



## **Small Shop - Big Results**

### **Repairing Serious Damage – Part 3**

By Chuck Behm

Central Iowa Chapter

This month it's time to take a look at the process used to finish off the repair of the damaged case that was begun last month. Steps 1 – 6 reviewed in last month's Journal covered the routing out of the damaged area to produce a manageable repair site. We will continue from that point.

7. Measure the damaged area to determine the quantity of oak needed for the repair. Oak is used as the core wood for its strength. Don't be tempted to use pine. If you don't have a stock of oak lumber on hand, you'll want to purchase at least enough for this job. (It would be a good idea to purchase extra to have on hand for the next job as well). If the depth of the damaged area is more than  $\frac{3}{4}$  inch (wood sold as 1 inch thick lumber is almost always a finished dimension of  $\frac{3}{4}$  inch) you will need to glue 2 boards together face to face to achieve the thickness that you need. Use a thin layer of Titebond, and clamp the boards together overnight. If you use C-clamps that screw down, tighten your clamps so that you get a bead of glue all around the work piece, but stop there. With C-clamps, it is possible to over-tighten the work, so that essentially all the glue is squeezed out. Let dry overnight.

8. On a thickness planer, mill your board down to the exact thickness that you need. Your board should not be cut to an exact length at this point, but should be longer at least by a foot or so than the intended repair piece, to allow for easier use of the planer. Remember to account for the thickness of the veneer and glue which will cover the core wood. If you wish to cover the core with two layers of veneer (the top piece and a layer underneath with the grain running perpendicular to the top layer), allow enough room for a double layer of veneer and glue. On the job being illustrated, I used a single sheet of veneer to cover the core, since the piano itself had a single layer.

9. Use butcher paper to create a pattern to trace onto your oak board and cut your repair piece on a band saw or scroll saw. To make the pattern, tape a sheet of butcher paper (or typing paper, if the area is small enough) over the damaged area, and crease the paper at the edge of the cut line with your thumb. Carefully cut along the crease with scissors, then tape the pattern to your oak stock. Use a band saw or scroll saw to cut out your repair piece. (If you're using a band saw, and there are rather tight curves to cut, make sure you have a narrow blade on the saw.) Allow for  $\frac{1}{4}$  inch or so extra on the straight edge, to be planed down flush later. Check the fit of the repair piece by holding in place at the repair site (Photo 1).



*Photo 1: Checking the fit*

10. Glue the repair piece in place. If there are narrow gaps between the finished repair piece and the edge of the area you routed out on the piano, you may fill those with wood filler after the piece is glued in place and the veneer is cut to cover the repair.



*Photo 2: Glued in place, with finishing nails in lieu of clamps*

However, if you're more of a purist, and don't want to use any filler, chalk the inside cut of the routed-out area with blue plumb chalk, hold the repair piece in place, and thump the edge with a rubber mallet. Take the repair piece out, put it in your wood vise, and file off the high spots (those showing blue chalk). Repeat the process until you have an absolutely snug fit. This is why you allowed a little extra on the straight side – better a little too much on the edge when you get done, than not quite enough. Use Titebond or a similar glue to glue the repair piece in place. If clamping is not possible (for example if the tilter is in the way), use finishing nails to secure the piece after the glue has been applied (Photo 2). Make sure to drill your pilot holes before you glue. If you wish to remove the nails and fill the holes after the glue has dried, don't drive them all the way in. If you intend to leave the nails, drive them down flush and tap them in with a punch to cover with filler.

11. Select the veneer you wish to use. If you don't have a supply of veneer, you'll need to visit a woodworking store, or order from a catalog. The advantage of a woodworking outlet, such as The Woodsmith Store, is that you get to see the veneer you buy – the pieces will be in clear plastic. When you buy from a catalog store, such as Rocklers, you get what they send you. Of course, if you don't live near a store catering to woodworkers, the catalog is a lifesaver.

Be sure to buy the correct species of wood. The most common types of veneer used on piano cases, are mahogany, oak and walnut. Mahogany, the type used on the piano being featured in this article, is recognized by its light and dark bands that run fairly straight in the direction of the grain. It usually is more reddish-brown than the other two (Photo 3). Walnut has more swirls to the grain, has more of a brown hue, and is without the distinctive banding (Photo 4). Oak varies as to hue, depending on the stain that has been used, from a reddish-brown to a more walnut brown. As far as grain, it also varies, depending on whether or not it is quarter-sawn (Photo 5). While you are buying what you need, I would go ahead and purchase a supply of each to have on hand.



