

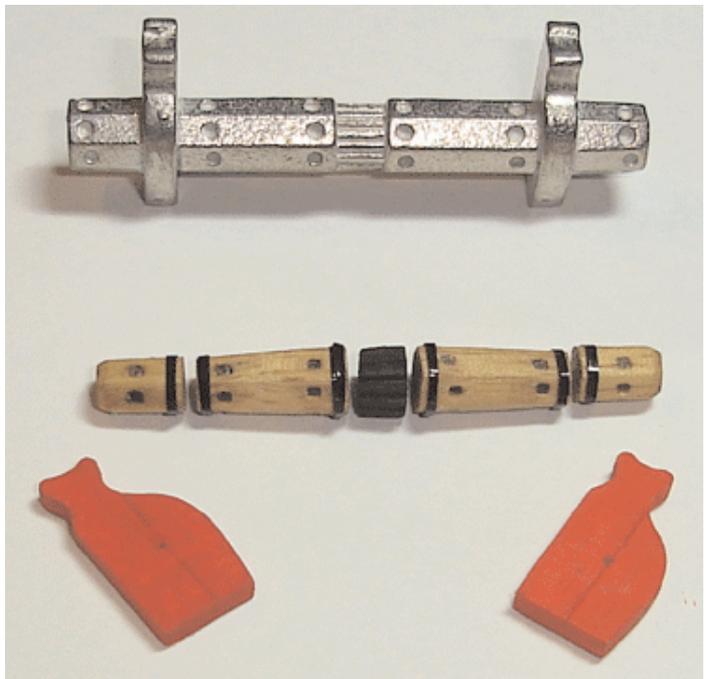
each seam around the diameter of the log with a #11 blade. This will make the eight sides more defined after they are stained. Some black automotive pinstripe tape was wrapped around each pump. It will simulate the iron bands. The tape was cut 1/32" wide. This iron band was placed about 1/32" below the top of the pump.

A hole was drilled into the top of each pump. It was large enough that the pump walls looked the correct thickness. The hole was only drilled to a depth of 1/32". I used a pencil to darken the inside of the hole. These pumps were sometimes lined with lead so I used a pencil to simulate that finish.

The brackets that hold the handles were made next. You can see how they were shaped in the photo. This shape was traced onto a strip of basswood 1/8" wide and 1/16" thick. They were shaped with some files and sandpaper. The outside edges were rounded. A slot was made on the top of each bracket to accept the pump handle. I used my Xacto saw blade with fine teeth to carefully score the slot. The slots were made wider by running some sandpaper through the each of them. The handles will be less than 1/32" thick so the slots need to be wide enough to accommodate them. Two small dots were drawn onto the outside of these slots to simulate an iron pin. This pin would have allowed the pump handle to pivot up and down. Glue the brackets onto the pump when you are finished.

The handles were made the same way. Trace the shape onto a basswood strip that is 1/32" thick and 1/8" wide. Shape them with some files and drill a small hole into the end of each handle. Some 28 gauge wire was shaped like an eye bolt and inserted into this hole. See the photo on the previous page for details.

The spout for each pump was made from a 2mm x 2mm strip of basswood. A tiny hole was drilled into the end of each spout. They were glued onto each pump at a right angles to the handle. They will be glued onto opposite sides of each pump so they will face outboard after glued into position.



The Windlass...

The windlass was also supplied as a cast metal fitting. It's not horrible but I decided to build one from scratch anyway. A windlass made out of wood will have a much better finish. I approached building the windlass the same way I do with all of my fittings. I break it down into smaller components that will be easier to build. The photo above shows all of the windlass components before I assembled them. The first pieces I built were for the windlass drum. This was broken up into five segments.

The center sprocket was made first. I chose a wooden dowel that was the proper diameter. The measurements were taken directly from the plans. I cut a small piece of the dowel to length and filed the teeth into it. A small needle file was used. When it finished I painted it black and set it aside.

The two center portions of the drum were cut to length. They will ultimately be glued onto both sides of the black sprocket. Both were shaped with some sandpaper. The windless drum should be sanded into a hexagonal (six sided) shape. They are also tapered to a smaller diameter on each end. It takes a little practice to keep the edges consistent and even. When they were finished I drilled the small holes into it as they were shown on the plans. You will notice that the

holes are square and not round. The holes are very small and can't be easily shaped with a # 11 blade or files. So I took a nail and filed the tip square. I pushed it into each hole and applied some pressure. The wood was so soft that the holes conformed to the square shape desired. This is a very effective way to create holes of any shape. The basswood I am using is extremely soft.

The two outside sections of the drum were prepared exactly the same way. All four sections were stained. Then I used some pinstripe tape to simulate the iron bands wrapped around them. They were cut into very thin strips like I have described for other tasks earlier.

Finally, the two supports for the windlass drum were traced from the plans. Some basswood strips were chosen that were the correct thickness (1/16"). I sanded them to shape being very careful to create a matching pair. Both supports were painted red. The entire windlass was assembled afterwards and glued onto the model. I was very pleased with the results considering how easy it was to build. It was well worth discarding the windlass supplied with the kit.

