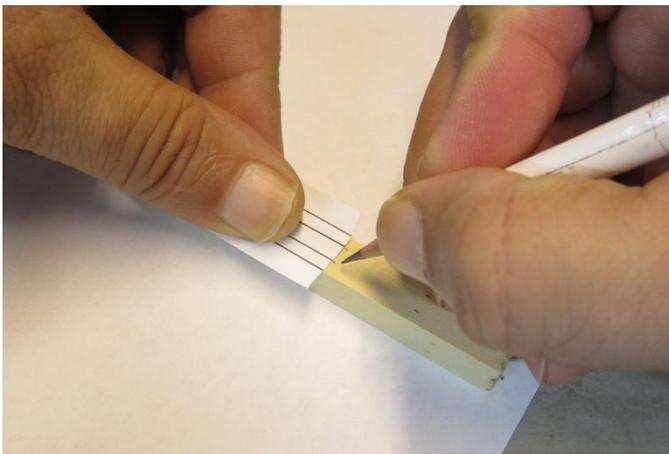


Part 5 – Masts and rigging

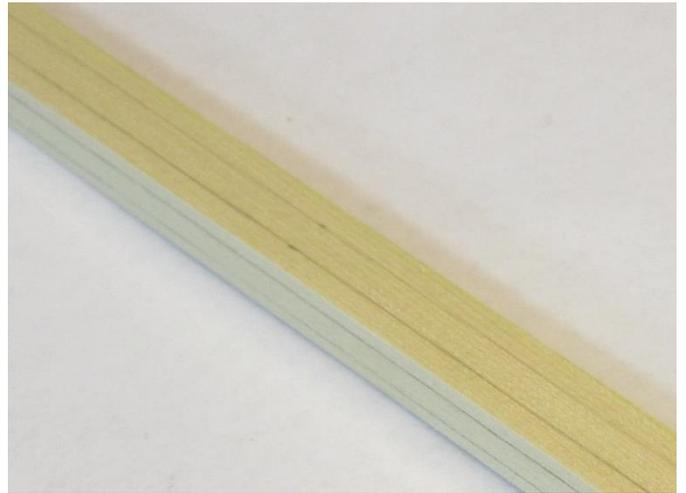
Making the mast from square stock...

It is always best to use the same wood for your masts and spars as the rest of the project. A 3/8" x 3/8" square strip of cedar is being used. You could obviously replace this with a dowel of another wood already rounded off but the difference in wood texture and color would really stick out. Most of the mast, boom and gaff etc. will NOT be painted. Rounding off square stock is a good thing to learn if you have never done it before...

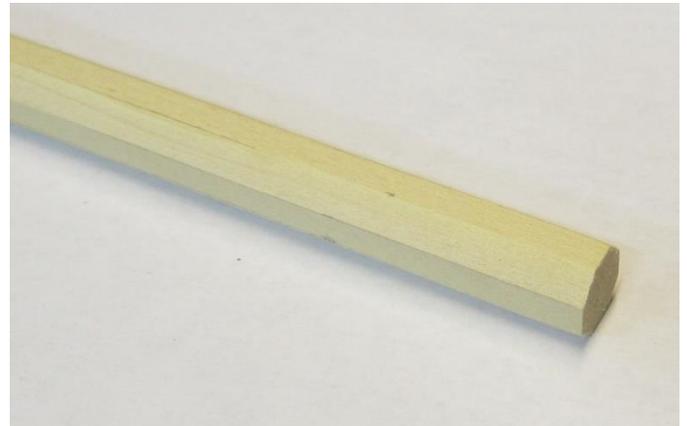


First, I used the template provided at the end of this chapter to line out the strip with a 7/10/7 ratio. Just transfer the tick marks for the two center lines every four of five inches down each side of the mast. Connect them by drawing 2 straight lines down the center of each side. Using a 7/10/7 ratio will create a perfect octagon after the corners are shaved away. This is being done to make it easier to turn this in a lathe or chocked in a hand drill. The strip is 20" long and it's much longer than you will need so there is plenty of meat on either side to chock this in your hand drill or lathe. The photo above left shows the lines drawn on the strip.

Then connect you lines with a sharp pencil so you have a guide when slicing and planing off the four corners. I just used a sharp #11 blade to shave and whittle off the corners almost down to the lines. It doesn't have to be perfect.....then I



ran a sanding stick across the flats I created. See below. Then drill the holes that will be needed for the sheaves which will be simulated on the mast later. There are three sets. It is easier to do this now while the strip is square or an octagon. See below.



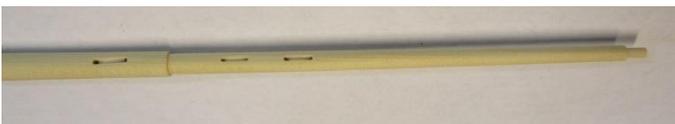
This is what my mast looks like after I shaved off the corners. It's ready for me to chock in my hand drill and taper it. This will take a while to do and be sure you use a mask because it makes a lot of dust.



