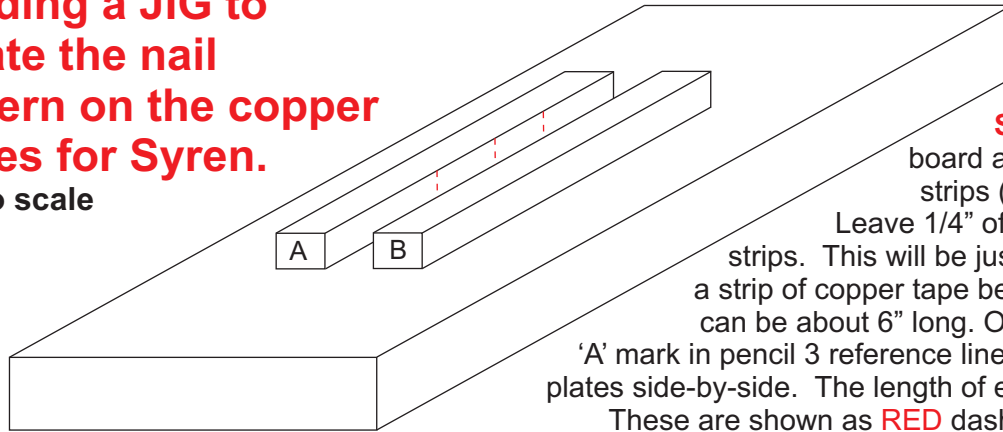


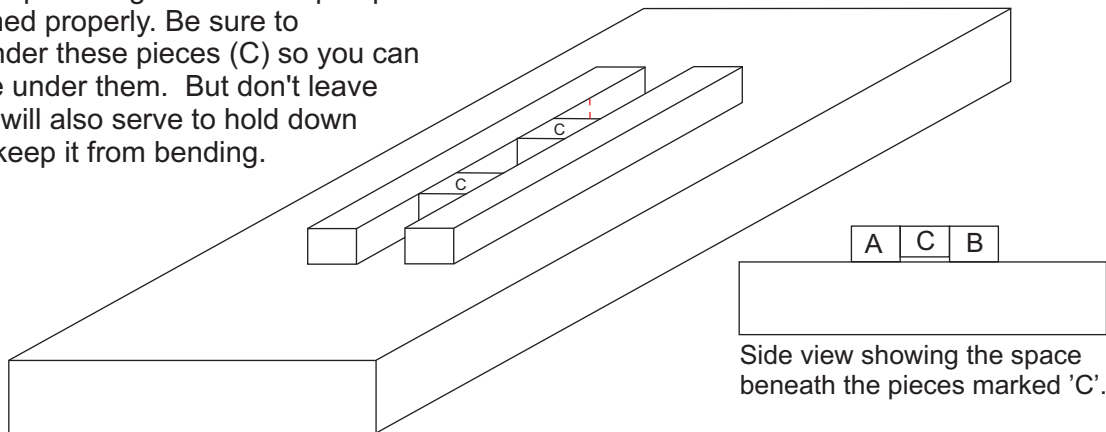
# Instructions for building a JIG to create the nail pattern on the copper plates for Syren.

Not to scale



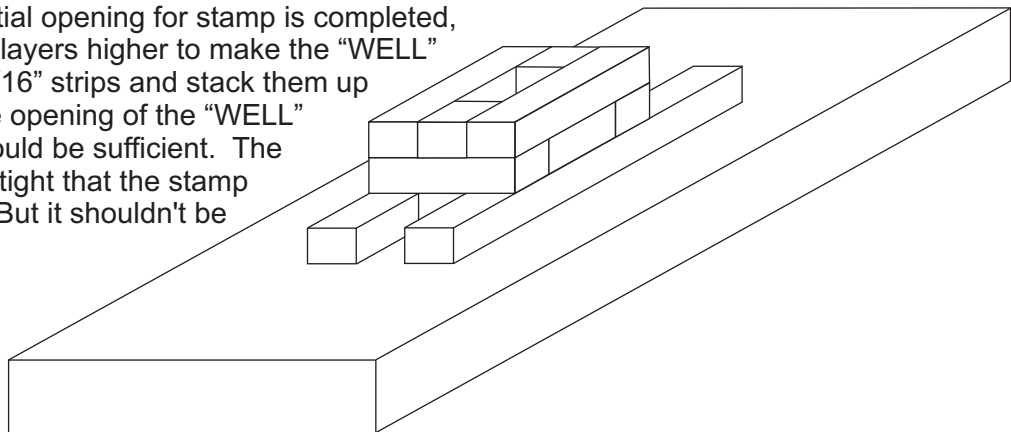
**Step One** - Take a scrap board and glue two  $\frac{3}{16}$ " x  $\frac{1}{4}$ " strips (A & B) down the center. Leave  $\frac{1}{4}$ " of space between the two strips. This will be just enough space to slide a strip of copper tape between them. The strips can be about 6" long. On the inside side of strip 'A' mark in pencil 3 reference lines to indicate two copper plates side-by-side. The length of each plate will be  $\frac{11}{16}$ ". These are shown as RED dashed lines in the drawing.

