

# **Restoration Project / Schiller Upright Photographic Journal / Photo Set 2**



**by Chuck Behm**

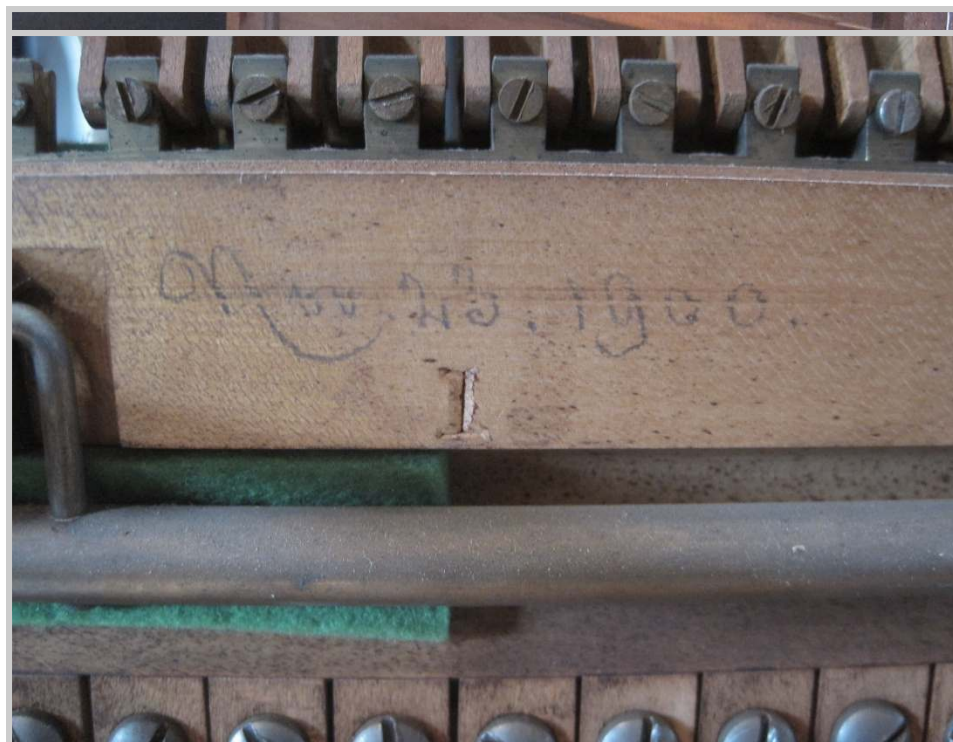
Where we left off:



With case disassembly complete, work was progressing well with the refinishing end of the project. Dave was ready to start work on key-tops, and I was preparing to send off bass strings and hammer samples to Schaff for duplication. I was also anxious to get started on repairing the soundboard, which had opened up considerably after drying out in the low humidity of the shop. Upon inspection ribs were also proving to be very loose in places and would need to be effectively reglued. The photos in this set show the progress we make on those jobs leading up to the beginning of repinning and restringing.



*Photo 28: End hammers of each section have been removed from the action and are numbered to send to Schaff Piano Supply Company for duplication.*



*Photo 29: In an instance of serendipity, I glanced up from taking the shot of my numbering on the hammer in photo 28, to notice for the first time the inscription on the rail written by a factory technician at the very beginning of the last century (the year the piano was built). . .this makes me stop and think—will anything I've accomplished with pianos last 100 years?*





