Constructing the Masts…

The main and fore masts are virtually identical. At least as far as the construction process is concerned. The differences between them consist mainly of the lengths for each mast and the positions of the blocks and eye bolts. The main mast will also have a boom rest. Once again, the many blueprints I have for the Sultana vary considerably with regard to their details. I followed the plans that came with the kit making only a few changes. I must note that the wooden dowels supplied with the kit were inferior and warped. They had many knots as well. I replaced them with some beech dowels that I bought at a local art supply store.

I started by tapering the lower masts. I carefully measured and cut a dowel to length. I added a ¼” to create a tennon that will be inserted into the deck when the mast is stepped. I almost always taper my masts and spars by hand. I prefer the feeling of having more control over shaping them. It may take a little longer but I haven’t found another method that makes me feel as comfortable. If you prefer, the dowel can be chucked in a power drill. Turn the drill on and use some sandpaper to taper the mast as it turns. After the mast was tapered to my liking, I began carving the tennon and squaring off the mast head. A #11 blade was used to rough cut the squared portion of the mast. I eventually used some fine sandpaper to smooth out the rough spots. The edges of the squared portion were chamfered as shown on the plans. An additional tennon was carved at the top of the mast which will be inserted into a corresponding hole in the mast cap. This tennon was square and not round like the tennon carved at the foot of the mast. See the photo provided.

When both lower masts were finished I added the details to them. The boom rest was added to the main mast. The plans show the boom rest as completely encircling the mast. I have decided to show the boom rest on the aft most side of the mast only. Half of a complete circle was carved from a basswood sheet. The sheet was 1/32” thick. Under this I glued three chocks to support the rest which were made from 1 mm square strips. The fore mast does not have a boom rest. After a little research I added a small chock on the aft side of the fore mast. Harold Hahn uses these on his schooners to prevent the mast hoops from sliding down the mast and resting on top of the mast cleats. You can see it in the photo provided. This detail is not shown on the plans.

Seven mast cleats were glued around each mast. I cleaned them up with needle files as mentioned earlier in this guide. They were painted black and glued into position. The bottom of each mast was painted red before I glued the cleats in place. I also painted the squared portion of the mast heads black before proceeding to construct the mast caps and trestle trees.

I did not use the cast trestle trees and caps provided in the kit. I made new ones from scratch. The trestle trees were easy to build. I traced the
shape of the bibs from the plans. They were cut from a 1/32" bass wood sheet. A thin strip was glued along the outside top edge of the bibs as shown in the accompanying photo. Slots were cut along this upper edge to accept the three strips of wood to complete their construction. I did not use the plans to establish the width of the trestle trees. Instead I used the lower masts as a guide to ensure they fit properly. A small eye bolt was glued into the bottom of the aft trestle tree brace. This eye bolt will be used for the gaff rigging. A double block was seized to this eye bolt. The trestle trees were painted black and set aside while I created the caps. The caps were made the same way that the bowsprit cap was earlier. One square hole and one round hole were drilled and shaped. Small eye bolts were glued into the sides of the cap for the yard lifts. Tiny single blocks were seized to these eye bolts. The main cap will also have an eyebolt glued into its aft edge for the topping lift. The caps were also painted black.

Don't glue these to the lower masts yet. You will have to create the mast hoops first. Nine mast hoops were made for each mast. I have decided to rig my model without sails, so the hoops won't have to be very strong. The easiest way to make good looking mast hoops is to make them from stiff board. I used a plain manila office folder. It has a great creamy color that resembles the color of the bass wood we are using. The folder accepts stain well. I cut several strips 1mm wide from the folder. The strips were stained and cut to length. Each strip was 27mm long. I simply wrapped a strip around a wooden dowel that was slightly larger than the diameter of our lower masts. I over lapped the ends of each strip and used super glue to form a tight connection. Apply this glue with an applicator so the finished hoop doesn't stick to the dowel. The finished hoop should slide off easily. You can see the hoops in the photos throughout this chapter.

Nine mast hoops per mast
Chock on fore mast only
Seven cleats per mast
3mm (S) whip block
.018 rigging line used to simulate thimbles port and starboard of fore mast only.

Mast hoops made from a manila office folder

1/32" Bass wood sheet used for the bibs.
Another small strip was glued on the outside of that.
Only after you slide the finished hoops onto your masts should you glue the trestle trees and caps permanently in place.

The top masts can be tapered and shaped as we did with the lower masts. The heel was squared off and the top of each mast was shaped as shown on the plans. Afterwards a small sheave was simulated as detailed on the plans as well. This sheave will be used for the top sail yard halliards. A small ball truck was carved from a bass wood strip and glued to the top of each mast. This should have a sheave drilled through it for the flag halliard. Unfortunately the ball would crumble if you tried to drill through it. I will use another approach to rig the flag halliards. The rigging plan shows small single blocks seized to the mast but this is not historically accurate. I drilled a tiny hole through the top of the mast (just below the ball truck) instead.