**Step Two** - Place two smaller pieces of wood  $\frac{1}{4}$ " wide (C) between the two other strips. They should form an opening which is the exact dimension of the first plate as marked earlier. The third red line should still be visible as it will act as a guide when you slide your copper tape through the channel. It is where you will line up the edge of the stamped plate so the next one will be aligned properly. Be sure to leave ample room under these pieces (C) so you can slide the copper tape under them. But don't leave too big a space as it will also serve to hold down your copper tape to keep it from bending.

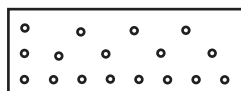


Side view showing the space beneath the pieces marked 'C'.

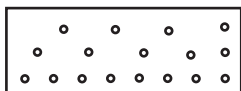
**Step Three** - Once the initial opening for stamp is completed, you can build it up several layers higher to make the "WELL" deeper. Use more  $\frac{1}{4}$ " x  $\frac{3}{16}$ " strips and stack them up like Lincoln logs. Keep the opening of the "WELL" consistent. Two layers should be sufficient. The opening should not be too tight that the stamp will not slide into it easily. But it shouldn't be very loose either.



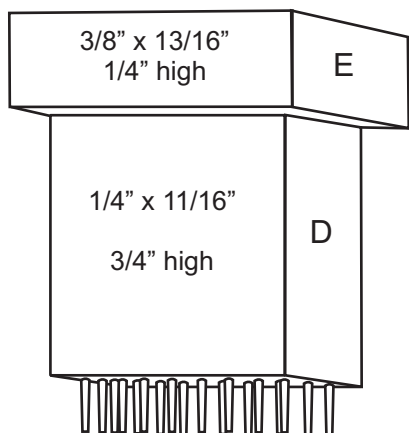
## Creating the stamps



Starboard  
Side



Port side



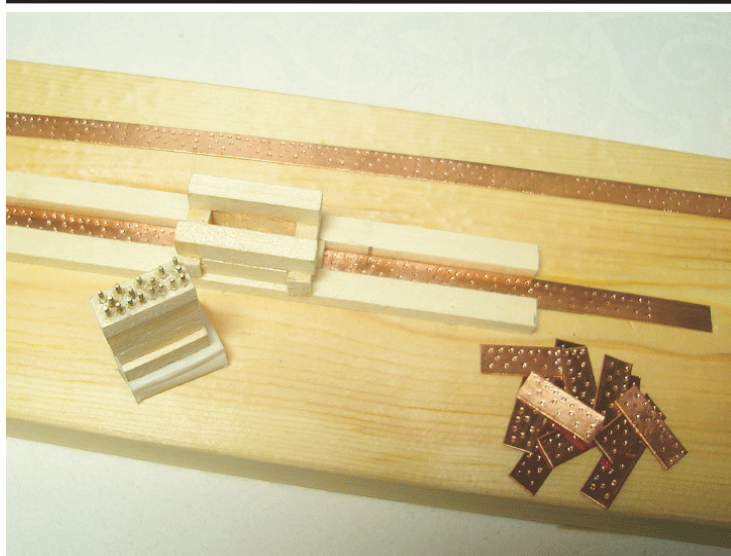
**Step Four** - Take a block of wood 'D' the same dimensions as the actual copper plate. Make sure it fits into the "well" of your base. You will need to make two stamps as shown where the nail pattern will be reversed. The block of wood should be a little higher than your well is deep.

Place another slightly larger piece 'E' on top of the block so you will have more surface area to hit with a hammer. Drill some small holes on the bottom of the stamp in the pattern shown. Snip the heads of some tiny brass nails and insert them into each hole. Glue them into each hole and don't be afraid to use a lot of glue.

File the tips of the nails flat so they don't pierce your copper tape. Make sure they are all flat and the same length. All of the nails must come into contact with the plate.

You should experiment with nails of different diameters. The pattern shown uses larger nails which make it easier to create the stamps. An actual copper plate was fastened with more than 5 times as many nails. Do to the scale of our model it would also be appropriate to omit the nail pattern all together. Another option would be to use a pounce wheel to emboss the nail pattern rather than stamp them as shown.

Stamping them however, will allow you to create a more historically accurate nail pattern. The plates had nails placed all around the perimeter of the plate. They were very close together. In the center of this pattern were several additional rows of nails which were spaced farther apart. Since our plates will overlap each other on the top and forward edges the nail pattern on those sides were omitted.



**Making your plates** - Slide a 12" strip of copper tape into position face up. Use a small hammer to stamp the nail pattern onto the tape. You may have to hit it more than once before you get the feel for how much force you will need to use. Then slide the strip through the other side of the "well" until you see the edge of the nail pattern line up with the reference mark you made. This is the last dashed line that should still be showing on the inside of the wooden strip "A". You can then make your next plate impression and continue the process until the entire strip of copper is filled up.

Remove the copper strip and burnish the nail impressions so they are flat. The nail heads on a real ship were flat. You can then cut the strip into individual plates afterwards with a sharp scissors.

By Chuck Passaro 8-13-07