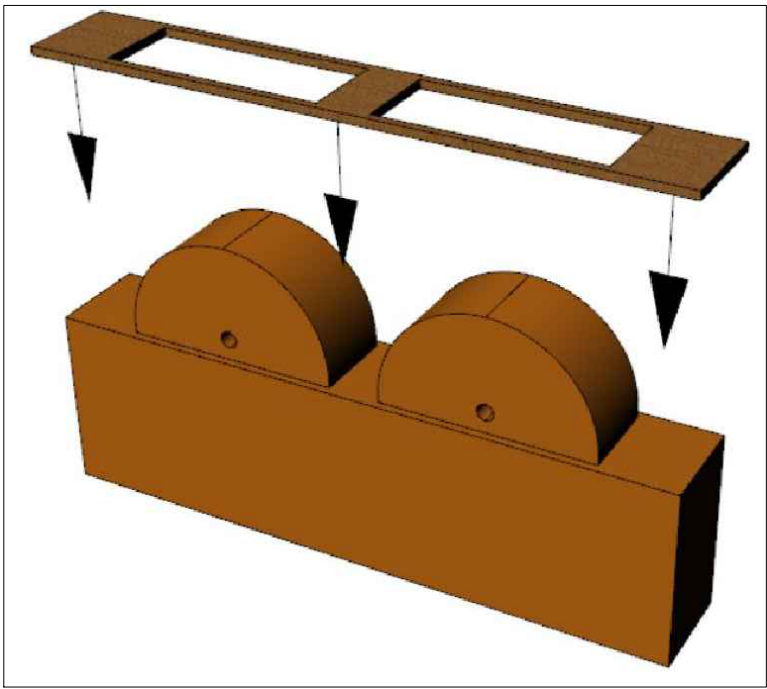
With both sides complete, all joints filled and sanded and the gunport openings cleaned up you can move onto painting with the red of your choice, I masked off the subfloor and painted a few coats of red, I used caldercraft red ochre.

With this complete we can now move onto the chain pumps. For Portland we will be building the chain pumps in chapter 4 and finishing them in chapter 6. The pumps can be secured to the deck once complete but I recommend keeping them loose until the deck beams and columns start going in place, you will see why when we get to Ch 6.

The chain pump assembly is made up of the 3D printed parts and laser cut boxwood, in chapter 4 we will be working with the parts you see to the right. The printed part makes up the base of the assembly which we will be covering with the laser cut boxwood pieces.

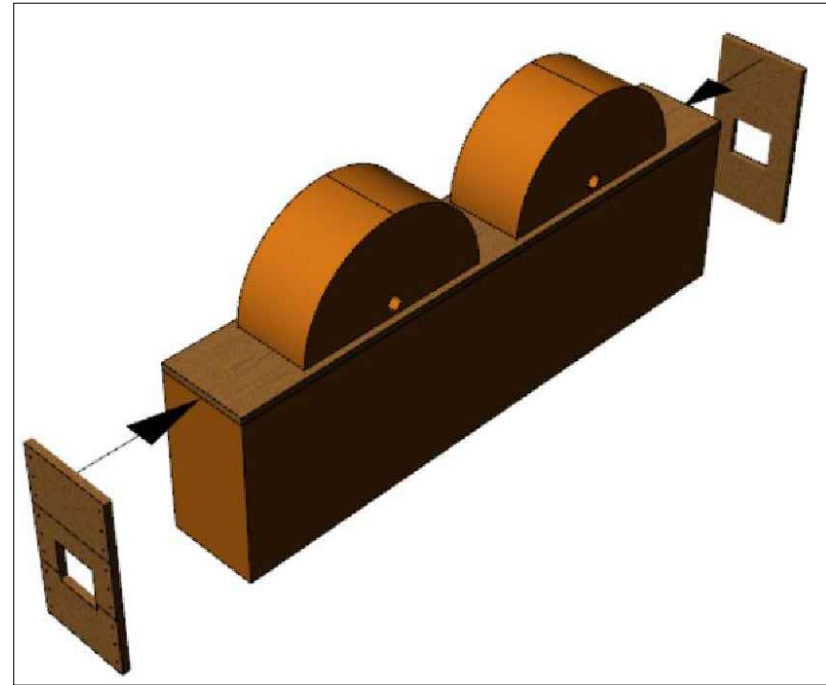
The completed pump assembly



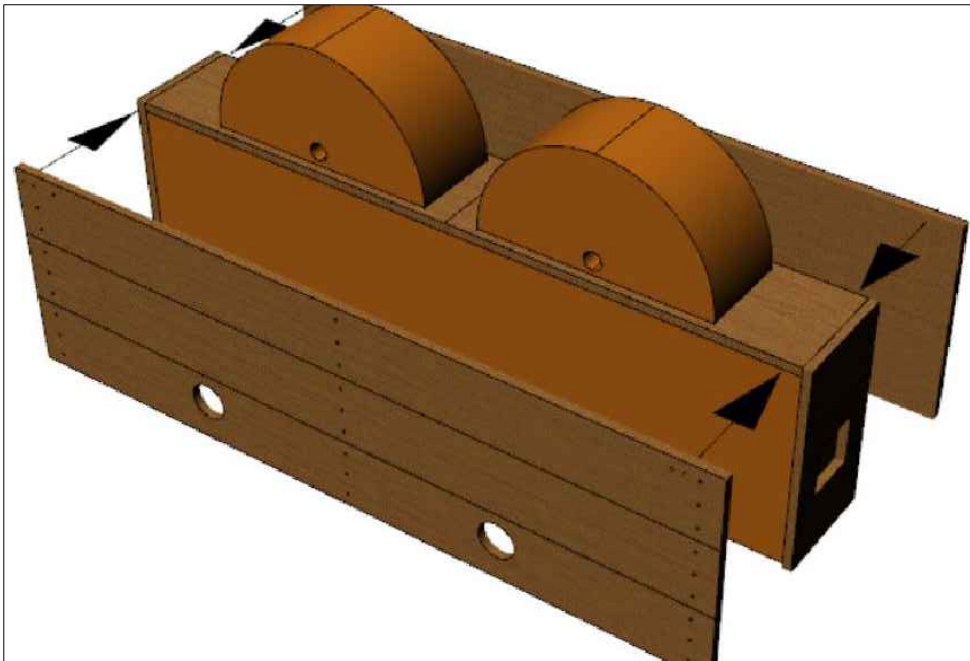


Begin by adding the boxwood top, it should fit right in place, i attached it with CA to avoid any kind of warping, the piece fits pretty snug. I then lightly sanded the boxwood edges to make sure they are flush with the base of the pump.

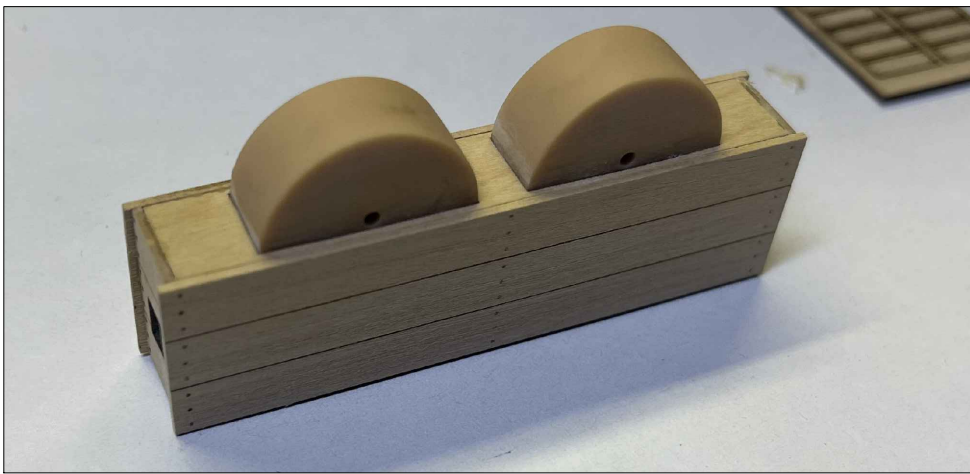
Next the ends of the pumps can be attached, these need to be flush with the top we just attached as well as the sides. Also make sure to keep the cut outs for the drains facing down as shown in the photo to the right.



The cutout for the drain tubes needs to be on the lower side of the pump.

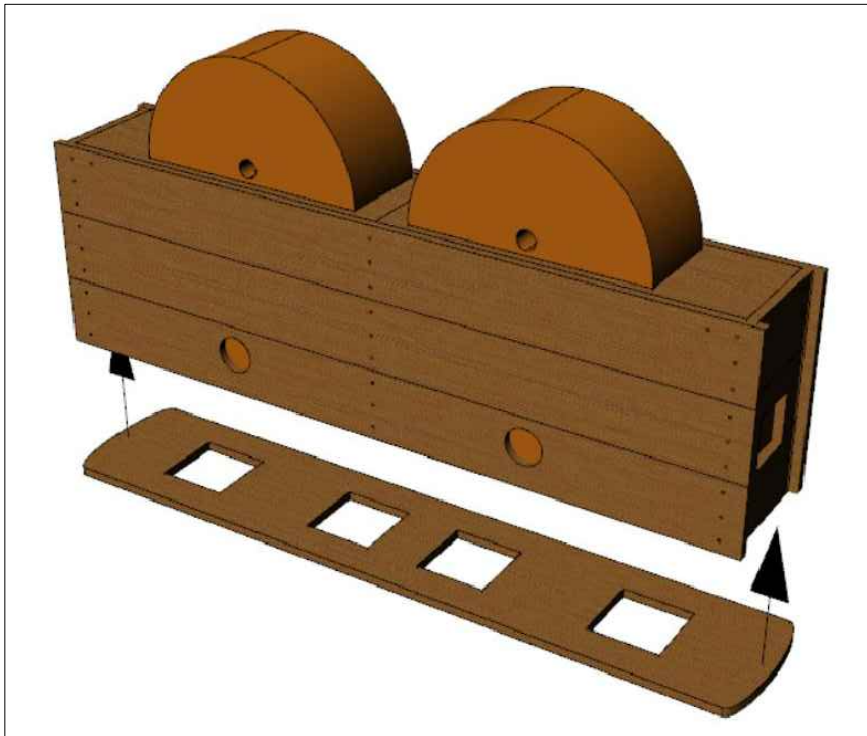
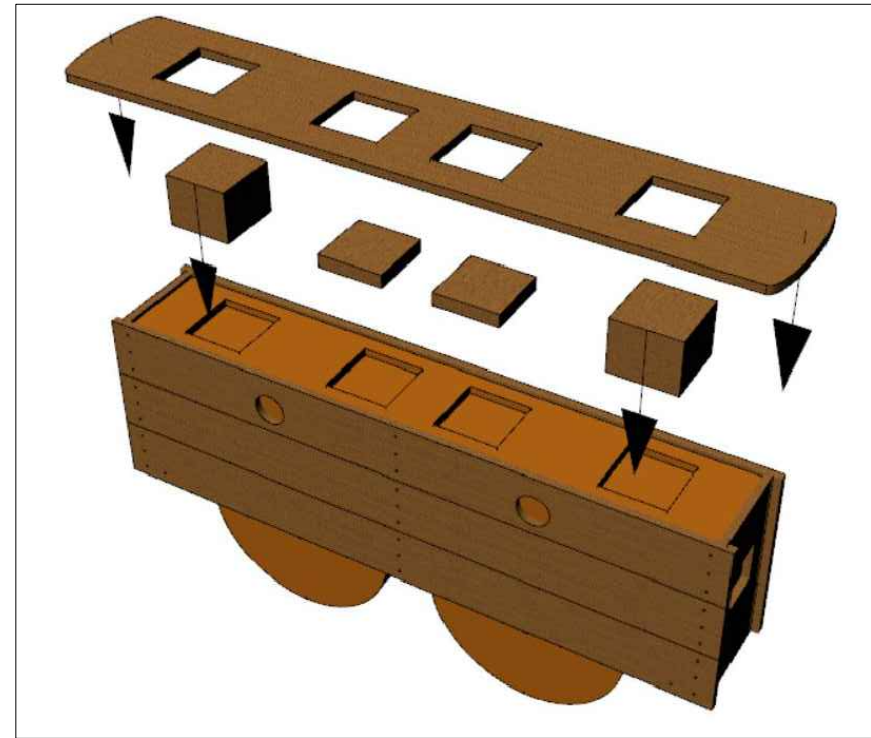


