BUILDING the FAIR AMERICAN 1780

Scale: 1:48

By Mike Lonnecker

After finishing my first model I started looking for a new project. I had seen many photos of Fair American models and found it a very attractive ship, or in this case, model. I liked the overall shape and the oversized rig and highly curved sheer gave it a very balanced look to me. There is speculative information concerning the Fair American and little about her actual looks. A 1:32 scale model in the Rodgers collection at Annapolis defines what she looked like and provides the most definitive information. I started looking around for more information and possibly for a kit to build. I found two kits. The first was from Model Shipways. It was a plank on bulkhead fully rigged model in 1:48 scale. The plans were also posted on the internet. The plans were by Erik Ronnberg Jr. and provided lots of detail. The second kit was by Lauck Street Shipyard. This kit was plank on frame, but only provided the basic hull, deck framing and some basic deck furniture. During the search for a kit, I found a CD of a book "Progressive Scratch Building in Ship Modeling" written by Clay Feldman M.D. describing his scratch build of a 1:32 scale model of the Fair American. He did an exhaustive search for information about the full size ship. The reader may want to consult his book to learn more about the Fair American. The information

about the model was quite complete including sparing and rigging. His model was plank on frame. My first model was 1:48 and I wanted to stick with this scale/size model. I also wanted to expand my skills and try a plank on frame model. Another consideration was to scratch build or kit build. The Lauck Street Shipyard kit offered a little of each as I felt in order to get the best impression of the ship it had to be fully rigged.

While searching for the new project I was reading a couple of books by David Antschrel. "The fully Framed Model, HMN Swan Class Sloops 1767-1780" which contains detailed information on how almost every part of the real Swan Class was built and assembled. These books inspired me to want to include as much interior detail in my model as I could. Consulting books by Lavery, Goodwin, Chapelle, and Petrejus convinced me I could do this. Proportioning of the interior proved to be an interesting task and made me feel like a real master shipwright. As I describe the construction of the interior I will relate how these sources were used.

GETTING STARTED

To get started I ordered the Feldman CD, the Lauck Street Shipyard kit and downloaded the Ronnberg drawings. The keel, fore and aft deadwoods and framing of the basic hull structure was built upside down Hahn style following the kit instructions. The cherry wood in the kit was of high quality, so it was used. The gun ports were CNC'd blocks. They were installed and faired on the outside along with the outside of the hull. The wales were added to stabilize the framing. The stern framing was added in accordance with the instructions. The lower counter was also planked at this time. Fairing of the inside of the hull was a real challenge. I tried every sanding tool in my box. Finally settling on a small sanding disk with stick on disks of about 180 grit in a motor tool with right angle head. This combination had to be used at a moderate speed with very light pressure. Work proceeded with strokes from the keel parallel with the frame. This was a very slow process with lots of measuring to insure consistent frame taper and thickness. The topsides were planked and the gun ports cut out. At this point I sawed the hull from the build board and trimmed the timberheads to the sheer line. To this point everything had been done to the kit instructions and with an eye to the Ronnberg drawings.

ASSEMBLY, PAINTING AND FINISHING

I wanted to assemble my model so it would last. I had read much discussion on the use of the new supper glues (cyanoacrylate) and the attendant pros and cons. I decided not to use any supper glue. All wood to wood joints were glued with Elmer's Carpender's white glue. Wood to metal joints were epoxied and metal to metal (brass) joints were silver soldered.

I had sat in on a roundtable at the 2011 Western Ship Modelers Conference with a very good discussion on longevity of models. Part of the discussion was about the preservation of rigging. The consensus of the restoration and modeling experts was that most museums no longer used

bees wax on rigging. If anything was used it was a preservation wax called Renaissance Wax. When questioned directly one expert and well known modeler said he used nothing on his cotton rigging. This is the way I went.

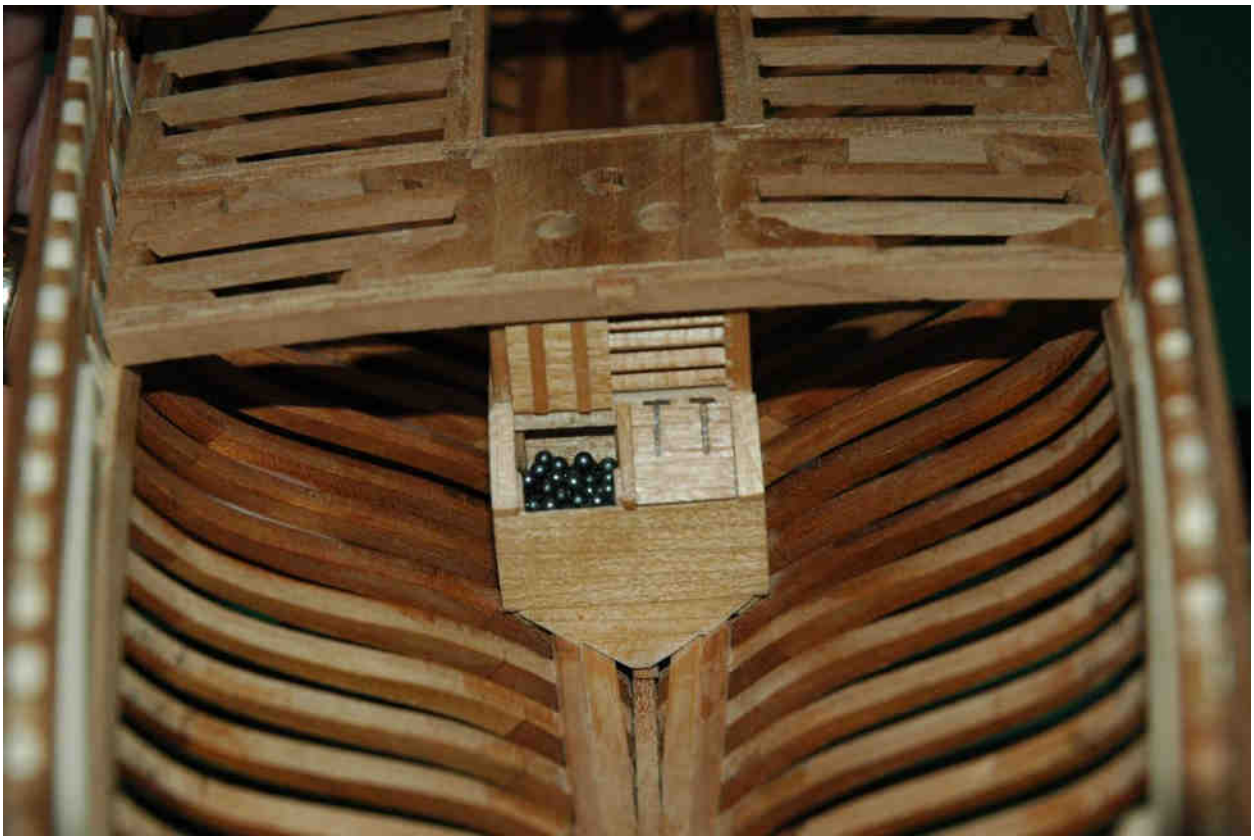
The hull framing was finished with tung oil. The oil was wiped on and then sanded. Several coats were applied. The final coat was rubbed with fine steel wool to give a satin finish. All decorative painting was brushed on using artists acrylics. These paints are very translucent and therefore require many coats. Once dry the decorative painting was over sprayed with Deft satin lacquer. All the spars were painted black with Floquil where required and over sprayed with the lacquer.