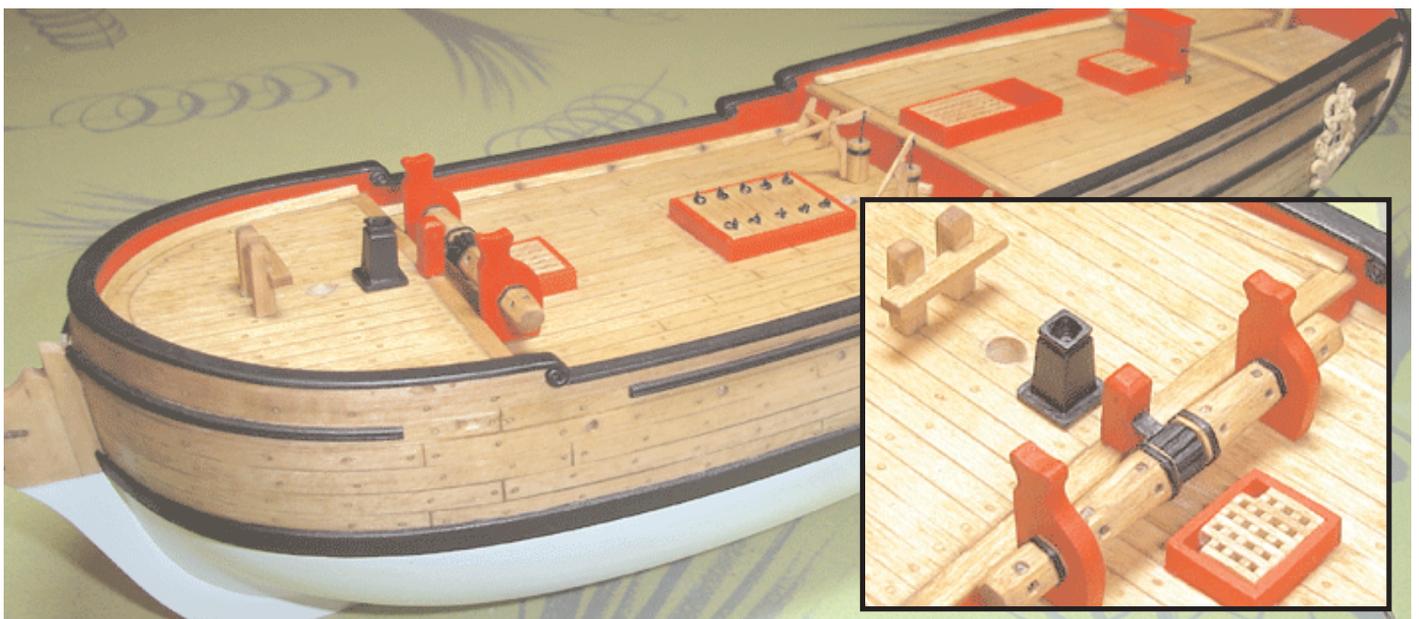
Finishing Up the Deck Fittings...

There are only a few more fittings to complete. To start, the pawl for the windlass drum was installed. The plans show the pawl simply bolted



to the edge plank on deck. I wasn't satisfied with this approach. Normally the pawl was inserted into a post positioned in front of the drum's sprocket gear. This was how I decide to model that feature. You can see the post painted red in photos below. A small strip of brass was inserted into a slit on the post.

The galley stack could have been built from scratch. But after looking at the one supplied with the kit I decided to use it. The casting needed to be cleaned up with some sandpaper but overall it was acceptable. As I mentioned previously, sometimes the time saved is more valuable than creating something from scratch. In this case, a scratch built stack would not have turned out significantly different from the one kit-supplied. I painted it black and glued it into position.



The tiller was finally made and glued to the rudder head. See the photo above for details. I wanted to hold off on adding this as long as possible. It is vulnerable to breakage and has a tendency to be pulled free after getting accidentally hooked on other items. It was simple to make. I used a 2mm x 2mm strip of basswood. It should retain a square shape for the end that connects to the rudder. The other side was rounded starting at about the center of its length. The tiller tapers to a very slender point. I placed a small black bead on the tip of the tiller. These beads are very inexpensive and can be bought at any arts and crafts store. They are normally used to make necklaces and jewelry. I keep an ample supply available in different sizes and colors. When I glued the tiller onto the rudder I wanted to strengthen the joint. A small piece of 28 gauge wire was used. It was inserted into a hole that was drilled into the square end of the tiller. Another hole was drilled into the rudder and the tiller was glued into position.



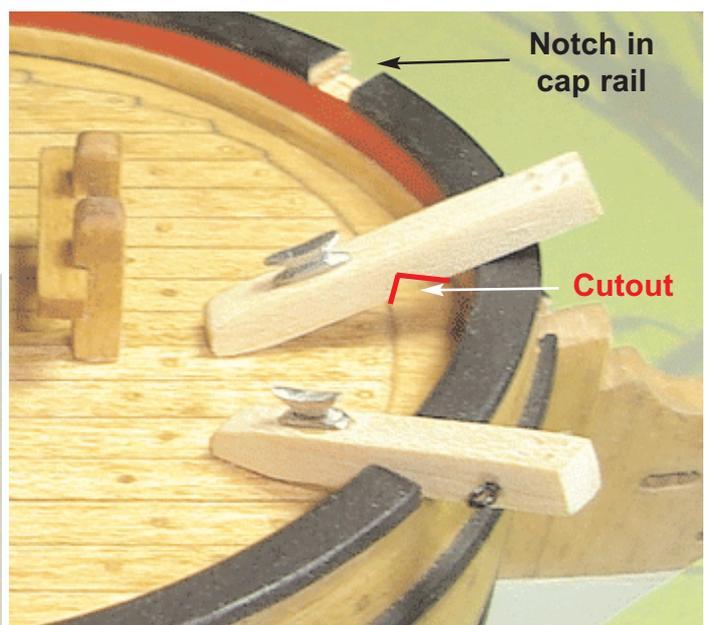
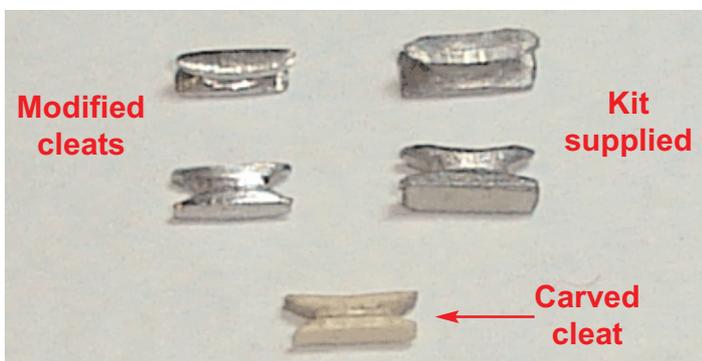
The bits are all that remain to be built (the rail just in front of the fore mast). This is a very straight forward procedure. Take some strip wood that is the correct dimensions and cut the posts to length. Carve some notches that will accept the rail. I also sanded a chamfered edge around the top of each post to add some detail. Glue the assembly together and install it on deck. I decided not to paint the bits red and stained them instead. See the photos on the previous page.