I didn’t bother drilling a fid hole into the heel of each top mast. The entire top mast was painted black except for the ball cap that was glued onto its tip. Afterwards the top mast was slid through the trestle tree and the cap and glued into position. I simulated the fids rather than have them pushed through a hole in the mast. A small strip (.75mm) was glued on both sides of each top mast as shown in the photos provided. The fid prevents the top mast from falling through the trestle trees. If done neatly no one will ever know it doesn’t protrude through the mast. In fact, so much rigging will cover this area that if you chose not to show the fid it would not detract from the finished model.

Before stepping the masts many more blocks were added to them. These are shown on the plans but I have also provided some photos with each block labeled. Different sized single (s) and double (d) blocks were used. The sizes are also noted in these photos. Most commercial kits are notorious for not supplying sufficient quantities of blocks. You may need to purchase some additional blocks as we get closer to completing the model. All of my blocks were modified as mentioned earlier in this guide.

The masts are now completed to the point where
they can be permanently placed (stepped) on the model. Some folks don’t glue the masts into position. They prefer to let the rigging hold them in place. They do this in case the rigging and masts get damaged and require some future doctoring. I don’t prescribe to this method and always glue the masts into the deck permanently. Before doing so, several blocks and eye bolts were glued around the base of both masts. If you check the rigging plan you will see a whip block on the fore side of each mast. This 3mm single block was seized to an eye bolt and glued into a pre-drilled hole on deck. The fore mast also has an eye bolt on the port and starboard sides. Normally a small thimble (bullseye) was seized to these eye bolts. A lanyard will be set up to secure the main and main top mast stays with these thimbles. Rather than use a commercially purchased thimble, I simulated one by creating an eye in .018 black rigging line. The thimbles available commercially are too large and would look over scale.

One last detail should be completed and you can glue the masts into position. The mast coats (wedges as described in the instructions) were made using a length of 22 gauge black wire. A ring was formed so it fits tightly around the base of each mast. I painted them red. You can see them in the detailed photo a couple of pages back. When you step the masts on your model be careful to establish the correct angle (rake). Both masts are raked towards the stern as shown on the plans. If you decided to glue them to your model, then you should view the masts very quickly from a variety of angles to ensure they are aligned properly. You have to do this fast before the glue sets. I recommend that you use white glue (carpenter’s) instead of super glue. It will give you more time to adjust the angles of your masts.

1. The chain plates were made from 28 gauge black wire. I used the same jig we used for the dead eye strops. (above)
2. Chain plates are positioned with a nail as shown . Length of the chain plate is marked with a pencil including where I will bend it to fit into the strop. Remove the chain plate afterwards.
3. It is reinserted after being cut and bent as shown above.
4. Crimp the bent end down with a needle-nosed pliers.
5. Touch up the chain plates with some black paint (finished).
Rigging the Shrouds...

Now that the masts are in position I turned my attention to rigging the shrouds. The shrouds are rigged around the trestle trees and secured with a lanyard on the channel. To prepare for this, the chain plates will have to be created first. The chain plates will hook into the dead eye strops we positioned in the channels earlier. I used the same jig to create the chain plates that I used to create the dead eye strops. It was just a little brass nail glued into a piece of wood with its head cut off. You can see a chain plate being made in the photo on the previous page. Each chain plate was made from 28 gauge black wire bent around the brass nail. I squeezed the wire tightly around the nail so the tail was neatly doubled and about ¾” long.

To finish each chain plate I ran a bead of gap filling super glue (CA) along both sides of it. You could also solder the two wires together as one. As I mentioned earlier, I prefer to use super glue. When the glue was dry I sanded each side flat which gave it the appearance of a flat single iron strap rather than two individual pieces of wire. I painted the chain plates black when they were finished.

The chain plates will follow the run of the shrouds and the angles for each of them were established. A photo on the previous page shows how I established the correct angle for each chain plate. I simply tied a string around the lower mast (at the mast head) and pulled the string taught in front of each dead eye along the channel. I marked the hull with a pencil where each chain plate will be nailed. The reference point was drawn 1/8” above the wales. I drilled a small hole into the hull for each chain plate.

The lengths for each chain plate will vary along the channel. I measured the length for each one using the method shown on the previous page. First, I used a small brass nail to hold the chain plate in position. Then I marked it where the chain plate will bend to fit into the dead eye strop. In addition to this I also placed another reference point above this mark to indicate the overall length of the chain plate. I removed the chain plate from the hull and cut it to length. Then I bent it at a right angle at the reference mark and repositioned the chain plate on the hull. This time I inserted the bent tip into the strop first. I very carefully crimped the bent portion of the chain plate onto itself to complete the installation. After all four chain plates were completed I touched them up with some black paint.