THE INTERIOR

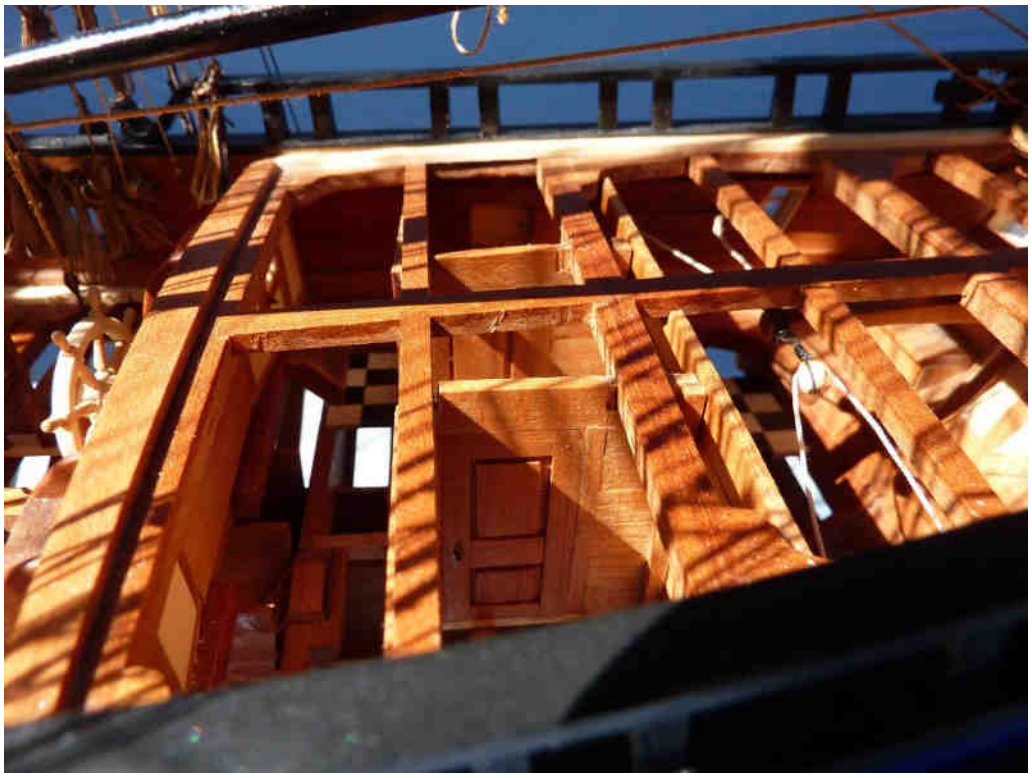
Deciding on the interior layout required some research. First I determined the attributes of the Fair American that I believed would most influence the interior design. They were, in no particular order: The number of guns and their location; Rigged as a brig; Depth of hold; The low quarter deck; The flush deck forward; Location of the capstan; The lack of permanent cooking facilities; Location of the steering gear. Other requirements that had to be met were minimum heights and the ability of men to move about the ship. Chapter 28 of "The Arming and Fitting of English Ships of War 1600-1815" by Brian Lavery proved to be most helpful. On page 153 the illustration of the 14-gun sloop of 1740 was very close to our Fair American in layout. The hanging cabin in the stern, an area for a stern magazine, room for a well and shot locker, and stowage forward were particularly significant. I made sketches of a layout with these items shown. Using measurements from the model, space was allocated to each deck.

Forward a single platform could be incorporated with plenty of overhead room. The forward platform would end at the forward edge of the forward hatch. Several storerooms were constructed on each side of a central isle. The port side was completely finished out while the starboard side was only framed. This was done to hopefully aid viewing of the interior. As can be seen from the photo the framing was rabbited for the wall planking. All planking was done board by board. The doors were built up of individual planks with proper cross bracing. Cherry was used for the vertical walls and holly with graphite edging for the deck planking.

An aft platform would act as the base for the magazine, bread room and small storage areas. David Antscherl's Swan series had floor plans of a small aft platform supporting a magazine and storage areas. I resized this layout to fit my model. The magazine area included a light room, double door entry and filling room. The height of this area was set at 4 ½ feet. The forward end of aft platform ended at the well. The well housed the pumps and main mast. A shot locker was mounted on the forward side of the well. The well was planked half way up and then louvers were constructed for ventilation. A door was installed for access to the ends of the pumps.



The next level up would house the captain and officers' quarters. As seen in the drawing from Lavery this was a hanging area. The deck of which ended at the bulkhead at the forward end of the quarter deck. The minimum height was just over 5 feet. Because of the rise of the quarter deck following the sheer, the interior height increased significantly as one moved aft. This allowed room for the tiller under the quarter deck without infringing on the captains head room. The aft section was dedicated to the captain's cabin. Officer quarters were forward of the captain's and to either side of the deck. The bulkheads were built board by board. The doors, which I envisioned of style and rail construction, were built in just that manner. The door thickness was .045 inch (2 1/4 inch at 1:48 scale). Using a .020 inch end mill the styles and rails were slotted and tennons were cut on the ends. Panels were cut of .032 thick material and machined down to .020 on all edges. The doors were then assembled exactly like a real door.



Access to the magazine from above was provided by a ladder way running athwartship, just forward of the magazine entry. Short ladders, behind each door of the quarter deck bulkhead were installed for egress to the officers' quarters from the main deck.

The interior was constructed of cherry with holy used for the small amount of deck planking that was installed.

The tiller was fully rigged. Blocks with real sheaves were located to route the lines to the wheel.