Here is a photo of how I do it in my hand drill.....this is from another project. I believe this is the lower mast for Cutter Cheerful. Or, if you are lucky enough to own a lathe, that would be a good choice. I didn't worry about creating the small shoulder or stepped portion of the mast for the longboat. I will do that by hand once I create the general taper. In the end the lower part of the mast turned out slightly smaller than 3/8" which is just perfect.



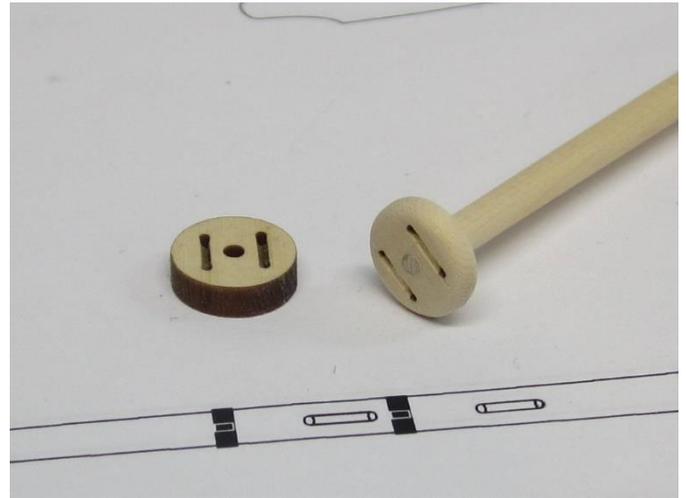
Then finally, I was able to finish up those sheaves so they looked good. To simulate the sheaves I used a #11 blade and some round needle files....you can use whatever you feel most comfortable with. Here are the final results below. This was done after I created the stepped portion or "shoulder" in the mast as you can see. The shoulder was just done by hand. The cedar worked very well for this operation and I was happy with the results.



Add the ball truck for the top of the mast when you are ready. It's the little things like this that make you appreciate 1/2" scale. The ball truck has two sheaves for the flag halliards. These were laser cut and etched for you. But as you might guess, they are only etched on one side due to the limitations of the laser. So if you want to, you can add the simulated sheave slot between the two holes on the bottom of the ball truck too. But in all honesty, I don't think anyone will

see it. I did it anyway. You can see an unsanded version in the photo below.

You have to round off the edges and corners on the top and bottom to make it look nice and rounded. I did this after I glued it on the mast. I found it easy to rotate and twist the mast as I held sandpaper against the ball truck to shape it.

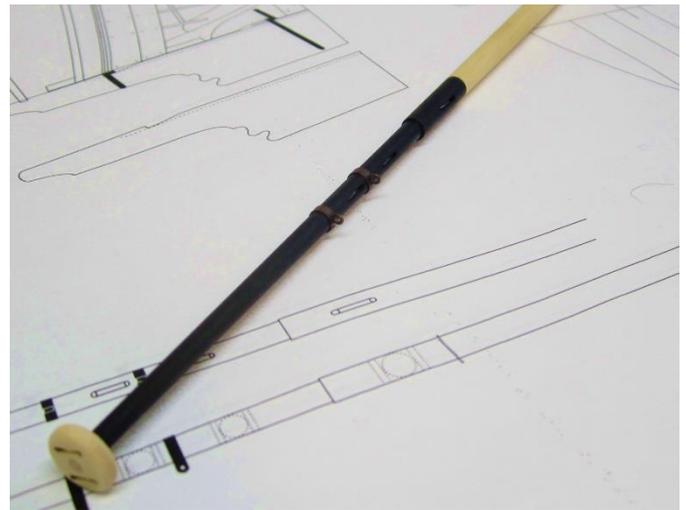
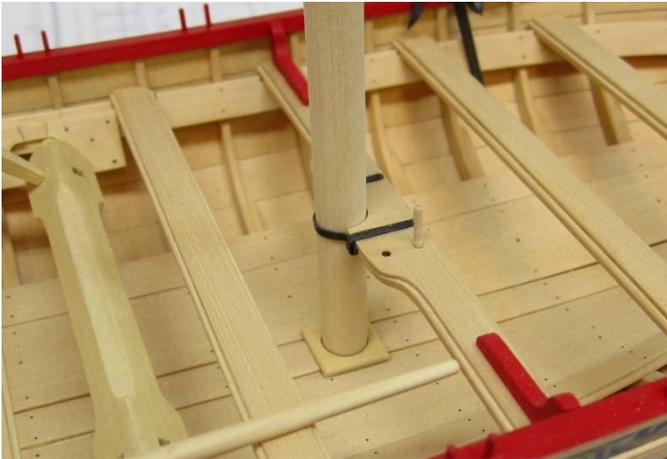


Make sure you orient the sheaves on the ball truck correctly when you glue it on top! They go parallel to each other for and aft...., one ball truck sheave to port and the other to starboard.