Moving on to the front and back pieces, you will notice that one of them has two holes, these are where the plugs go and they also need to be on the low side. Note that the side with the two holes will become the front face of the pump. Also the edges should overlap the ends by about $\frac{1}{32}$ "



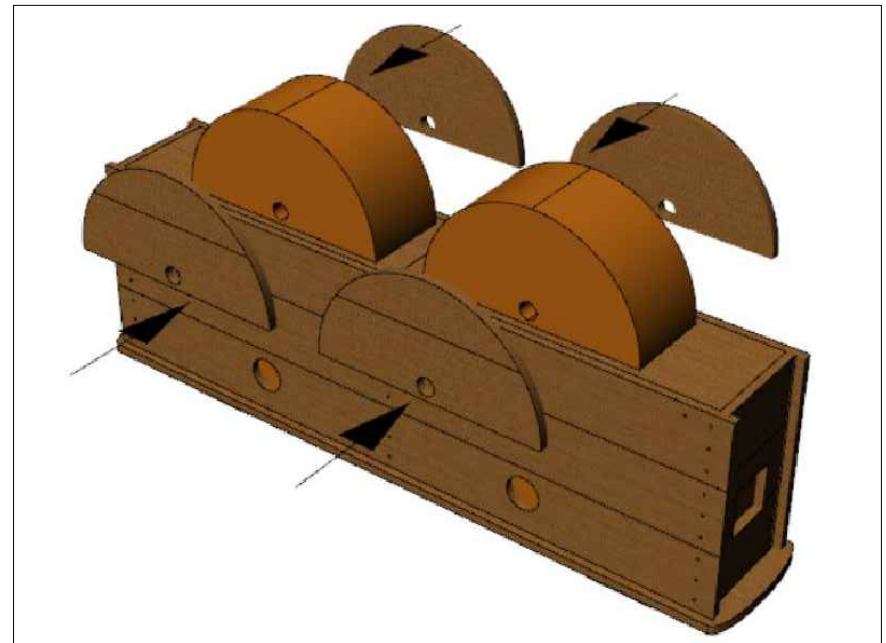
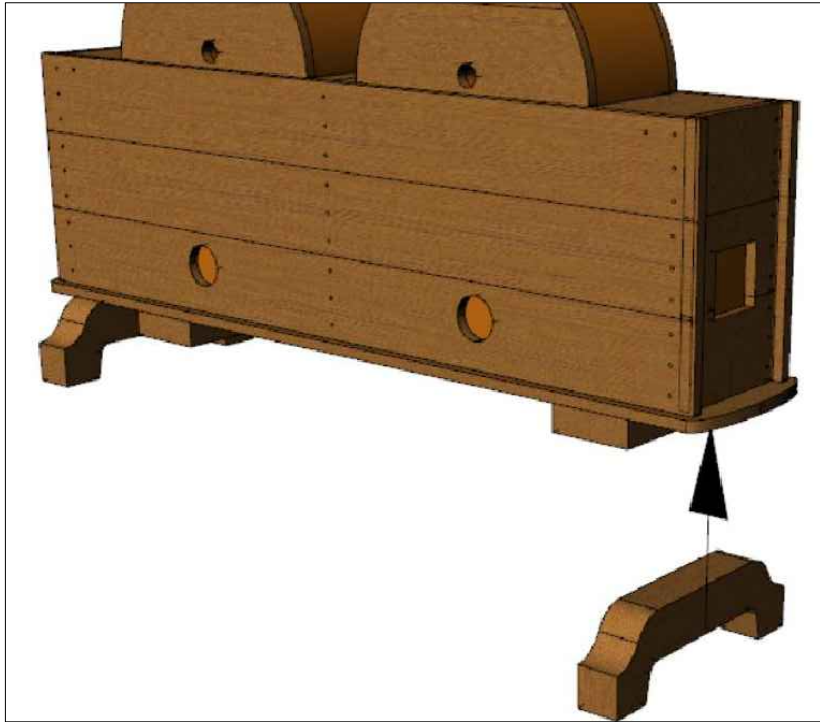
At this stage your pump should look like the example to the left.

Next we can attach the bottom base, included with chapter 4 is $\frac{1}{4}$ " x $\frac{1}{4}$ " boxwood stock, these are intended to fit the base of the pump and act as the square chamber. These can be installed and cut to a rough length, they can be sanded to exact height on the assembly when the pump is ready to go on deck.



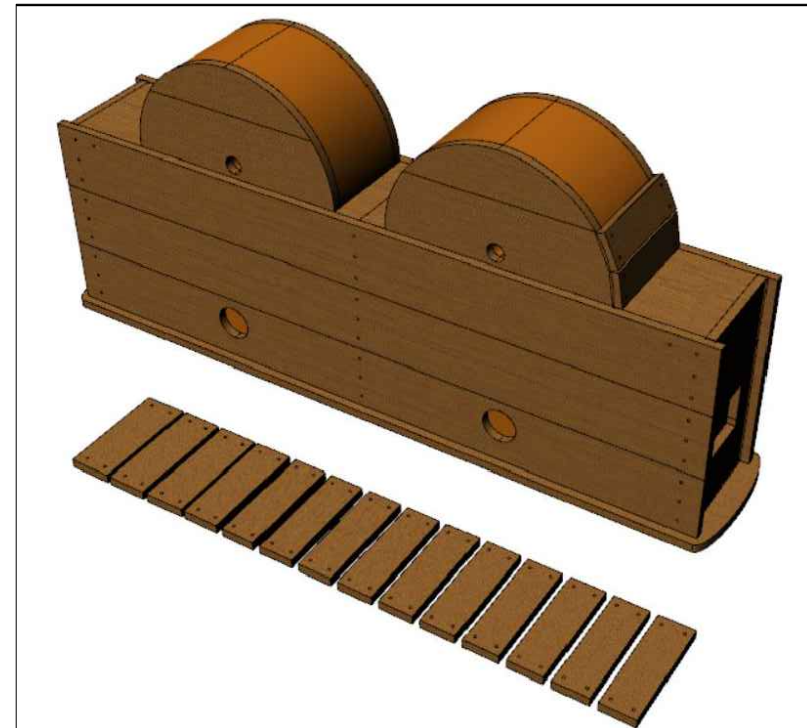
The short pieces can be cut to about $\frac{5}{32}$ " and the longer pieces on the outboard side of the pump can be cut to $\frac{5}{16}$ ", this should give you plenty of wiggle room to get them to sit on the deck and main mast partner. They will also ensure your base piece is perfectly centered on the pump.

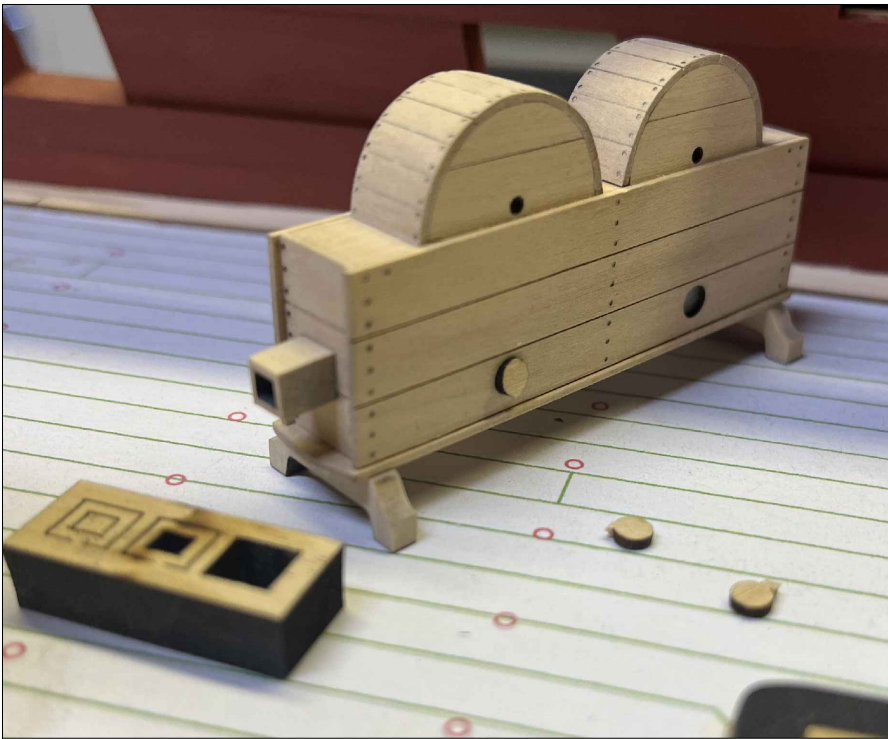
We can now add the ends of the pumps, these were glued on with PVA so i could ensure that they were centered perfectly on the printed part. The problem with PVA on thin boxwood is that it wants to curl up so i clamped them down once set where i wanted using larger pieces of scrap wood.