STERN AND DECK FURNITURE

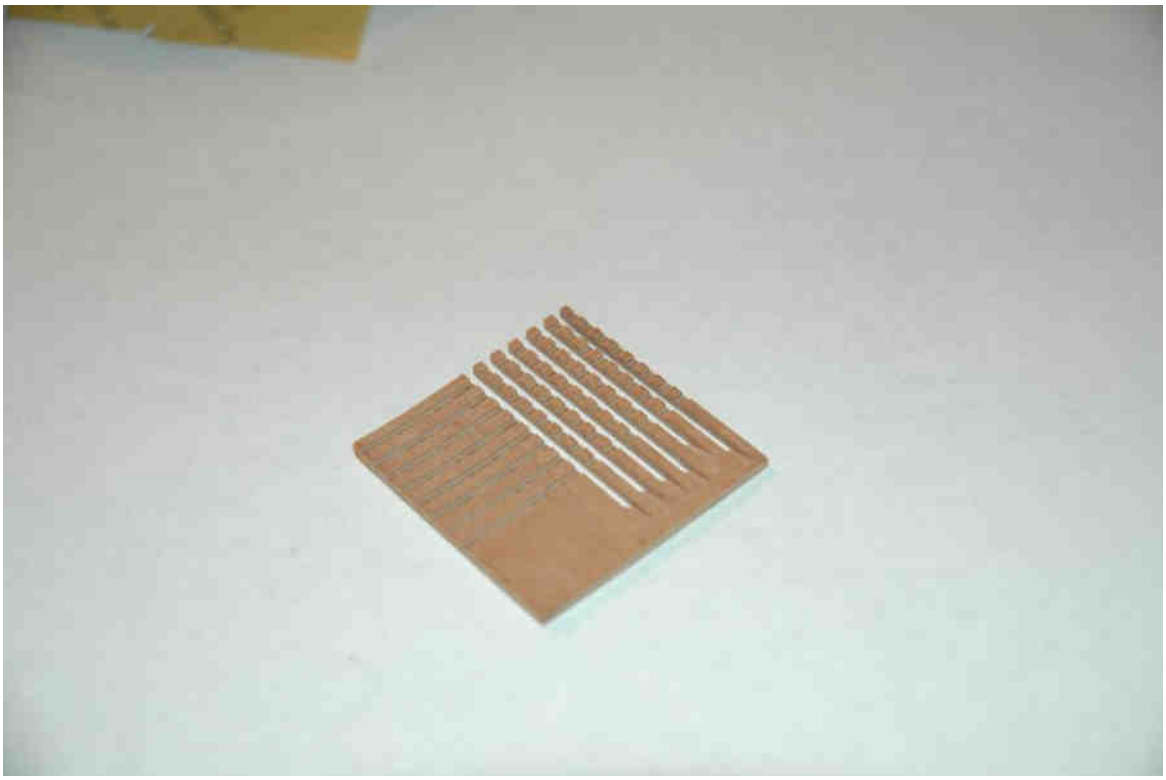
The kit supplied a piece of plywood for the stern. The plywood, in order to conform to the shape of the stern, would have to be formed in two directions. I replaced the plywood with planking of cherry. Openings were left for the windows and strips added on the inside edges of the windows to form a rabbit. The frames were constructed of six pieces of holly with half lap joints at each intersection. The "glass" is .010 inch thick artist acetate. This material is used for overlays of art for preservation and painted on for cartoons when they were produced one cell at a time. The material doesn't yellow or become brittle with time. The stern was painted a dark blue. A drapery scene, as suggested by the Ronnberg drawings, was added to the lower

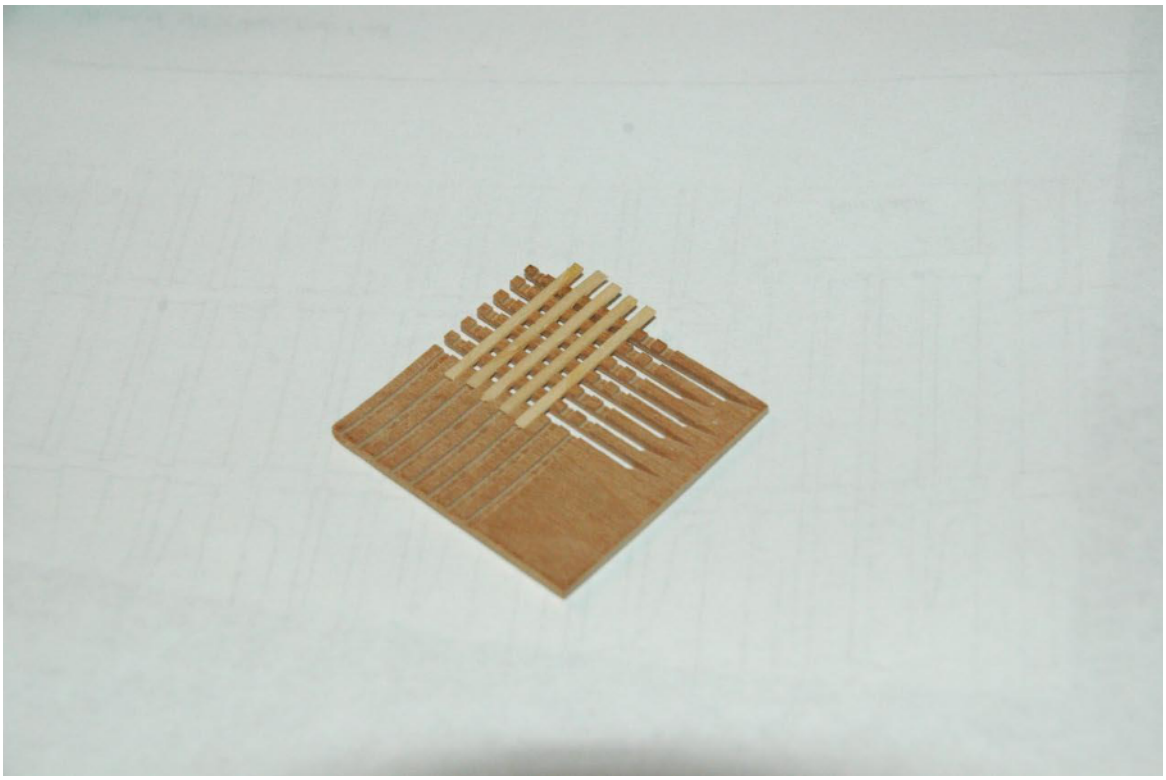
counter. The upper counter was framed in holly. The name and upper decoration are photo etch parts from the kit with a little shading added to give a little depth.

MAIN HATCH GRATING

There have been many articles written about ways to make a hatch grating. My method is similar to several I have seen with maybe a couple of differences. The main hatch grating was made of holly. The ledges, the athwartship pieces are 3 inches (.062 at 1:48) thick by approximately 2.5 inches (.052 at 1:48) wide. The approximate is because I used a width of .054 which is the kerf of my table saw blade. The battens , the fore and aft pieces, are 2.5 inches wide by ¾ inch thick (.052x.015). I cut a piece for the ledges that was slightly wider than needed and at least ½ inch longer than needed in the direction of the grain. Using my table saw with a fence that can be adjusted by micrometer, I cut groves .015 deep spaced .054 inches apart

