

# Making the Spritsail Yard, Spritsail Topsail Yard, and Parral

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*Spritsail yard (longer), and Spritsail Topsail Yard (shorter)*

These two yards carry the sails that hang below the bowsprit and jib boom.

The yards are 1 foot diameter (0.19") x 62'-4" (11.69") long for the longer of the two, and 8.4" diameter x 41'-9" (7.83") long for the shorter yard, so approximately 1/4" square strips of Castello wood were cut at about 2" longer than the finished length of each yard. These were placed on my shaping board and the four corners were chiselled off to produce a hexagon shape. This was then placed in my drill press chuck to hang vertically for shaping. This is not how David showed us how to do it, but I am not that skilled as yet, or more likely simply lacking the confidence at this stage.

These pieces are too long and thin to shape in my mini lathe. I did do it when making my Jib Boom but resorted to sand paper and finger pressure support to steady it. I found I could knock these off easier in the drill press.



I had a block with a drilled pocket to act as a bottom support in the first stages of shaping as I was using rasp file for quick shaping, after which I resorted to 80 grit sand paper. Once I had it near the major diameter I marked off the lengths of the yard arms (port and starboard tapered extremities). The very ends taper to 0.11" diameter for the larger yard and 0.08" diameter for the smaller yard. Once I was near the final diameter on the extremities I removed the yard from the chuck and removed the lower support block. The excess was cut off the yard and it was reinserted in the chuck and clamped finger tight. Sanding recommenced to get as close as possible to the final dimensions.



The yard was again removed from the drill press and placed back on the shaping board. A sanding stick was used to sand the flats to create the hexadecagon or 16 sided polygon shape. First I flattened one surface slightly for the proper distance, turned the yard 180° and did it again, turned 90° and sanded again, then turned to flatten the remaining points.

The final step was to add the six cleats, two **Sling Cleats** just off centre and four **Strop Stop Cleats** near



the ends of the yard arm. All dimensions were taken from the **Rees/Steels** figures below. The proper locations were marked and flat pockets were chiseled into the yard as the cleats are very thin and I thought it might help. The chiseled end of the pocket definitely aided in locating the face of each cleat properly. The cleats were shaped to thickness and length but the heights was almost tripled. Once the glue had dried and cured the

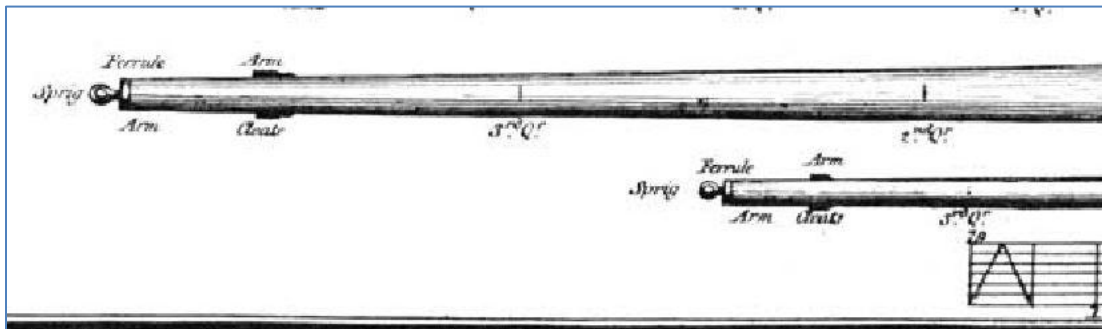
cleats were carefully sanded to the proper height and shape.



Yard Sling Cleat



Yard Arm Stop Cleat being shaped



**Steels Mast Making 1794 - plate 1**, or **Ree's - plate VIII**, both have the same image of the spritsail yard. There are **Sprigs** (eyebolts) and **Ferrules** (metal bands) at each end of the yard arm. The bolts measure approximately 1 inch (25mm diameter) which at 1:64 scale is 0.0156 inches (0.04 cm). The copper wire I used is 0.02" (0.05 cm) diameter which makes it 1-1/4" (3 cm) at 1:64 scale.

First I added the metal bands at each end of the yard arms. The metal band is about 1-1/2" to 2" (3.8 to 5 cm) wide as best as I can measure. The extreme end of the yard measures 7" (18 cm) diameter on the larger yard and 5" (12 cm) diameter on the smaller. To scale these are 0.11" (3 cm) and 0.08" (2 cm) diameter. They are much too small for me to roll a copper strip and solder, so I used the method suggested in **The Fully Framed Model (TFFM)**. I took a sheet of white 20 lb bond paper (regular

photocopy or printer paper) and coloured a small portion with black permanent marker. I turned it over and coloured the other side so the ink would soak through completely. Having had the ink soak through meant I would not have a white edge after cutting the strip. I then cut a strip about 1/8 inch wide (3 cm), applied diluted glue to both sides and applied it to the yard. It did overlap to create a bit of additional thickness.