The feet for the pump can be attached now, go ahead and center them and set them back off the edge of the base .1653" or depending on your calipers and to make it simple 4.2mm.

With the ends in place we can now start attaching the laser cut planks to the top of the chain pumps. There are several planks that are slightly taller than the one before it so you can ensure the entire printed base is planked without gaps and which ones you use will vary depending on how you bevel and fit them. I used all the larger ones first on the inside then was able to finish out with the shorter ones. Mock it up before you begin.





Our pump is now almost complete and should look like the example to the left. Now we just need to add the discharge ports and the plugs on the front. The discharge pieces are laser cut boxwood, they just need the outside edges sanded to remove the char.

The plugs are also laser cut and fit into the holes on the face of the pump, as you can see they also require a small handle, i used 22 gauge copper wire and drilled two small holes on each plug and then fixed them in place with CA. The plugs fit pretty snug but i still used a little bit of PVA just to be safe. The pump you see is not attached and i will return to it later in chapter 6.

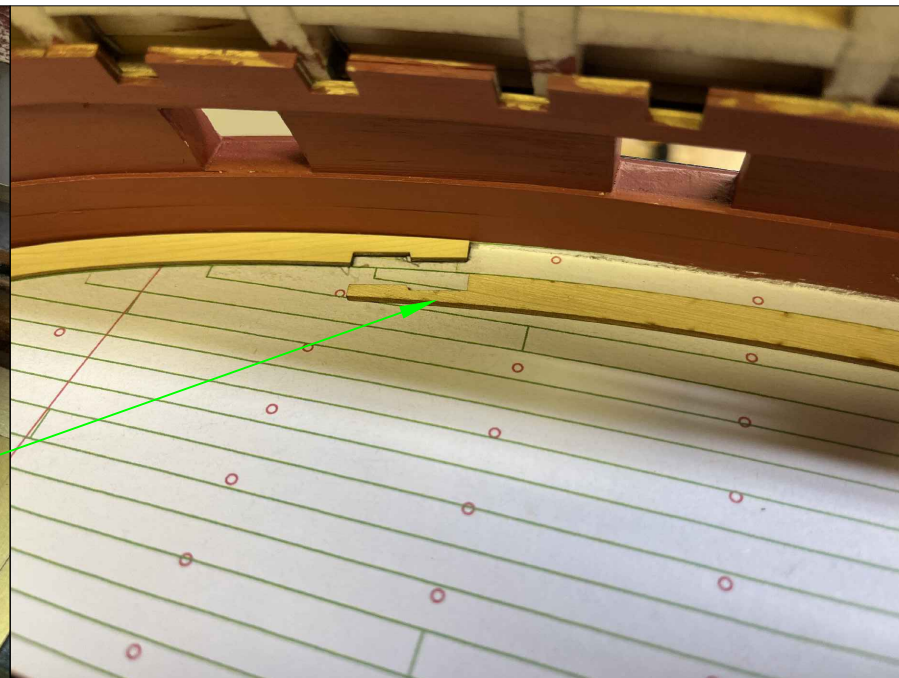
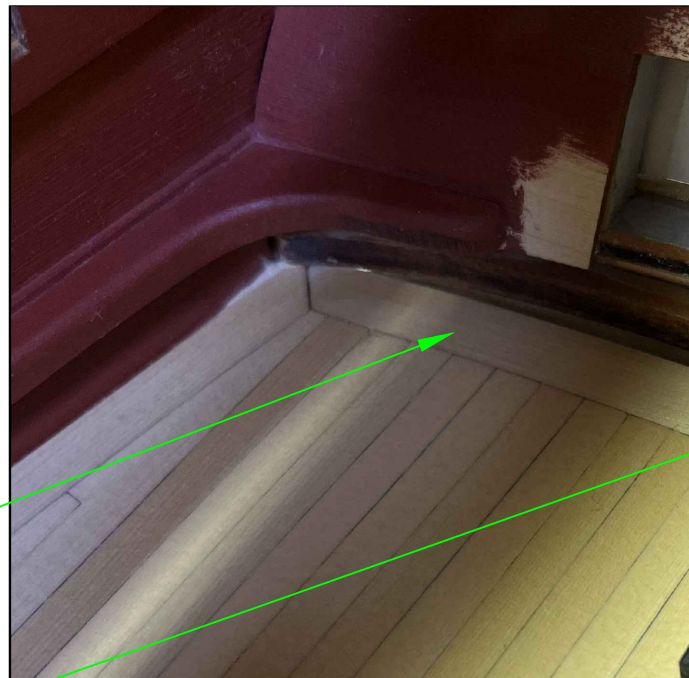
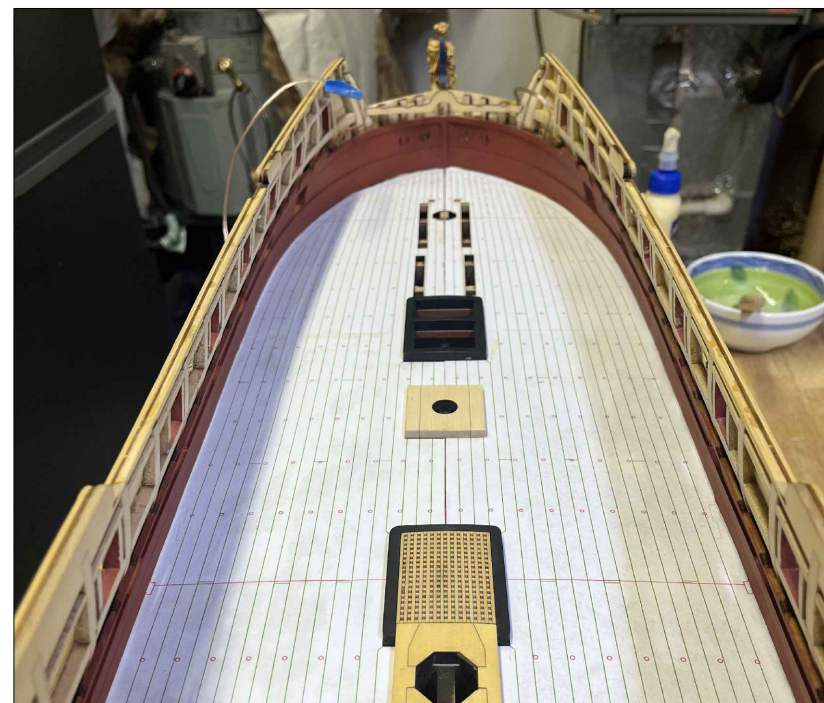


Ok lets get this main deck planked, as you've seen already your sub decks are pre etched with the planking and butt joints so you don't have to do any lining off. Of course you are free to plank your model however you see fit.

To the right you can see the prototype, I decided to etch the patterns after i had already installed my sub decks so mine are printed and glued in place.

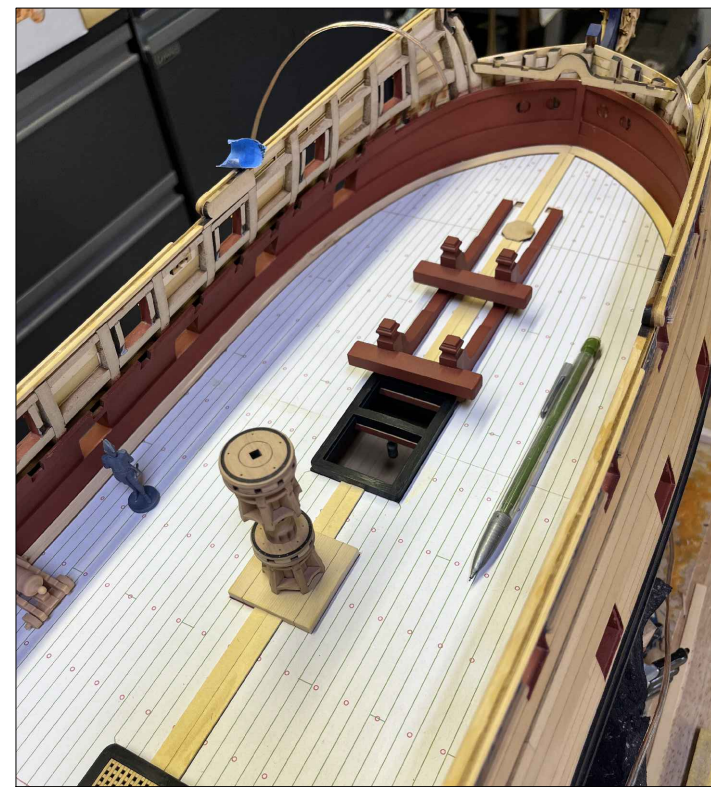
Lets begin with the margin planks, these come in the chapter 4 set and they are laser cut, the joints are arranged so that you work your way from forward to the stern, you will find that the final margin plank is slightly longer so that you have some room to work with and trim as necessary. To begin I installed the stern margins first then moved to the sides, this will allow you to get a precise joint on the final side margin with the stern one.

The aft margin plank installed before the sides, the etched sub decks also give you the joint angle.



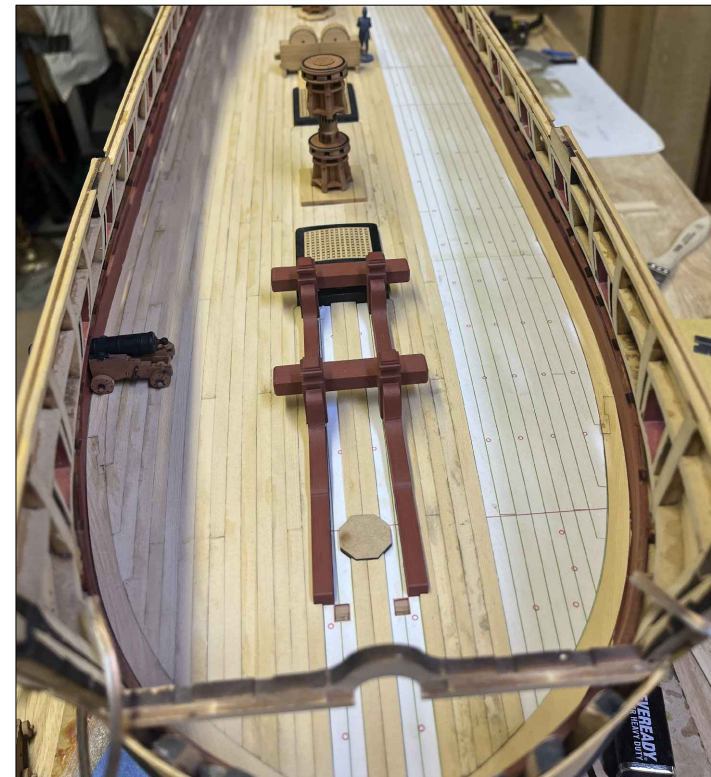
To the right we can see the second margin plank going on, the joints are arranged so you can work front to back. In order to produce tight joints the ends and the hook are just slightly longer than required, you may have to do just a small bit of sanding.