Once completed I stepped the mast but not permanently. On the contemporary models and in real life, the mast would sit in a hole made through the floorboards. This would have been a pain in the butt!! Lining up a hole for the mast in the floorboards even before you added the thwarts and just praying the mast would be lined up correctly.

So my solution was to create a thin mast step instead. It's a little guilty simplification. Basically it is a square with a hole in the middle for the mast. I rounded off the edges to make it look nice. It is only 1/16" thick. I placed the mast in position and in the mast step as the tite-bond was setting in order to position the mast step properly. I adjusted the angle and straightness of the mast to find the proper placement for the

mast step. This was also done before the glue sets so you have to work fast.



Here is a close up view.

The mast is set straight up and down with no aft rake.....having said this, I did add an ever-so-slight aft rake because when I add the forward stay, I always seem to pull the mast forward a little. Knowing that I will probably do this yet again in error, I compensated for it by leaning the mast slightly aft. It should correct itself once I rig the forward stay which will pull it forward slightly.



I removed the mast so I could paint the areas of the mast red or black to suit. Then I simulated the mast bands with black masking tape. The tape was cut into strips 1/16" wide and wrapped around the mast a few times to get the correct thickness. Before anyone asks how thick.....just until it looks right. Not too heavy. I wrapped around twice and it was plenty. Then I used some rusty brown weathering powder to make it look different than the painted mast and more like metal. I will only use brass or actual metal when absolutely necessary. In this case it isn't needed. Then I finally made some eyebolts using 22 gauge black wire. I drilled holes through the bands and inserted the eyebolts. I also ran some pencil over the sheaves I made on the mast to make them look different and stand out a bit more.

At the base of the mast, it was painted red up to the iron band there. This band was made the same way but this time 3/32" wide tape was used. The eyebolt was made using 22 gauge brass wire blackened afterwards. The mast isn't permanently stepped yet but the mast is now completed.



I also made the 7mm deadeyes that we will need for the model. I wanted to have them all done so they were available to use when I needed them. These are just like the other Syren deadeye kits I offer. The three layers are glued together....then I remove most of the char from the outside edges by hand with some 320 grit sandpaper. To finish them up I throw them in my block tumbler



to soften and round off the edges. Don't tumble them too long though...or they will get funky with an odd shape. You want them to maintain their round shape. These deadeyes are boxwood and not cedar. The cedar is too soft to make these. You can see four deadeyes that were released from the sprue with no sanding or laser char removal. The other group is ready to go after being sanded and tumbled, but no finish has been applied yet.

Time for sticks and strings!!!

I made up the boom, gaff and bowsprit next. Nothing unusual to describe and it is just more of the same. Square Cedar stock was rounded off just like the mast. The 7/10/7 templates are also provided for these. The gaff has laser cut jaws that need to be attached. Then a few eyebolts (24 gauge wire) were added to follow the plans.

The boom has a hook made from 22 gauge wire (blackened) on its inboard end. There is also an eyebolt. If you have some, you might even prefer to make the hook heavier. Maybe even use 18

gauge. Some might think the 22 gauge is too thin.

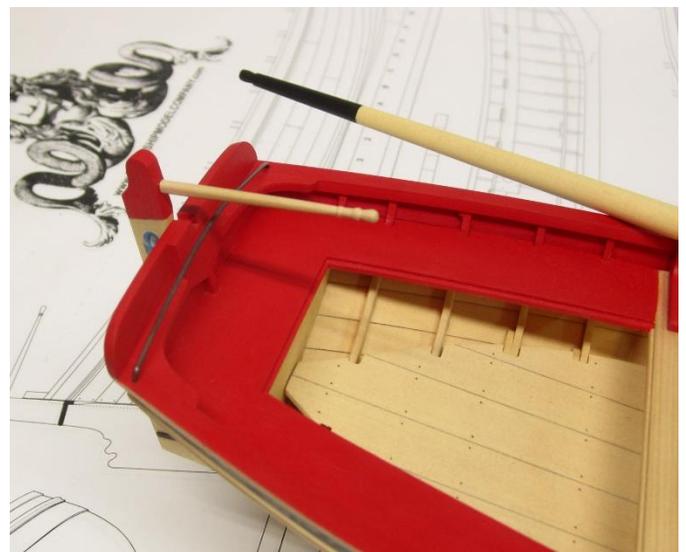
The bowsprit has a sheave on its outboard end which is typical and it was simulated using the same methods that were used when making them on the mast. They were painted as shown below with black acrylic paint leaving the bulk of the material natural. This matches the contemporary model's depiction.



So now I am ready start with the strings.

I added the horse under the tiller which is typical for the period and as has been discussed numerous times. This not only follows the two contemporary models that are fully rigged but also contemporary rigging plans.

