

Making a Landing Net

Steam-bending and laminating a curved frame

by Geoffrey G. Carson

Besides woodworking, one of my favorite avocations is fly-fishing. Whenever I've had a good dose of shop sounds and sawdust, and it's time to clear my head and lungs, I take to the mountain streams of the Sierra Nevada. But I don't forget the pleasure of working with wood because I bring a piece of my craft with me in the form of a steam-bent landing net. To me, there are few things as rewarding as gently lifting a just-hooked rainbow trout from clear water using a piece of gear I crafted in my workshop.

The net is a straightforward project that offers practice in both steam-bending and bent-lamination techniques. The wooden frame is comprised of three $\frac{1}{2}$ -in.-thick strips that are steamed and bent around a form and then, after they're dry, laminated in a clamping fixture. A wooden-handle insert is then fitted and glued in place. After the frame is prepped for a net, it is sanded and finished and a net bag is attached.

The frame I use for an 18-in.-deep by 28-loop net bag is lightweight and comfortable to hold. It's long enough to accept a sizable fish, but narrow and compact enough to be maneuverable and to fit into my fishing vest. You may want a larger or smaller net depending on the type of fish you are after, but you should have a net in hand before building the frame (see the sidebar on p. 86 for a source for nets). Another consideration in the frame's shape is the radius of the bend. I've found a 3-in.-radius curve is as tight as I care to bend $\frac{1}{2}$ -in.-thick strips of wood.

Building a bending and gluing fixture

My bending fixture consists of a $\frac{1}{2}$ -in.-thick plywood plug screwed to a plywood base. The plug, which is the exact shape and size of the desired frame hoop, has holes drilled equidistantly around the perimeter to accept clamps (see the drawing on the facing page). To keep the frame from being glued to the base, I place a sheet of 0.5- or 1-mil. polyethylene between the plug and base. When band-



The author's steamer is a roasting pan filled with a bit of water heated on a Coleman camping stove. Only the middle of the $\frac{1}{2}$ -in.-thick laminations are steamed before they're clamped around a plywood plug to form the frame.



A steam-bent landing net is a welcome addition to any angler's gear. This bird's-eye maple and walnut frame holds a 28-loop bag.

sawing the plywood plug, I remove a $\frac{1}{8}$ -in.-wide hoop of waste to allow space for the frame, so the outside scrap plywood can be used as clamping cauls. I bandsaw just outside the layout lines and then use a file and drum sander to smooth the edges of the plug and cauls to the lines.

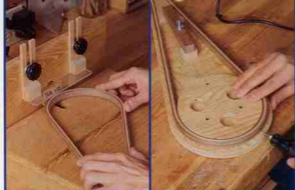
Selecting and preparing stock for the laminations

Various contrasting woods can be used for the landing net's frame, but each one will have its own bending characteristics. Woods like oak, maple, walnut and poplar bend with relative ease, while mahogany and many exotic woods require thinner laminations or longer steaming times during the bending process. I always select straight-grain lumber for the frame because it's frustrating to have steamed laminations snap in two due to slash grain.

After selecting the wood, I rip three $\frac{1}{2}$ -in.-thick laminations (usually two of one wood, one of another) from $\frac{1}{2}$ -in. stock. The length of the laminations will vary with the size of the net frame; the strips for the frame shown here should be about 48 in. long. Once I've cut all the strips, I'm ready to bend them.

Using a simple steam-bending pot

Although my method of steam bending may seem somewhat crude, it works well enough for me. I use a turkey roasting pan, boiling approximately 3 in. of water in the bottom. I lay all of the wood strips across the pan, as shown in the top photo above, with the portion that will form the tight curve at the net's end over the steam, and then I cover the strips with the lid. It isn't necessary to steam the part of the strips that will form the handle portion because its curve is minimal and will be formed during laminating. I steam each strip until it is very pliable—both ends are bent upward until the strip's center is bowed down enough to touch the boiling water. As I mentioned earlier, different woods will require differ-



A 1/8-in.-wide groove for securing the line that secures the net is routed around the frame's perimeter (left). A curved, hard-wood block, attached to the fence of the horizontal mortising table with double-faced tape, allows for full depth of cut all along the frame's outer edge.

Equally spaced holes for mounting the net bag are drilled along the groove that surrounds the frame. To minimize tearout, Carson drills with a high-speed Dremel Moto-Tool (right).

ent steaming times. I've found that maple, poplar and walnut take about 10 to 15 minutes, while mahogany takes at least 30 minutes.

While the wood is still hot, I bend the laminations around either a 6-in.-dia. circular plywood form, like the one being used for drilling in the photo at right, or around the fixture's plug, as illustrated in the drawing at right. I clamp the net end of the frame's curve only, not the handle, and let the layers sit overnight. The next day I remove the laminations from the bending fixture, separate them and place a rubber band around their ends to hold the curve until they're fully dry, which usually takes two or three days.

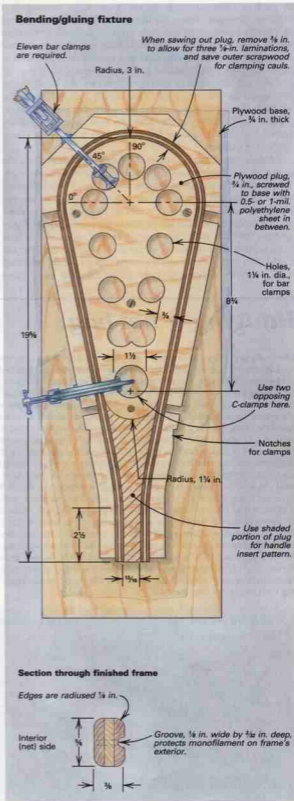
Gluing and clamping the frame

To glue the laminations, I use Weldwood's plastic resin glue with a water-activated catalyst. It's easy to mix, highly water resistant and strong (provided the manufacturer's recommended mixing ratios and clamping times are closely followed). Be aware that the pot life of this glue is relatively short and brushing glue on the strips can be time consuming.

