

## BOATWORKS BLOG

By Reuben Smith, Boatbuilder at Hall's

### 1928 22' CHRIS CRAFT CADET - "MOONSHINE"

#### Number 4 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 gripe

The gripe is a backbone timber that ties the stem and keel together, while also forming the boat's forefoot. It's generally curved in profile, and is often made from a crook or knee of a tree. Its swept grain helps make the transition from a horizontally running timber (the keel) to a vertically oriented timber (the stem) without sacrificing strength or being prone to checking. The joints between the gripe and the stem and keel are common leak points in older boats.

## Getting started

We removed the bottom quickly, doing most of the work with a sawzall, bringing up good-sized lengths of planking and inner skin all together. It's a messy job, dealing with all that old, oil-soaked planking. We were careful not to do too much damage to the frames, chines and keel, because we wanted to use the old parts to help us maintain the shape of the new bottom. We also removed the first round of planking above the chine.



We pulled off the keel and the gripe, and then cut down into the stem far enough to get past any dubious wood and cut a shape that would be make for a good, strong joint between our new gripe and the stem. The chines were tied together with a temporary breasthook, and then cut off short. We kept those ends for help later when we will sny the ends of the chines to fit the stem.

Our new gripe was going to be bigger than the original, having more curvature and running further up the stem. On a lot of old plumb-stemmed boats with bows built of straight-grained stock, rather than knee stock, the builders compromised with the runout of the grain at the foot of the stem and forward ends of the gripes. There's commonly lots of checking in the wood in older boats, and these boats commonly leak at the backbone joints in the bow. We decided to laminate our new gripe to handle some of these problems.



By running our gripe further up the stem, we raised that joint, and the stopwater, up to just above the waterline. We also eliminated much of the cross-grained part of the foot of the stem.

By laminating, we got rid of all of the cross grain in the gripe, and at the same time built up a very strong and stable timber for the bow of the boat.

Much of the original gripe was worn away, down past the rabbet line and into the planking. In this picture, the amount the planking has worn down is obvious—the battens indicate the original outer profile of the gripe and keel, and the rabbet line, and the worn edge of that garboard is



nowhere near those battens along the bottom of the boat. We used these battens to rough in the shape of the new gripe and make a mold for our new laminate. These pictures should give a sense of how we use the battens, and show how viewing them from the side and the end help us judge their fairness. A taper was planed into these battens to let them be more limber where the bend was more extreme.

The exact shape of the profile of the stem, as well as the rabbet, bearding line, and apex lines would be established when the new stem will be fit into the boat, using fids and more battens.

### **Roughing out the gripe shape**

We used a beam compass—the trammel points, in the picture—to transfer these curves onto a pattern we would use to create a mold for laying up our new laminate gripe. We clamped temporary vertical posts to the side of the keel, and a chunk of plywood to that, and swung arcs from points taken from our battens to pick up our rough shape of the gripe. We can use these arcs to re-create the curves on the boat. There are lots of different ways to do this step, from using joggle sticks to laying out a grid, and we're basically using the same system



you would use to fit a bulkhead, or to splice planking. When we lay our pattern stock onto the material we're building with, we can use the beam compass to find the radial center of each arc we drew, and thus create a series of points that we can run a fairing batten through, and draw on our building material the outer and inner profiles of the gripe, and the rabbet line.

### Laminating the gripe

In this case, we wanted to make a mold to lay up a laminate gripe. We laid out the shape of the rabbet line onto heavy plywood and made a good strong mold from that. We smeared it with Butcher's wax and milled up some mahogany offcuts and started our lay-up.

My preference when laminating a curved piece like this that will get a rabbet cut into it is to make the mold shape to the rabbet line. Then, the laminate stack that is made on the mold is the part of the gripe that is outside the rabbet. Then, I use that outer laminate as a mold, itself, to lay up the inner part of the gripe. The main point of this is to eliminate cutting the rabbet across glue lines, which can get frustrating. We find that building up a laminate stack as thick as this is best done in several layups, because although each thin laminate is a flexible enough piece, all together, and slathered with epoxy, they would make one powerfully springy mess, and it would be very difficult to make the bend without creating voids or, just as bad, creating too much clamping pressure.

In the end, the laminate blank looked like this (photo at right) >>>



We didn't cut out the profile shape of the gripe, and cut the rabbet, until the reframing was complete, but I'll jump ahead to that point here, to stay on the topic of the gripe.

In our case, figuring out the final shape was fairly involved, because so much of the original had been worn away.

Fortunately, we had recently hauled out another cadet and had it stored in the upper building. We were able to take measurements from that boat.

We also had saved the garboards with the inner skin still attached and laid that on over the new framing to work out the rabbet lines and bevels. With fids and battens and guesswork we worked out the rest.



**THAT'S ALL FOR THIS WEEK.**

**CHECK BACK SOON FOR MORE UPDATES ON "MOONSHINE"**