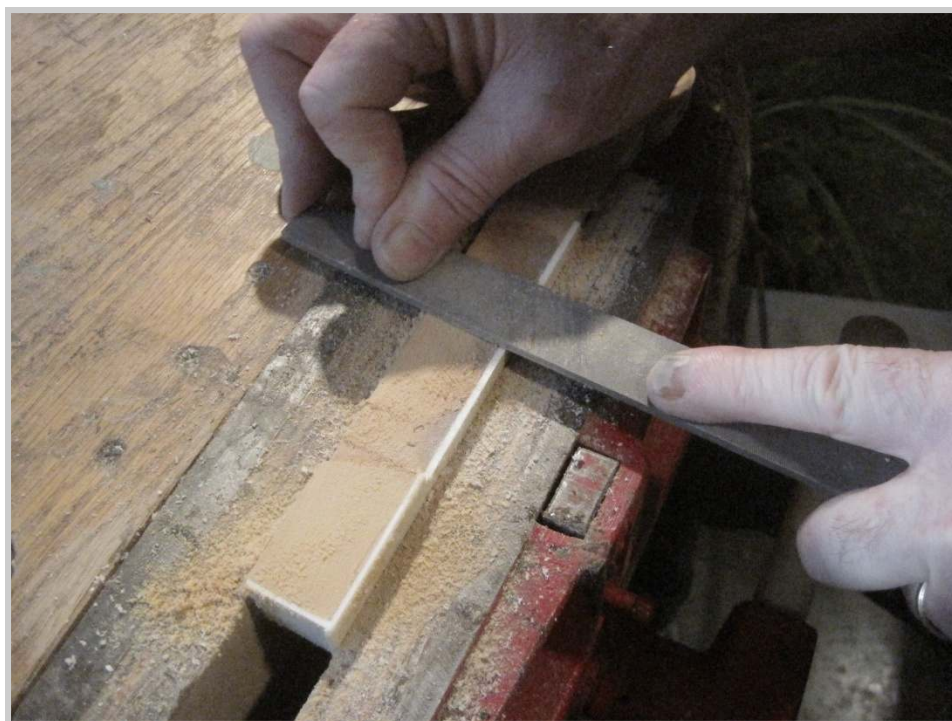
*Photo 30: Wear and tear on the sample hammers being sent in for duplication—a clear need for replacement and not just a simple filing and shaping.*



*Photo 31: Turning our attention to the keys, I prep the surface of the natural keys for installation of new keytops. Since the new tops are a bit thicker than the original ivory, the very top of the keysticks are shaved off to compensate for the difference. The old fronts will also be removed prior to the installation of the new tops.*



*Photo 32: New keytops are hand filed after being glued on. The satin finish of the keytops to the left in the photo is a result buffing off the sheen with 0000 steel wool.*



*Photo 33: The sides of the each new keytop is filed flush with the wooden keystick by using a coarse file to knock off any overhang, followed by a fine file for a smooth finish.*





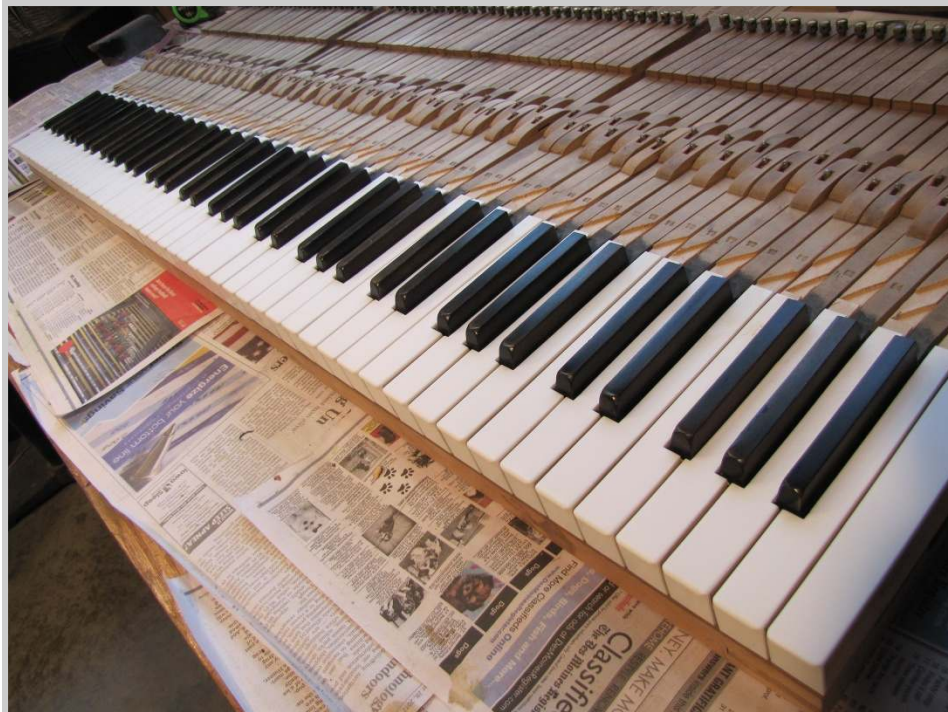
*Photo 34: Sharp keys are placed in racks and the old lacquer finish is stripped off.*