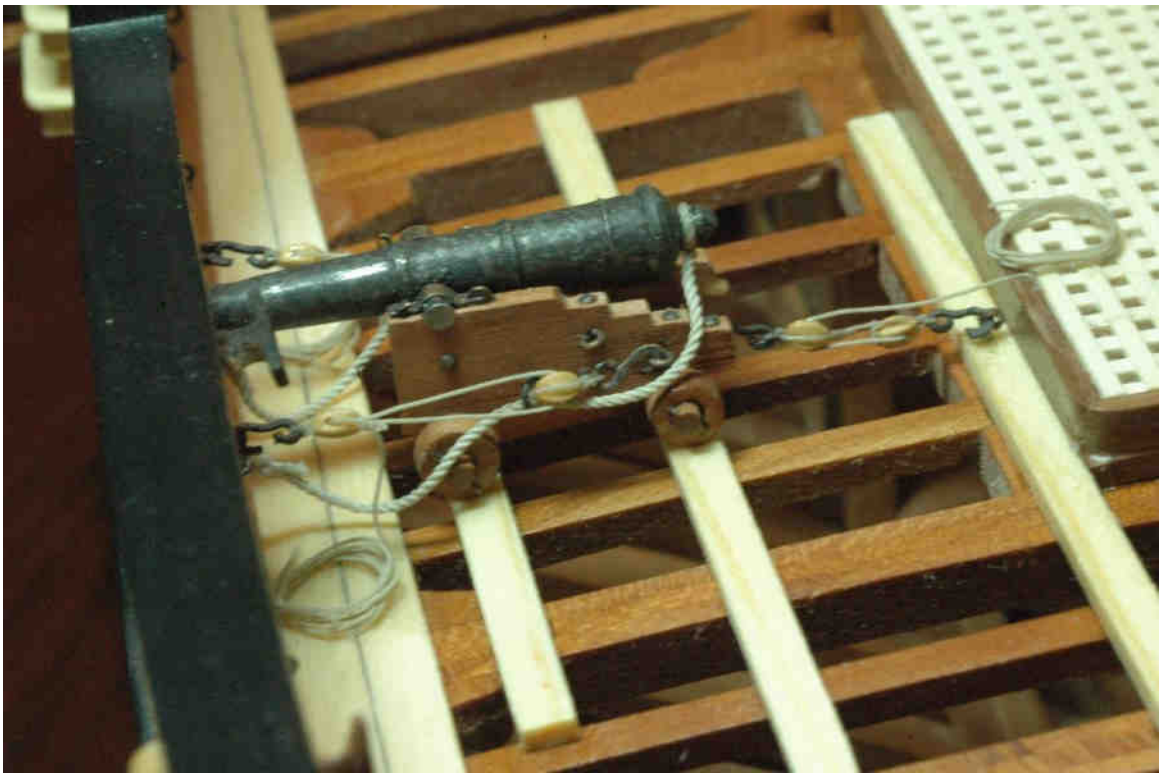
across the grain. The piece was then turned 90 degrees and saw cuts made through the piece, leaving the oversized end uncut. By not sawing the ledges off the blank the spacing between ledges is held until assembly is complete. The battens were then cut to size and glued in place. When dry the hatch was trimmed to size. This yielded a hatch with 2.5 inch holes and 2.5 inches between holes. The hatch coamings were cut to fit the hatch with half lap joints at the corners. The assembly was then mounted to the deck beams.





CANNON A 6 POUNDER

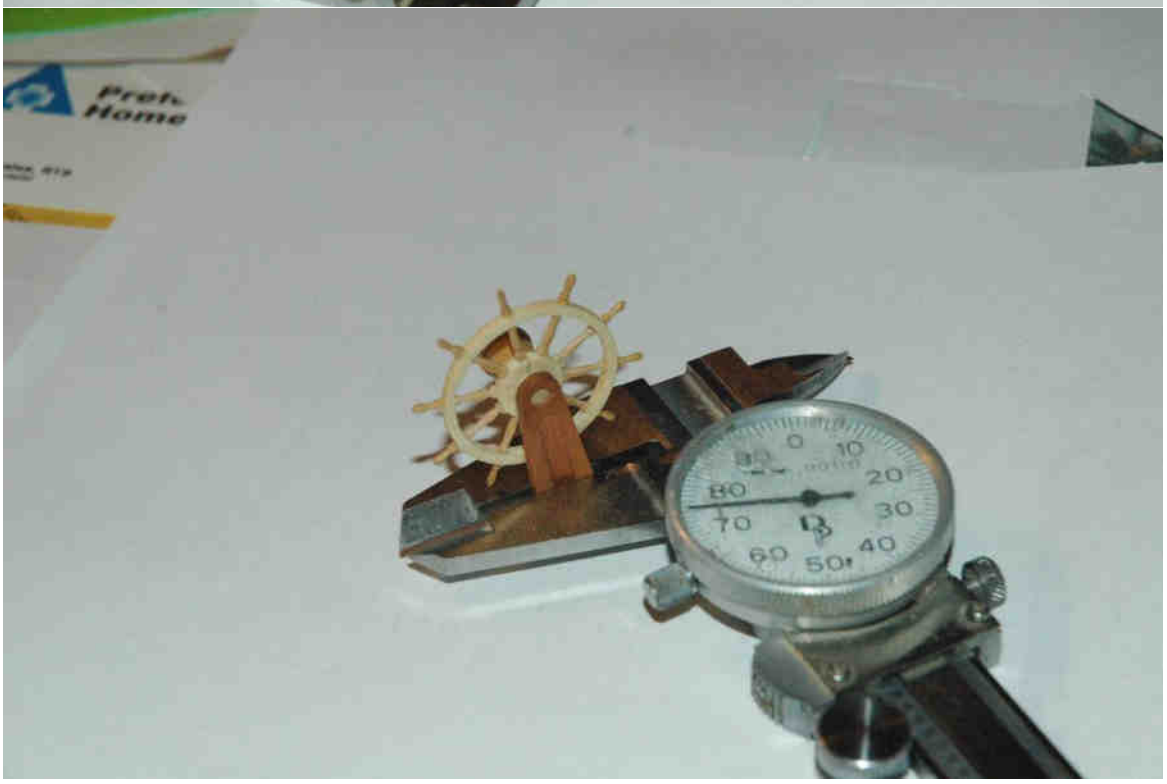
The cannons on the Fair American were 6 pounders. I wanted to minimize the amount of deck planking that was installed, so I chose to only install one cannon. The Lumberyard for Ship Modelers has a nice line of pewter cast cannon barrels that are pre blackened. The barrels as received are too black but a little polishing by hand removes just enough of the finish to give an antique look. The lumberyard also has laser cut carriage kits in swiss pear in sizes to match the barrels.



The carriage wooden parts were cleaned up and assembled. Details were added using drawings by David Antscherl from Volume II of his Swan class series which are of a 6 pounder. All of the bolts, eyebolts and hooks were made of brass nails or wire and pre-blackened before installation. The capsquares are of .005 inch brass sheet. The capsquare joint bolt, eyebolt and key are very small and took a couple of tries to get to look right. The joint bolt and eyebolt are made of brass wire and the key is of .005 inch brass sheet. The hooks, however, look fat and not very good. Later I got lots of practice making them for the rigging. The later ones looked much better and I probably should have replaced these. I used Warner Woods blocks for the rigging. The lines are of Morope that I had on hand. I later decided to use cotton line for rigging the masts, but the Morope looks good for rigging in these small sizes and its' stretchiness had no effect in this application..

THE STEERING WHEEL

I thought that the steering wheel was a focal point of the deck and therefore should have one that looked very scale. I reviewed what I could find that was commercially available but found nothing that was acceptable. Making one seemed a daunting task, but figured I had nothing to loose so jumped in. The steering wheel was constructed using holly for the rim and center. The spokes were made of 3/64 inch square boxwood strip. The first wheel I made, I ended up making two, was a 10 spoke with the rim 4 foot in diameter. When it was finished I showed it to a friend who was familiar with the model I was building. He immediately said it was too big. He was right of course. Deflated, it was back to the drawing board. The second one was easier to make so not all was lost. To reduce the diameter I also reduced the number of spokes to 8. To make the rim and center I glued up 8 pie sections of 3 inch (.060) thick holly of 45 degrees each to form a circle. A cover plate also of holly was made at the same time . It also was of 8 pie shaped pieces but only ¾ inch (.015) thick. A 6 inch (.125) diameter hole was drilled in the center. The blank was centered up on a rotary table on the mill and mounted on a sacrificial wood plate with double stick masking tape. 8 slots 2.25 inch square (.045 x .045) were milled radially on 45 degree centers from the center out. The slots were centered in the pie piece with joints equally spaced between them. The center was machined to a diameter of 12 inches (.250) and the rim was cut to a diameter of 3 feet (.750) by 3 inches (.060) wide. The waist material was removed leaving the center and rim in alignment. The spokes were turned using a 4 jaw chuck (dremel) in the mill. A cutter was made from a razor blade using a cut off wheel to machine a point. The cutter was mounted in a mill vice. The spoke material was moved vertically and 4 grooves were machined in the spoke. One groove to locate the outside end, one on each side of the rim and one just outside of the center. By using the vertical motion of the mill all the grooves were the same distance apart on each of the spokes. This operation could just as easly been done on a lathe. The spokes were then hand filed and sanded to create the handles on the ends and the beads and bulges in the center. The Spokes were then glued into the radial grooves. The ¾ inch thick cover piece was trimmed to size and glued over the spoke aligning the pie sections leaving them centered in the rim. A drum was turned with 6 inch diameter axels on each end.