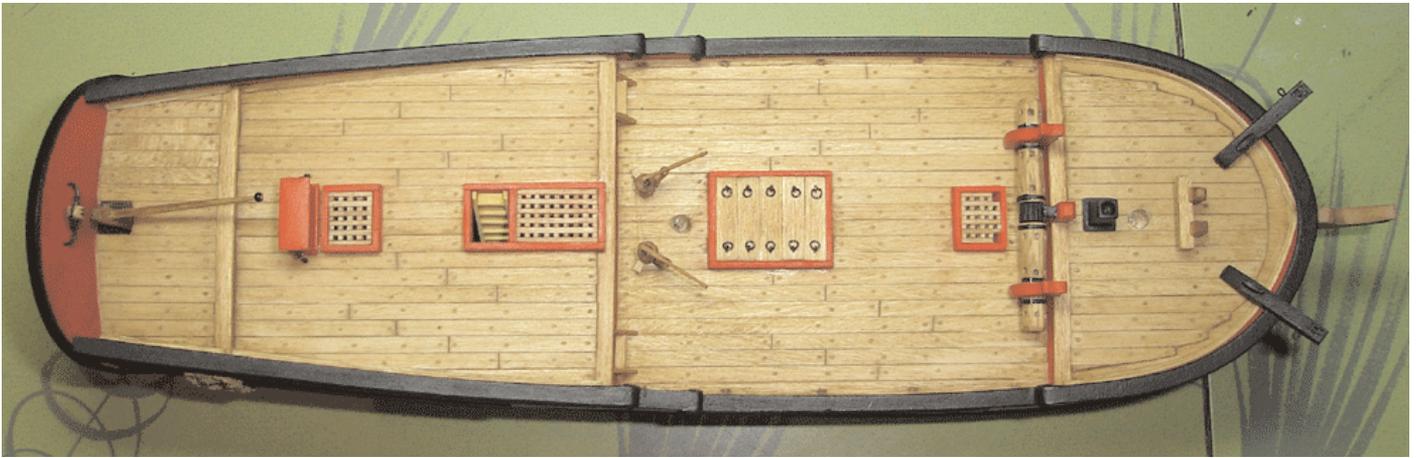
drawings and cut a basswood strip to length. Two catheads are needed so try and keep them as a matching pair. They can be shaped as shown in the photo below. Make note of the cutout on the bottom of the cathead. The cutout is shown with red lines in the photo. It will help correctly seat the cathead in position on the bulwarks.

The cap rail was notched as shown in the same photo. The catheads were glued into these notches. The position for each cathead was carefully measured and marked along the cap rail before I cut the notches. I recommend taking measurements from more than one reference point on the model. The placement for each cathead is crucial to the building of the head rails so take your time.

The Catheads...

The plans have several detailed drawings of the catheads. They are shown from many different angles. Take the measurements from these





After I created the basic shape for the catheads the small details were added to them. Two sheaves were simulated on the end of each cathead. I drilled the four holes for both sheaves. Then I took a pin vice and scored the space between each pair of holes. This created the groove that simulated each sheave. You should do this on the top and bottom of each cathead.

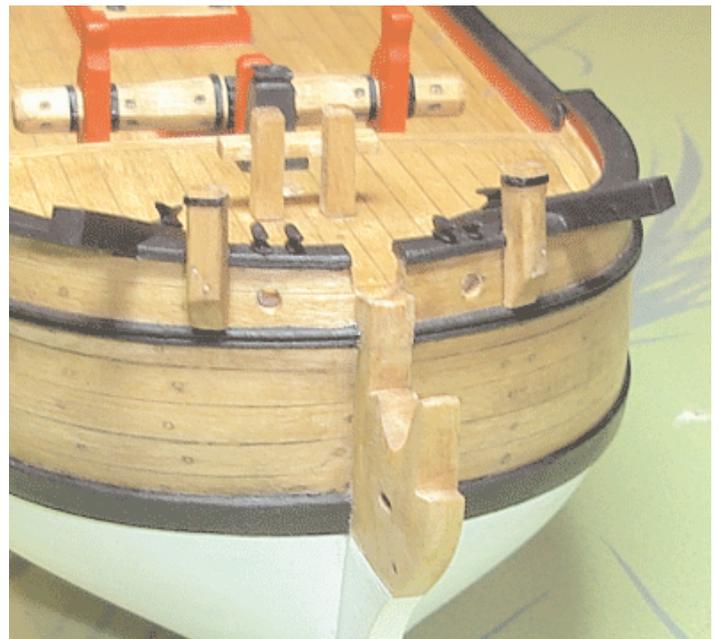
A small eye bolt was made from 28 gauge black wire and added to each cathead. You can see them in the photo on the previous page. A cleat was also glued to the top of each cathead inboard. You will have to decide if the cleats supplied with the kit are acceptable to you. Just like the blocks, the cleats should be modified or carved from scratch out of wood. They need to be slimmed down in appearance. I provided a photo on the previous page. It shows two cleats that were filed to an acceptable size and shape as compared to a pair that was not. The cleats on the Sultana were probably made of wood. You could also create them from scratch where a natural finish is more desirable. The cleats on the catheads will be painted black so I used the modified metal cleats. The same photo also shows a cleat that I carved from basswood. The catheads were painted black and glued into position. The photo above shows the catheads completed and glued into position.

