Model Shipwrights *of* Niagara

WEAVING A RIGGING MOUSE

By: Don Knowles
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What is a rigging mouse and why would you want to weave one?
On larger sailing ships that have sizable mast stays, in my case the USS Constitution, a rigging mouse is like a stopper that surrounds the stay near the top platforms on the fore side of the platform. The stay has a loop in the upper end, called an eye, and the stay goes around the mast, over the rigging shrouds, and through the loop, or eye. The stopper, or mouse, fits into the eye and stops the stay from tightening like a noose. The point of the stay is to provide forward stability for the masts. The rigging shrouds provide lateral stability.

The problem with modelling a mouse is how do you do it without too much complexity? One person that I know of purchased a brass cone, covered it in that famous fabric bandage, and painted it black. It worked to a degree but forget about scaling it to fit the model.

Trying to make a real mouse is a quick recipe for a mental break down unless you have the dexterity of a watch maker and Biblical patience.

One reasonable way is to weave your own covering on a cone, or what I call a mouse form. For that you need a loom.

A regular loom produces a flat, square or rectangular item, like a rug, or a scarf, but the loom for a ship's rigging mouse needs to produce a columnar object.

The mast stay is a round rope that must go through the centre of the woven mouse. To that end the loom must be round.

Before we begin, there are a couple of terms to come to grips with; Warp and Weft. The warp is the longitudinal lines that run the length and the weft is the actual weaving that goes across and over/under the warp.

MAKING YOUR LOOM

The image below displays the general aspects of the loom and is version 2.0. The description is for version 3.0. I am constantly making upgrades as I come across a better idea.

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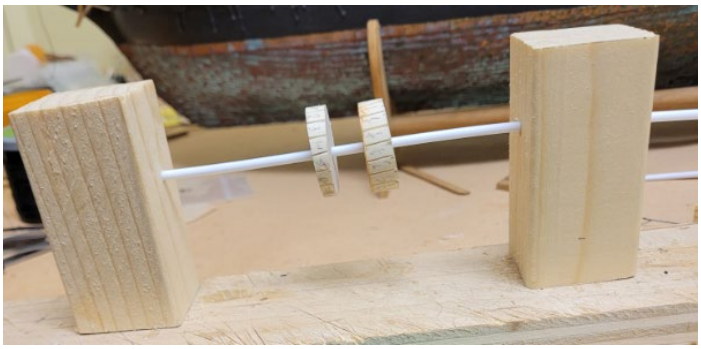

Here is the description of how to build the loom, which is essentially a jig.

1) A scrap piece of ¾ inch plywood was used as the base. Any sturdy piece of wood will do.

2) A centerline is drawn down the middle of the wood and support spacing marked 10 inches apart.

3) A starter hole is drilled on each mark to secure the supports. I used #8 - 2 inch screws.

4) To make the loom supports take a pieces of 2 inch pine and cut 2 pieces 6 inches long and drill a hole in the centre of the sides of the wood about 2 inches from the top. In my case, the hole was made to take a styrene plastic tube of 2 mm in diameter as my largest stay was 2mm. The tube will become the loom spindle

5) Turn the supports on their ends, find the centre, and drill starter holes in the centre of each piece, 1 end only. Turn the pieces vertical and pass your spindle through the holes in the sides to test fit and adjust as necessary.

6) Once the fit is correct then screw the pine end pieces onto the base using the holes previously drilled in steps 3 and 5, and test again.

7) A 1 inch dowel is cut 1 inch in length to make the loom warp round pieces.

8) You will need a protractor, a pencil, and piece of paper. Radius lines are drawn from a centre point outwards on the paper. I chose 20 degree between each line from the centre point.

9) The circle is cut out from the paper and the lines transcribed to each end face of the dowel, keeping the points parallel as you need to mark a line for saw cuts.

You could try marking the dowel face directly if you have the patience and steadiness of hand to do it.

10) Next, join the previously plotted end points with a ruler and pencil then cut a 1/8 to ¼ inch deep slice, edge to edge, into the dowel longitudinally with a razor saw. In my case I was using 0.50 mm string. Check for fit with your chosen string.

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11) Draw a line at the ½ inch mark around the circumference of the dowel and write numbers on each side of the middle line between your longitudinal cuts: 1-1, 2-2, 3-3 etc. The numbered cuts are to keep the longitudinal strings in the loom (warp) aligned.