Planking is pretty self explanatory from here forward you just have to get through it. I used $\frac{3}{64}$ " yellow cedar and most of the planks are right under $\frac{1}{4}$ " wide. I begin in the middle and worked my way out, the model is designed to be planked around the deck fittings and i also intended to remove them after I finished so i could sand the deck down without having to work around the coamings and fittings, this makes for an easy block sanding. If you elect to plank this way be careful not to accidentally glue any fittings down while planking. Of course you can also just plank with everything glued down from the start.



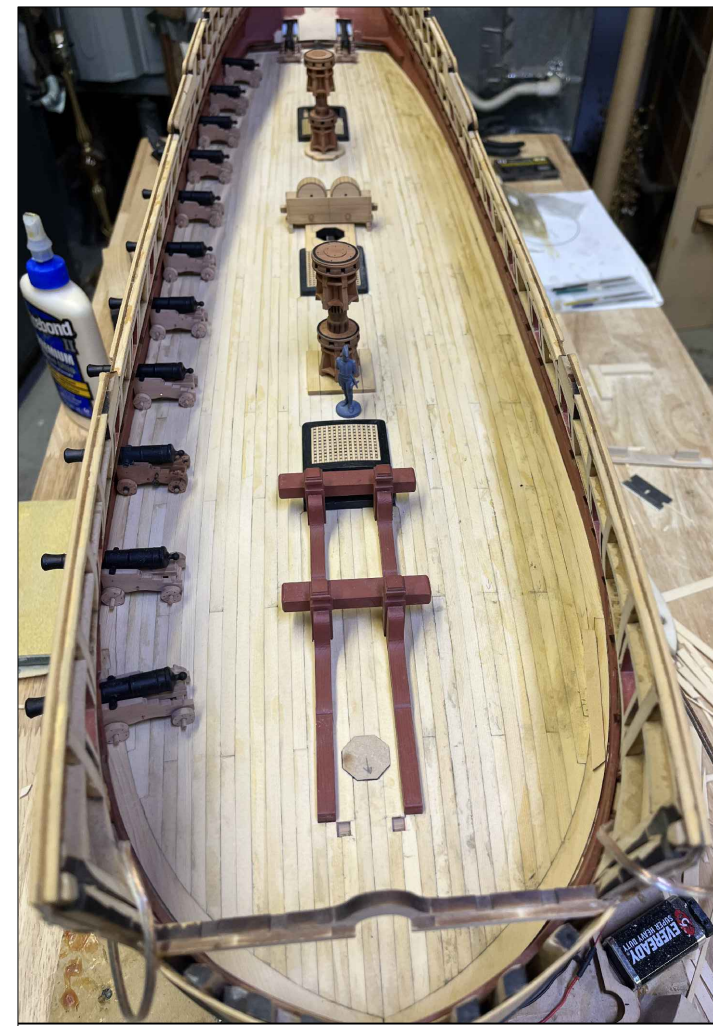
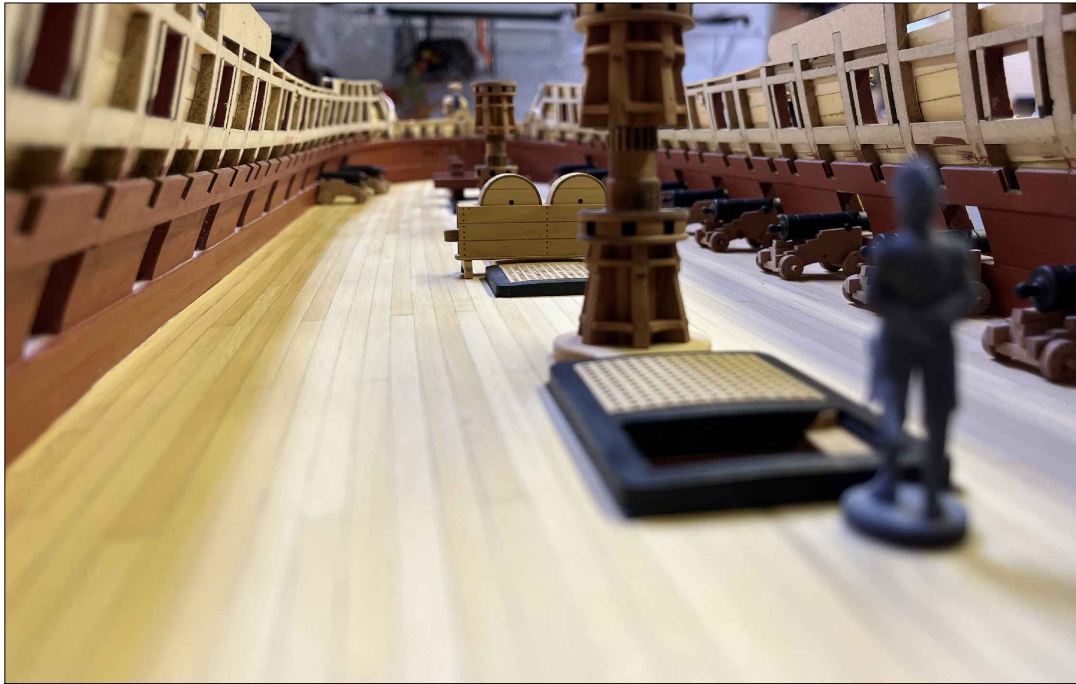
Above you can see as we start to work our way outboard there is a strake that runs the length of the deck and forms a margin around the coamings and partners, these will require some $\frac{5}{16}$ " wide planks in order to produce the complex joints you see above.

To the right we can see planking advance to the portside with a few planks in the middle around the riding bits.



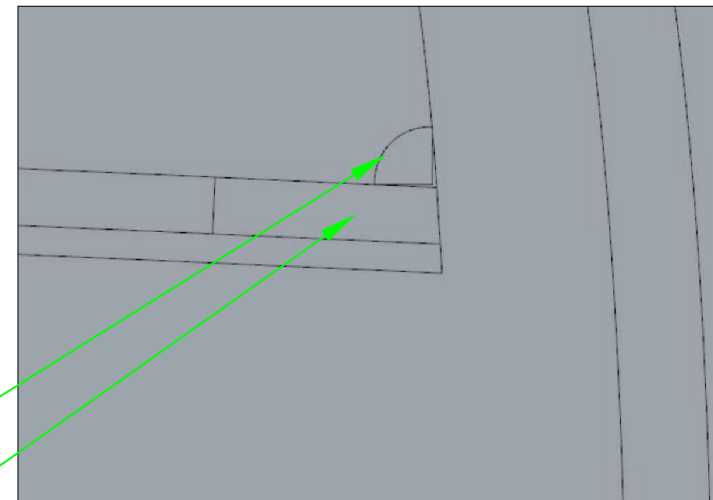
Planking is now completed and ready for sanding, once I remove all the fittings i will block sand and treat the deck with a coat of WOP.

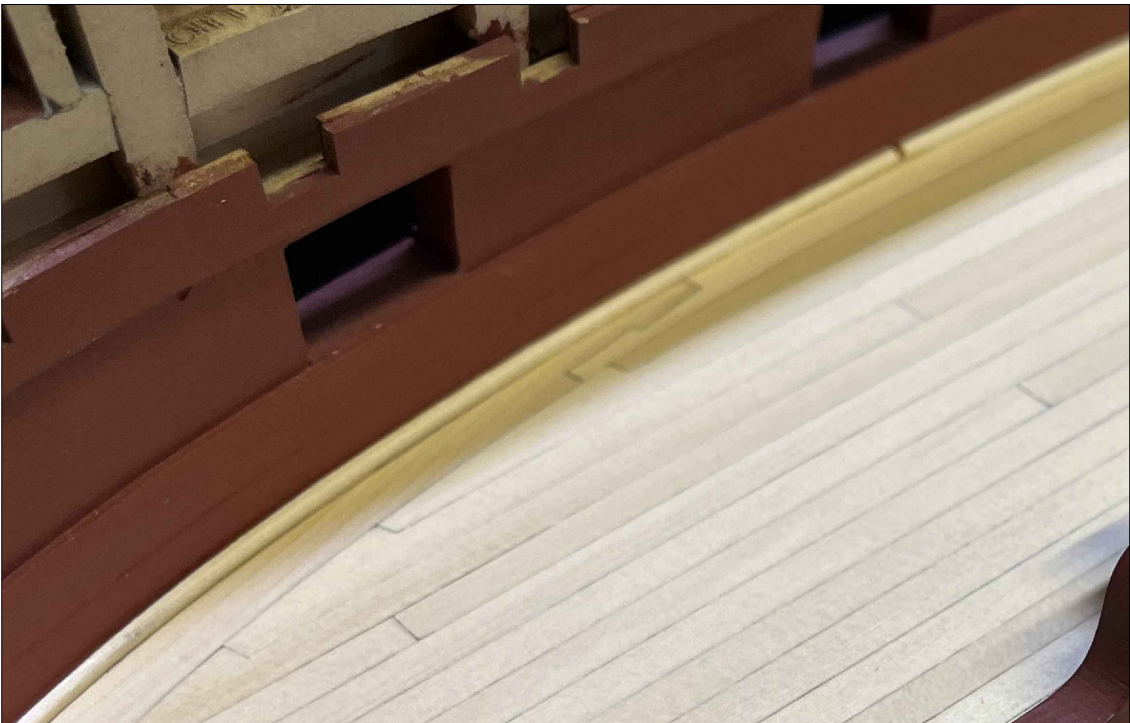
Below the completed deck treated with WOP and the deck fittings in place.



With the deck complete we can move onto the remaining fittings to conclude chapter 4, first lets go ahead and install the waterways on the main deck, these are made from 6 $\frac{1}{16}$ "x $\frac{1}{16}$ " cedar strips that are quarter rounded. I just used my block sander to shape them by hand using 220 grit.