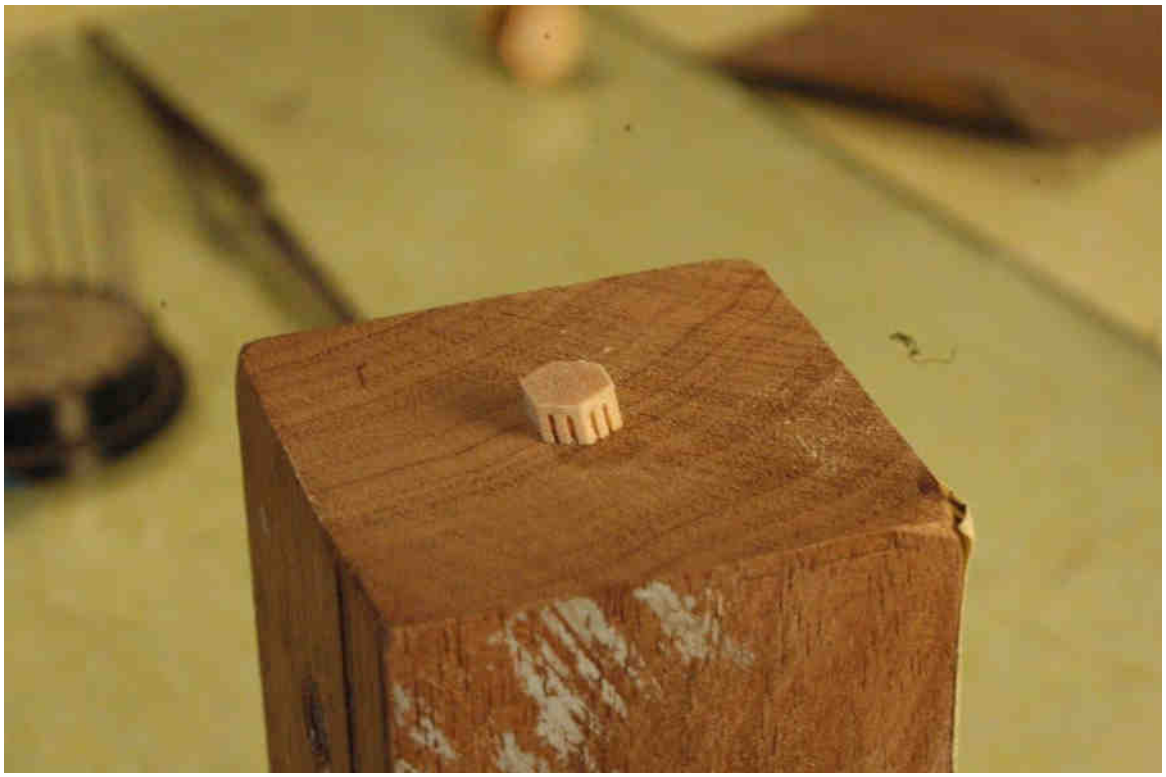


Stern Lantern

The stern lantern is made up of lots of individual parts. The window section is a photo etched part from Admiralty Models. There are 6 sides with 5 of windows and one with a door. The part must be scored and folded into a tapered shape that incorporates the correct angle that the finished lantern will sit when mounted to the stern of the model. The instructions call for filing grooves at each fold line to facilitate folding. I didn't have a file with what I thought was a sharp enough edge so I scribed the line with a new scalpel blade and multiple light cuts. The photo etched part then folded very easily into the desired shape. One edge must be joined to complete the window section. This could be soft soldered or epoxied. I choose to epoxy the joint.

Once the window section was complete, I measured the angle that it would sit. This angle gave the lantern the proper slant when mounted. I made all the other parts with their vertical axis at this angle. The other parts consisted of a mounting disk, a base, base disk, upper disk, upper section, vent section, vent top and finial. All of these except the finial are six sided.

All the parts were of boxwood except the vent and its' top which were of holly. The disks were simple to make. A hole was drilled in the center and the six sides laid out. The part cut to the finished size and the edges sanded round. The top, bottom and vent top pieces were a little harder. A blank of the chosen thickness was cut and the central hole drilled at the angle determined from the window section. This gave the proper offset to the top and bottom surfaces. Six radial lines evenly spaced were drawn on the top and bottom using the drilled hole as the center. The lines were lined up top to bottom. The radii were then sanded to shape using the lines as a guide. The vent section was made from an over length properly sized six sided section of holly with a hole drilled in the center. The vent slots were cut using the mill. The part was then cut to length at the same angle as the other parts.



The lower sections were then assembled on a drill bit to maintain alignment. The window section was epoxied in place. The outside was then painted a wood color that sort of matched the cherry of the rest of the model. The inside of the lantern was painted a dull red. A simulated candle was made of dowel with the tip turned to make a wick. This was painted and installed in the central hole. White glue was dripped down the candle to simulate melted wax. The windows were again made from acetate cut to fit and held in place with very small dots of epoxy. The upper sections were assembled into a unit, using a drill bit to align them. The assembly was then painted and epoxied to the window section. A finial was turned with the lower end to fit the hole in the vent top. A mounting iron was cut from brass stock and painted. The lantern was epoxied to the iron and the assembly installed in the stern of the model along with the upper support rods.

SPARS

The rig of the Fair American is quite oversized when compared to other brigs of the time. This manifests itself particularly in the overall height. From a design standpoint the ability to carry a larger spread of sail allowed her to take advantage of the light coastal winds that were her home. The proportions of the rig to the hull lend great aesthetic beauty to the model. I believe this beauty is why so many models of the Fair American have been made and certainly attracted me.

