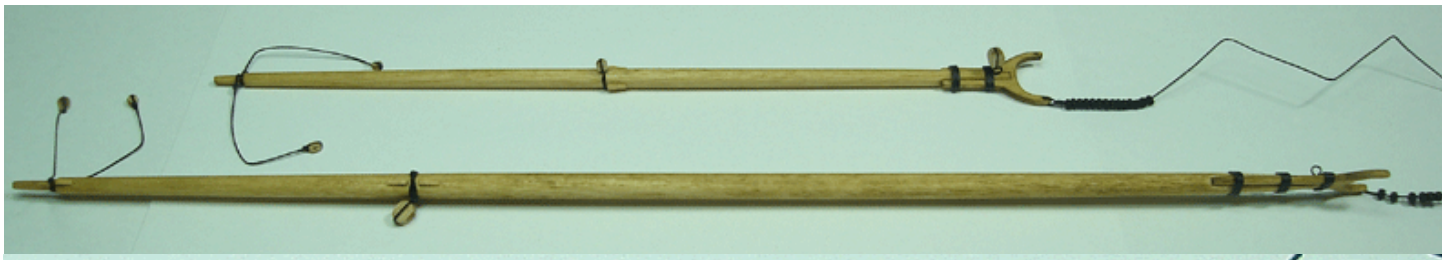
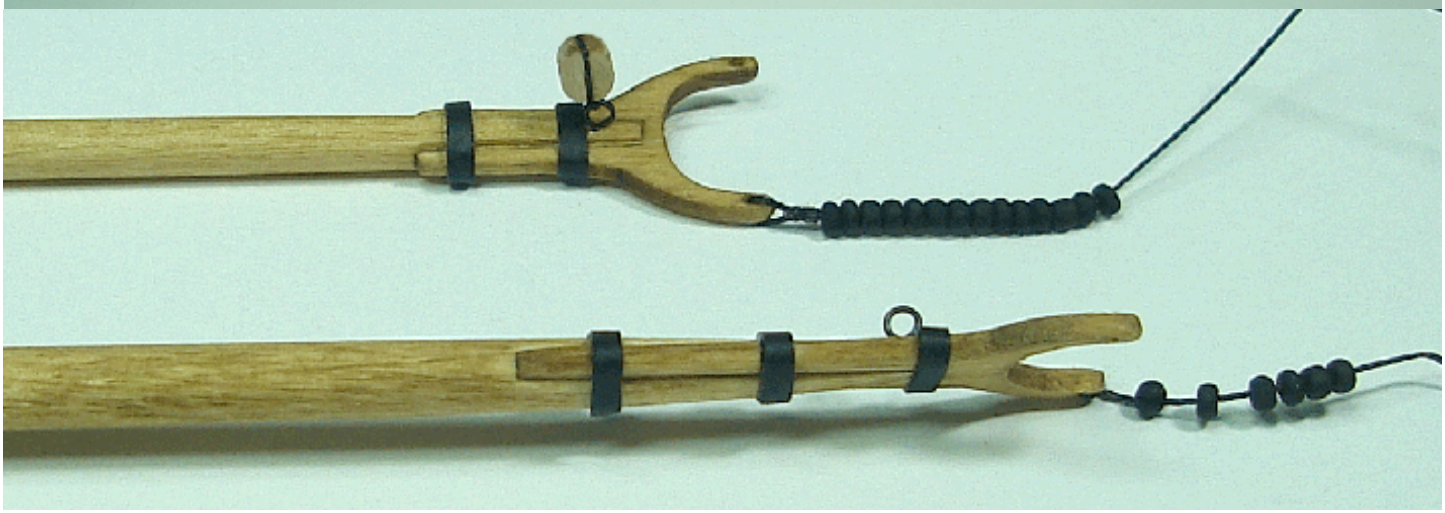




Chapter Nineteen Yard Construction and Running Rigging

Constructing the Boom and Gaff...
The Boom and Gaff were created and rigged next on the prototype. Use a 5/32" dia. dowel for the boom and a 1/8" dia. dowel for the gaff. Taper them as shown on the plans. The jaws for the boom and gaff have been laser cut for you. Before removing them from the wood sheet it is recommended that you drill the holes on the ends of the jaws first. This will decrease your chances of splitting the wood while drilling them. Round off the edges of the jaws and sand off any burn marks that might be present from the laser cutting. As you taper the boom and gaff you should check periodically to see how the jaws fit. This will help you avoid over tapering them. Glue the jaws into position when you are satisfied.

The iron bands around the boom and gaff jaws are simulated using 1/16" wide black pinstripe tape. Create and attach all of the cleats shown along the boom and gaff. These were made using 1/32" x 1/32" strips. There are also a couple of eye bolts which need to be inserted on the top of the jaws as shown on the plans. At this stage it would be a good time to decide if you will paint all of the spars and yards black for model. This is a subjective decision based on your own personal tastes. You should paint the spars black before you add any blocks.

Examine the running rigging plan which shows the positions for all of the blocks needed on the boom and gaff. Shape them all and rig them ahead of time before you position them on the model permanently. See the photos provided that show the details of the completed boom and gaff assemblies. Note that the guy and vang pendants were also rigged ahead of time.

Lastly the parrels can be added to the boom and gaff jaws in preparation for final rigging. Small beads are supplied that can be strung on the parrel line after seizing it to one of the jaws.

Rigging the Boom and Gaff…

Once again the process has been written in the order used to rig the prototype model. There are many ways to approach this and you should read through all of these directions thoroughly before starting. See if you would be more comfortable altering this sequence based on your past experiences and sensibilities.

Throat Halliard for the Gaff (.008 Tan) — The very first line to rig is the throat halliard. Seize a generous length of line to the 1/8" double block under the main top. Examine the plans carefully for all blocks and belaying points. Once it is seized to that block, simply coil up the halliard and secure it to the shrouds or other safe place. This will ensure that it won't get in the way while you mount the gaff in the next step.