To make the eyebolts I wound the smaller wire around a 16 gauge (0.064 inch or 0.16 cm) wire to form the eye. At 1:64 scale this is a 4 inch (10 cm) inside diameter (ID) eye. Although the *Ree's/Steel's* drawing suggests smaller ID, I could not imagine a smaller hole in an eyebolt on a yard arm on a ship tossing at sea. I pulled this tight against the mould wire with pliers to get a good circle shape. The overwrap was cut back and adjusted to contact the standing end as solder will not fill gaps. I found my parallel pliers were the perfect tool to re-straighten this tiny wire as it grips the complete length rather than pinching one end. I could have rolled it out but might have damaged the bent eye.



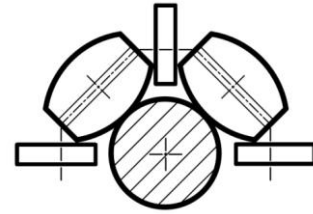
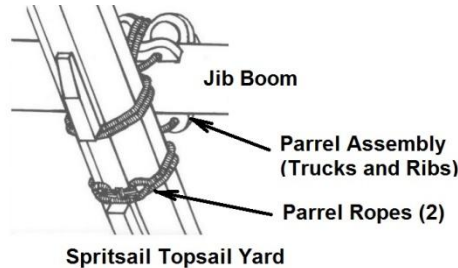
I used a *copper-phosphorous solder* (I do not have silver solder) as it is less pricy and chemically blackens well as it is copper based. The phosphorous is the flux, so what is left in the joint is copper, the same base metal as the wire. I could have used regular plumbing (soft) solder on these eyebolts, as I had learned from Ray, because they will not be under any stress nor will they be chemically blackened (soft solder will not chemically blacken).

I used my new *butane torch* and *GRS soldering station* (Gesswein Canada)... It took a while to realize my first problem was the torch was empty... luckily I had purchased a refill bottle way back when I got the torch. Thanks to a soldering display presented by Ray I saw the usefulness of the soldering station and so bought one and have had this sitting at the ready for the better part of a year.

My first two attempts at soldering were terrible. I've soldered copper pipe in my home but this is different. The hole or void in the eye plugged up completely on both and I disintegrated (melted) the first. I found that if I cut a tiny piece of solder, warmed up my eyebolt and moved the piece of solder

against the joint it would get sucked in. I then turned it over and re-heated to try to eliminate any blobbing. The copper wire was blackened with ink from a permanent marker as I was reluctant to chemically blacken so tiny an item as the process is actually oxidation or surface corrosion, and I had already vapourized one eyebolt. Possibly I shouldn't be concerned, but this is what I did and why.

Using a #70 (0.028 inch or 0.07 cm diameter) drill bit and pin vise I drilled the holes into each end of the yard arms, centered as best I could. I trimmed the standing end of the eyebolts (about 1/2" or 1.3 cm long) and slipped them into the yards. Presently they are dry fitted.



The **Parral** consists of three **Ribs** and four **Trucks** and is used to sling and adjust the position of the smaller spritsail topsail yard on the jib boom.

The **Trucks** are 0.17" long and 0.13" diameter but a bit barrel shaped (as per The Anatomy of Nelson's Ships) with a hole through the axis. These were sanded to the proper diameter then rough shaped on the mini lathe. After that the 0.02" rope hole for the 2-1/2" circumference (3/4" diameter) Parrel Rope was drilled into the truck(s) as deep as I could manage. These were cut off on the bench with a fine toothed saw and then sanded a bit more while holding each and twisting them between two fingers.

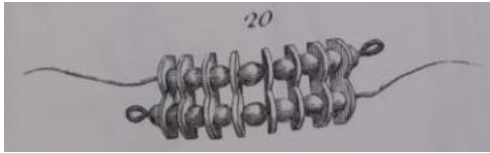


The **Ribs** are 0.03" thick x 0.38" long and high with the top edge scalloped. First I found some scrap Castello and sanded it down to the proper thickness. Then the shape was marked on one side. The Parrel Rope holes again were drilled first before shaping and finally cutting them away.

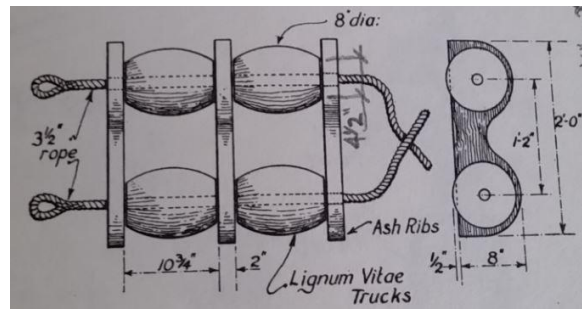
The thickness was sanded down short of the proper thickness and they were dry fit assembled on an old broken drill bit so I could assess the fit (image below). They clearly need more "cleaning up"!



The **Parral Ropes** will have a (simulated?) eye splice on one end and the other end tapers per **Rees Plate II**. It depicts the trucks as ball shaped but **The Anatomy of Nelson's Ships, fig. 139**, shows them barrel shaped. Both images can be seen below.



**Rees Plate II (fig. 20)**



**The Anatomy of Nelson's Ships (fig 139)**

As I haven't any rope as yet this is about as far as I can go with these for the time being. There will be blocks and furling sails to be made to be secured to the yards.

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