*Photo 35: The ebony sharps are buffed with a special compound to bring out the beauty of the wood. .*



*Photo 36: The beautiful reddish brown finish of the ebony sharps is brought out by polishing.*



*Photo 37: The finished set of keys ready to be reinstalled when the time comes.*





*Photo 38: Turning to the case parts, Dave applies three coats of polyurethane to each case part. Staining was done to match the original finish, which will be preserved on the inside of the lid. The first two coats applied are high gloss for hardness— the final coat is satin for the desired appearance.*



*Photo 39: Parts after second coat has been applied. The arm on the far right is just one coated. Each coat of polyurethane is buffed between coats with 600 grit paper.*





*Photo 40: Decorative case parts before (inset) and after new finish is applied.*



*Photo 41: With all case parts finished and stored on parts trolley for the moment, work can focus on other matters.*



*Photo 42: Loose ribs are effectively reglued by use of piano wire at tension used to draw the ribs and the soundboard firmly together. Tuning pins driven temporarily into the back posts as stakes to pull back on the wire. The holes drilled in the back posts for the pins will be later filled with epoxy, sanded and shellacked.*

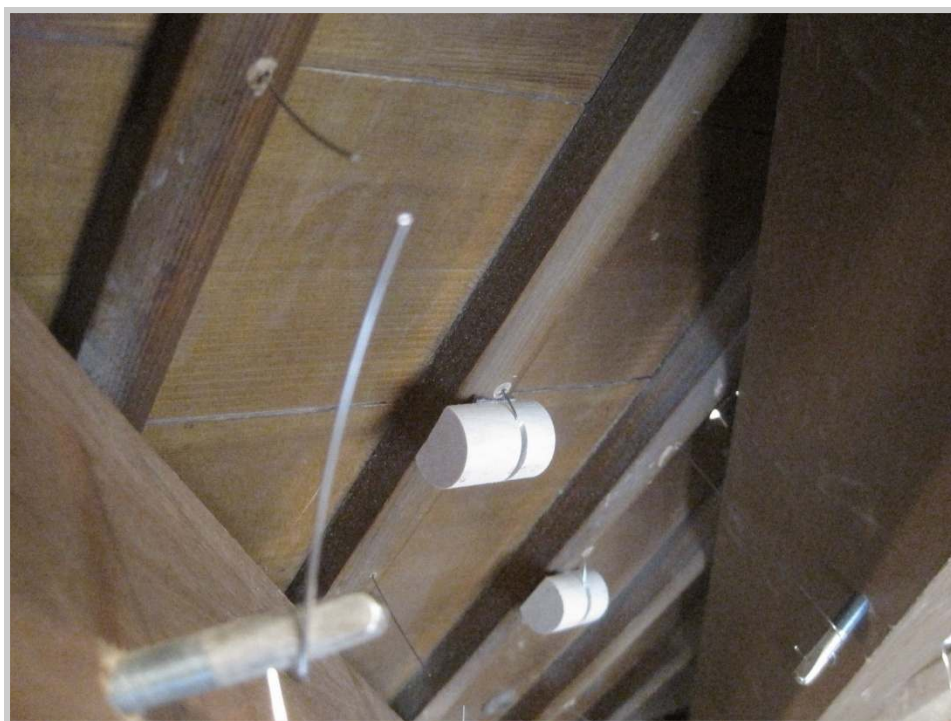


*Photo 43: This is the device that makes this method work. Piano wire is threaded from the front to the back of the soundboard and around half-rounds which are channeled to allow the wire to easily slide as it is tensioned. The only damage to the ribs and the soundboard are the 1/16" holes drilled to allow for passage of the piano wire..*