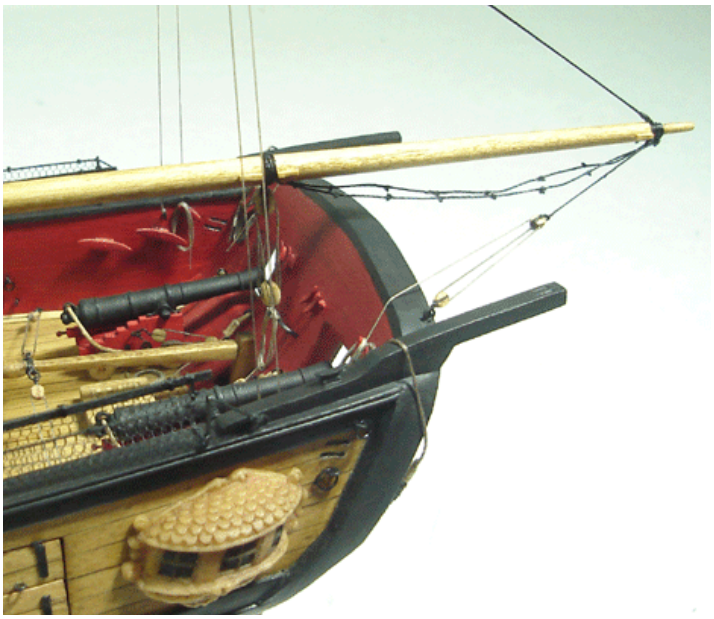
Attach the gaff…to the lower mast by placing it in position under the top (just under the catharpins). Bring the parrel around the mast and seize it to the other jaw end. Test the length of the parrel to see if you have used the appropriate number of beads first. If so, then apply a drop of glue to that seizing to secure the gaff in position permanently. It will probably hand down helplessly for now until we rig the appropriate lines that follow.

Finish rigging the throat halliard at this time. Run it

Rigging for the Gaff

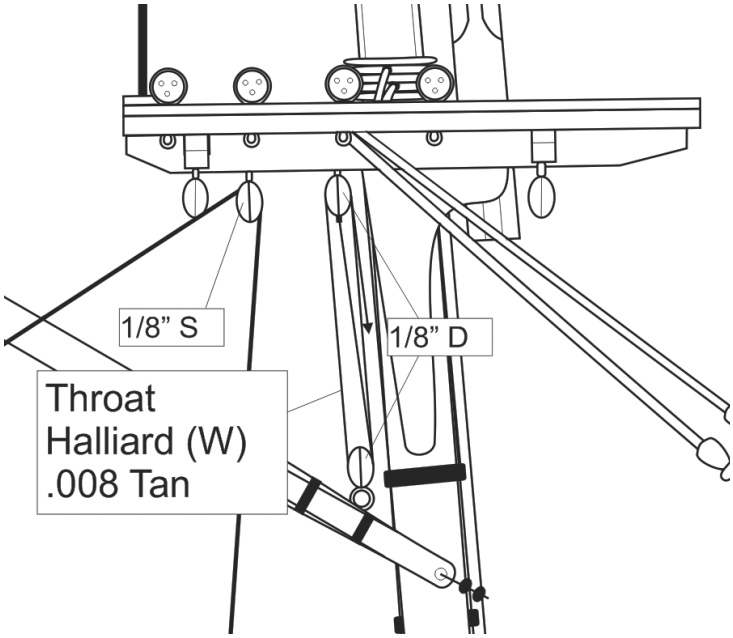
through the double block on the gaff jaws. Then repeat the process to complete the tackle through both sheaves of the double block. Take the loose end down to the deck and belay it to (W) along the port side pin rail. Finish it off with a rope coil.

Gaff Peak Halliard (.012 tan) — Seize the end of a generous length of line to the tip of the gaff. Run it through the double block on the main cap. Establish the correct angle of the gaff. Once you are satisfied, apply a drop of glue to the line as it runs through the double block to "lock-in" the angle and height of the gaff. From there, take it through the single block seized to the center of the gaff. Then bring the line back up to the double block on the cap and belay the running end to (S) on the fife rail. Remember to take the line through the center of the main top (down the lubber's hole). Finish it off with e rope coil.



Gaff Vangs (.008 tan) — The vangs will be rigged on both the port and starboard sides of the gaff. Seize one end of the vangs to the eye bolt (U) marked on the belaying plan. Take the loose end up through the block on the vang pendant. Bring it back down to the cleat (U) along the bulwarks. Before gluing the end to the cleat make sure that you don't pull the gaff too much to one side. Be careful to position the gaff along the center line of the hull. Finish it up with a rope coil. Repeat this process on the other side of the hull for the second set of vangs.
The flag halliard shown on the plans will be rigged later on the prototype.

Attach the boom to the main mast much like you did for the gaff. Position the boom jaws on the boom rest and secure the parrel around the mast.



Boom Topping Lifts (.012 tan) — There are two topping lifts. One is rigged on the port and on the starboard sides of the hull. Seize the line to the tip of the boom. From here, run it through the single block under the main top. Establish the correct angle and height for the boom. When you are satisfied it can be "locked-in" by applying some glue to the sheave of that block. Seize a 3/32" single block to the loose end of the topping lift. This will create one end of a running tackle. Examine the rigging plans to determine its height off of the deck.

The topping lift halliard will be seized to this block. It will run through another single block (with a hook) to create the tackle. This second block should be hooked to an eye bolt along the main channel. Take the running end of the tackle and belay it to (V) along the bulwarks. Finish it off with a rope coil. Repeat this process for the remaining topping lift on the other side of the hull. Note the "leg" of .008 rigging that runs from the topping lift to the boom. It is shown on the rigging plans. This should be rigged as well.

Boom Sheet (.008 tan) — This line is first seized to the double block under the boom. Then it is run through the double block secured to the horse on the stern. Belay the running end to the horse and finish off with a rope coil. See the photo provided.

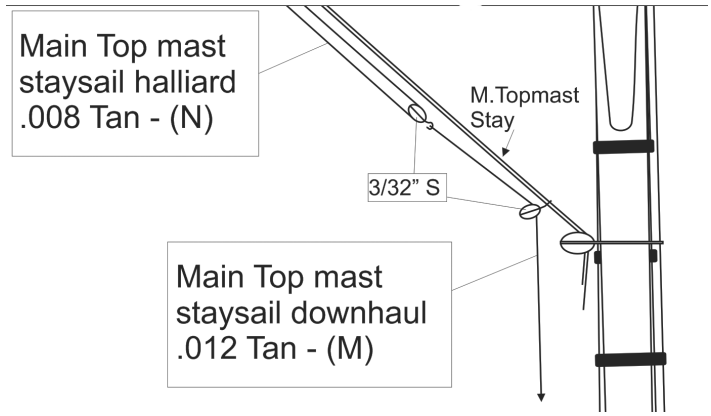
Boom Guys (.008 tan) — Seize a length of tan rigging line to the block on the end of the guy pendants. From here the line is reeved through another single block that is seized to the top of the stern rail. This 3/32" single block is seized to an eye bolt that is glued into the top of the stern. Run it back through the originating block and belay it to the cleat (Y) on the inboard side of the stern. Finish it off with a rope coil. Repeat the process for the remaining Boom guy on the other side of the hull.