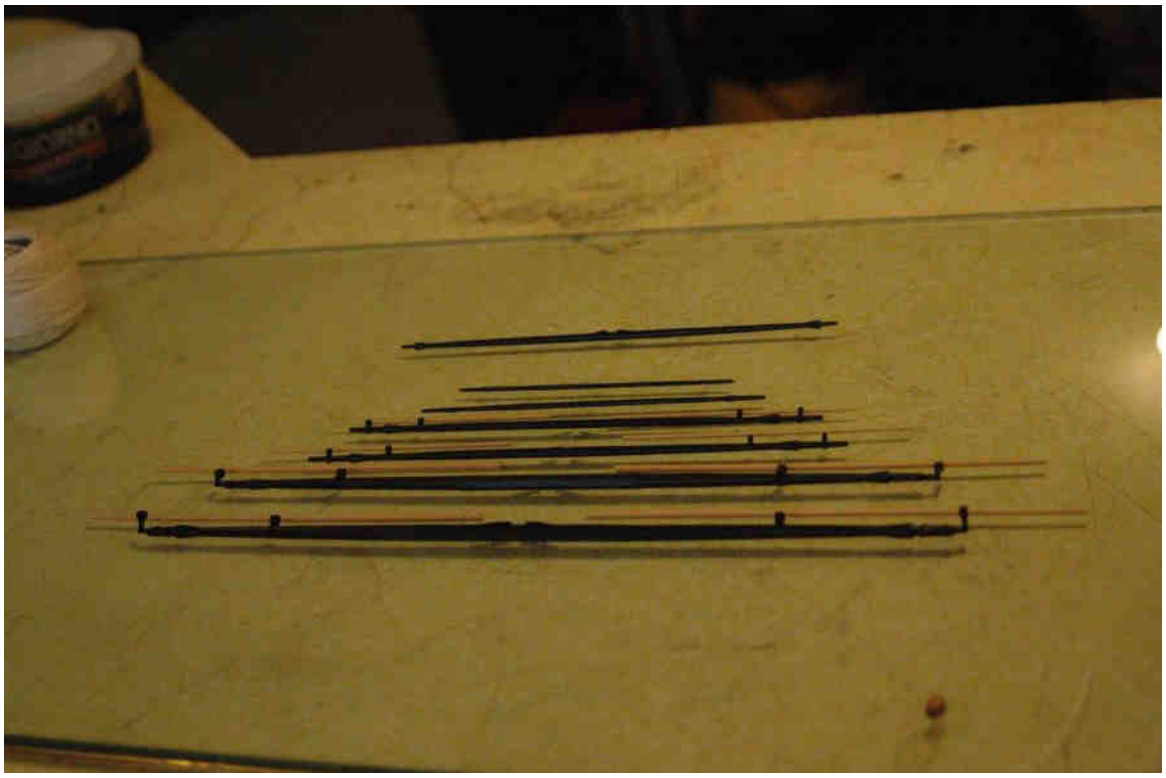
Information for constructing the spars came from the Model Shipways/Ronberg drawings and Dr. Feldman's book. The drawings gave me general configuration and a chart in Feldman's book gave me exact dimensions that he calculated from information in Steel, saving us that task. His dimensions however were for a model of 1:32 so a simple conversion to 1:48 had to be made. Multiplying the charted dimension (1:32) by .667 gave me the correct dimension in a scale of 1:48. I also used drawings from Petrejus to confirm details of the spars and their fittings.

The choices for suitable material for spar construction are large. Really fine model spars have been made of birch, boxwood, beech, walnut, spruce and degame to name a few. Fellow

modelers that I consulted suggested degame. My local exotic wood supplier suggested yew which he said was either a very close cousin or the same as degame. What he had for sale was a blank for the construction of an archery bow. It was six feet long and approximately 2 by 4 inches deep and wide. This wood has very fine and straight grain. When worked it is very similar to boxwood. The only characteristic that I noticed different was it seemed much more flexible. I make my spars on a large wood turning lathe out of blanks that are usually cut to ¼ x ¼ inch and a length of at least 2 inches longer than the finished spar. Any square or hexagonal sections are cut to size using a miniature low angle plane and a holding fixture with a 90 degree bed for the blank to lie in. To start the turning, I mount the blank in a 4 jaw chuck with only a ½ inch or so sticking out. A hole of approximately .080 inch diameter is drilled about ½ inch deep. The blank is reversed and the other end is drilled. To mount the blank, one end is clamped in the chuck. In the tail stock I mount a drill bit backwards. The diameter is 2 number drill sizes smaller than the drilled hole. The butt of the drill is waxed up a little and the tailstock moved to insert the drill into the previously drilled hole. This method provides good support and no binding of the non-driven end of the blank. The built in slop prevents the blank from binding and causes no problem when turning. In the past if I broke a spar while trying to turn it, it almost always fractured in torsion rather than from too much side pressure. Hence a method to practically eliminate friction at the non-driven end prevents these torsion fractures. The blank is then turned round using a spindle roughing tool. Once round I mark the ends and the quarters. To turn to finished size I use a Microplane type of sureform. This tool is a flat or rounded piece of sheet steel with multiple square edged teeth punched in its' surface. By laying it on the spinning part, it makes a very controlled cut with very light pressure. Extremely small diameters can be made this way. The spar is turned to size using the dimensions at each quarter to control the taper. Details such as built in chocks or sheave housings are turned in as the diameter is reduced. Holes drilled in each end allow the reversal of the part so work can be performed at the stronger chuck end. The spar is then finish sanded, the ends cut off and finish shaped by hand. Slots required for sheaves are milled and sheaves made of ebony are glued in place.

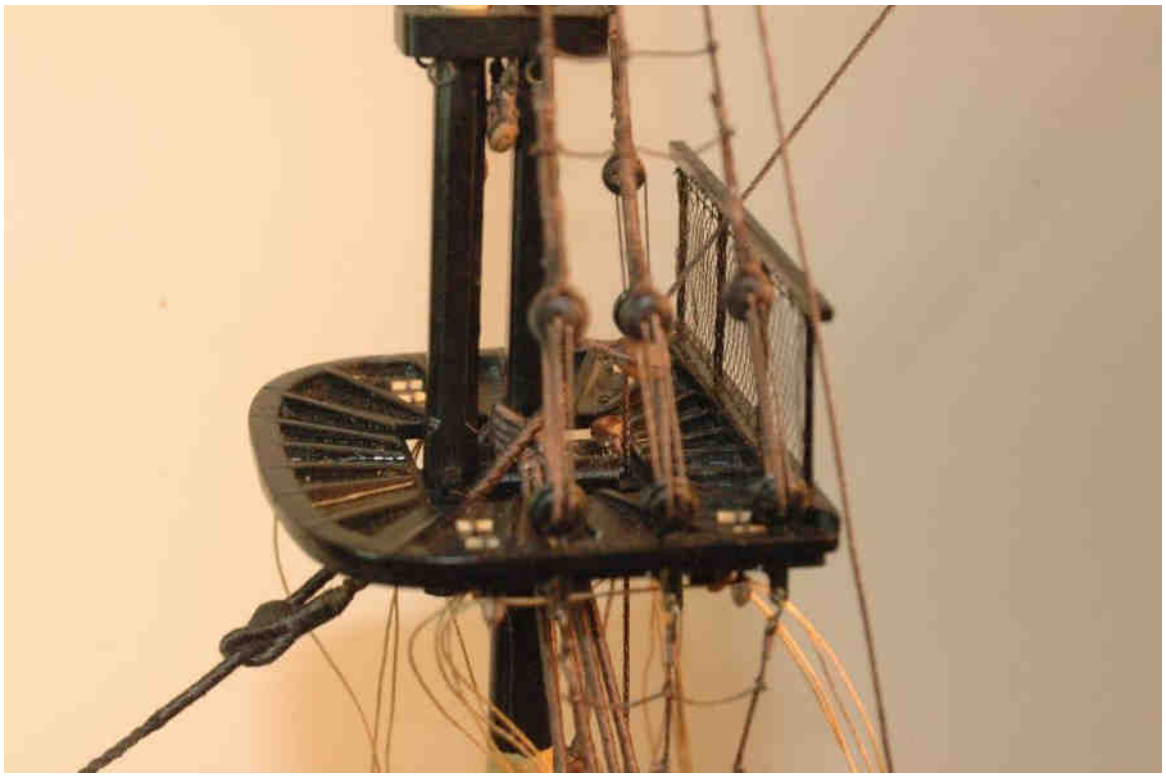
The studding boom supports, were made of round and square brass tubing and sheet. Silver soldering was used for their assembly. The parts were then epoxied in place.