12) Drill a hole equal to your spindle, described above in step 4, through the centre of the dowel, and then cut the dowel into 2 pieces at the ½ inch mark made in step 11. Test fit the pieces. You should be able to pass the spindle through the right support, the 2 round loom pieces, and the left support. File to adjust as necessary.

The finished loom should resemble the image above.

MAKING YOUR MOUSE FORM

A form is created as a real mouse shape is made up of layered rope and canvas. It is very interesting to look at, but impractical to create, at in my case, 1/8 scale. The mouse form will be cone shaped with rounded ends and made from a small piece of dowel. The mouse, and the model mouse form, will be covered in a weaving called a knittle.

The scale ratios for my ship stated that the mouse was to be 3 times the width of the stay. Given a 2 mm stay this made the mouse width 6 mm and length 8 mm. A dowel of 5 mm was used as the 0.50 mm string used for the warp brought the final width up to 6 mm.

The dowel was cut, the centre found, and a 2 mm hole drilled through. Test fit the spindle and the stay. Adjust as necessary,

The cone shaping process involved filing the taper into the piece of dowel, in my case a piece of walnut. The taper starts at the aft side of the mouse form and slopes down to the centre hole.

You may want to paint the mouse form flat black or flat dark brown. The flat paint is non-reflective and will hide any holes that might be in your weaving. The weft thread (the weaving part) would be black or brown as it was tarred in reality, and the paint on the mouse form will help hide any spaces. You don't want to paint the form when it is on the loom as you will inevitably put paint on the warp.

SETTING UP THE LOOM WARP

The pieces all need to be placed on the spindle.

In the example below the cone taper is to the right but it doesn't make a difference which side you use, other than to have the smaller portion of the mouse form (foreside) be on your most comfortable side. If you are left handed then you will probably want to use your left hand to weave the warp. The weft will go up the taper in any case.

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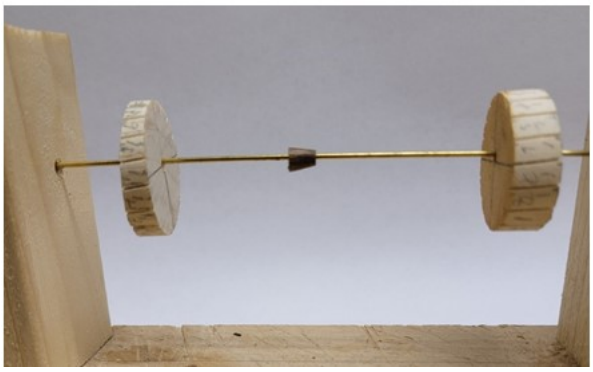
Thread the spindle through the first support, through the first round loom piece, through the mouse, through the second round loom piece, and then through the final support.

The image below shows the loom set up for the mizzen stay mouse using a 1/16 brass rod as the spindle. I am right handed therefore the aft part of the mouse form is on the left and I will work up the taper from the right.



SETTING THE WARP IN THE LOOM

As mentioned above, the warp is the longitudinal strings and now it is time to put them into place.

The amount of string used depends upon the size of the mouse form and the thickness of the string or ”rope”. In my case I was using 0.50 mm rope for the fore and main mice and .25 for the mizzen mouse. I also used every other slot in the loom: 1, 3, 5, 7 etc.

Take your chosen rope and double knot the end. Two overhand knots should suffice. Place it outboard of the end of slot 1 and run it over to slot 1 on the other loom piece. You must make sure that the middle working area is several inches wide and big enough for you to push a needle and thread around. Make sure that the string is wedged down into the saw cut as friction will keep it in place until it is taped. Also, you will lose middle working space when you shape the warp so keep the loom pieces as far apart as is practical.

Go out the outboard side of the loom and go up to the next slot being used, in my case #3. Go through slot 3, over the work area, and through slot 3 on the other loom piece. Make sure that the string is wedged down into the saw cut.

Go up to your next slot, in my case #5, and pass the rope through the loom, wedging the rope in the saw cut. After you have done a few rows take a piece of good masking tape and place it over the warp on the two round loom pieces that have been filled in order to keep it in the loom. It is really annoying to have the rope fall out of the loom and make a mess of your work.