With the chain plates completed it was now time to rig the shrouds. There will be four pairs of shrouds on each mast. The first pair will be rigged on the starboard side. I used .028 black rigging line. A pair of shrouds is created when a single length of rigging line is doubled at the mast head and seized. The line should wrap around
the lower mast and be seized above the trestle trees as shown in the photo on the previous page. When the first pair is in place both shrouds should be set up with their lanyards before rigging the second pair on the port side. You should alternate the shroud sequence from starboard to port when rigging each shroud pair.

A dead eye was seized into the end of each shroud. This dead eye will be spaced ½" from its partner on the channel. To establish this distance I used an alligator clamp to hold the dead eye. I made tiny adjustments until the proper distance was established. When I was satisfied, I seized the dead eye while it was still held in the alligator clamp. Two additional seizings were made above this which were spaced as shown in the photo on the previous page. I painted the dead eye black and proceeded to set up that shroud with its lanyard. The rigging plan and instruction manual has a diagram that details the proper way to set up the lanyard. Please note in that same photo how the dead eyes are evenly spaced and note the orientation of the dead eye holes. Only after the first shroud pair was finished did I rig the next pair on the opposite side of the hull. I was very careful not to pull the masts too tightly to one side. The shrouds were pulled taught with the lanyards but not over done.

Now that the shrouds were placed on the model I proceeded to rig the ratlines. This can be a tedious and unfulfilling experience. My only advice would be not to rush through it. Take your time because it will be a prominent feature on the model. Before you begin, the sheer poles should be lashed to the shrouds. The sheer poles will prevent the dead eyes from twisting while you rig the ratlines. See the photo above. I used a bass wood strip that was .75 x .75 mm. Cut the strip to length and stain it before you place it on the model. You may also opt to paint them black. It was easier for me to glue the sheer pole onto the shrouds first. Then after the glue dried I lashed it to each shroud. The sheer poles are positioned directly above the dead eyes. You can now see why it is so important to have all of your dead eyes lined up properly. If they were positioned at different heights it would look just awful.

The ratlines were normally spaced about 15" apart. On our model I spaced each row just under ¼" apart. I have seen other modelers use a template positioned behind the shrouds to help them maintain equal spacing between the rows. I suppose it would also help to keep the rows parallel to the waterline. The Sultana has only four shrouds and I decided to “give it a go” without the use of a template. You can use whatever method that will work for you but the template seems to get in my way when I make the clove hitches on each shroud. I used clove-hitches on all four
shrouds. In real practice the fore and aft-most shrouds would have had the ratlines lashed to them through an eye spliced into each end. I used the thinnest black rigging line which was .008 diameter. I secured the first clove hitch with super glue and afterwards preceded to clove hitch the remaining three shrouds. I did not secure these with glue immediately. Before doing so, I made any adjustments to the ratline in order to insure that the shrouds weren’t being pulled together. I also adjusted the height of each clove hitch before placing a drop of super glue on each of them.

Upon completing the ratlines I glued four modified cleats to the inboard side of each shroud. See the photo provided for details. Their positions were taken from the rigging plan. Once again I found it much easier to glue the cleats to the shrouds first and then lash them (.008 black rigging) afterwards when the glue was dry. The lashing was tied around the center of each cleat. These cleats absolutely, positively need to be modified. They would look far too thick and clumsy if they weren’t. I slimmed down each cleat with some needle files and painted them black after placing them on the shrouds.

Rigging the Stays…

Once the ratlines are finished you can start to rig the stays. I will try and show how each one was rigged but you should refer to the rigging plans provided with the kit. I have made some modifications to those plans and will describe them as I go. I started by rigging the forestay, inner jibstay and outer jibstay followed by the fore topmast stay. They were placed on the model in that order. I must mention before we begin that figure 27 in the kit supplied instructions is plagued with errors. Rather than point each of them out please don’t use it.

The instructions mention that ALL of the stays for the Sultana were seized around the mast heads. I have decided that the forestay should be rigged using a mouse instead. I will let you decide which is more appropriate. In Harold Hahn’s book “The Colonial American Schooner”, the rigging plans for Hannah and Halifax show the forestay rigged with a mouse. Other sources I checked also follow this rule for schooners of this size and time period. Black rigging line (.028) was used for the forestay. This is the heaviest line rigged on the Sultana other than the anchor cables. If you wanted to use a heavier line I would recommend that it not exceed .035. This will be the only stay where a mouse is used.