*Photo 44: The wire clamping system as seen from the front of the soundboard.*



*Photo 45: The morning after the ribs were clamped, the wires were cut. Overnight, the soundboard had gained a noticeable crown, which was announced by a bang with each wire that was cut. The board visibly flexed outward as the tension was released.*



*Photo 46: Laying the piano on its back once again, it is time to tackle the cracks which have opened up in the dry shop air. (The tiny holes which were used for the gluing of the ribs to the soundboard will be filled, and will be nearly invisible when the board is finished.)*

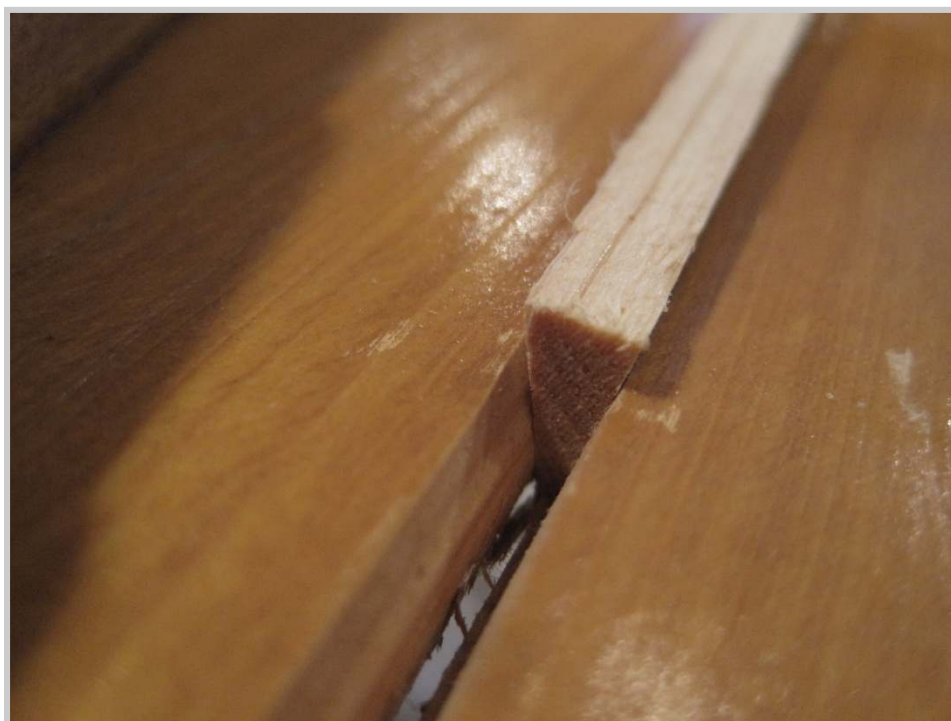


*Photo 47: Each crack is widened with a specialized gouging tool which produces a v-shaped gouge suitable for shimming. Multiple passes with the gouging tool with a moderate amount of downward pressure produce the cleanest cut.*





*Photo 48: A perfectly gouged channel for a shim.*



*Photo 49: A sample piece of shimming material is used to test the width of the groove. The point of the shim should protrude below the gouge, while not sinking below the level of the soundboard on the topside.*