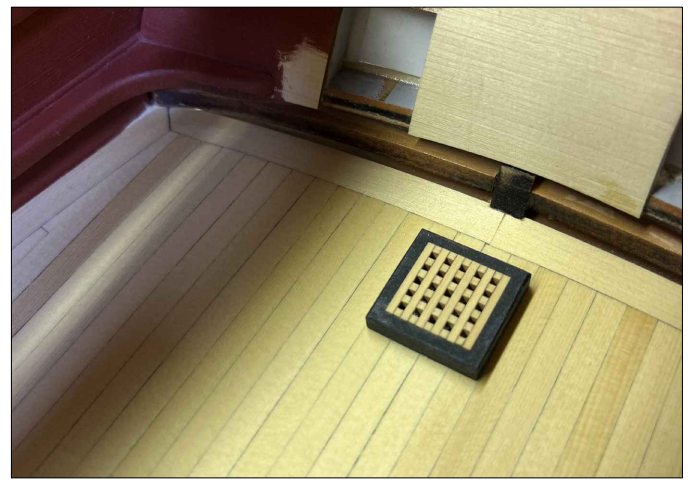
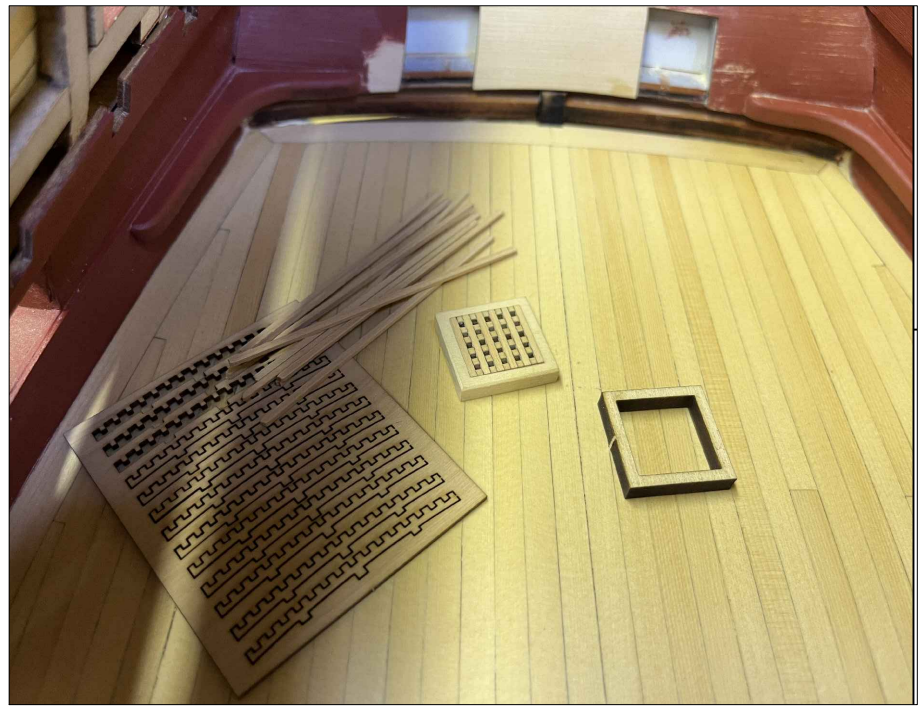
$\frac{1}{16}$ " x $\frac{1}{16}$ " quarter round
deck planking



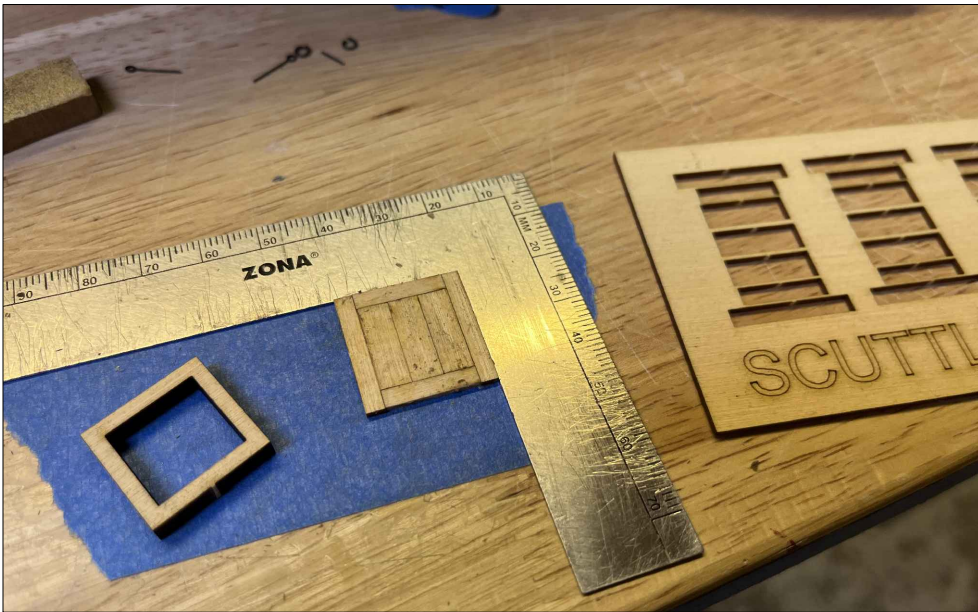
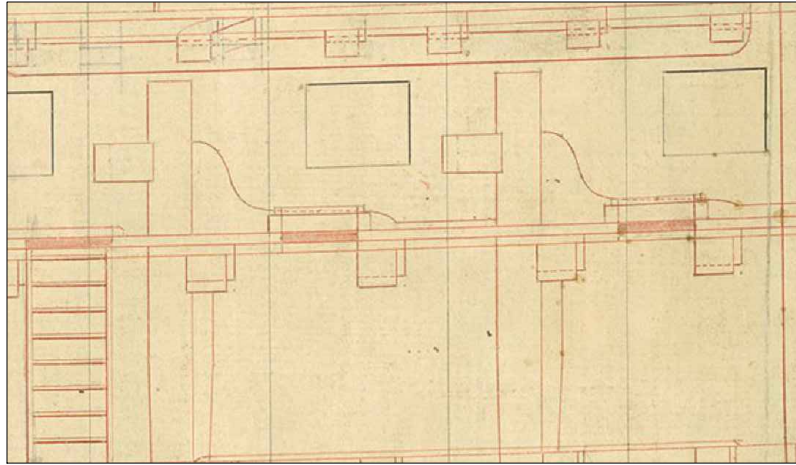
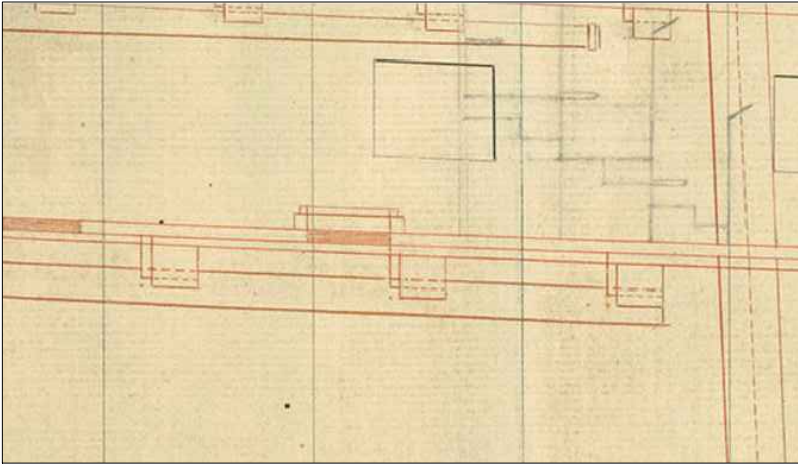


To the left the water ways in place, i carefully attached them with CA. I made sure to to leave the joints or in my case gaps at the gun ports that way they will be covered by one of the guns.

Lets move aft and add the bread room grating, this is a laser cut base to house the provided grating. Remove the char off the sides and build the grating. The grating should be slightly oversized so you can sand it to a nice tight fit.
Once i had the grating completed I placed it down taped off its foot print with blue masking tape, then i offset the mask inward accounting for the thickness of the base, this gave me the area that i needed to black out on the deck. Once dry i secured the break room grating. Its placement is shown on the drawing in the instructions.



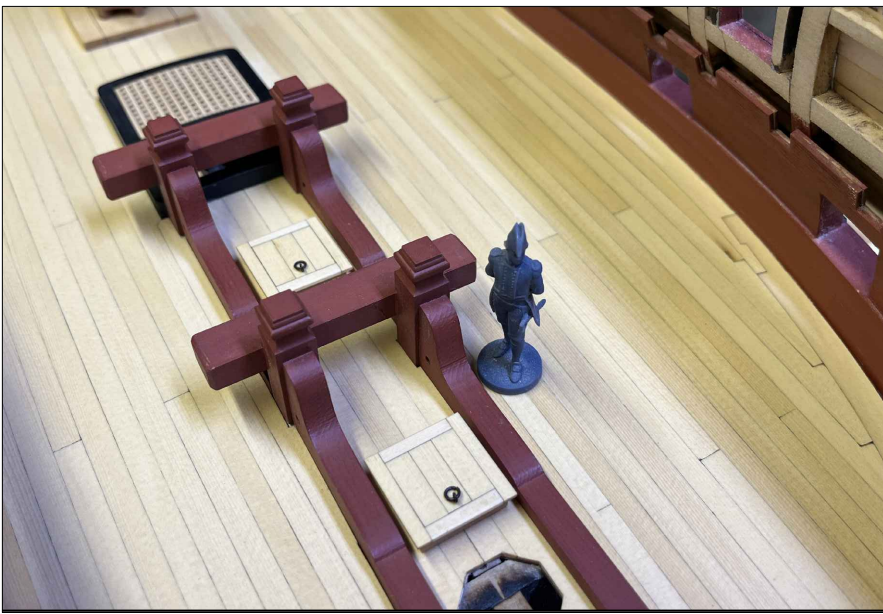
Moving on to the scuttles, Portland shows three sets of scuttles, two forward centered between the riding bits and one just aft of the mizzen mast. The scuttle hatches are laser cut on the model and go together quickly, below middle you can see one before assembly.



The top lid of the scuttle is laser cut cedar, i edge glued the planks and assembled it in my trusty little square. Once dry I cleaned the char off the outside edges and sanded the top face clean.