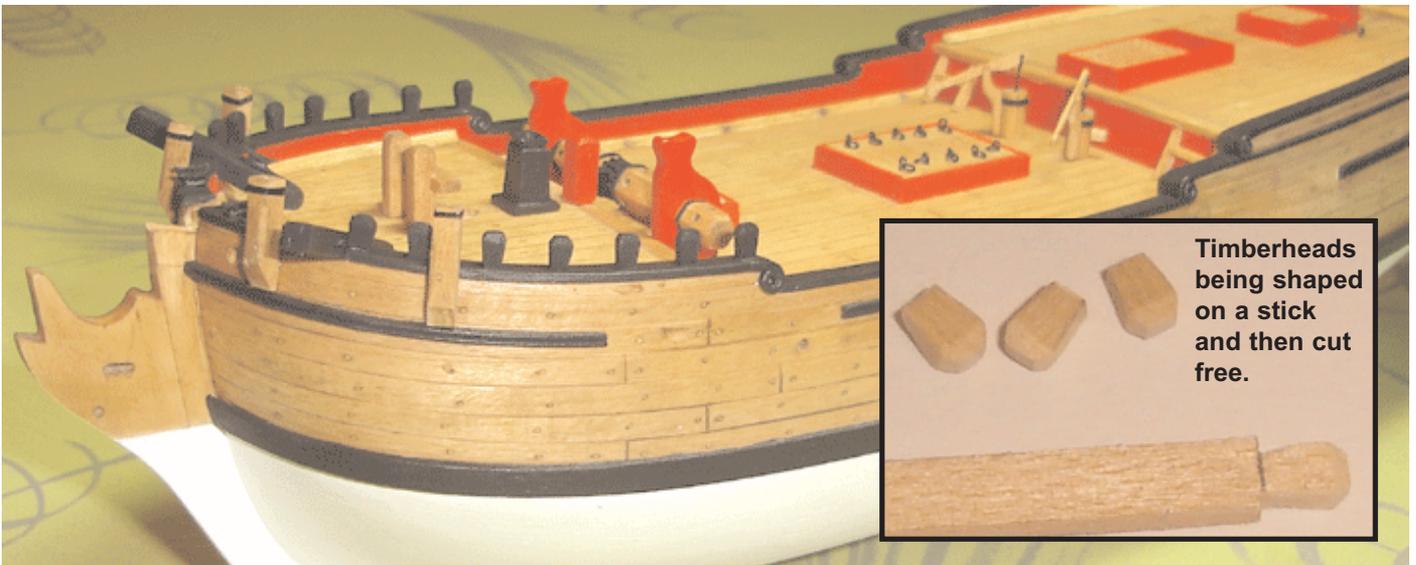
Hawse Holes and Bow Details...

Since most of the deck structures are now completed, I will start to add the details along the cap rail. The first thing I addressed was the notch for the bowsprit. You will notice that the

bowsprit will extend above the cap rail after it is installed. I used a dowel that was the same diameter as the bowsprit to establish the correct placement and angle. The notch was cut to the correct depth with a hobby saw and then rounded with some needle files. The inboard end of the bowsprit will be eight-sided. The shape of the notch will be modified when it is time to install it.

I noticed that the stem was too short after I test fit the dowel (bowsprit) in position. I added a small piece of wood to lengthen it. This "patch" is hardly noticeable and after the head rails are created will be almost invisible. I recognized my error some time ago and could have fixed it so no one would have noticed. I made a conscious decision to leave it as is so I could mention how everyone makes mistakes. It happens to the best of us and the remedies for these errors are usually easy to make. Try not to get discouraged when





Timberheads being shaped on a stick and then cut free.

something similar happens to you. Once the model is finished, no one will ever see the error as long as you correct it with skillful craftsmanship and care.

I examined the plans for the positions of the hawse holes and gun stocks. I placed reference marks on the model for them. The hawse holes were drilled and cleaned up with a needle file. It is interesting to note that the hawse holes are not shown on the original draft. There seems to be a difference of opinion whether the Sultana actually had hawse holes. Of the three plans I am using, Portia Takakjian doesn't show them on her plans. Howard Chapelle has them located on the outside of the gun stocks. The replica in Maryland has them where they are located on the kit-supplied plans. I decided to stick with the kit-supplied plans and placed them where they are shown in the photo.

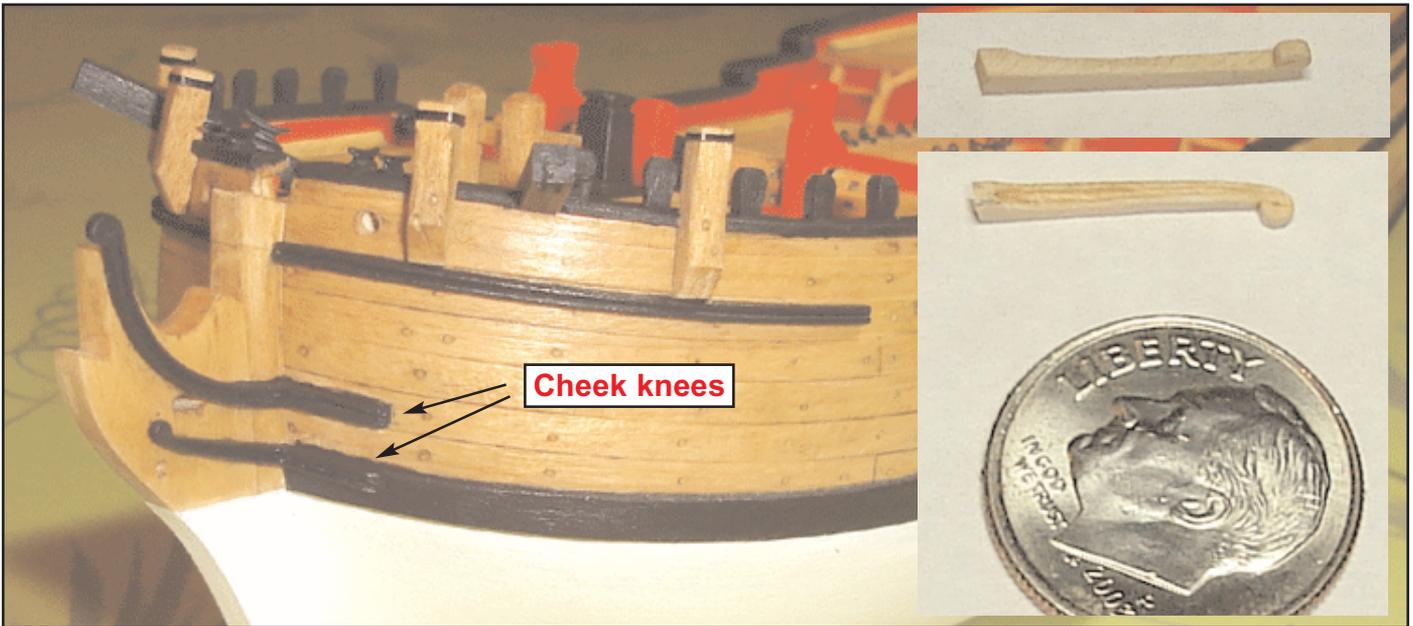
The gunstocks were easy to make. I made two of them as shown in the same photo. An iron band was simulated with a thin strip of black pinstripe tape. I also drilled a small hole on the top of each gun stock for the swivel guns. It is easier to drill them before you glue them onto the model. They were glued into position after I notched the cap rail to accept them. Afterwards, I drilled two holes on the outside of each stock and filled them to replicate trunnels. I may paint the gun stocks black but will leave them natural for the time being. I will make that decision before I start rigging the model.