Before gluing, I dry-clip the strips in the fixture to ensure a proper fit. To prevent excess glue from sticking the frame to the fixture, I generously coat the plug's and cauls' edges with Minwax furniture paste wax. Next, I place the inner lamination on the fixture, and then liberally cover the inside surfaces of the middle and outer laminations with glue before adding them to the fixture. Starting at the top of the frame, I position the clamping cauls over the outer lamination and, working alternately in both directions, I tighten the clamps until there is even glue squeeze out around the frame. I also make sure that the edges of the laminations are lined up since this makes the frame easier to surface later. It's normal to encounter a small amount of springback when the frame is unclamped, but that won't be a problem once the handle insert has been glued in place.

Adding a handle insert and prepping the frame for a net

Before cutting the 1/2-in. stock for the handle insert, I use the handle end of the glued-up frame to trace the insert's pattern. To overcome springback, I squeeze the ends of the frame to the desired width before marking out the handle. I shape the wide end of the insert to form a smooth transition between it and the frame. The insert is glued in place and clamped using two hand screws and the lower cauls. After the glue has cured, I run the frame through



my thickness planer to remove any offset in the laminations. I minimize cross-grain tearout at the end of the frame by keeping my planer's knives sharp and their depth of cut set for very light passes. When the top and bottom surfaces are even, I trim and round the end of the handle, sand and smooth the upper end of the handle with a drum sander. Radius all edges of the frame, inside and out, with a $\frac{1}{8}$ -in. roundover bit (see the detail in the drawing on the previous page). Occasionally, my mahogany and oak frames split out at the curved end while I'm routing. But almost all splitting can be eliminated by first easing the frame's sharp edges with a sanding block and then passing the router slowly over that area.

Although the net bag is hung on the inside of the frame (see the instructions in the sidebar), it is secured around the frame's perimeter with 50#-test monofilament fishing line. To reduce abrasion of the line and net loops, I rout a $\frac{1}{2}$ -in.-deep groove into the outside of the frame with a $\frac{1}{8}$ -in. veiner bit fitted into my shop-built mortising jig (see the left photo on the previous page). After counting the net's attachment loops, I lay out and mark the hole locations, starting at the center of the frame's curved end. The last hole at each side of the handle (below the hoop) should be drilled at an upward angle so that the hole spacing along the inside curve

of the handle insert matches the spacing along the frame. I use a Dremel Moto-Tool to drill the evenly spaced $\frac{1}{8}$ -in.-dia. holes (see the photo at right on the previous page) along the frame's groove for attaching the net bag. The Moto-Tool's high speed minimizes tearout where the bit exits the inside of the frame.

Sanding and applying a protective finish

I hand-sand the frame to 220-grit in preparation for the finish. Then I brush on successive coats of clear Watco oil, allowing the frame to soak up as much oil as it can in 30 minutes. Next I apply two coats of Formby's High Gloss Poly Finish as a topcoat, which provides some protection against the net's occasional dunking. Because of the frame's curves, I make an applicator from an old T-shirt with rolled-up balls of cloth inside (similar to those used for French polishing). I dip the applicator several times to saturate the inner cloth with enough finish to do the entire frame. When the frame is dry, I tie on a net bag and install a brass screw eye in the butt of the handle to tether my landing net to my vest, ready for the next fishing adventure. □

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Hanging a net bag

After making my first landing net frame, I decided to tie my own net using nylon line and a book on knots. Unfortunately, it took longer to tie the bag than it did to build the frame. I have since vowed never to tie nets again. Instead, I purchase net bags from Greg Lilly's, A Fly Fishing Adventure, 13011 Newport Ave., Suite 105, Tustin, Cal. 92680. The nets come in a variety of sizes, but the methods for hanging them on a frame remain about the same.

First, devise a stand, like the one in the photo at right, to secure the frame and free your hands for tying. Begin attaching the bag's loops on one side of the frame's handle and work that side, around the net and then down the other side toward the handle again.

Here's my procedure: Cut a piece of 50#-test line about twice the length of the frame's perimeter, less the handle. With one end of the line, tie a figure-eight knot around the net bag loop, and then feed the other end through the frame's first hole from the inside. Pull the line until the knot just disappears into the hole, as detailed in step 1 below. This takes some force, so heavy gloves are a good idea to keep the line from cutting your hand.

Next, thread the monofilament through the second hole of the frame from the outside, as shown in step 2. Repeat this sequence for all the intermediate holes. For the last bag loop, pass the monofilament through the frame from the outside, through the loop and then back through the last hole in the frame. Pull the line until the bag loop is completely through the frame. While holding the line taut in the frame's groove with a small pair of needle-nose pliers, tie a figure-eight knot around the loop (see step 3). Trim off the excess monofilament, and then pull the loop from the inside of the frame until the knot and net-bag loop disappear into the hole.

—G.C.



The author built this stand to clamp his work when he's hanging nets. It holds the net frame, so Carson's hands are free to attach the net. Using a length of 50#-test monofilament, which measures twice the length of the frame's perimeter (minus the handle), Carson secures the net loops within the perimeter groove.