The base of the scuttle is the same as the bread room grating, so just sand the edges clean of char, the lid for the scuttle can glue on top centered. On the end i added a small 1mm eye bolt with a 3mm split ring. Just like the bread room grating the scuttles are shown on the drawing for exact placement.

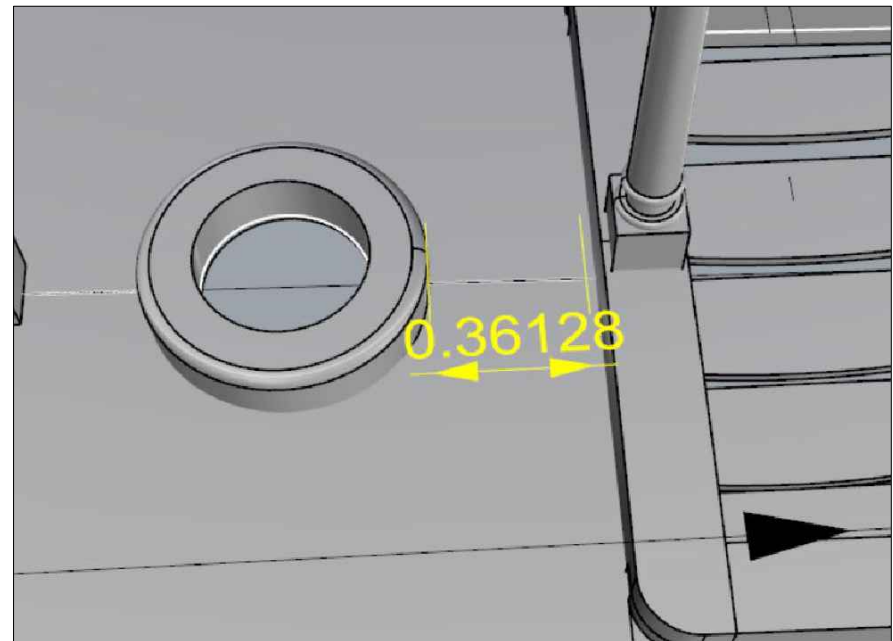
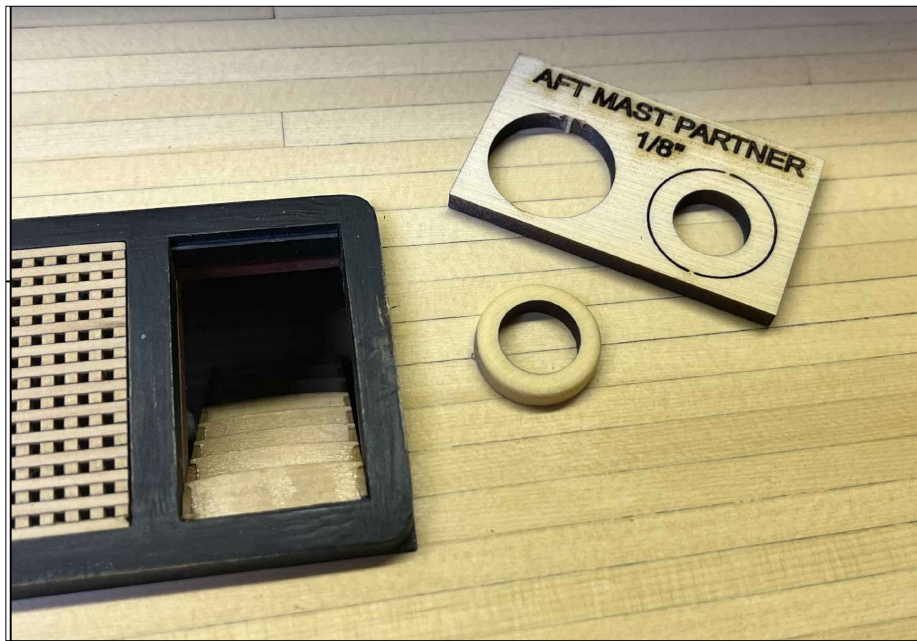




To the left we have the two forward scuttles in position according to the drawing.

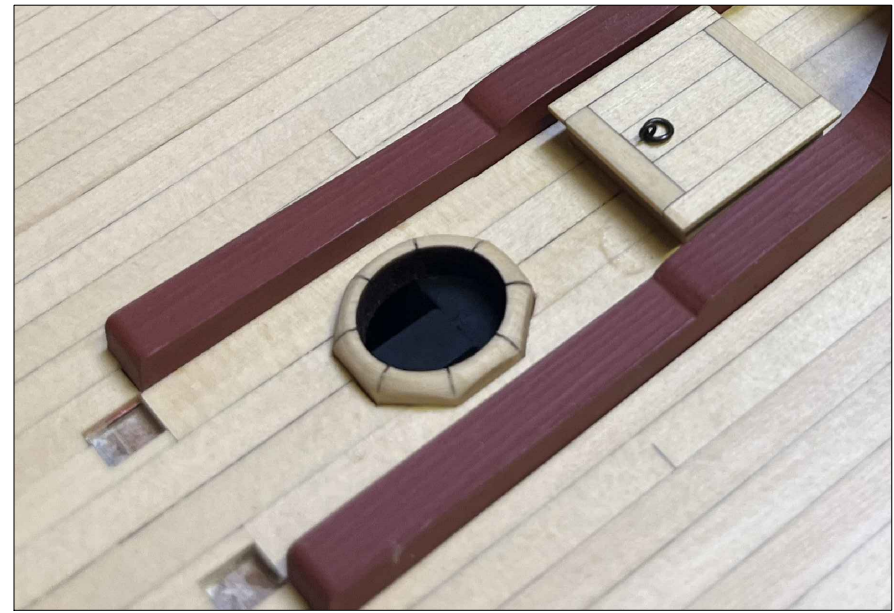
Next we can add the aft mizzenmast partner, it is laser cut from $\frac{1}{8}$ " yellow cedar. All you need to do is fillet the edge about $\frac{1}{16}$ " and place it on deck, like the other fittings it is shown in the drawing. Below left we can see the finished partner in place, the only step that remains is to

paint the decking inside the partner black. Below right is the partner on the 3D model, it is set .36128 aft of the coaming right on the centerline. 9.17mm for metric builders.



Moving forward we can add the final partner for the main gun deck. The forward mast partner is the same as the mizzen and only requires a bit of fillet work around the edges, I just fit mine to a sanding drum and rounded it off in the portable lathe, otherwise know as my drill.

The piece is laser cut so you need to remove the char from the outer edges, it is slightly larger then the hole on deck to allow for this sanding. I also painted some flat black in the hole after i glued it down.



There are two sets of steps we need to build in chapter 4 these are laser cut from $\frac{1}{32}$ " boxwood, the sides of the steps are laser etched so the steps slot right

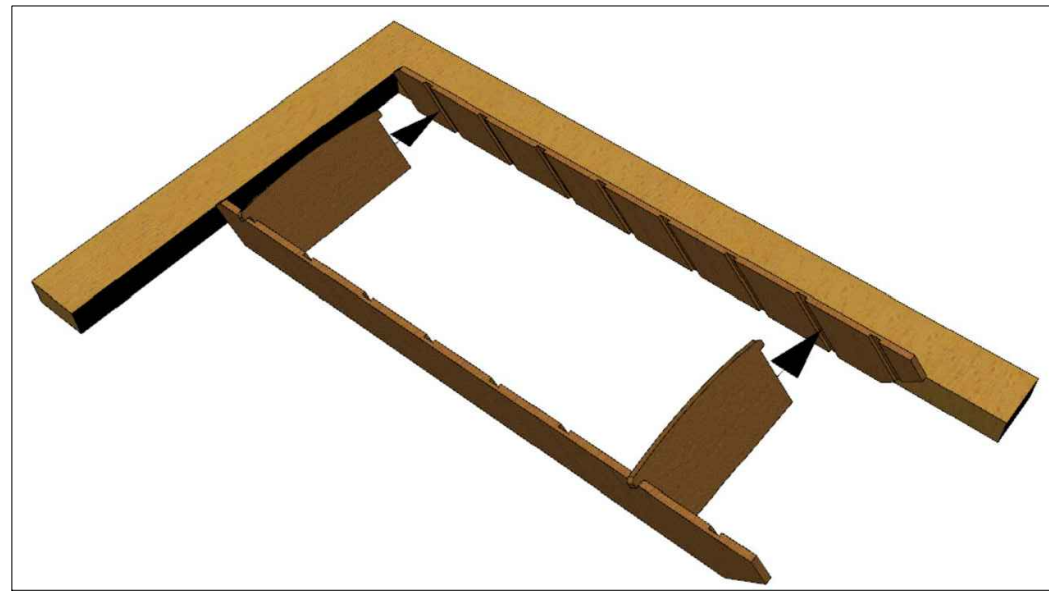
into them. First clean the char off all the edges except the glue joint sides, then lightly sand the surfaces smooth. Now these little things can be tricky so i build them by assembling one side first, with the bottom step and the second from top step first. I make a 90° jig to keep it all square. The two steps will dry quick, you can then spin it around and attach the other side.



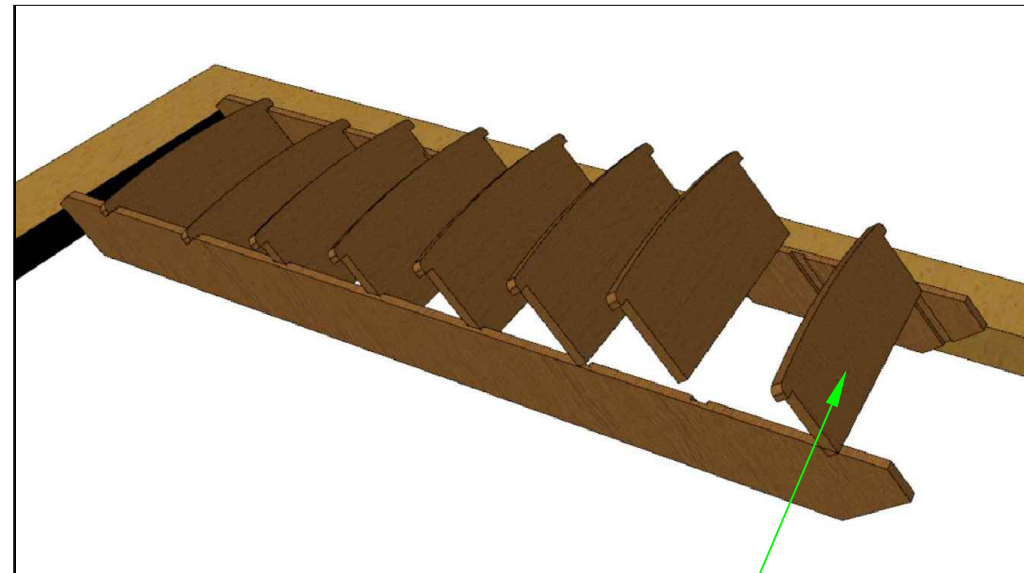
To right the first part assembly carefully joining the other part of the staircase, the jig will ensure everything is held square and you wont have any crooked steps. Let this dry, it will become fairly ridged for what it is.