The kightheads won't be placed onto the model until after the bowsprit is in position. I added 4 modified cleats as shown to the top of the cap rail. They were painted black. Measure carefully before you glue them into place. Make sure you leave enough room for each kighthead on both sides of the bowsprit.

Timberheads...

I will continue working along the cap rail at the bow. Seven timberheads will be positioned atop the cap rail aft of each cathead. They were made using a strip of 1/16" thick basswood. It was the same material that was used to plank the decks. Each timberhead measures 4mm high and 2.5mm wide. I transferred the general shape for each timberhead to the strip and shaped it with a #11 blade and sandpaper. See the photo above which shows a timberhead that I created. They are cut from the strip after they are finished because the strip makes it easier to hold as I am shaping them. The tops of each timberhead were beveled to add some interest. They were also tapered to 2mm at their bases. I used the plans to find the exact locations for the timberheads and glued them onto the model. Afterwards, I painted them black.

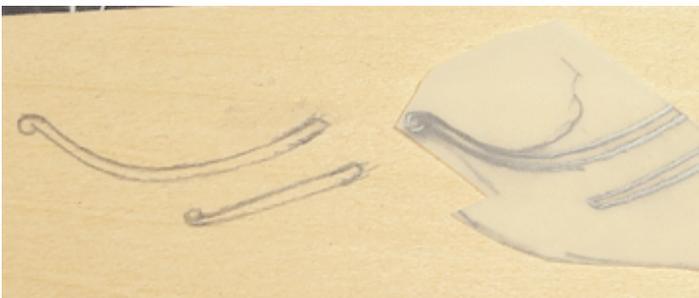
One gun stock should be made for each side of the hull as well. They were made the same way I made the others earlier. You can see where I glued them onto the hull in the same photo.



Head Rails, Head Timbers and Cheek Knees...

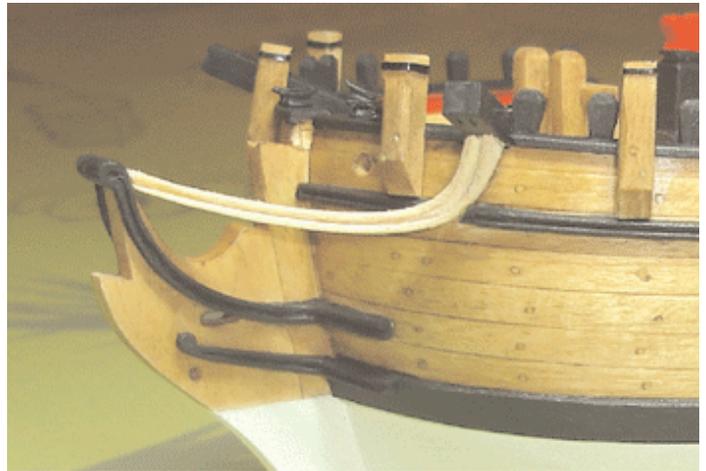
The head of any ship model is one of the more challenging areas to build on any project. It is also one of the most expressive and beautiful aspects of a ship. The head rails, cheeks and head timbers are quite complex. The number of parts and angles need to intersect and connect while maintaining the graceful curves we have grown familiar with. As always, I managed to build these components by breaking down the task at hand into smaller individual projects. There are many different techniques for constructing the head rails for a ship model. I will select the method depending on the finish being used and the scale. Since I will paint the head rails black, basswood was chosen for the material. I would have used boxwood but I didn't have enough of it to complete this operation. Basswood should be just as suitable.

I shaped the cheek knees first. There are two knees on each side of the stem. The photo



above shows them in place on the model. I constructed each cheek in two pieces. The first piece was the section glued to the stem which curves gracefully into a small scroll at its end. These sections were glued onto the model before I carved the pieces you can see on the hull above. I was very careful when fitting them together. The seam between each segment was painstakingly blended together with wood filler so it wouldn't be seen after I painted them. They were traced from the plans and transferred to a basswood sheet that was 1/16" thick. See the photo below. I cut them out with a fresh #11 blade and sanded them to shape. 1/16" is too thick for the cheeks and was chosen so the curved area where the stem meets the hull could be shaped. Otherwise, the cheeks were thinned down to 1/32" along their length.