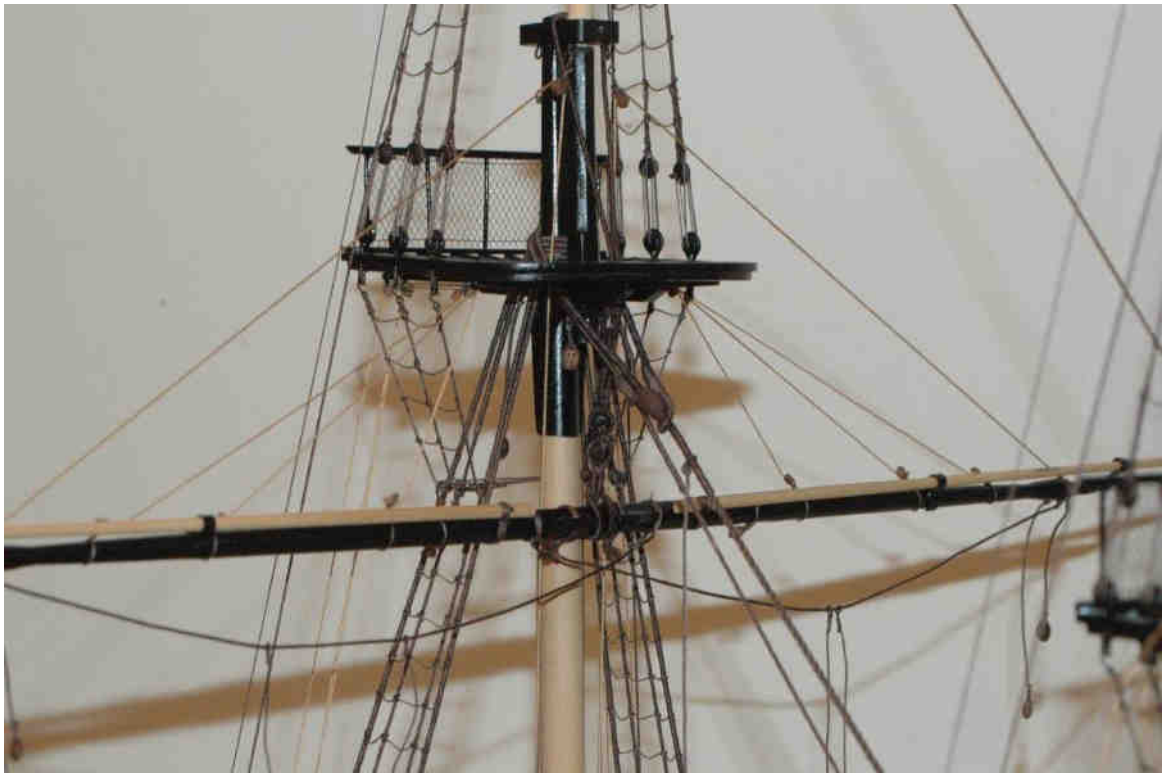
The trees, caps and tops were made of boxwood. The trees and tops were easily made following the Ronnberg plan. The tops were made of individual parts like the full sized ones. Info for this build came from the Ronnberg drawings, description in the Feldman book.



Information from “Modeling the Brig of War “IRENE”” by Petrejus was used for the detailed construction. The bases of the tops were made of 4 sets of planking half lapped at each corner. The planking forms a central rectangle with planking running fore and aft at the sides and athwart ship at the sides. A rim is made of several parts to keep the grain length wise in the part. It is installed enclosing the top and projecting slightly beyond the edge. The fan like ribs that run from the central hole to the outer edge were made and installed. Slots for the topmast dead eye chains were milled on each side.

The railing at the stern of the top was made of brass tubing and rod. The rail itself was of square tubing cut to length and the ends angled off. A hole was drilled through the top and bottom surface for each round rod stanchion. A rod was inserted through the hole and silver soldered on the top. The top surface was filed smooth. Soldering on the top left a clean joint on the lower surface with no solder to clean up. The rails were epoxied in place and netting from Model Shipways lashed in place after painting.



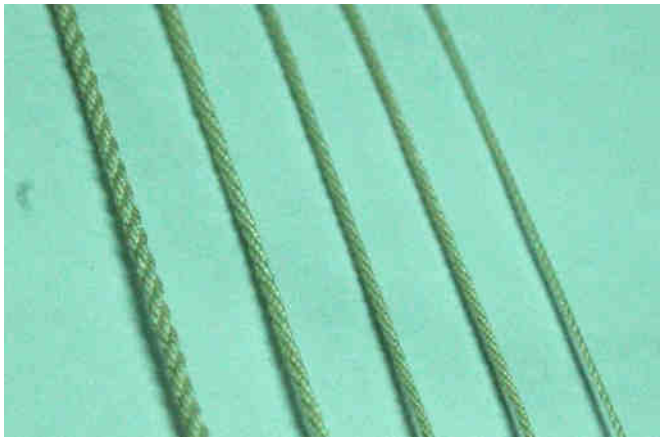


Finally the main and fore masts, main and fore topmasts, main and fore topgallant masts and bowsprit and jib boom were assembled as individual units.

RIGGING

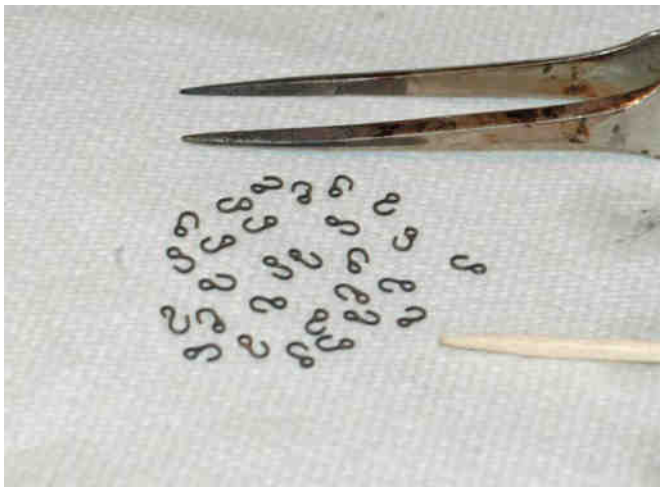
To rig the model I followed Feldman's description which was very detailed. Additional details of location and methods of termination came from Perijus. I went through the entire rigging plan one line at a time to determine where blocks, eyebolts or other fittings could be added before the stepping of the masts or mounting of the yards. With this complete I was ready to start the actual rigging.