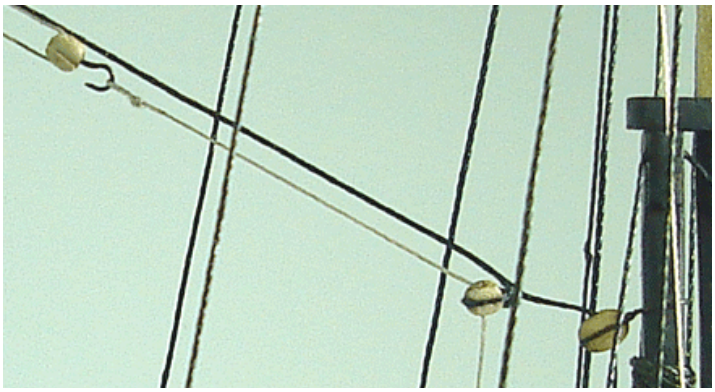
Foot ropes - The footropes can be rigged next. Use black .012 rigging line. Examine the rigging plans for details. There is a pair of foot ropes to be rigged with knots placed ¼" apart along them.

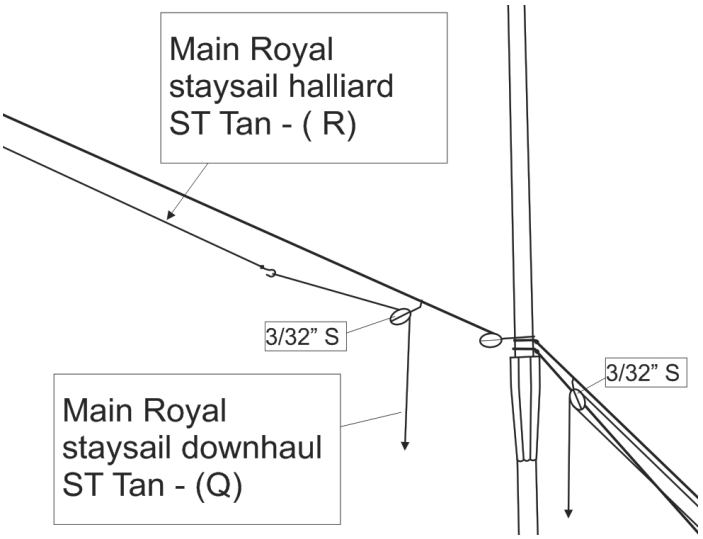
Staysail rigging…

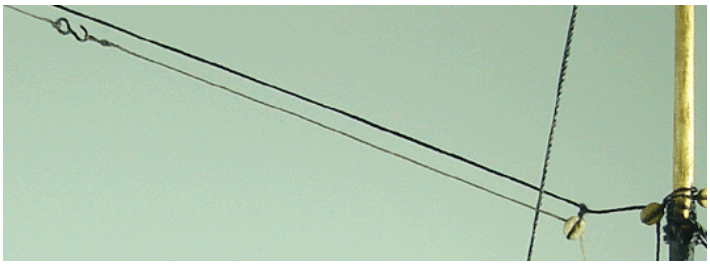
Main topmast staysail downhaul (.012 tan) — Seize a 3/32" single block to the main topmast stay. Examine the plans closely for its position. Then create an eye in the end of the rigging line. This is the eye that will receive the hooked block of the staysail halliard. Run the line through the single block you just secured to the stay. Position the eye an appropriate distance from the foremast. When satisfied, "lock-in" that position by applying a drop of glue to that single block. Take the running end down to the pin rail on the starboard side bulwarks. Belay it to (M). Finish it off with a rope coil. Be sure not to pull the line to tightly while belaying it. You don't want to pull the stay to starboard. Apply just enough tension so the line doesn't go slack.

Main topmast staysail halliard (.008 tan) — Seize a generous length of line to a 3/32" single block. Then seize that block to the main topmast stay (above the mouse on the port side). Once secured, take the halliard and run it through another 3/32" single block that has a hook in one end. This hooked block should be attached to the eye you formed on the end of the down haul. Take the running end of the halliard back up through the originating block and belay it to (N). This is the pin rail on the port side abaft the









main mast. Be sure to run the halliard through the lubber's hole of the main top first. Finish it off with a rope coil.

Main topgallant staysail downhaul (sewing thread or .008 tan) — Set this up just like you did for the previous staysail downhaul. Only this time you will belay the running end to a shroud cleat (O) in the fore top. Check the plans carefully before rigging.

Main topgallant staysail halliard (ST or .008 tan) — Same as topmast staysail halliard but belay to a main top shroud cleat (P). Finish off with a rope coil.

Main Royal staysail downhaul (ST or .008 tan) - Same as the topgallant staysail down haul.

Main Royal staysail halliard (ST or .008 tan) — Similar to the topgallant staysail halliard but this time there is no hooked block. Simply seize a hook to the end of the halliard. Run the halliard through a single block seized to the main royal stay. Then bring it down to the main top where it should be belayed to a shroud cleat (R). Examine the plans for details.

Fore topmast staysail downhaul (.008 tan) — Seize a 3/32" single block to the fore topmast stay. Check the rigging plan for its position just above the jibboom. Create an eye in the end of the rigging line. Run the line through the block and establish the distance of the eye from it. Once you are satisfied, "lock-it" in that position by adding a drop of glue to the sheave of that block. Take the running end inboard at the bow and belay it to (I) on the port side pin rail. Finish it off with a rope coil.