The photo above shows the lower cheek from two angles. I can't describe how tiny these pieces actually are. The dime in the photo gives you some indication. Even at this scale it is possible to carve a "fancy" profile into the edge of each piece. A scraper was created using a brass sheet. The profile was filed into the brass and run along each edge of the knee 10 to 15 times. The end results are shown above. Each pass of the scraper tool was made with the lightest of pressure. If you press down too hard the wood will break or fray. Notice in the photo how the scroll of the upper cheek was extended above the top of the stem.

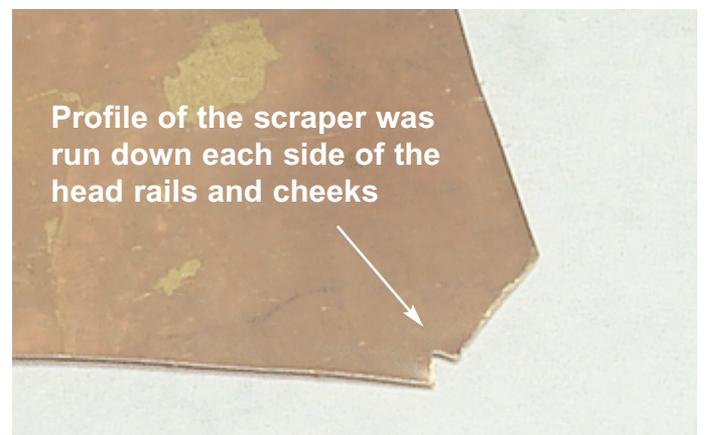


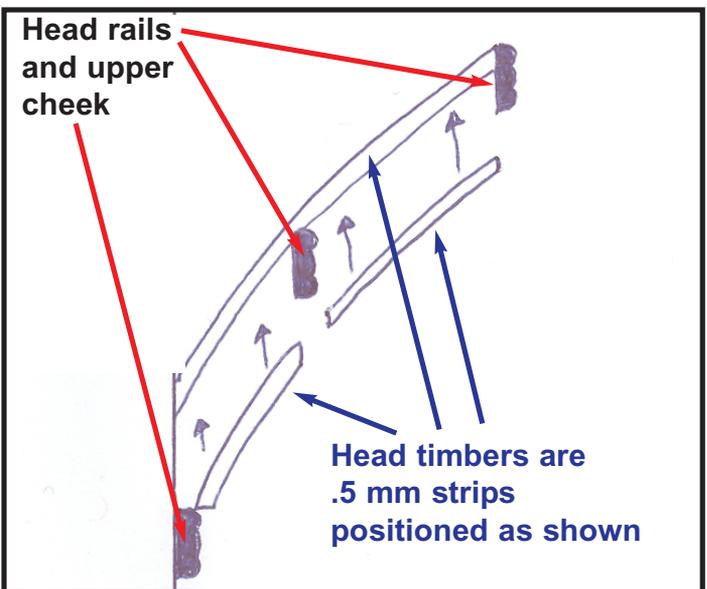
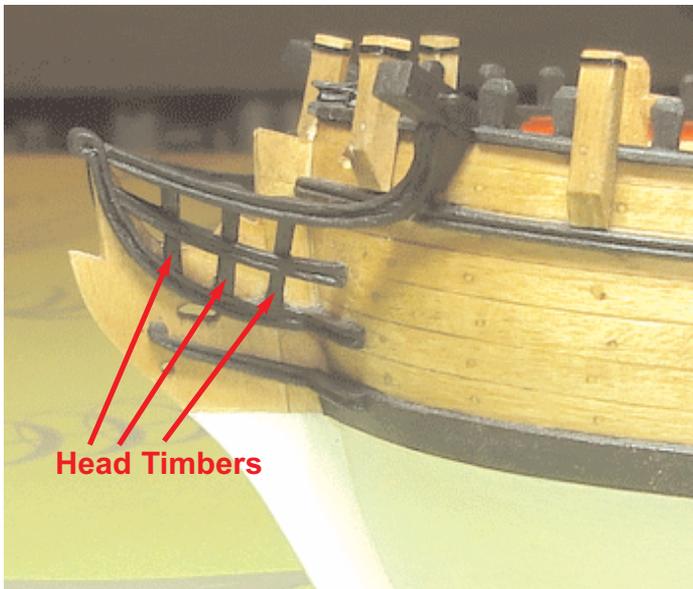
After the cheeks were glued onto both sides of the stem, I filled the void between them with some Elmer's wood filler. This was the same technique I used when filling the space between the Sculpey volutes earlier in the build. You may have noticed my generous use of wood fillers through out this project. I am very comfortable using it for many applications. You might not see other modelers using it as frequently but the end result is the only thing that matters to me. You will either be surprised when I use it or disappointed. But when the model is finally finished my hope is that no one would be able to tell how it was done.

I created the head rails next. The cheeks were the only portions of the head that I was able to trace directly from the plans. All of the remaining elements, including the head rails were shaped by testing and retesting. To make this process a little easier I used some 22 gauge wire to determine the curve of the upper and middle rails. See the photo above (left) where the wire has been placed

on the model. I was able to view the wire in place from a variety of angles and made small corrections until I was satisfied. The wire was removed and traced onto a sheet of basswood that was 1/8" thick. The extra thickness was needed for the portion of the head rail directly under the cathead. The head rail was cut free with a # 11 blade and sanded to shape. I used the scraper to create the molding profile and glued it onto the model. The head rails were painted black before they were permanently glued into position. I also notched the molding along the bow so the head rail would lay flat against the hull. The same process was repeated for the middle rail except the thickness of the basswood sheet was only 1/16". While gluing any of these elements onto the model I was determined to achieve a symmetrical appearance when the model was viewed from the bow.

It was finally time to create the head timbers. This is in my opinion, the most difficult part of the head to complete. If the model was built 50% larger it would have been much easier. Therefore I chose a simplified approach here.