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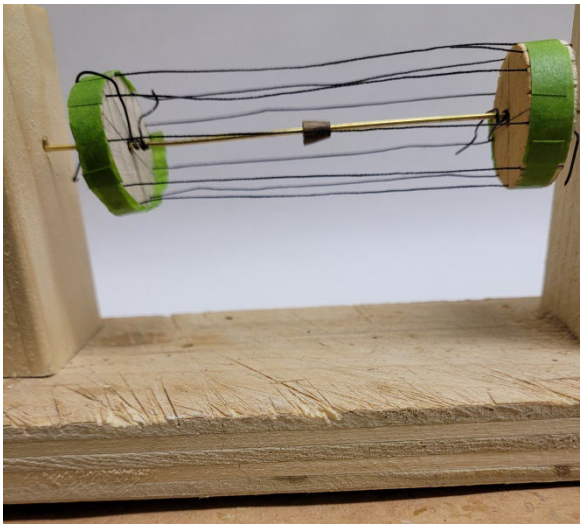
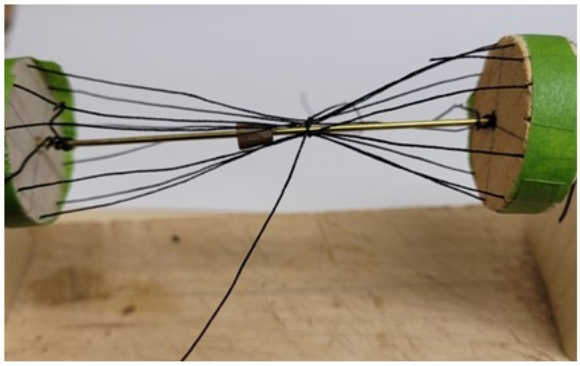
Continue your zig zag setting of the warp, taping every few rows as you go. Keep the warp equal in distance and fairly tight between the loom pieces.

Your loom should now look like the image below. Again, the image is of the mizzen stay mouse. Note the 24 gauge wire wrapped around the loom parts and the spindle to keep the loom wheels from spinning freely.



SHAPING THE WARP

Now we have to bring the warp down to the mouse form. Ensure that the loom piece numbers align and that the warp is not twisted. Take a piece of your warp rope and wrap it around the fore end of the mouse form on top of the warp, using a simple overhand knot to keep it in place. Tighten the knot. This will bring the warp down and bring the loom end piece closer to the middle of the loom. Do not secure the knot tightly yet. This is the reason that you need to space the loom pieces apart as you will lose space when the warp is shaped.



Example of shaping the warp to the fore side of the mouse form.

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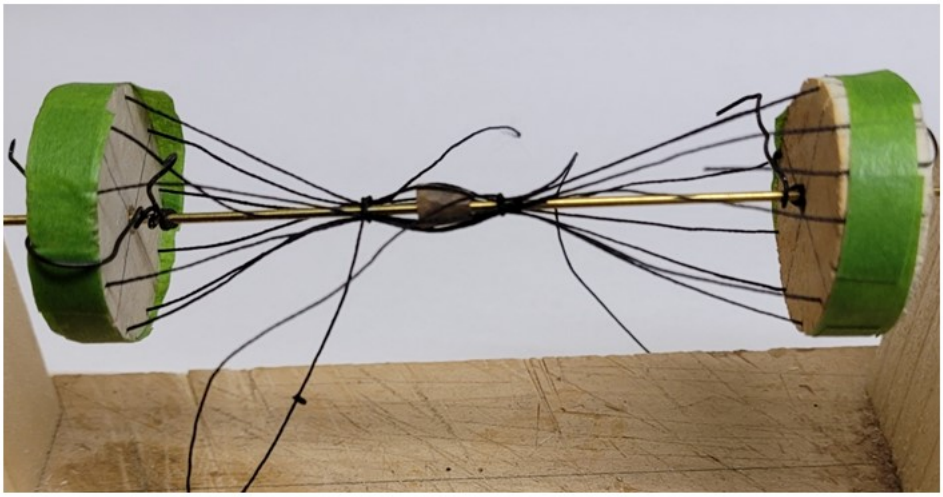
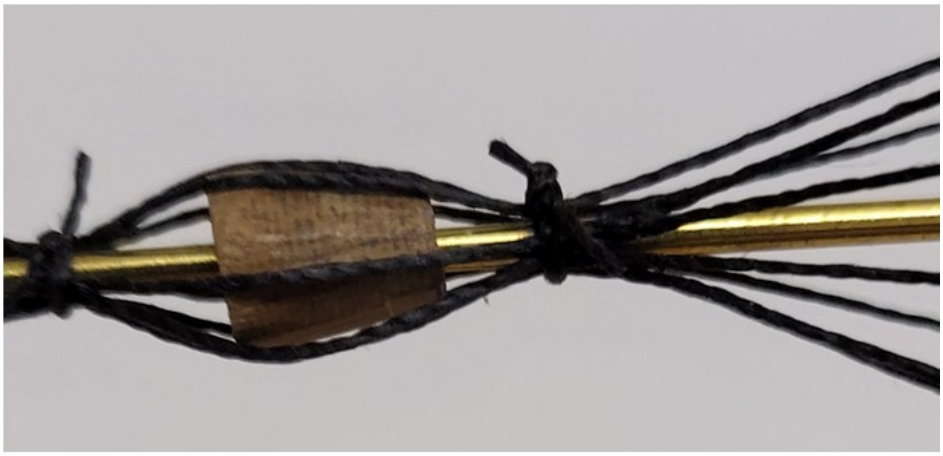
Do the same with a piece of rope at the aft end of the mouse form.