The horse was made from the 1mm brass rod (blackened). It was bent to shape and glued into pre-drilled holes as shown below.



The Boom and Gaff will be rigged first while there is more room without the shrouds to get in the way. Then the shrouds and stays will be done afterwards. Note in the photo how the boom was hooked to the eyebolt on the mast.



Start rigging...

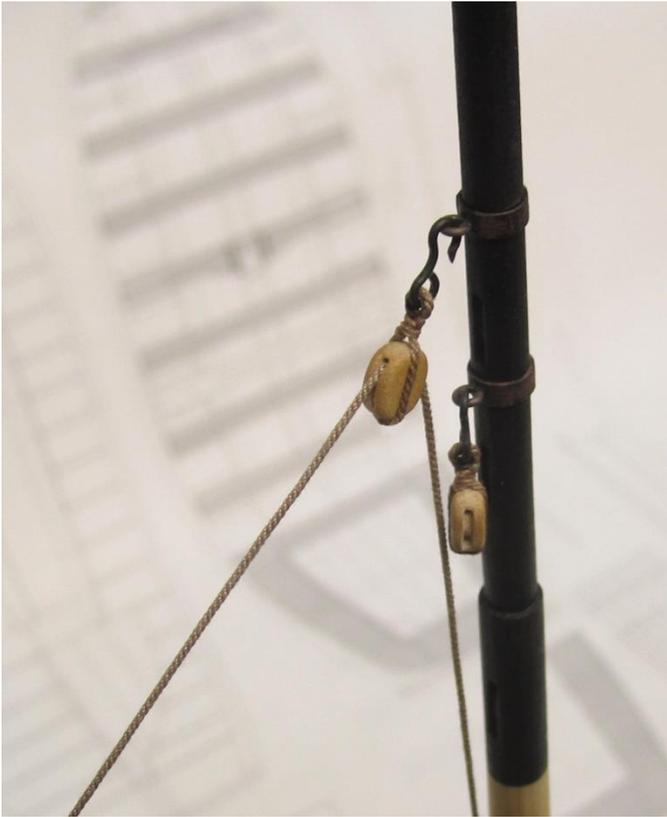
The boom was rigged first. But before I started, I knew I would need two 1/4" single blocks set up with hooks. See photo below. One is for the boom and the other is for the gaff which we will need soon after. So I made these up first. They were stropped with .025 light brown rope. The hook was made with 22 gauge black wire. I also used a thimble but this is optional. I know they are a pain to make but if you want to give it a try, use some 1/16" brass tube (not supplied) to make them. The photo shows the blocks without a coat of wipe on poly.....



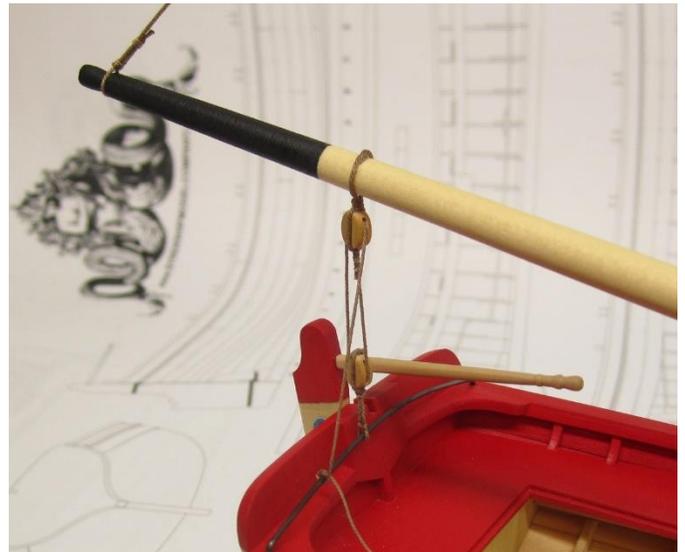
Making thimbles... Just use a small punch and lightly tap both sides so they flare out. Then blacken them.



With the hooked blocks finished, I started rigging the boom by adding the topping lift first. I used .025 light brown rope. It was seized to the outboard end of the boom. Then it was brought up to one of those blocks hooked to the mast. See the next page. You can just hang the other block as shown. It will be used later.

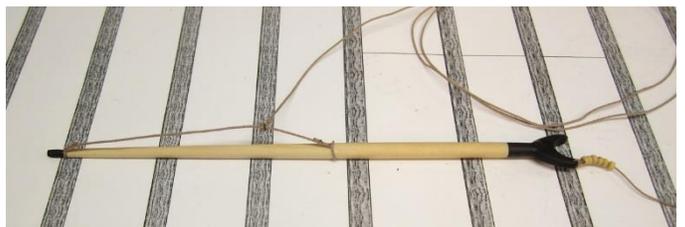


To finish off the boom rigging, I added the main sheet which is shown below. Two 1/4" single blocks were used. One lashed to the boom and another seized to the horse. The sheet was run between both using .018 light brown rope. The loose end was made fast to the horse and left extra-long again. No glue is being used yet. Once the shrouds and stays are added everything will be re-tensioned. And yes!!! It would probably be easier to attach those blocks to the horse and boom before they were added to the model. I will remember that for next time.