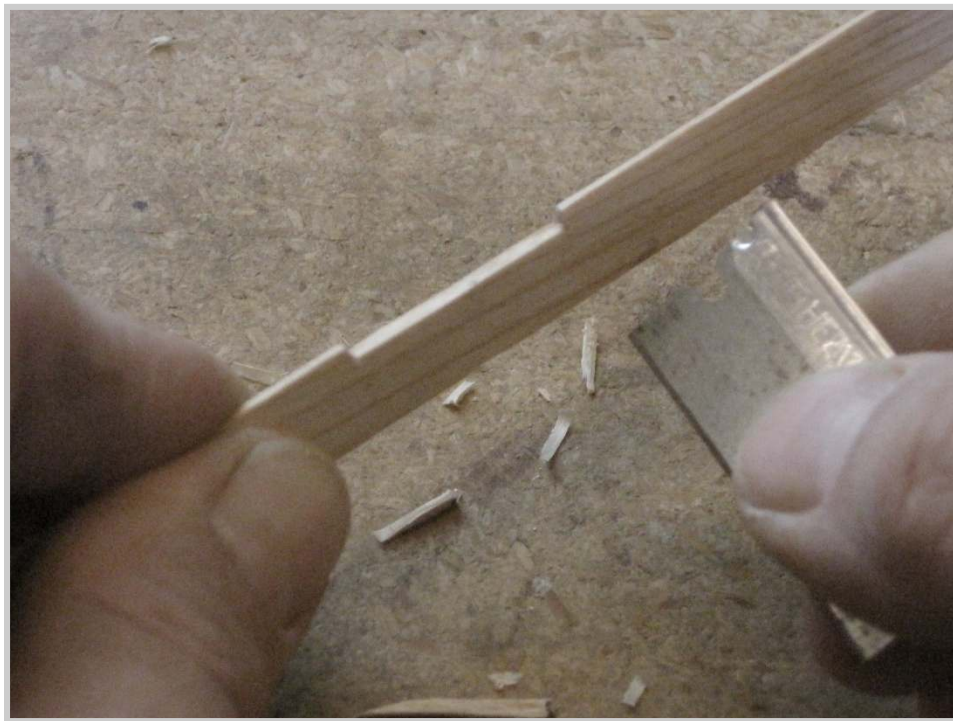


*Photo 50: A piece of thin steel is used to easily find the ribs. Moving the steel from side to side, it will knock up against the solid ribs while cutting through any remaining material at the bottom of the v-shaped gouge. The start and stop point for each rib is marked with a scratch line on the soundboard.*

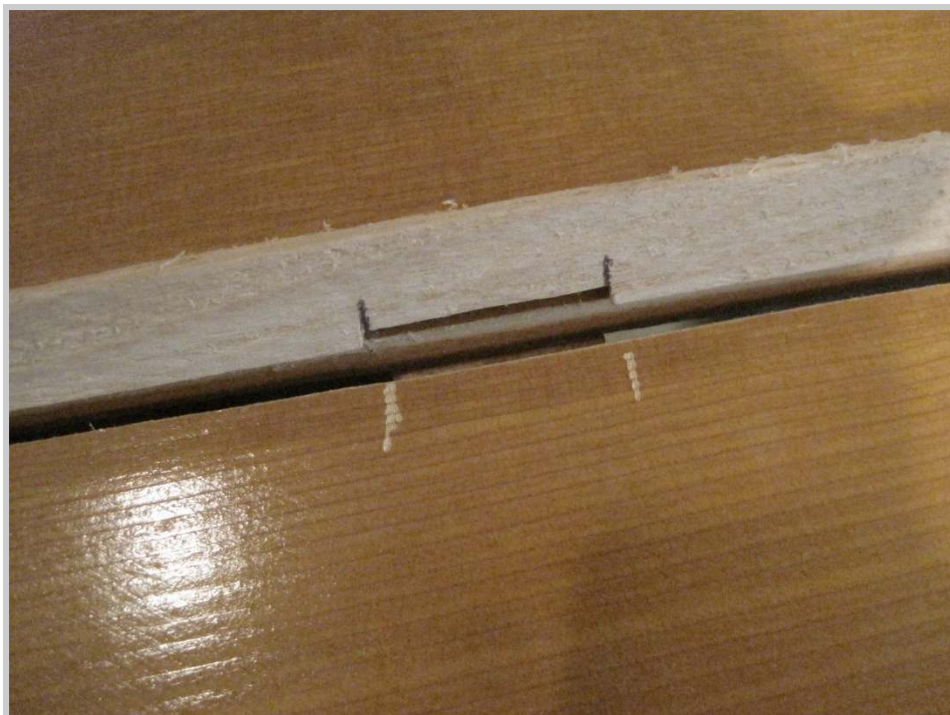


*Photo 51: The sides of the shim to be used are marked for notching to match the scratch lines on the soundboard. The edges of the notches are first scored with a sharp razor by rocking it back and forth.*