Example of shaping the warp to the aft side of the mouse form.



Use tweezers to sort out the warp once the warp is surrounding the form. You do not want the warp crossed and jumbled. Once the warp is nicely lined up then tighten the knots and double them to keep them intact as shown below.

Example of the completed warp lines surrounding the mouse form, tied off, and extra string snipped.



WEAVING THE WEFT

The weft is the over/under weaving of thread around the warp and forms the outer mouse covering, called the knittle.

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In my case I used about 2 metres of 30 weight cotton sewing thread. This is also the thread that I used on my serving machine. For your application this could be different depending upon the scale of your ship.

You will need as thin a sewing needle as will carry your thread. Thread your needle and then starting on your preferred side, at the bottom of the taper, come along horizontal to the spindle to create some working material for the later serving process. Your lead-in thread will be wrapped under the mouse and stay serving in order to give it some stability over the long haul.

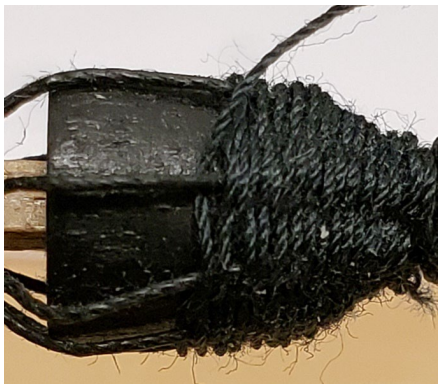
Make an overhand knot around warp number 1. The knot is usually on top so go under the next warp, over the third, under the fourth, and then pull the thread all the way through. Make it reasonably tight, then poke the needle into the top of the closest support, so you can find it later, pick up your favourite needle nose tweezers and push the first few strands down the slope to compact it.

A word about turning your work. DO NOT turn it via the loom wheels as you will have to synch up the numbers to keep the warp parallel. Instead turn the work via the spindle. If the loom wheels are loose then I wrap some soft 24 gauge wire around the spindle on the aft side of each loom wheel, up the aft side of the loom piece, across the outside, down the fore side and around the spindle. This will keep the loom wheels from moving freely. It helps to run the wire along a warp saw cut as it allows the wire to have a bit of purchase in the wood.

Keeping track of your overs/unders, pick up your needle and weave the next 4 warps, and then repeat the compression routine.

After you have started the next revolution, allow the thread to dangle through your outstretched hands to the floor, pinch the thread at the mouse between your thumb and index finger and run it to the needle. This will help keep the twists and knotting out of the thread. About every 4th revolution I perform the finger pinch unkink routine but the needle is removed so that the thread can freely unwind. If you find the standing part of the thread kinking back onto itself then it is time for an unkink routine.

Here is an in-process photo of the foremast stay mouse



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Continue the over/under weaving until you reach the apex of the mouse taper where you have a decision to make. You can either continue the weaving down the aft side or you can tie off the thread and start a new weave.