An eye was seized in the end of a generous length of rigging line. The mouse was created 2 1/4” from this eye. See the photo below for details. A simplified approach was used to create the mouse. I made a pear shaped mouse by
coiling some sewing thread around the stay. It was firmed up with some super glue when I was finished. I must point out a mistake that I made. In the photo you will see that I have the pear shaped mouse reversed. The largest end of the mouse should face towards the eye. Unfortunately I did not realize this until long after it was placed on the model. I have decided to leave it as is. Live and learn. The line drawing I provided shows the correct orientation for the mouse.

I secured the forestay around the mast head and finished it up with a lanyard on the bowsprit. You will need to make two more hearts for the stays we are about to rig. They will be set up using the same techniques I described for the bowsprit shrouds. See the photo above. The inner jibstay was rigged in the same manner. The only difference was that a mouse wasn’t used. Instead, a simple seizing was used to secure it around the trestle tree of the fore mast (.018 rigging line was used).

The outer jibstay (.018) was seized around the trestle tree also. However, it will then run through a small ring on the jib boom called a traveller. Then it proceeds through the sheave in the jib boom and sets up into a simple tackle. The traveller was made from 28 gauge black wire. I used the same technique we used to strop the deadeyes along the channels. Only this time I removed the deadeye after forming it. See the photos on the next page. Finally a small piece of sewing thread was tied around the top of the traveller to finish it up. This was firmed up with a drop of super glue. The traveller was painted black prior to being used.

While rigging the outer jibstay I found that it was
easier to complete the tackle first. Seize a 2.5mm single block into the end of the stay. Then place its partner on the eyebolt on the cap. The running end of the tackle can be secured to a cleat at the bow. Figure 30 of the instruction manual has a good diagram showing how this should be done. When that tackle was completed it gave the necessary tension to reeve the stay through the jib boom and traveller so I could seize it around the trestle tree. Don’t forget to add a rope coil to the cleat where you tied off the tackle. There are many ways to form rope coils. I usually just wrap the line around an appropriate sized dowel. I add a drop of super glue with an applicator to keep it from unwinding before I slip the coil off of the dowel. If the coil needs to bend at an angle (as is the case here) another drop of glue is added and the coil is bent to shape. It will hold that shape when dry.

The topmast stay was finally rigged as shown on the plans. I used .008 black rigging line for this stay. At this time I could move ahead and finish all of the running rigging on these four stays. But I decided to add the main and main topmast stays first. The main stay (.018) and main topmast stay (.008) are fairly straightforward. The only challenge here was navigating my fingers and tools behind the shrouds to set the lanyards at the foot of the fore mast. If you recall, I simulated the bulls eye on deck for each of these stays by creating a seized eye from rigging line. Another eye was seized into the end of each stay. The lanyard will be formed between these two simulated bulls eyes. In hind sight I guess it would have been better to have rigged these two stays first, before the shrouds and ratlines (or to have just set the lanyards up and clip the stays temporarily to the main mast.). After a little fussing the lanyards were finally completed.

Once the lanyard for the main stay was secure I ran the loose end through the large double block on the aft side of the fore mast. Then I seized the stay around the main mast as shown in the photo on the next page. The lanyard for the main stay was set up on the port side of the fore mast while the topmast stay was on the starboard side. The main topmast stay was rigged in the same way. However, it was seized around the main topmast as shown in the same photo.
I thought it was a good time to take a break from rigging the model. I think the backstays would make it more difficult to rig the boom, gaffs and yards. The backstays will be rigged after the boom and gaffs are in place. I find it nice to break the rigging up a little bit with other small projects. So I decided to construct and mount the anchors. They will be mounted on the model with anchor buoys. Ships similar to the Sultana would certainly have had them. There were strict laws and codes that mandated the use of anchor buoys while in a harbor or port. They weren’t used for the Sultana’s benefit. They were used so the other ships wouldn’t get damaged by the anchor and cable. Stiff penalties were brought against a ship’s crew when they failed to use a buoy. The kit doesn’t come supplied with them but they are very easy to make. Details such as the anchor buoys will set your model apart from the others who build the model straight out of the box.

I used the cast anchors supplied with the kit. They were of course cleaned up with some sandpaper and filed first. I discarded the anchor stocks and made new ones from scratch. I prefer wooden stocks and didn’t want to paint the kit supplied castings. I used a bass wood strip 1/8” x 1/16” to create each half of the anchor stock. See the photo above for details. Their size and shape were traced from the plans. You can see that they are tapered on both ends. You will need to carve a small groove into the center of each half. When they are glued together the anchor should fit tightly through it. Thin strips of automotive pinstripe tape were wrapped around the anchor stock to simulate the iron bands. The ring for each anchor was made from 28 gauge black wire.