

BOATWORKS BLOG

By Reuben Smith, Boatbuilder at Hall's

1928 22' CHRIS CRAFT CADET - "MOONSHINE"

Number 2 in a Series

Over the next months, we'll tell the story of Hall's restoration of this cadet. This boat has always lived on Lake George, and at 80 years old, she's in the shop for a structural rebuild and restoration. The boat needs a complete new bottom, with repairs to the stem and gripe, and new bilge stringers, keel, and chines, and all the framing and planking. The original engine is long gone, and the boat will have a restored engine installed when we're finished. Above the waterline, we'll do various repairs to planking, deck, and covering boards, and do a complete strip and refinishing.

In this series, we'll talk about the thought process that goes into restoring a boat like this.



Replacing the stringers

The engine stringers are the largest timbers in a runabout like Moonshine. Chris Craft called them "keelson." They run fore and aft through the hull a little more than a foot either side of the keel. They distribute the weight of the engine to most of the main frames. Importantly, the thrust from the prop, as well as the twisting torque from the engine, is carried through the engine mounts to the stringers. Via the little quarter inch bolts and careful notching around the main frames, the stringers push the rest of the hull through the water.

Each stringer is notched for the frames, and the bottom edge is shaped to follow the bottom of the hull, an inch and a half or so above the planking. The top edge, commonly, is a straight line, and we can sight along that line to double-check the shape of the hull; if it's bowed one way or the other, then the hull is humped or

sagged. We can also set a level athwartships from one stringer to the other at several points along their lengths and see if there is any twist in the hull.

On our Cadet, the stringer runs straight from the transom frame to the forward end of the engine compartment, where it kinks upward to its end under the forward deck. The seats and soles are built off these stringers, and of course the engine is mounted on top of them. So long as the stringers are level with each other and run straight, then all the fitting out projects, from interior joinery to installing the engine, goes smoothly. So, doing this part of the job carefully will pay dividends later on.

An unexpected problem

When we removed the lower transom plank (which we needed to do to feed the stringers in and out of the boat) and sighted along our stringers, we saw that the portside one had been replaced, and its top edge was not made of straight lines. Probably it had been installed without the boat as open and apart as we had it now, and the builder had to do the best he could, cutting that top edge with a circular saw, while the piece was in the boat. So, now we had a good starboard side reference, but no such thing on the port side. But by assuring we had set the boat up level from the outside references, we could extrapolate where the straight lines of the top edge of the port stringer should run, and then figure the shape of the bottom edge and where and the notches for the frames should go. Here's how we did it.

Picking up the shapes of the stringers

We ripped some 8" strips of luaun ply and set them up to make two dead straight 18' long pieces (18' being the length of our stringers). That straight line would be the reference line for picking up and transferring all the shape in the stringers, top edge, bottom edge, and position and depth of the notches for the frames. We fastened these luaun pattern pieces directly to the sides of the stringers in the boat, exactly parallel to each other, and set up so that the top edge ran in a rising straight line from two inches above the starboard



stringer at the stern of the boat, to two inches above it where it ended forward. We could then trace the top edge of the starboard stringer right onto the luaun, showing the straight line running from the stern up to where it kinks upward at the forward cockpit, and then the straight line from that kink to the end forward. Going over to the port side we could use a level from the starboard side to mark on our luaun the heights where the top edge of the stringer should be, and then mark off the bottom edge shape, as well as the position of the notches for both stringers.

A word on marking and measuring

Most boatbuilders don't use a ruler unless they need to. You're working often to tolerances much finer than a sixteenth of an inch, and it's much simpler to use a pair of dividers, or even making tick marks on a clean stick of wood to show a measurement than it is to recall that something was 7 and 11/64s inches long. For instance, in marking our luaun pattern the position of the notches, and shape of the bottom, we used a length of scrap wood roughly six inches long. We held it the bottom of it against the corner of a notch for a frame in the original stringer, and then marked where the top end landed on the luaun. That established the height of that corner. Also, while marking, we held our little stick against a small square laid against the top edge of the luaun patter, and this established the position of that mark fore and aft. We used the same process, and the same small stick of wood, to mark those points on the stock we made the stringers from.

Also, now, a word on straight lines

Because that luaun pattern was going to be our guide for transferring the shape of the stringers in the boat to the new stock laid on the bench, we needed some sort of datum line. For us, it was the straight top edge of the luaun patterns. Even someone with glasses as thick as mine can see a dead straight line. A tiny, eighth inch kink over an 18 foot length is plainly



visible, so long as you get your eye right down to a few inches over the line and look down its length. We sighted those edges for straightness when they were fastened to the stringers in the boat, and then we did it again when we laid it out on the bench to mark our stock.

And while I'm at it, a word on method

Fitting this sort of piece is not an artistic exercise, because you're making a literal duplicate of an existing piece. It should be as exact as possible, because any variation here can affect the shape of the boat and its performance, or lead to serious headscratching when fitting seats and soles and powering. In teaching boatbuilding workshops, and in working on my own, I've found the best way to think about this sort of job is to keep your focus on just two dimensions at a time. In a piece like this, you have the length, the sided dimension, and the molded dimension. Just think of two of those three things at a time. Wait until you're extremely familiar with the shape before taking on all three at a time. So, in this case, we established the length of the piece and the thickness of the stock. Then, we cut the profile shape of the piece. Then we cut the notches without bevels, and then cut the bevels.



Marking and cutting

We transferred the data from the luaun onto beautiful vertical grain fir planks that our lumber supplier, Tom Devlin of Northern Hardwoods scored for us. We sawed that top edge with a skilsaw, and then worked it with a plane to make the lines dead straight. Then we picked up the bottom edge and skilsawed that swooping line. The notches were cut out with a pullsaw and a sharp chisel, doing our best not to chip up that stringy fir. The stringers sit plumb, and the frames pass under them at varying angles, so the notches have to be bevelled for the frames to fit into. We mark the bevels for each notch onto the luaun, and then picked them up onto the new stringers and carved those in.

On the port side, because we couldn't always get good marks because of structure in the way, we had to fuss with the notches a little bit more, taking carrying that stringer back and forth from the boat to the bench a few times before we had it right. On the starboard stringer, however, we could get reliable marks for almost every piece, so we could make that part on the bench and then go to the boat, cut out the old stringer, and drop the new one in without much fussing.

Working rightside up

Many builders prefer to be working with the boat upside down at this point, and with the bottom planking cut off. It's our preference to work rightside up, largely so we can always see the shape of the boat and make sure we're maintaining it, and because leaving the planking on the bottom helps hold the shape while the stringers are going in and out of the boat. We cut holes in the bottom to expose the bolts that tie the stringers to the frames in order to be able to drive them out. We fastened the new stringers in with temporary bolts.

THAT'S ALL FOR THIS WEEK.

CHECK BACK SOON FOR MORE UPDATES ON "MOONSHINE"