Going down the aft side hasn't been all that successful for me so I start a new weave at the stay on the aft side and work up the slope. Check your weaving to ensure that it looks correct, and then tie off the weft on a warp. Leave some extra thread just in case you need to weave some touch up later and then snip the thread.

Go to the aft side of the mouse form and start the weaving process again using the above instructions.

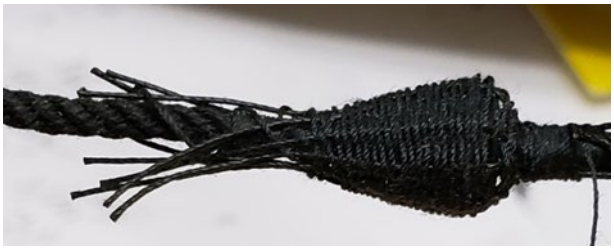
FREEING THE MOUSE FROM THE LOOM

When cutting the mouse free of the loom you want to leave as much warp length as possible on the mouse. It is easier to trim the excess later than to try to figure out how to keep the mouse attached to the stay if you cut too much warp away now. The warp will be splayed around the stay and then served tightly so that the serving keeps the mouse in place. In my case, the fore side needed to be served 3 feet down the stay, 3/8 of an inch or about 9 mm. The aft side is about ¼ inch or 6 mm.

To position the mouse on the stay the stay needs to be completed at this point. The collar is formed and served down to the point where the mouse is to sit. The standing part of the stay is fed carefully through the aft side of the mouse warp threads, through the mouse and out the fore side. Use your tweezers to array the warp parallel around the stay, and then snip the warp to the proper length and serve into place, fore and aft.

The photo below shows the fore stay placed through the mouse. Note that the stay eye and standing part are served down to the mouse before threading the stay through the mouse.

Below is a photo of the fore mast stay with the aft threads served and the fore threads free.



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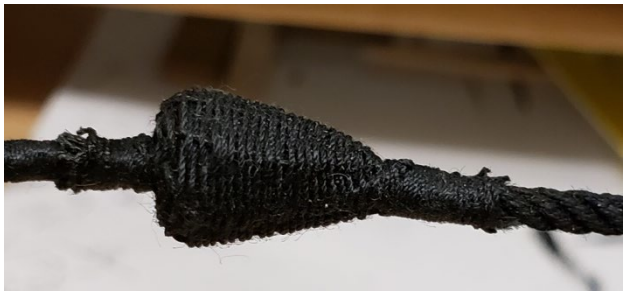
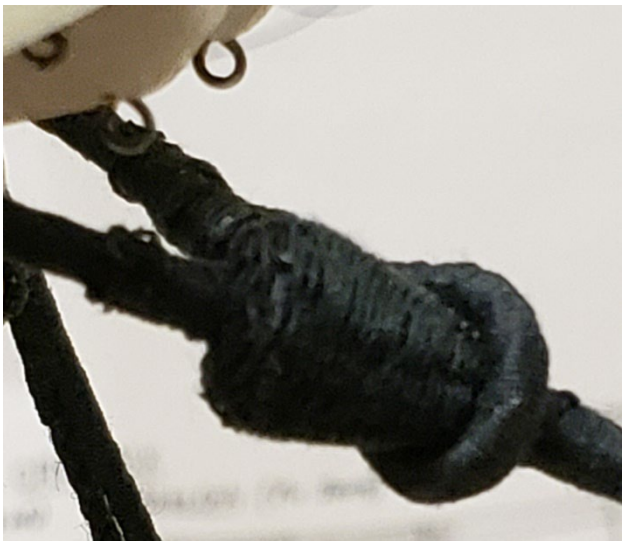
The photo below is of the completed fore stay with served mouse.



The photo below is of the forestay, mouse, and collar. The rigging has not been doped or painted. The extreme close-up of the photo makes the rigging look coated. The mouse is in reality only about 6 mm on the aft side.



It has been suggested to use some diluted white glue to freeze the mouse into shape after the seizing. However, if you are going for realism then the glue will keep the mouse from being crushed in the collar. Once the mouse is in the collar the weight and pressure of the stay should deform the mouse a little bit. That being said, if you want to keep the mouse from stretching over time, then the glue is a great idea. The choice is yours, and unfortunately, being a model, redoing the mouse every few years as in real life, is not really an option.

I hope that you find the effort, time and patience to weave your own mouse meets your satisfaction and desire for realism.

Don Knowles