*Photo 3: Mahogany*



*Photo 4: Walnut*



*Photo 5: Oak*

12. Cut your patch piece from your selected veneer. As much as possible, try to match the grain of your new veneer to area it is being patched into. At this point, don't worry about the difference in color between the new and old veneer. Once the piece is cut to fit and glued into place, you'll be stripping and staining the surrounding area and the patch together. Before cutting the veneer, tape a piece of wax paper over the area and use a Sharpie to trace the exact outline of the repair. Remove the wax paper and cut along the line you've drawn. This will be your pattern.

Next, cut a rectangular piece of veneer several inches larger than the repair to tape over the area. The straight edges should be even with the outside edges of the oak repair piece. Tape the veneer down securely along all four edges, with the tape on the outer edge wrapping behind and under the piano. In addition, use several stick pins to secure the veneer more securely. You probably will have to tap these in with a mallet.

Now, tape the wax paper pattern on top of the veneer so that the curved edge is exactly over the edge of the oak repair piece.

Finally, using an X-Acto knife, cut outside of the wax paper pattern about a half inch through the new veneer and into the existing veneer of the piano. You'll find that this is the trickiest part of the repair so far. You will want to cut with a firm enough pressure to cut through both the new and the old veneer. If you don't make a firm enough cut go through both layers of veneer the first time, you'll have to retrace your steps and cut again. Following the razor line in the veneer is difficult.

Remove the cut piece of new veneer and set aside, then pull off the tape and excess pieces of new veneer to dispose of. Your new piece of veneer should match up perfectly with the razor line cut into the original veneer of the piano (Photo 6).



*Photo 6: Cut to fit*

13. Use a sharp chisel to pry off the excess of the original veneer in between the edge of the oak repair piece, and the razor cut. The purpose of removing this ½ inch of old veneer is to insure that the seam between the old and new veneer does not lie directly over the seam between the oak repair piece and the routed edge of the piano, ensuring a smoother transition.

If the old veneer is stubborn, and doesn't want to pry off easily, you may try a steam iron and a slightly dampened rag, and heat it up slightly. If you do resort to this, you will find that the steam makes the razor cut very hard to see, so try to remove as much of the ridge of veneer as possible before steaming it. Also be very cautious when

scraping out this veneer not to damage the veneer on the other side of the razor line. If you do chip out a little piece, save it to glue back into place.

14. Finish preparing the bed for the patch. If there are any gaps between the oak repair piece, or holes where you punched in the finishing nails (as mentioned in step 10), fill them in now with filler. Wait for it to dry, sand and repeat if necessary (oftentimes the first layer will sink in slightly, leaving a shallow groove which needs to be refilled). Rough sand the area once this has been done with a small piece of 100 grit sandpaper, being careful again not to damage the adjacent original veneer.

15. Mix your glue. You need a glue pot, and a supply of animal hide glue crystals. Although other types of glues could be used for this job, hot animal hide glue is great – easy to use and forgiving of errors. If you haven't used hot glue before, these directions are for you. (Initial instructions for gluing veneer using hot animal hide glue were given in the January, 2009 segment of the Small Shop – Big Results series.)



*Photo 7: Pinblock scraps come in handy for lots of things*

16. With the patch glued in place, use a cold piece of wood (a squared off chunk of pinblock scrap is perfect for this job) to smooth the work out, pushing it up tight to the seam (Photo 7). As the glue cools, it will adhere to the oak core. This process takes a minute or two, but there will be no overnight clamping needed once the glue has re-cooled. I mentioned that hot glue is forgiving. What I meant by that is that were you to decide that your positioning of the patch was not quite tight enough, you simply need to reheat the work until the glue re-melts, then reposition. Try that with Titebond!



*Photo 8: All is well again*

17. With the patch in place, finishing up is a matter of staining to match (Photo 8), and applying the finish. For mahogany, try putting on a thick layer of pigment, allowing it to dry for a day or two, then gently wiping off with 0000 steel wool. The banding that one sees in mahogany may be imitated by wiping more of the stain off to create the effect of the lighter bands, and leaving more on for the darker bands.

Until next month, then, I'll leave the coffee pot on. Stop by anytime.

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