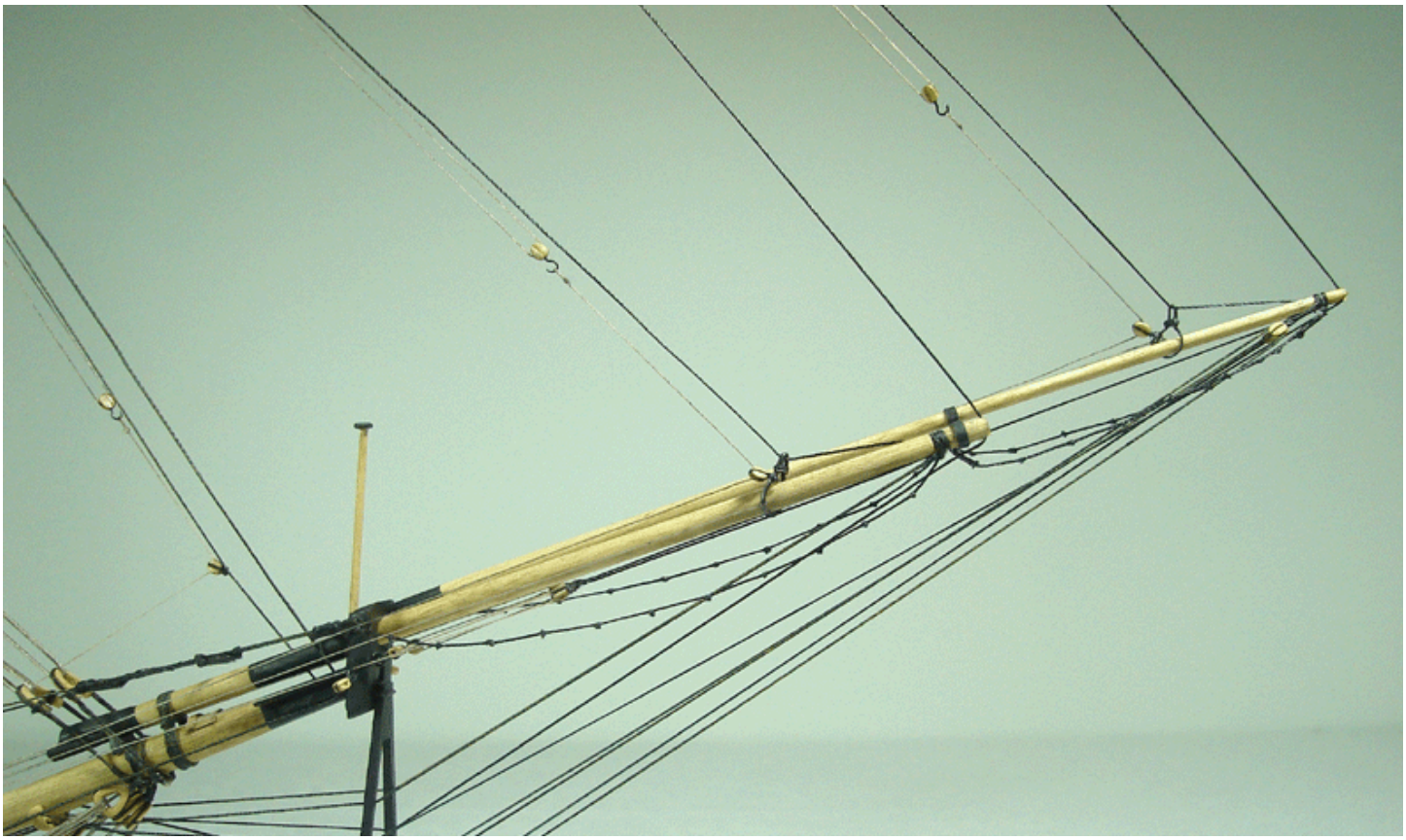
Fore topmast staysail halliard (.008 tan) — Very similar to the main topmast staysail halliards. Seize a generous length of line to a 3/32" single block. Seize this block to the fore topmast stay (above the mouse) on the starboard side. Run the line through a second single block with a hook. Hook this block into the eye of the downhaul. Run the line back up to the originating block and belay it to a shroud cleat (L). Finish it up with a rope coil.

Jib sail downhaul (.008 tan) — Similar to the fore staysail downhaul. This time however, you will seize the 3/32" single block to the traveler on the starboard side. Belay the running end to the pin rail at the bow (H). Add rope coil.

Jib sail halliard (.008 tan) — Prepare a 3/32" single block with a hook. Then take the halliard and seize it to the jib stay. Run the loose end through the hooked single block. This block should be hooked into the eye of the downhaul. Take the running end back up to the cheek blocks on the port side of the topmast. Run it through the upper sheave of the cheek block on the port side. Belay it in the fore top to a shroud cleat (K). Add rope coil.

Flying jib sail downhaul (sewing thread or .008 tan) — Set this up the same as the jib sail down haul except the single block should be seized to the traveler on the port side. The plan shows it on the starboard side for clarity only. Belay it to the pin rails at the bow (G). Add rope coil.

Flying jib sail halliard (ST or .008 tan) — Set this up the same as the fore topmast staysail halliard. Belay it in the fore top to a shroud cleat (J). Add a rope coil.



Constructing the Yards…

The lower yards (Main and fore mast)

The lower yards will be constructed using a 5/32" diameter dowel. The yards will be identical for the fore and main masts. This will be true for all of the yards made for both masts. Build each pair of yards simultaneously so they are sure to come out identical. The lower yards can be built in four steps described below.

Step 1-

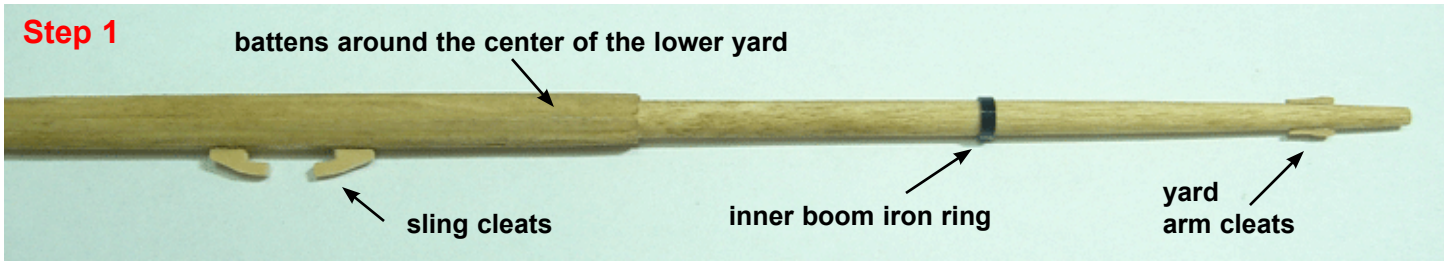
The center of the lower yards is "octagon-shaped". The eight-sided section of the yard usually covered about one quarter of its length. While shaping your spar, try to avoid tapering this center section. You will place batten strips around the yard to achieve this eight-sided geometry. Not being tapered, it will make it much easier to prepare and assemble the batten strips around this section of the yard. This section of the yard can be tapered after the battens are added. NOTE: Drill a hole into both ends of the yard before you start to taper them. The outer stuns'l boom irons will be inserted into these holes later. It will be easier to drill them now since there is less of a chance that the wood will split. Taper the yards arms to match the plans.

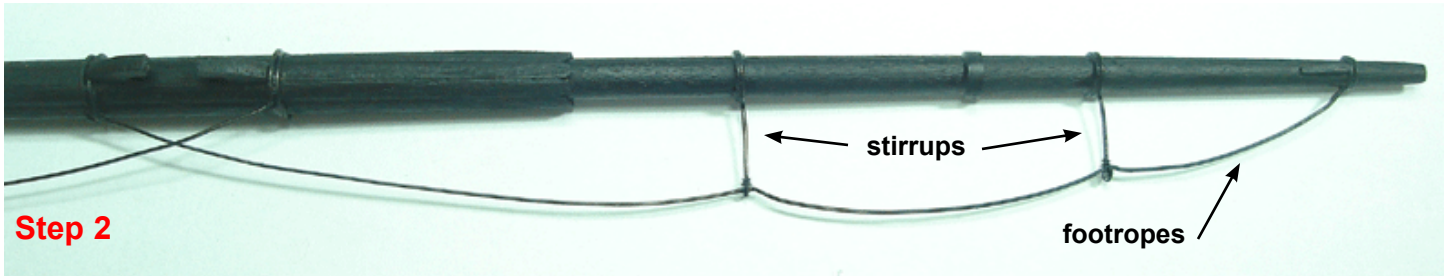
For the octagon-shaped section of the yard, select some wood strips that are no thicker than 1/32" for the battens. To help find the correct width for these strips you will need to measure the circumference of the center of the yard. Then divide that by eight. Wrapping a strip of paper around the center of the yard is an easy way to find its circumference and then divide up the resulting space.