Notice that the top step is slightly shorter than the others, this is so it will fit up against the coaming so be sure to use it on the top step only. There are extras of the wider ones which could also be used to make a short one if broken.



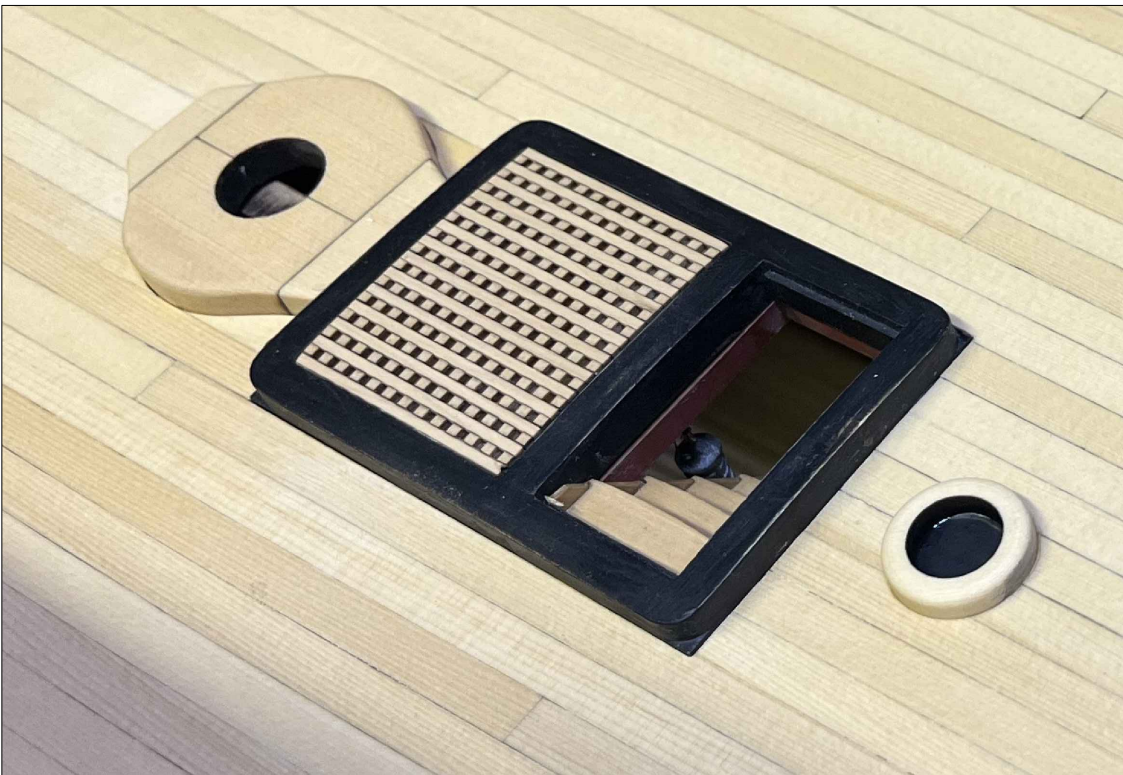
Once the initial assembly is dry you can begin inserting each step into the slots, I carefully applied PVA and gently pushed them into place.



Shorter top step before assembly

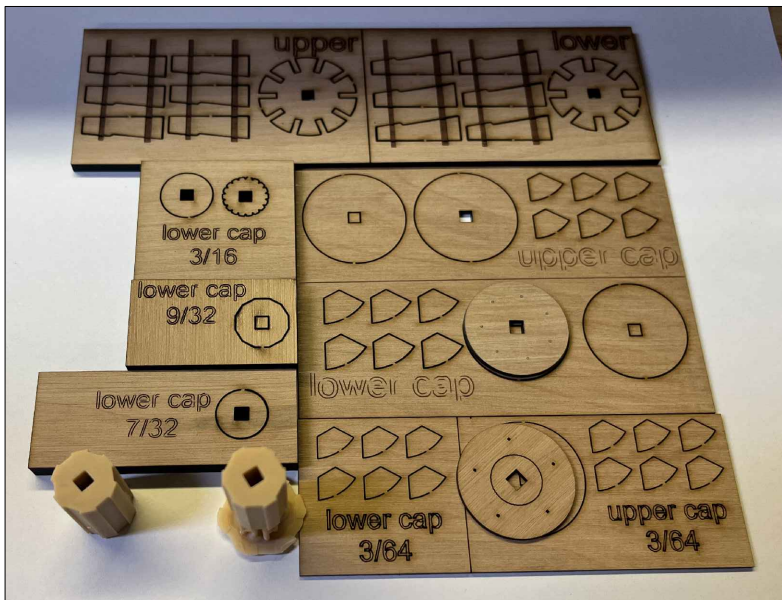


One completed staircase before I treated it with WOP and glued it in place. As you can see I built these before planking but they were not permanently installed until the deck was finished and all the coamings secured.

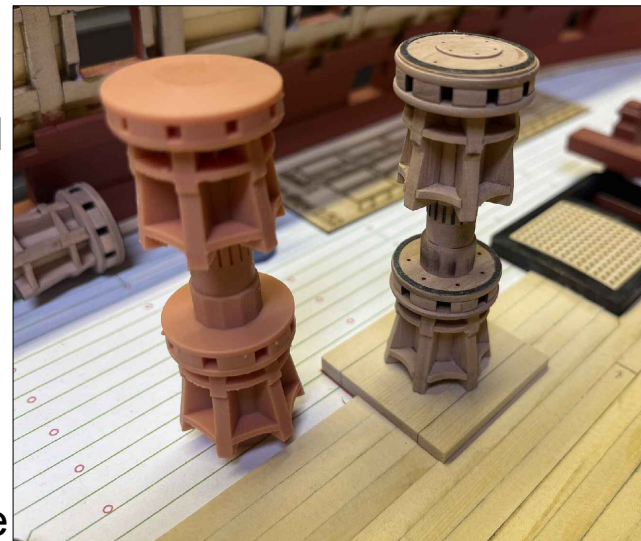


Shown left middle is the aft orlop staircase in place, the steps land on the orlop deck facing starboard and the same applies to the forward coaming. I used PVA to secure the stairs, just a little on the bottom and top faces that make contact with the deck and inner coaming. Carefully lower them into position and adjust until they are sitting correctly.

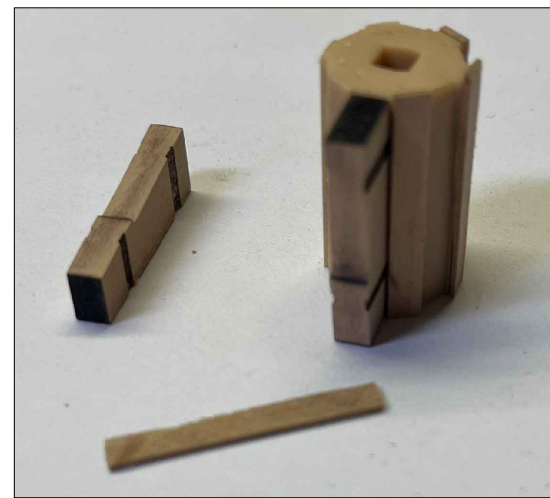
Chapter 4 covers the two capstans however I do not include them in the chapter 4 set, this will allow people to choose between the 3D printed version or the pearwood version, I wanted to use pearwood so I will cover the construction in the instructions. The wood capstan is quite complex, almost as much as the much larger Neptune Kit that Chuck designed. I chose to use a printed center drum that utilizes printed slots to hold the whelps. In order to pull this off we need to



hide any evidence of the printed drum. I chose to add a thin veneer of pearwood to the



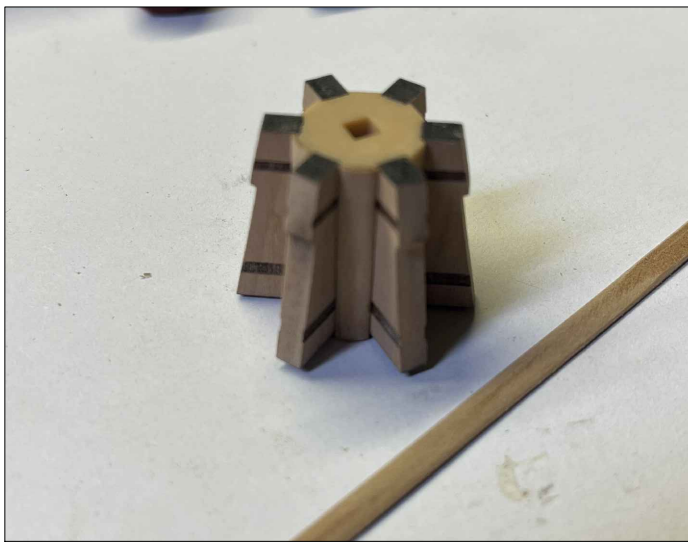
outer edge of the printed slots. Take note there are two different sized printed drums, the larger of the two is the lower drum. Using PVA I carefully glued each piece onto the edges of the drum, I then used whelps on each side of the strip to ensure the strip is placed so that there won't be gaps between whelps. Give the strips some time to dry before you



turn them, I chucked them into my drill and used a small sanding block with 150 and 220 to round off the veneer strips so they appear