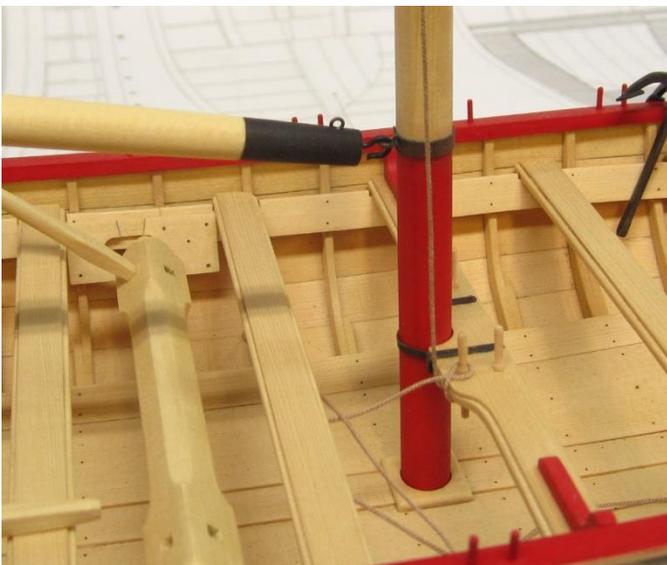
Then the loose end was brought down to the aft belaying pin on the starboard side. I set the angle of the boom I thought looked good and then secured the line to the belaying pin on the thwart. But it isn't glued on permanently yet. It will absolutely need adjusting and tensioning as I progress. So I left it extra-long with no glue for now. I probably won't use any glue at all. You can see that second hooked block on the mast hanging which is for the gaff peak halyard ...later.

The gaff was finished by adding the rigging line and parrel beads ahead of time. See below.



It was rigged to the model (peak halliard) using .025 light brown rope. The loose end was brought up to that other hooked single block on the mast and then belayed on the thwart. This time to the aft port pin.

The "throat halliard" is seized to the eye on the top of the gaff close to the mast (.025). The loose end is brought up through a sheave that goes through the mast and is brought down to



the forward belaying pin on the port side. These were not glued permanently yet or any rope coils added. We will need to re-tension all of these after the shrouds, backstays and forestay are rigged. Then you can glue them in position and add rope coils.



You can see the shrouds were added in photo above, but before we get that far along, we need to stop the deadeyes and make some more hooked blocks.



The deadeyes were stropped with 24 gauge black wire. This might look a bit different than you are used to seeing as they will be hooked to iron straps. So along with the strop, you will need to make some hooks from the wire and slip them onto the strop as shown above. This can be tricky but it gets easier as you go. I wish I could give you some magic tip or technique to make this easier. Unfortunately, you should just go slowly and eventually they will be all done. After all, we only need four of them.

The straps are made from the 3/32" wide brass strips. They are easy enough to make. Just round off each end and drill a small hole in each end. Blacken them when you are finished.

In addition, you will need to make two more hooked blocks which will be used for the backstays.

The shrouds are rigged first (.035 brown). They are rigged in pairs, one to port and the second pair to starboard.

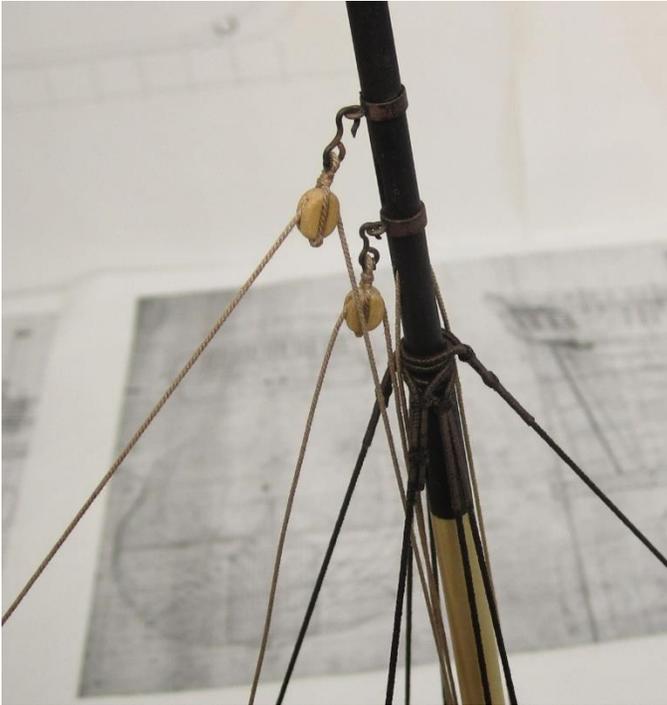
You seize a deadeye to each end of the shrouds as shown on the plans so a halliard can be run between it and the deadeye hooked to the strap.