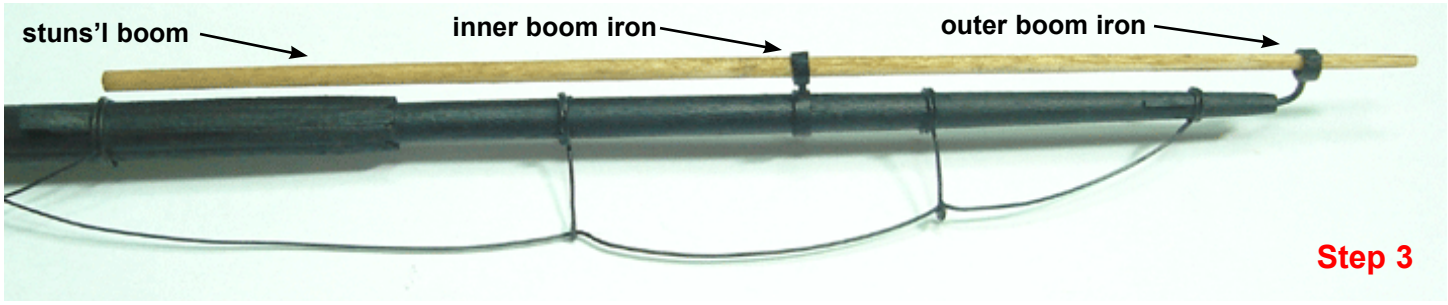
When cutting your wood strips to the width needed, make them slightly wider. Not by much. Since you are covering a rounded surface, the outside edges of each strip need to be beveled so you get a tight fit around the yard (Hence the need to make them slightly wider). The ends of these battens can also be rounded off as shown in the photo provided to create some extra detail. Once glued around the center of the yard, any small gaps can be filled with wood filler and sanded.

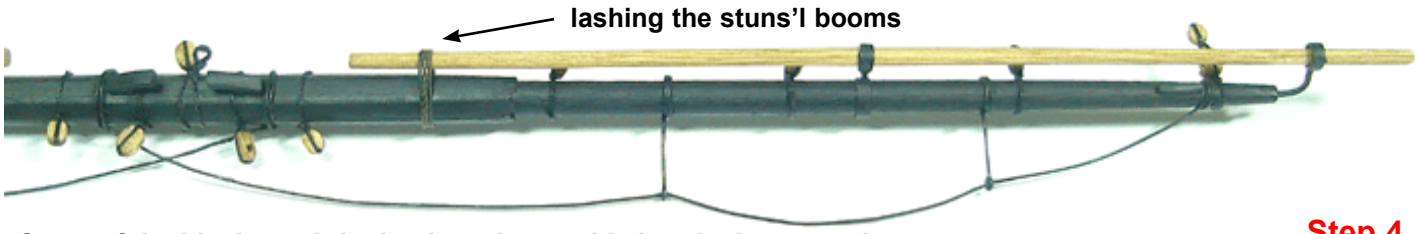
Two cleats called "sling cleats" are positioned in the center of the yard. These kept all of the rigging gear contained to the center of the yard. Additionally, two "yard arm" cleats were positioned at the end of each yard arm as shown on the plans. These cleats should be created thin and slender. Use a strip of 1/32" x 1/32" wood for the yard arm cleats, while the sling cleats in the center of the yard should be made using 1/16" thick strips (sand them down closer to 3/64" thick). Working with such small finicky pieces can get frustrating. Simply cut the yard arm cleats to length and glue them on as is. Then shape them after they are on the yards. Both cleats will then be in close proximity to one another which aids in producing a similar shape for both of them.

The course and topsail yards for the Syren carried stuns'ls. Four stuns'l boom irons were fitted to the yards for their use. There was a pair of inner and outer boom irons. The inner boom iron was positioned about 1/3 the distance from the end of the yard arm. This boom iron was a simple fitting with one iron band around the yard. This band had a second one attached to it with a short rod connecting them. The stuns'l boom was slid through this iron ring









Some of the blocks and rigging have been added to the lower yard.

which was made slightly larger for this purpose. In some cases the ring was hinged so it could be opened but we are getting ahead of ourselves. At this point in the yard construction you need to only locate where the inner boom iron would be positioned. Using some black automotive pinstripe tape or black paper strips, wrap a 1/16" wide (or less) strip around the yard to simulate this iron band. If you have decided to paint your yards black, this would be the time to do it. If not, then some preparation for the outer boom irons can be completed next.

The outer boom irons consisted of an iron ring to support the boom also. A metal rod was also attached to it. This time however, it is bent to form a goose neck. The end of the goose neck had iron jaws which were slid onto the yard arm. The jaws were usually let into the yard arm and bolted on. The outside surface of the jaws was more-or-less flush with the surface of the yard arm. Two iron bands were sometimes wrapped around the jaws and yard arm to help strengthen the whole assembly.

To simulate the jaws simply paint them onto the ends of the yard arms. Since they were let into the yard arm this makes perfect sense and it is a much simpler solution than creating an actual set of metal jaws. No soldering or complicated metal work is needed. Once finished, you could even add the "optional" pinstripe tape around the jaws to simulate the iron bands that sometimes secured them. These bands should not be as wide as the ones used to simulate the inner boom iron. Make them no wider than 1/32". This feature was not added to the prototype but you can add as much detail as you want depending on your level of experience. This also adds some additional detail to the yards which will show to good effect if you decide not to paint your yards black.

Step 2 -

Foot ropes were hung from the yards so the sailors could have a place to stand while working the sails. They were hung from lengths of rope wrapped three times around the yard arm called "stirrups". The stirrups had an eye or thimble worked into the lower end and the footropes would be strung through them. As many as four stirrups were used on the yards of larger ships but as few as one or two for smaller yards or vessels. The stirrups and footropes for our model could be made from .018 black rigging line. You will have to adjust them after they are rigged. Various

stiffening agents can be used to process the line so it will lay with a natural swag. Some of the kinks and twists can be worked out of the line ahead of time of course. The rigging line is not heavy enough for gravity to allow them lay naturally.