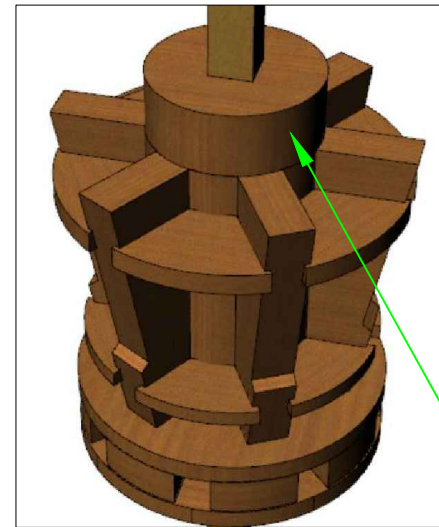
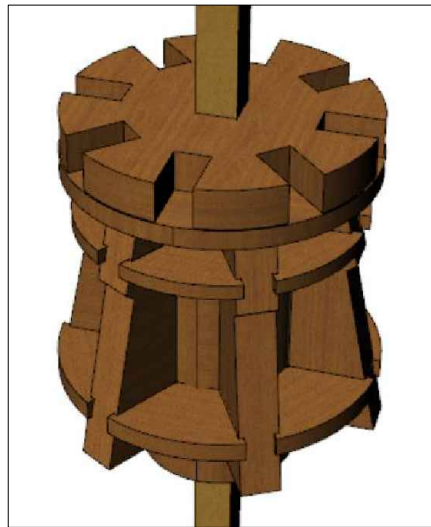
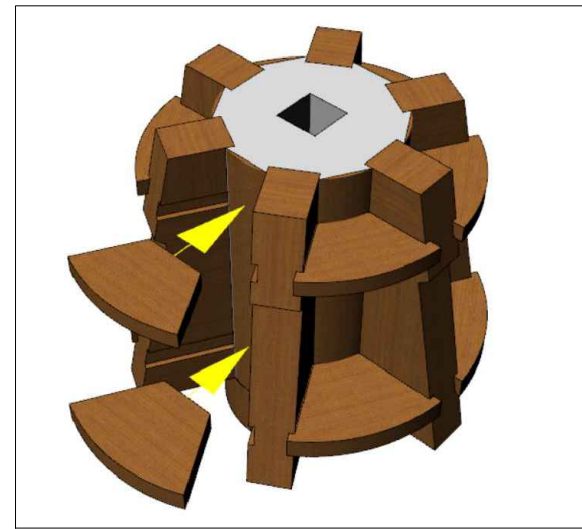
slightly round making the outer edges of the drum look like a traditional wooden built capstan once all the whelps drumhead are added.





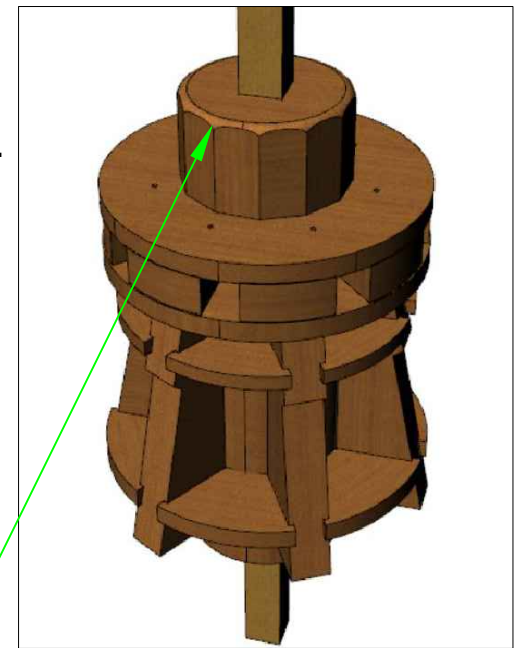
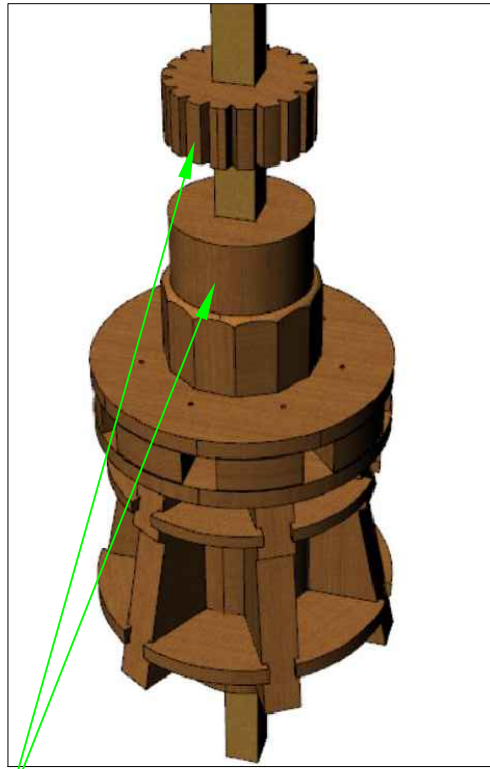
The whelps in place after the strips were lightly turned down in the drill. I attached the whelps with the top of the drum facing down that way they are perfectly flush with the top of the printed drum. We can now install the chocks, there are two different sizes of chocks, the lower chocks on each capstan are $\frac{1}{16}$ " thick and the upper set of chocks on each capstan are $\frac{3}{64}$ ". The chocks require a little sanding to smooth them out and and slight adjustment to make them fit the drum, you will have to slightly round the inner side of the chock to

match the radius of the drum. We can now place the centering stick through the middle and install the lower base, I carefully rounded the edges just slightly before install and with the middle section of the upper drum just remove the char from the edges. At this point we can also install the lower base of the capstan that holds it centered in the partner, this is the $\frac{7}{32}$ " round piece.



The lower $\frac{7}{32}$ " base piece.

To the right the $\frac{9}{32}$ " center section can now go on but before you attach it it needs a little fillet at the top, like before you can put the center stick in a drill or dremel tool and carefully round off the top edge as seen to the right.

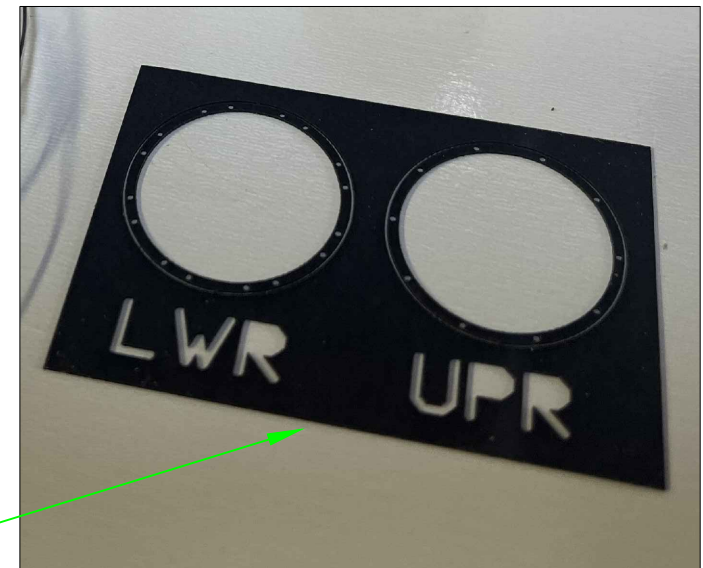


Give the 12 sided $\frac{9}{32}$ " section a $\frac{1}{32}$ " fillet on the top edge after removing the char from the edges.

The $\frac{7}{32}$ " center section can now go on but first remove the char once this piece is secured we can add the $\frac{3}{16}$ " upper spline, like the other parts we will clean the char off the edges of the splines.

To the right middle we can see the assembly of the lower capstan complete, all that remains is the laser board bolt ring and we need to sand a small arc into each of the lower chocks.

The laser board bolt rings, note there are two separate rings, one for the upper and one for the lower capstan.

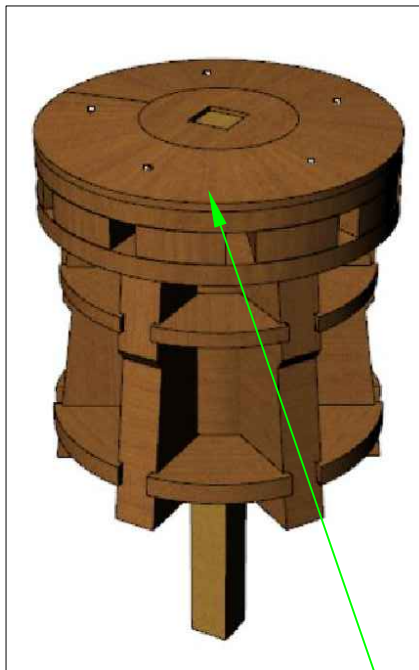
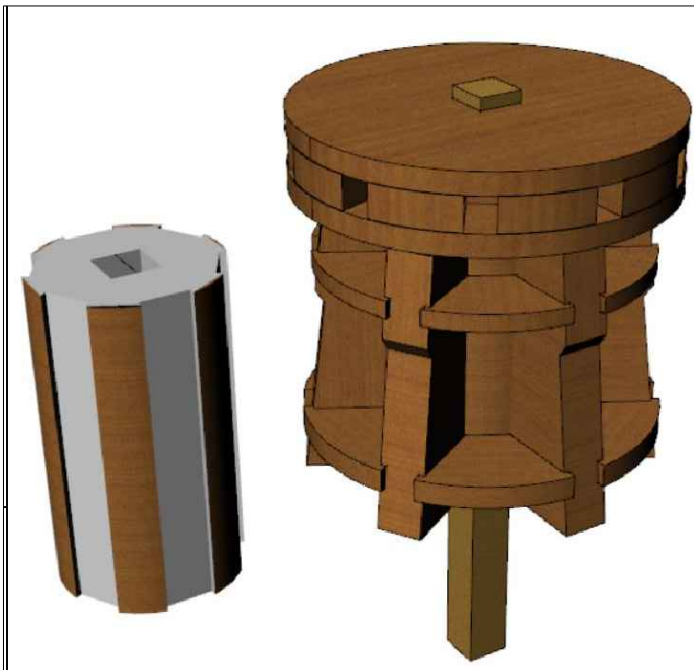


The completed lower capstan with the bolt ring included. The capstans come with 20 lb black fishing line to simulate bolts with, you can see the simulated bolts on the whelps to the right on the completed lower. After the capstan was completed I then covered it in WOP.



Next I will be going over the upper capstan which is built very similar to the lower except it has fewer components, below you can see the rendering of the upper capstan up until the point where it differs from the lower. At this stage the upper capstan is almost complete aside from two upper components. At this point we can add the $\frac{3}{64}$ " upper drum cover, as you can see below I gave it a slight chamfer from the etched center ring outward.

The final components are a thin $\frac{1}{64}$ " cover and the laser board bolt ring. With your capstans completed, leave them dry fit until we return to them in chapter 6.



The chamfered $\frac{3}{64}$ " upper cover.

This concludes chapter 4, now we are ready to move on to chapter 5 which includes the 24 pdrs on the main gun deck along with the gunport doors and the rudder.