The head timbers were created using thin basswood strips .5 mm thick. The strips were 2mm wide. I placed the first strip on the inside of the head rails as shown in the diagram above. Please excuse my crude rendering. After all three head timbers were glued into position I cut smaller strips which were glued between the head rails. I positioned them from the outside of the head rails as shown. They were glued to the outside of the three longer head timbers. This increased the thickness of the timbers giving them a more realistic appearance. I wouldn't have chosen this technique except for the fact that the head rails are all painted black. This helps hide the fact that the head timbers weren't carved from a single piece of wood. The small scale of this model makes it very difficult to carve them neatly.

Channels and Deadeyes...

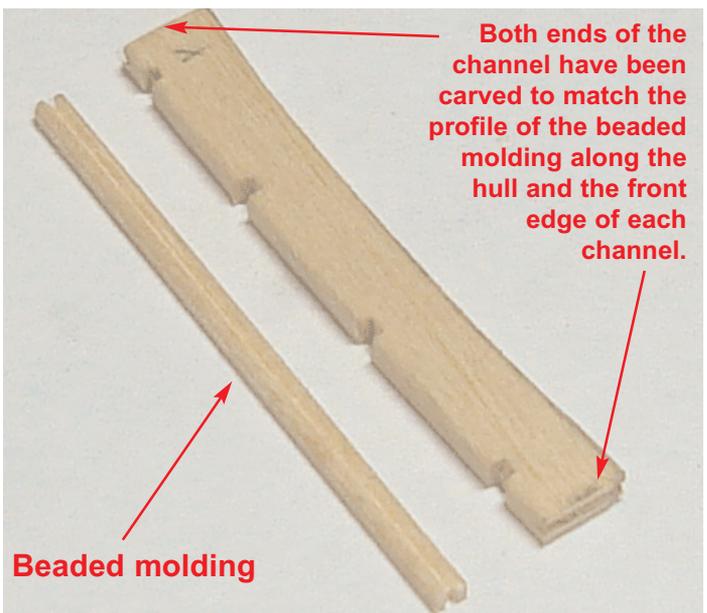
The channels were traced from the plans and transferred to a sheet of basswood 1/16" thick. When you trace the channels from the plans be sure to adjust the width of each channel. A beaded molding will be glued to the outside edge of the channel making it wider. Your initial tracing should be adjusted with this in mind. See the photo (right).

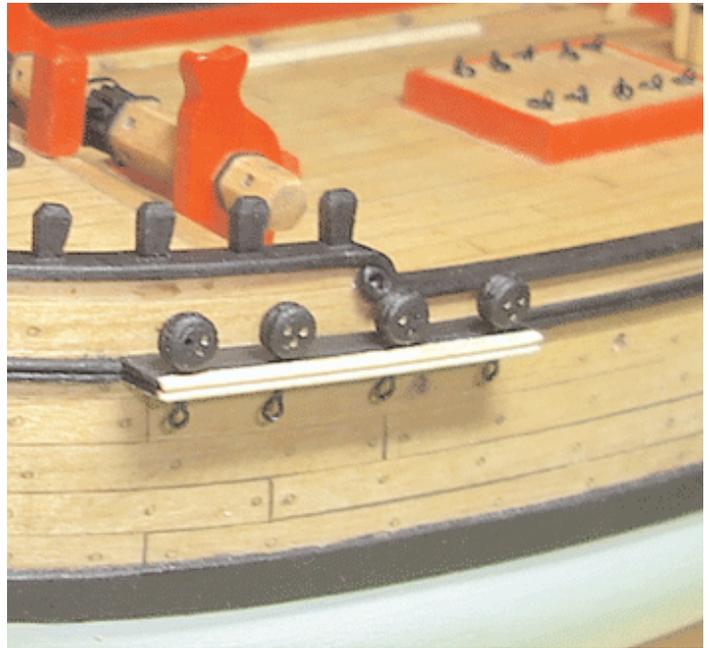
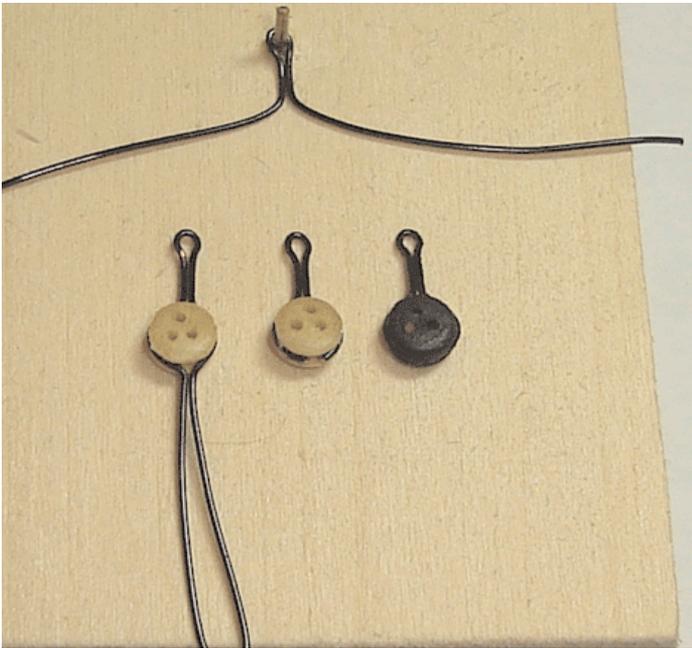
I carved both ends of each channel to match the profile of the molding we will be gluing to the front of each. This was the same double beaded

molding that was glued along the hull. This profile can be made using a scraper similar to the one we used for the head rails. The area we need to shape is so small I decided to use a #11 blade to carve it instead.

I carved little notches along the outside edge of each channel where the four deadeyes will be positioned. I used the plans to find their exact locations. These notches were cleaned up using a small needle file that was square in shape.