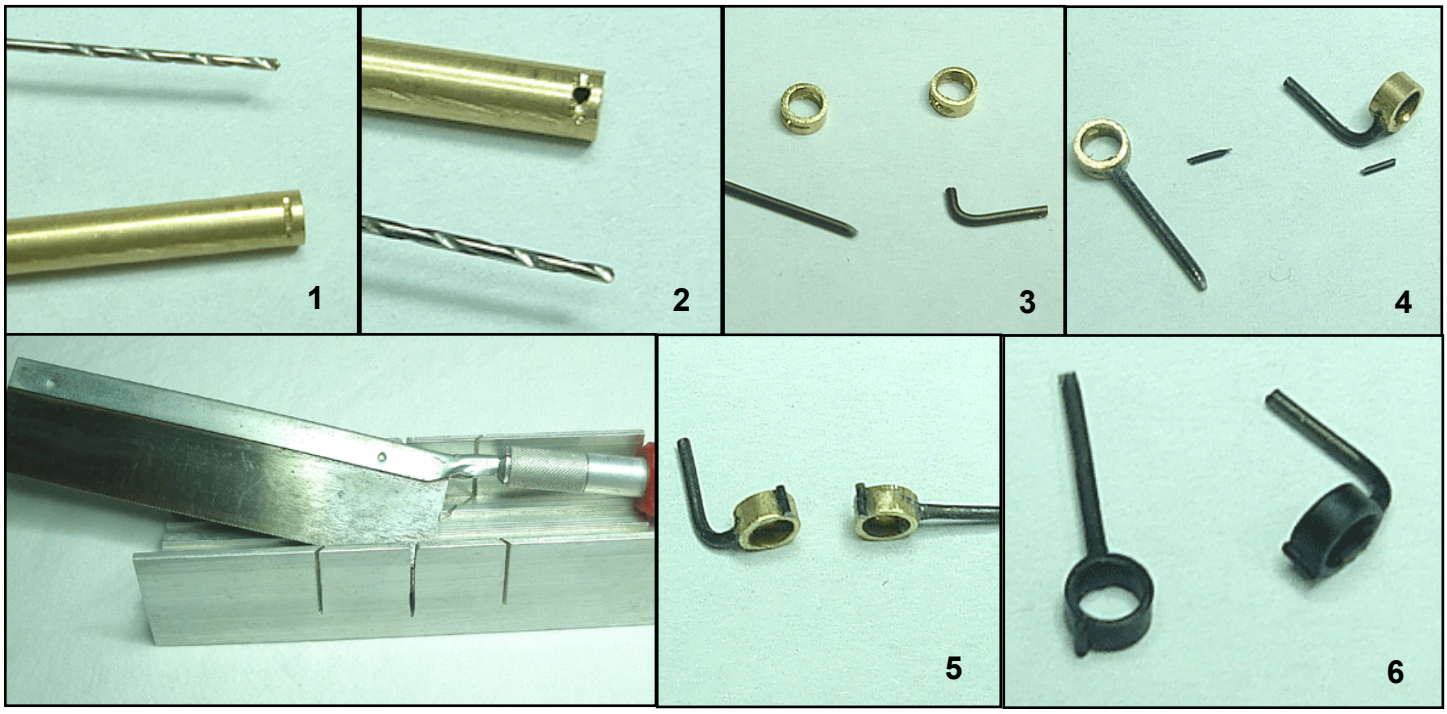
But as an alternative, 28 gauge black wire can also be substituted. It can be used solely for the stirrups or for footropes as well. This was the method used on the model prototype. If bent around the yard and treated as if it were rigging line, the results just might surprise you. An eye is formed on the end of the wire with some needle nose pliers. This is sufficient for simulating the eye and thimble on the end of the stirrup. But to push the realism a bit further you could use some sewing thread to create a "cosmetic" seizing above the eye. It serves no purpose but to cosmetically enhance the idea that the stirrup is actually made from rigging line. Once again, the choice is yours depending on which method you feel most comfortable using.

Create four stirrups on each yard as shown on the plans and in the photos provided. You could hang them from the bottom/center of the yard after wrapping them three times around the yard. This can help conceal the fact that they are made from wire, although, in actual practice they would have hung off the back side of the yard. You can use either approach.

The footropes (28 gauge wire) are run through the eyes of the stirrups and wrapped twice around the yard on both ends. You can see in the photo provided where each end of the footrope is located. Use a needle nose pliers to create a slight bend in the footrope were it passes through the eye of each stirrup. Then create a natural looking swag between each segment of the footrope by shaping them with your fingers. The trick to using wire is NOT to make the stirrups and footropes hang too perfectly. You might want to actually introduce some "imperfection" to how they hang. This will go a long way in helping push the illusion. Draping them with near perfect hanging swags is something that lends itself to closer inspection. Introducing an ever-so-slight bend now and again will do wonders for the overall affect.

Step 3 —
With the footropes completed, focus your attention on the completion of the stuns'l boom irons. Several steps are described below for you that correspond to the photos also provided. Use a 1/8" brass tube to create the iron rings for the boon irons. This will allow the stuns'l boom to easily pass through them with room to spare. The iron rings will be slightly less than 1/16" wide when completed. To start the process use a simple razor saw available at most hobby shops. Use the saw to create a small cut in the tube. It's more like a "score" than a cut. This score does not have to go all of the way through the wall of the tube. The score is made 1/32" from the end of the tube. The purpose of this score is to provide a means to prevent the drill from slipping off the tube while drilling through it. See the pictures provided. The score is shown in step one.

For step two, drill the hole all the way through the wall of tube using the scored groove as a way to keep the drill from slipping. This score will be filled up with CA (super glue) afterwards so don't worry, it won't show up at all when the boom iron is finished. The hole must be the same size as 22 gauge wire. When done, cut the ring off of the tube so the boom iron is 1/16" wide with the hole in the center. You can sand down both edges to make the boom iron slightly less wide than 1/16". This also knocks down the burrs and roughness of the cut edges.
Step three - Bend a piece of 22 gauge wire to form the "goose neck" for the outside boom iron. The inside boom iron only requires a straight piece. Make them extra long so



you will have a handle to hold while painting them later.

Step four - Glue the 22 gauge pieces of wire into position. Push them into the holes so the wire protrudes slightly into the tube. Once the glue dries, file the protrusion down flush with the inside wall of the tube. It will be quite sturdy. Remember that the stuns'l booms will be under no tension what so ever. There is really no need to solder these pieces together. The glue will provide more than sufficient strength here. Cut tiny pieces of 28 black gauge wire in preparation for the next step.

Step five — Glue the tiny lengths of 28 gauge wire to the rings. They will simulate the hinges that are often seen on some boom irons from this time period. You could add more detail if you wish. But this is usually sufficient and produces a nice clean simplified boom iron. File or sand the ends of the wire flush with the width of the tube.

Step six — To complete the boom irons paint them black. See the photos provided.