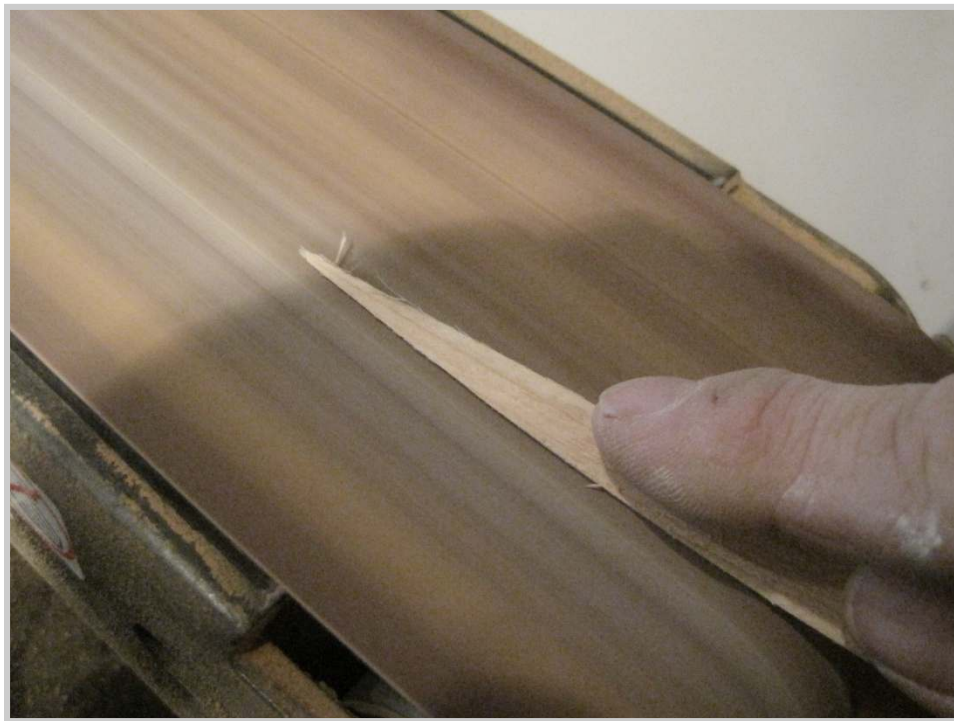




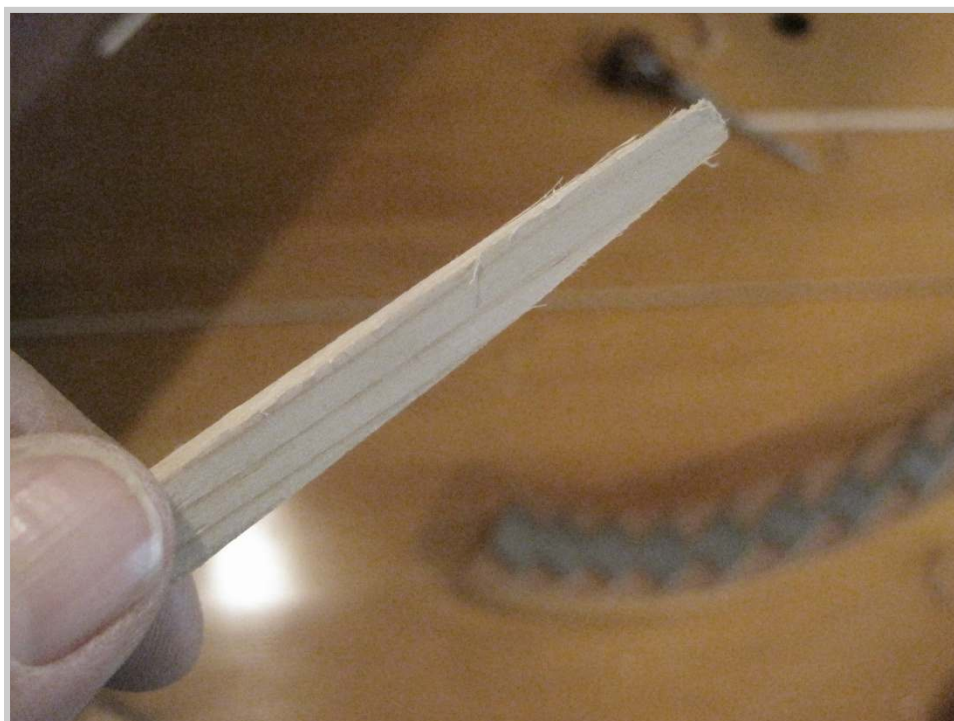
*Photo 52: Each notch is cut out with a razor blade.*