Once all four channels were completed I painted them black and glued them onto the model. The molding for the outside edge of each channel will not be used at this time. The deadeyes need to be stropped first. They will be placed into the





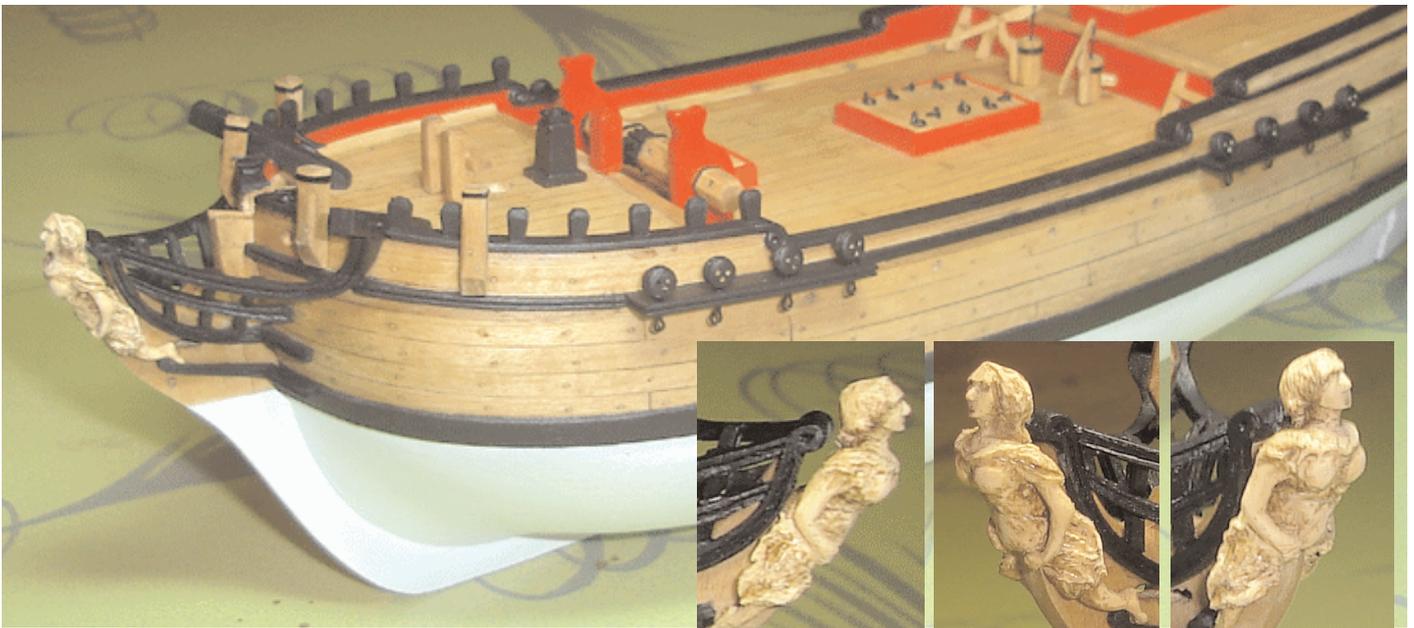
notches on the channels and the molding glued into position afterwards. See the photos above.

I built a small jig to help me prepare the deadeyes. The jig was just a block of wood with a small brass nail glued into it.. The head of the little nail was cut off so it would be easier to slip the wire strops on and off. I used 28 gauge black wire to create the strops for the deadeyes.

Using a needle-nosed pliers, I squeezed the wire tightly around the nail. This formed the loop which will be used for the chainplates later on. While still holding the wire with the pliers I bent the two trailing ends of the wire as shown in the photo above. At this point the wire was removed from the jig.

A deadeye can be held in position while you bend the wire around it. It should stay in place long enough so you can crimp the the other end with the pliers. The excess wire was trimmed with a pair of scissors. The assembly is essentially finished but the deadeyes should be secured further so they wont be pulled free while setting up the laniards. Some modelers will argue that the ends of the strop should be soldered together. I confess that I have never soldered anything for a model since I started building them. What I chose to do was apply some super glue (gap filling) along the entire outside edge of the deadeye. When they were dry I sanded them down a little and painted them black. I have never experienced a situation where a deadeye was pulled free while rigging





the shrouds. This is for me a simplified approach, but why complicate matters when it seems to do the job just fine. The deaeyes were placed into the slots on the channels and the strip of molding was glued over them.

The Figure Head...

The figure head for the Sultana was removed by the Royal Navy after it was purchased. It isn't clear if it was replaced with something other than the full length figure of a woman originally used. Even so, I will create a figure head using Sculpey. I think it will make the model more interesting. I also wanted to experiment further with using Sculpey. I am not an expert on sculpting with clay and can't offer you any tips or suggestions. I took many books out of the library on sculpture and decided to give it a try. Most of those books mentioned how a clay sculpture needs a wire skeleton. The figure head is only 1" tall and I concluded that a wire armature wasn't needed.

The Sculpey I chose to use was the same color as the quarter badges. I decided to sculpt the figure directly on the stem of the model. I admit this was a lazy approach. I had no idea if the Sculpey was going to stick to the model and be impossible to remove. The figure head needs to be removed when finished so it can be baked in the oven for 15 minutes. It will be baked at a

temperature of 250 degrees. I started by adding small pieces of Sculpey at a time. A small rectangle of clay was placed on the stem to represent the torso. To this I added the neck, head and legs. The arms weren't added until after I was satisfied with the details now being sculpted. I used a variety of tools including tooth picks, paper clips, and wooden dowels. After a few hours I was happy with the results so the arms were attached and the work continued.

I was surprised how easy it was to remove the figure head from the stem. It didn't stick at all. I placed it onto a cooking tray and baked it for 15 minutes. After it cooled I continued to fuss with it. I used a #11 blade to carve it further. Again, I was surprised at how beautifully it carved. If this had been a boxwood figure head I am sure it would have crumbled at the more fragile areas. The Sculpey held up nicely.

Finally it was glued to the model permanently and touched up with some paint. I used some warm brown acrylic paint to "antique" the sculpture. After applying the paint, I immediately wiped it off so only the cracks and crevasses were filled. This was my first attempt at this and there is clearly some room for improvement. Take a look at the cast metal figure head supplied with the kit. I think you will agree that this is a step in the right direction. I hope you will give it a try.