But first these straps need to be nailed to the hull. The photo below shows how the straps should be bent around the molding and secured with a tiny nail which has been blackened. The nail is of course too long and will need to be snipped so it is much shorter. Then pre-drill a hole into the hull. But don't drill through the inboard side. Be careful. The nail should not protrude through the inboard side although it will hopefully be covered up with the riser.



The lanyard run between the deadeyes is rigged using .018 light brown rope. This is done in the traditional way you are familiar with. Just try and keep the distance between deadeyes consistent.

The shrouds, backstays and forestay were served but only where they are seized around the mast. The area served extends about 1" below where it was seized around the mast. This is an optional detail. You don't have to do this. But it does look good.



Once the shrouds were completed, the backstays were added.

The backstays have a long runner made with .035 brown rope. One end has a 1/4" single block seized to it. You can seize the other end around the mast on top of the shroud gang. This is the area that can be served if you want to. Try and keep the runners for the backstays on the port and starboard sides the same length.

The backstay tackle (.018 light brown) runs between this block and another hooked block on the hull. It is hooked to another strap just like the deadeyes were.

Note that the tackle belays to itself. In other words, take the loose end and secure it just above the lower block of the tackle. Just tie it off and snip off the loose end. You will be adding a rope coil over this point to hide the knot.

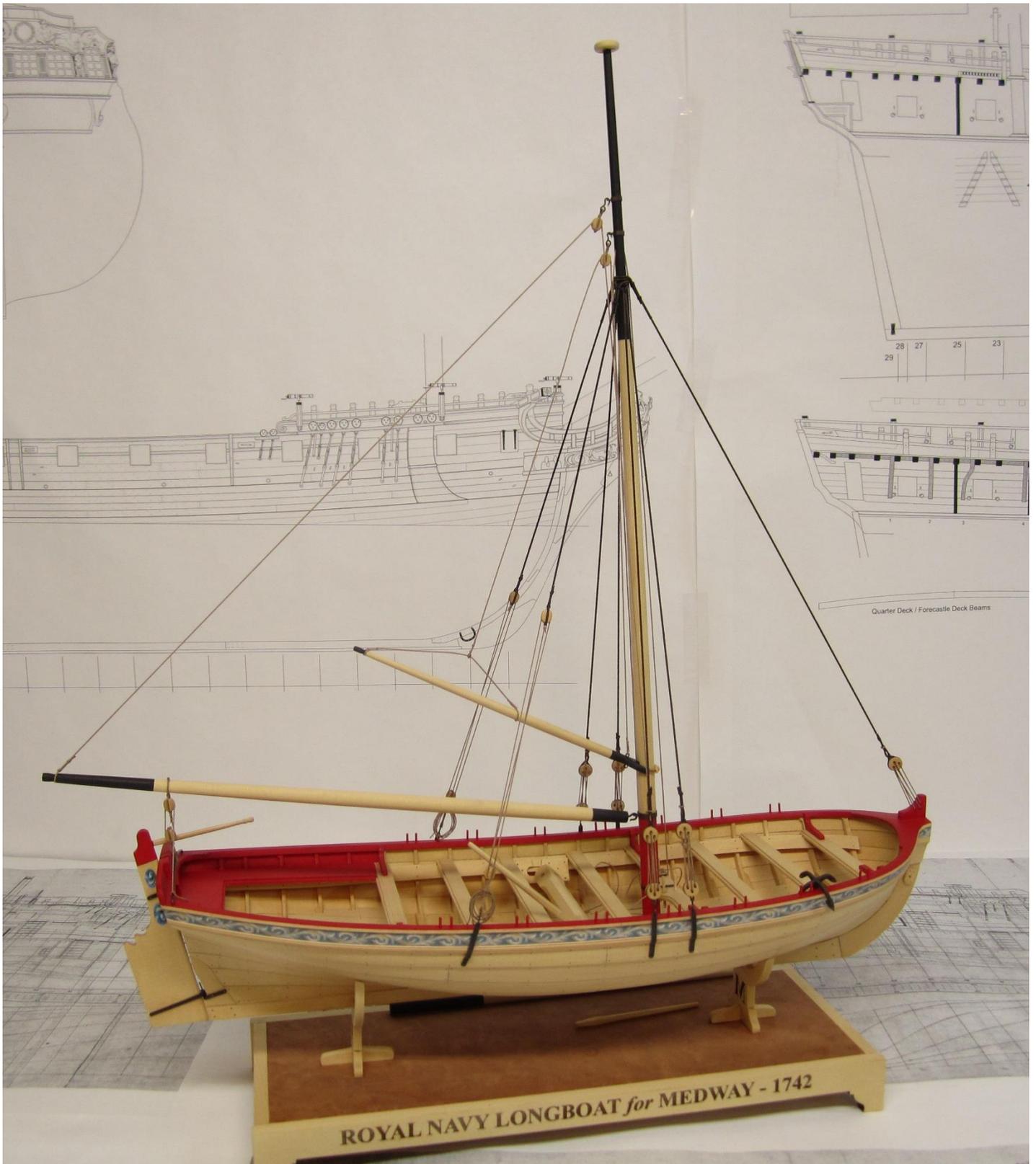


The forestay....