The boom irons can now be added to the yard assembly. They would have been set to a 45 degree angle above the yard on the fore side. Slide the end of the goose neck for the outer boom iron into the hole you drilled on the end of the yard. Establish the correct angle as noted. The inner boom iron is simply inserted into a hole drilled through the iron band you made on the yard arm earlier. If you used paper or pinstripe tape to simulate the iron band, then you should start the hole with the point of a sharp awl first. This will prevent the tape from twisting around the drill bit as you make the hole. That would ruin the finish and shape of your iron band. Cut the stem for the inner boom iron to length and insert it into the hole. Touch up any areas that need some attention with black paint and the process is completed. Avoid positioning the rings of the boom irons too far away from the yard arm. They should be placed no further than 3/32" or closer.

The stuns'l booms are made from a 3/64" diameter dowel. The outer ends are tapered. The inboard ends are not. In fact, you could sand the inboard end to an octagon shape. This was sometimes done with the stuns'l booms and it adds a nice touch to an otherwise plain stick. Slide them through the boom irons and add a drop of glue to prevent them from shifting out of position.

This completes the construction of the yard.

Step 4 —
At this point you can rig all of the various blocks and rigging to the yard using the plans as a guide. If you have decided to show buntlines and leech lines these blocks should be rigged towards the top-front of the yard as this rigging hung down the front side of the sail. The clew lines are rigged on the back side of the sail therefore these blocks should be rigged under the yard and positioned towards the aft side.

The lower yard around the turn of the 19th century had the topsail sheet block and lift block stropped together. These two blocks were rigged to the end of the yard arm against the cleats you shaped earlier. You can examine them on the plans. The block for the topsail sheet gives you the opportunity to improve the look of your model further. You could use a 1/8" single block for this "as is". But if you examine the drawing closely you will see that the topsail sheet block has a distinct shape. There is a small lip on the inboard side of the block. Showing this detail would be easy to achieve. Just start with a slightly larger block and shape it to match the plans.

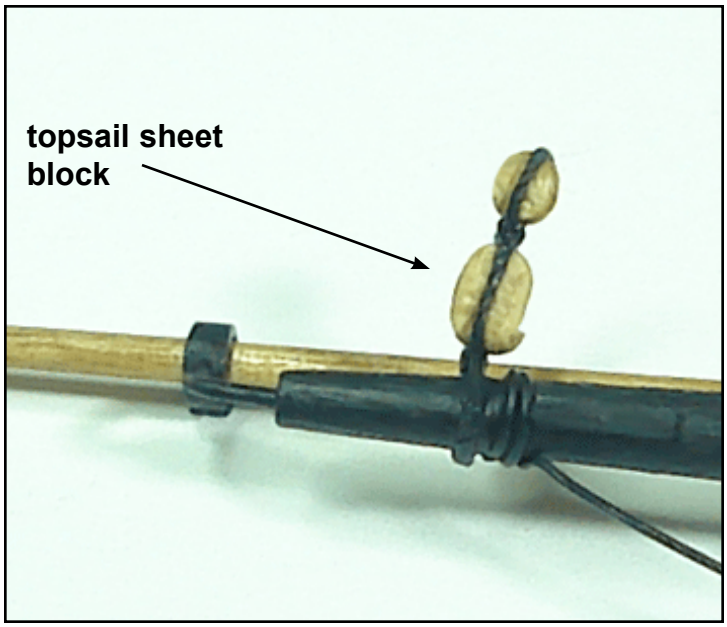
Take the larger block and cut the lip into the inboard side of it with a sharp blade. Then round off all of the edges. You can see a topsail sheet block in the photo provided.

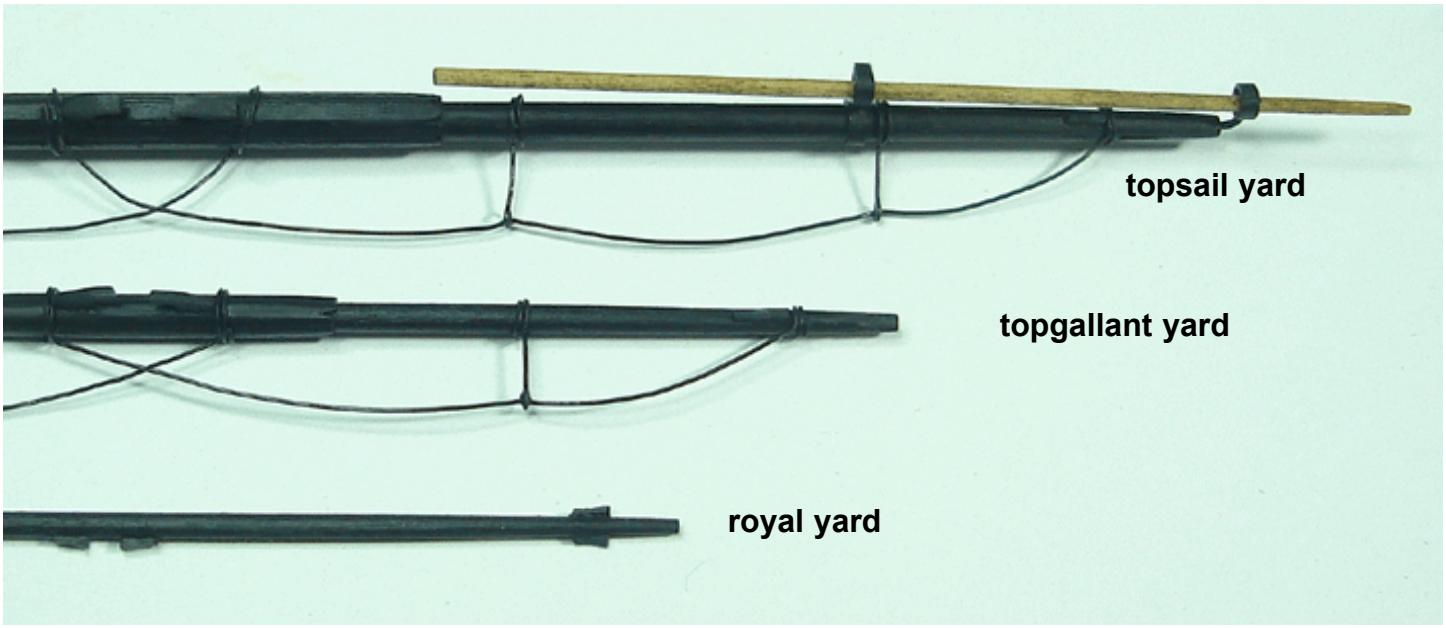
Lash the stuns'l booms to the yards using some .012 black rigging line as shown.