For rigging line I used DMC Cordonnet cotton thread. This is a six strand thread available in 8 sizes, approximately .008 up to about .021 inch diameter and two colors, white and ecru. Diameters larger than .021 had to be made up on a rope walk. I used the excellent one from Byrnes Model Machines. By some experimentation with different sizes of the cotton thread I could make almost any size line I needed on the rope walk. Sometimes I had to make a line and then use three of them to make the final size needed. This is an advantage as it lets one make the size needed but also allows one to end up with the correct right or left hand twist. Neither color is dark enough, so dying was in order. I used an organic dye, actually a wood stain, called Transtint. Transtint is a very concentrated stain that can be diluted with either water or alcohol. I diluted mine with alcohol. The line was soaked in the solution for a couple of minutes and then hung to dry, which because of the quick evaporation of the alcohol, had them ready for use in 5 or 10 minutes. I used Dark Walnut with a little black added to get the dark brown needed for standing rigging and golden oak with a little dark walnut to color the standing rigging. I didn't make up lots of line for stock but instead made each line as required.



Blocks were from Warner Woods. Those not available from Warner Woods were hand carved from boxwood. These included fiddle blocks used rigging the bowsprit and the shoe blocks for the fore sail bunt lines. I thought the blocks were too light in color so I dyed them in the same solution as the running rigging. Because they were of wood instead of cotton they came out a little darker than the line. Deadeyes were from Model shipways. They were of boxwood.

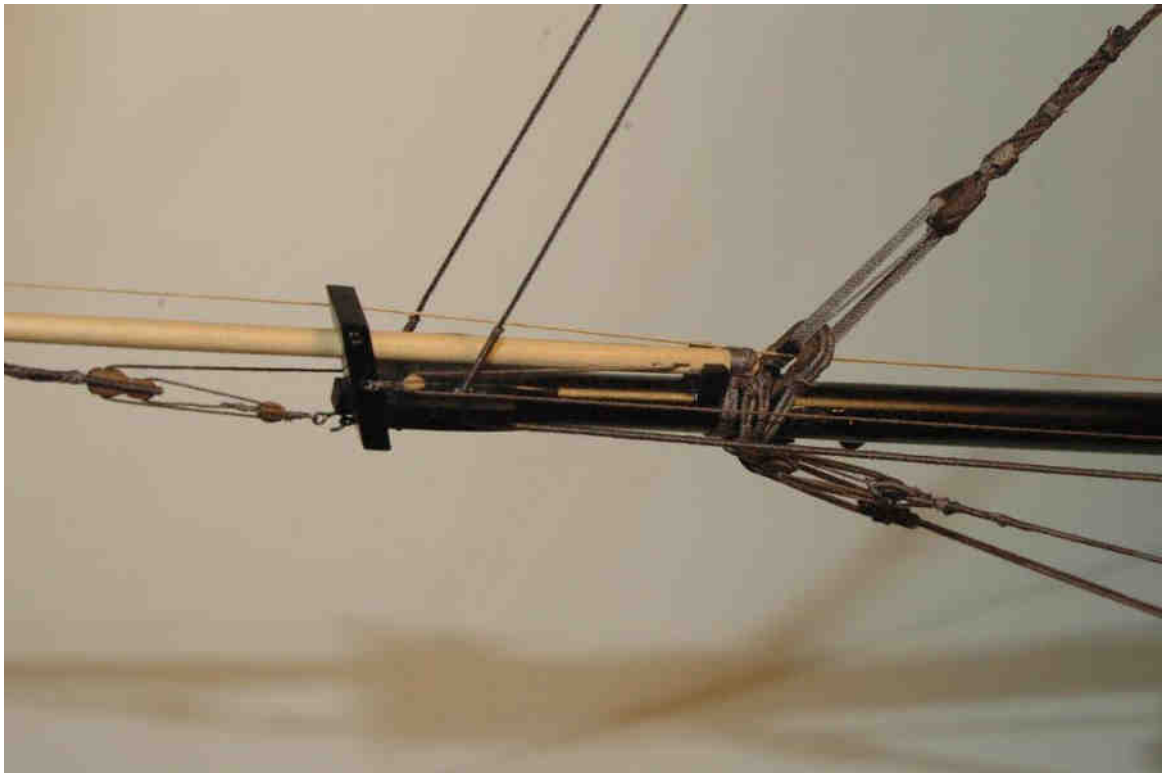
A lot of hooks were required. I used small eyebolts with the straight portion bent and trimmed to form the hook end. The eye portion was silver soldered to prevent it opening. They were then blackened using Blacken-it.



I followed standard full size rigging practice starting with the standing rigging of the bowsprit. Each section of mast was added as the standing rigging on the one below was completed. The sections of mast were not glued in place but held in place by the fid as in real practice. All lines were served as required. I purchased a cotton sewing thread, about .005 inch diameter, in a matching color to do all the serving and seizings. All lines were secured in place by a seizing or tie as appropriate. A drop of diluted acrylic matt medium was used to secure each one. I made a mouse drilling a hole in a piece of boxwood that would allow it to be threaded onto the stay. I then turned it to size leaving it with turn marks to simulate the wrapping line. The piece was parted off and dyed with the dark brown solution. The mouse could then be slid and glued in place on the stay.

Ratlines were tied with a half hitch on the outer shrouds. The knot portion was pulled to the inside of the shroud set to simulate the eye splice hitched to the shroud. The line was clove hitched top the inner shrouds and finished off with another half hitch on the outer shroud.

To keep trimmed ends of the lines as short as possible they were cut off with a scalpel instead of scissors.



MOUNTING THE MODEL

The model itself was mounted to a mahogany board using threaded rod screwed into nuts imbedded in the keel. Stanchions were turned to the proper length and slotted to fit the keel. The mounting board sits on an acrylic mirror. I thought the mirror would help light the lower half of the model, help view the underside and show off the drapery scene painted on the lower counter. Trim was added to hide the edge of the mirror.

A name plate was made of a piece of boxwood cut to size. Three of the edges of the plate were routed with a dremel router to give a finished look. A local trophy shop laser etched the lettering. I then filled the lettering with ebony dust. The dust was piled high completely covering each letter. Thin super glue was then dripped into the ebony dust binding it in place. Once cured the face was sanded smooth leaving very sharp lettering in a contrasting color. The final finish was Deft clear lacquer.

A case was constructed of cherry and acrylic sheet. The base was made of cherry venier plywood with cherry quarter round trim. The case was finished in tung oil. Screws through the base into the verticals allow removal.

The case was completed early so the unfinished model could be displayed at the Western Ship Modelers Conference. Once the model was completed and installerd in the case I realized I had no place to display it. It was too large to fit on any table we had in the house. I searched local furniture stores for a suitable stand with no success. A search of the internet led to a company that sold table kits. One of their offerings is a custom base kit. The buyer can order any leg, any length and strechers of several trims and lengths to suit. Several choices of wood are also offered. I sketched up what I needed and placed an order. After finishing the parts in tung oil I assembled the base. The kit included corner bracing and all hardware. The funished base is very sturdy.

The model now resides in our living room entryway.


CASED MODEL