The forestay is rigged with the .035 brown rope. After seizing it around the mast, bring it down to the stem. On this end you can rig a deadeye. Then use .025 light brown rope to reeve a lanyard between it and the stem in the traditional way.



With these lines completed, you can start to re-tension them as needed. Then permanently glue them at their belaying points and add some rope coils.



Time to step the bowsprit. The bowsprit irons can be made many different ways. You can use brass for all the parts and do some soldering if you want. That is one method. I did use some brass but I also simplified the process so I wouldn't have to solder anything.

The photo below shows the two brass bars 1/16" x 1/16". The longer one was pretty simple. I just cut the strip to length after filing a pin in one end. You could also file this pin into both sides if you like. It will be blackened later before I add them to the model.

The second smaller piece was the same. I filed a small pin into one side. BUT I also drilled a small hole through the other. This is for the little brass pin. I used a #66 drill bit. The trick is to use a light touch and let the bit cut through the brass. Too much pressure and you will break the bit. Then I rounded off that end.

Both of these pieces need to be measured off your own model. They are shown on the plans but because there will be so many small differences you need to measure your own model for their length.

Finally...black tape was cut to 1/16" wide and wrapped around the bowsprit to simulate the iron rings. The brass strips will be pinned into these. Once blackened and with the use of some weathering powder you won't be able to tell they are two pieces or not all metal. You could also use boxwood strips and just use some black wire for the pins. If you paint them black and weather them you won't be able to tell. It's up to you.



You must figure out exactly where the tape bands should be before you commit to gluing everything in position. Measure carefully.

Then drill a small hole in the bottom of the aft end of the bowsprit. Make sure the sheave on the other end of the bowsprit is facing the correct way first. That would be a big mistake.

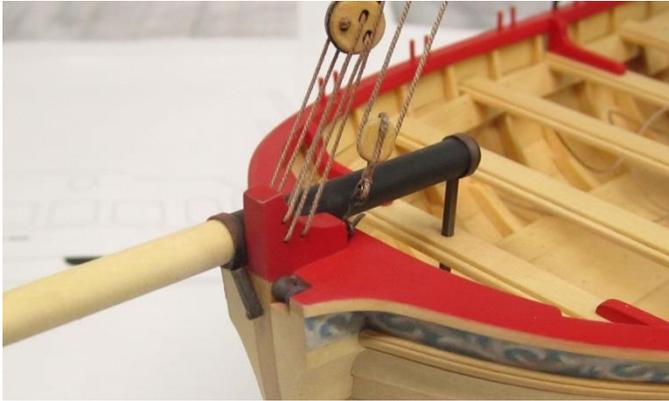
You will need to drill a hole through the thwart for the larger brass strip with the pin facing up (unless you put a pin on both sides then it doesn't matter). But once again you must drill the hole in the right place. You only have one shot at this. Make sure you test the bowsprit in position and figure out where on the thwart you need to drill the hole. I used a #49 drill bit. Then I squared up the hole with a small needle file.

Once done you can see how convincing it looks. The pin was glued into the hole on the tape (simulated iron ring) on the end of the bowsprit. The bottom can be pinned into the platform or just glued into another hole through the platform. It's up to you.



Finally.....The small brass piece was glued into a hole drilled into the other iron strap (tape). Then a small brass pin was used to secure the other end through the stem as shown below. Make sure these are glued in position securely. You must carefully find the length for this brass piece because it determines the angle for the

bowsprit. If the brass strip is too long or short then the bowsprit will not sit at the correct angle.



You can see that I also added the foresail halliard. The single block was hooked into an eyebolt at the aft side of the stem. Note the optional thimble on the block. The loose end can be belayed to any open pin on the center thwart.

Bowsprit rigging....Making the traveler ring

You will see a split ring about 1/4" round that is made from 1mm micro tubing. You will also need to make a small hook and a simulated shackle from 24 gauge black wire. Because this model is 1/2" scale the hooks are a prominent feature of the rigging. You should take your time with these and try to make some really good looking hooks. Practice a bit and I am sure you will get the hang of it. They are so much better than using photoetch versions that you can buy.

Also note that I have slid a decent length of 28 gauge black wire into the split ring. Leave a portion of it hanging out as shown. Once again this is my method of making a traveler ring that requires no soldering at all. It will stay together perfectly and they look great. So if you need one for another project, consider this method.