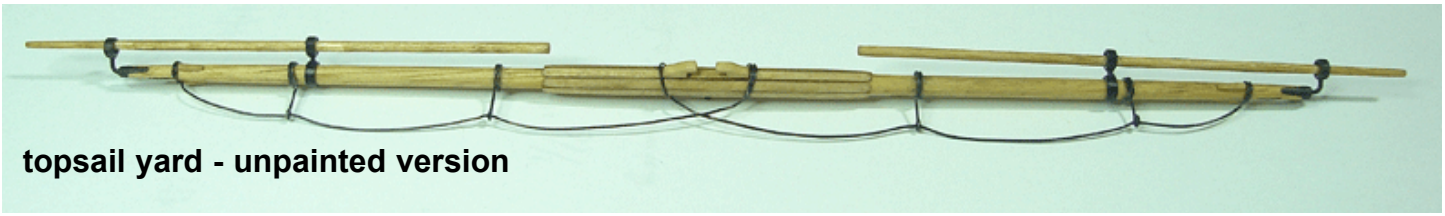
The centers of the lower yards have a simulated thimble lashed around it for the slings. This will be lashed to the thimble you created on the end of the sling with a lanyard. Use .018 blk rigging line to create this "stiffened/simulated" thimble and rig it onto the yard as shown on the plans.

A simplified truss is also shown on the plans for the lower yards. It would be a good idea to rig one side of the truss onto the center of the yard ahead of time. Use a generous length of .018 black rigging line for the truss. Let the loose end hang free for now.

The yard brace pendants can also be added at this time in preparation for final rigging. You should add as much rigging to the yards as you feel comfortable doing at this time. Examine the plans and choose the rigging elements that would be easier for you to add before they are in position on the model.






topsail yard - unpainted version


topsail yard -
unpainted version should you
prefer this over the painted yards

The lower yards can be pinned into position on the masts when they are completed. This will hold them in position and make it easier to complete the truss rigging and slings later. Pre-drill a hole into the center of the yard (aft side where it will rest on the mast). Insert a length of 22 gauge wire. Drill a corresponding hole into the lower masts (fore side) where the yards would be positioned. Glue the pinned yard into position on the mast.

Topsail yards…
The topsail yards are made similar to the lower yards. This time however, you will use a 1/8" diameter dowel to make them. There's no need to describe their construction in detail since the methods are so similar. Just be very careful to examine the plans thoroughly. Measure all of the elements for the yard and note the simulated sheaves made through the ends of the yards arms. A 1/8" diameter brass tube is used to create the boom irons for the topsail yard also. The number of blocks and their positions are also noted on the plans. Rather than a simplified truss, the topsail yards were secured to the mast with a parrel. The parrel consisted of small wooden ribs with round trucks between them. These are supplied with the kit and an illustration is provided on the plans to assist you with them. Pin the topsail yards to the masts as well just before you begin to rig them on the model.

Topgallant yards…
These are constructed using a 1/8" diameter dowel like the topsail yards. There were no boom irons for the topgallant yards. A simple truss is used to secure them to the mast. Since the topgallant mast is so thin, do not attempt to pin these yards into position before rigging them. You don't

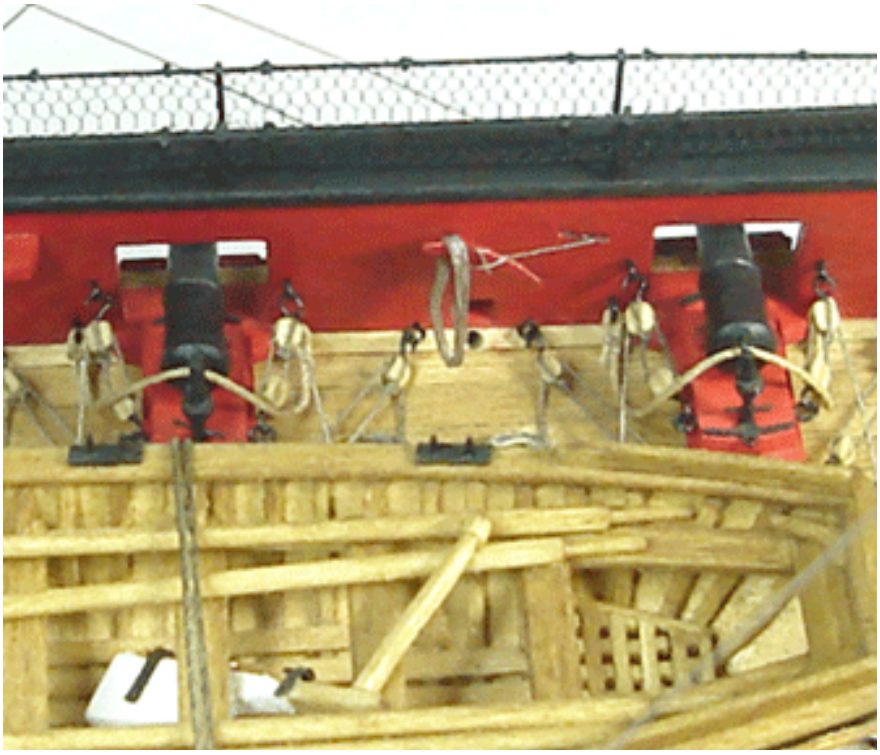
want to risk breaking your mast in two after you spent so much time and effort rigging the model up to this point. Drilling a hole through the topgallant mast to except the pinned yard would make it very fragile. It might not hold up to the tension created by the yard braces and other rigging.

Royal yards…
The royal yards are made using a 3/32" diameter dowel. The center of these yards is not octagon shaped. No battens will be required. Simply add and shape the cleats as shown on the plans. You should not pin these yards to the masts for the same reasons stated earlier.

Inboard rigging for the lower course sheets, tacks and braces...

If you recall, there are several sheaves that were simulated through the hull. They are for the braces, tacks and sheets of the lower course yards. Examine the plans and you will see these lines as they work their way through the hull inboard where they are belayed to cleats along the bulwarks.
It may be difficult to insert a line through the hull while rigging them. The bulwarks are quite thick and in two layers. An easy way to accomplish this is to simulate the rigging as if it were one continuous length running through the bulwarks. You will be rigging the outboard portions of the sheets, braces and tacks much later. But this would be a good time to rig the inboard portions of these lines. Check the weights and details on the rigging plans before starting.

Take a small length of rigging line and push the end into the sheave holes from the inboard side of the bulwarks. You only need to push the line into each sheave a little bit and then secure it with some glue. When it is dry and secure, you can take the lines and belay them to the appropriate cleats along the bulwarks. This should be done for the main course braces (.012 tan), sheets and tacks as well as the fore course sheets (all .008 tan). See the photo below that shows the main braces and sheets rigged on the inboard side of the bulwarks at the stern. It may look a little odd until you finally rig the outboard portions of these lines. But you will appreciate how much easier it was to rig them now instead of waiting until the bulk of the rigging would get in the way and make it difficult.



These two photos show the inboard portions of the main course sheets and braces (below) and the fore sheet (above). It is best if you add these soon before getting to much rigging done. It will be easier to complete them with less rigging to get in the way. Not shown is the main tack which is handled in the same way.