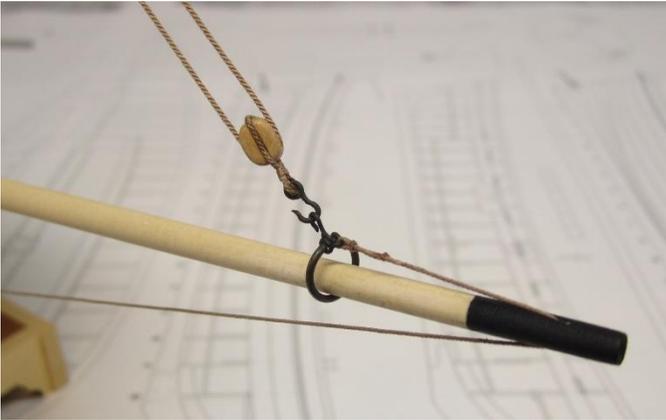
Then slip your shackle and hook onto the ring. You will of course need to make sure that the eyes in your hook and shackle fit onto the ring when you make them. Try and keep these pieces small because most of the time I see folks making huge hooks and shackles for the traveler ring and it will look really funny. The hook goes between the two eyes of the shackle. Then bend the ring like you are going to close it up but before you do....slide the end of the 28 gauge wire into the other side of the ring. Guide it through quite a bit as this is what keeps everything together. I slowly inch it in the other end using a needle nose pliers. Once blackened this will look very good.



Here is a photo the traveler ring in position. The jib halliard is hooked to the traveler ring while the outhaul is seized to the shackle. You must rig both of these to get the proper tension on both lines. This is all shown on the rigging plan. The outhaul uses .018 light brown rope while the jib halliard uses .025 light brown rope.

The other "loose end" of the outhaul runs through the sheave on the tip of the bowsprit. Then it goes down to the sheave on the stem (starboard side). Then you can bring the running end inboard and belay it around the first thwart. Finish it up with a rope coil. The jib halliard is pretty straight forward. Just like the halliard for the foresail. You make up some

blocks with a hook. It's shown on the rigging plan and all of those loose ends are belayed to the pins around the mast. It is OK to belay more than one line to the same pin on the center thwart. This was common.

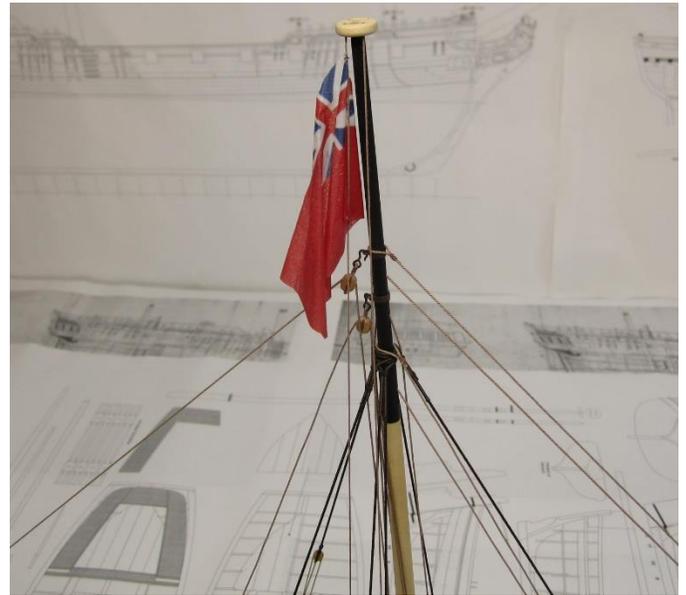


Once the jib and foresail halliards were completed all I really had to do was rig the flag halliard. This will complete the rigging....once I add the rope coils to all belaying points.

The flag halliard (.018 light brown) is run through the simulated sheave on the starboard side of the ball truck on top of the mast. Both ends run down to the deadeyes where they are belayed. One to each deadeye. Then they are finished up with some rope coils so the belaying looks credible.

I adjusted the tension on all lines and then finished every belaying point off with a nice neat rope coil. The flag was made in the usual way. It is printed on tissue paper so it looks to scale

when shaped. I use matte fixative spray. Spray the flag and before it dries tries to shape it so it looks like it is draping naturally. This does take some practice. But if you don't like how it drapes, just spray it again and reshape it. I made two tiny holes in the corners of the flag which I used to seize the flag to the flag halliard.



This pretty much finishes off the model. Here are a few photos of the completed model. You can make some oars as well which are included. I wouldn't add more than six because it would look too crowded. The oar blades are laser cut for you. They can be glued to the handles. The handles are made using the 1/8" x 1/8" cedar strips. They need to be rounded off as shown on the plans. Then glue the blades onto the other end and paint them red.

The grapnel was finished off with some .025 rope as well.