*Photo 53: Each visible rib will have the corresponding notch in the intended shim.*

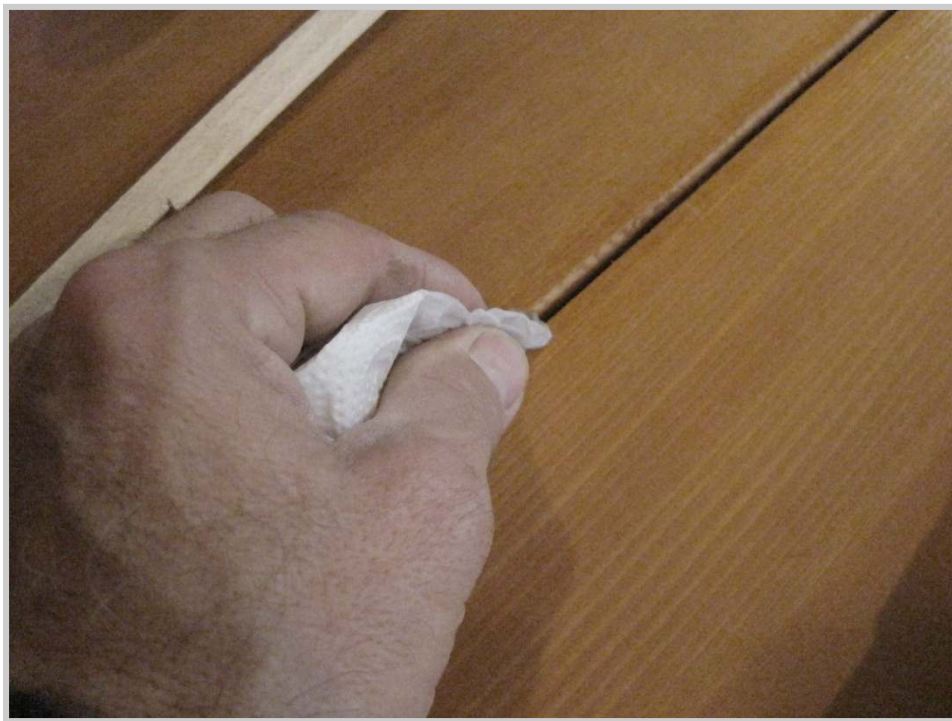


*Photo 54: The end of a shim is tapered using a belt sander.*

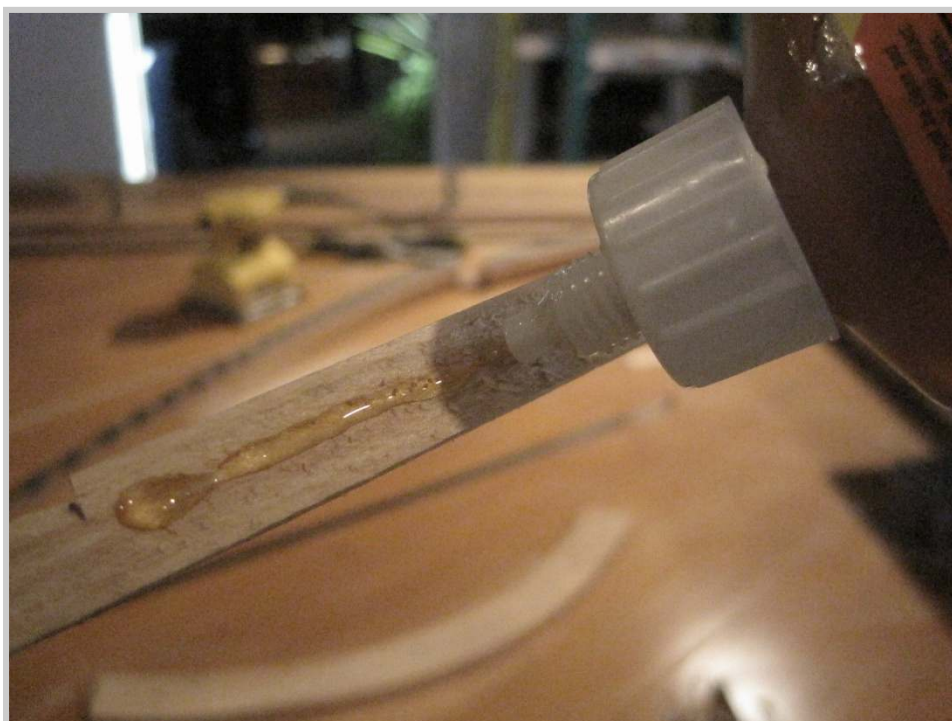


*Photo 55: For a gouge ending in an open area, a shape like the bow of a boat works the best.*

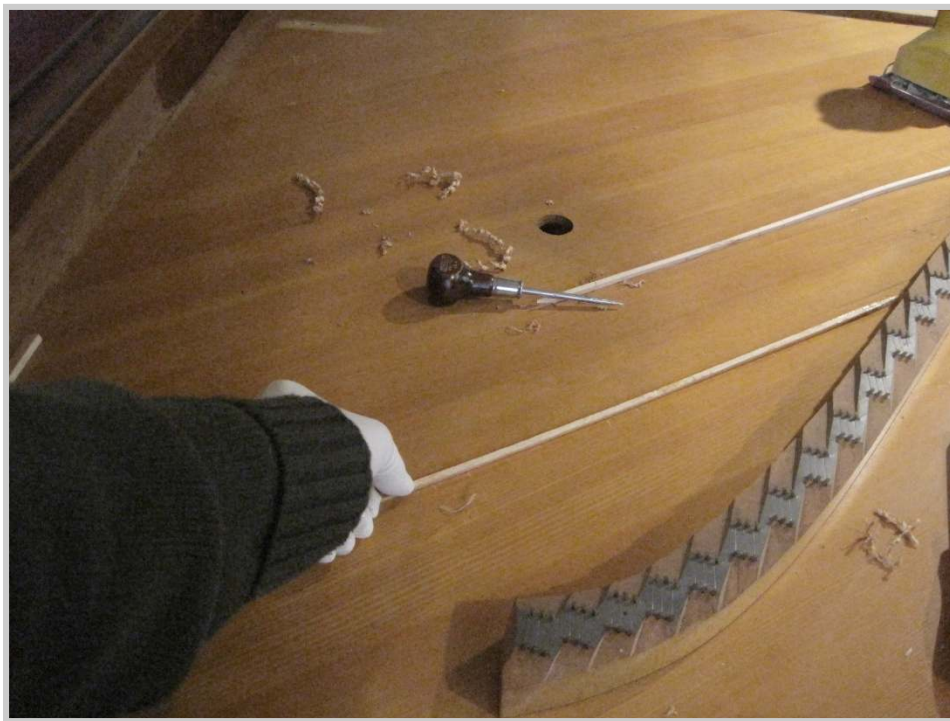




*Photo 56: If Gorilla glue <sup>®</sup> is to be used (my preference) the v-shape gouge is moistened as per gluing instructions.*



*Photo 57: A generous layer of glue is applied to both sides of the shim, and then evenly spread over the surface. When using Gorilla Glue one always needs to wear gloves, by the way.. Although the stuff has the consistency and look of honey, the job of trying to scrub it off of bare skin is anything but sweet!*



*Photo 58: The shim is pressed into place. What is desired is a good fit from side to side in which the shim doesn't want to pop out of the gouge on one end or the other*

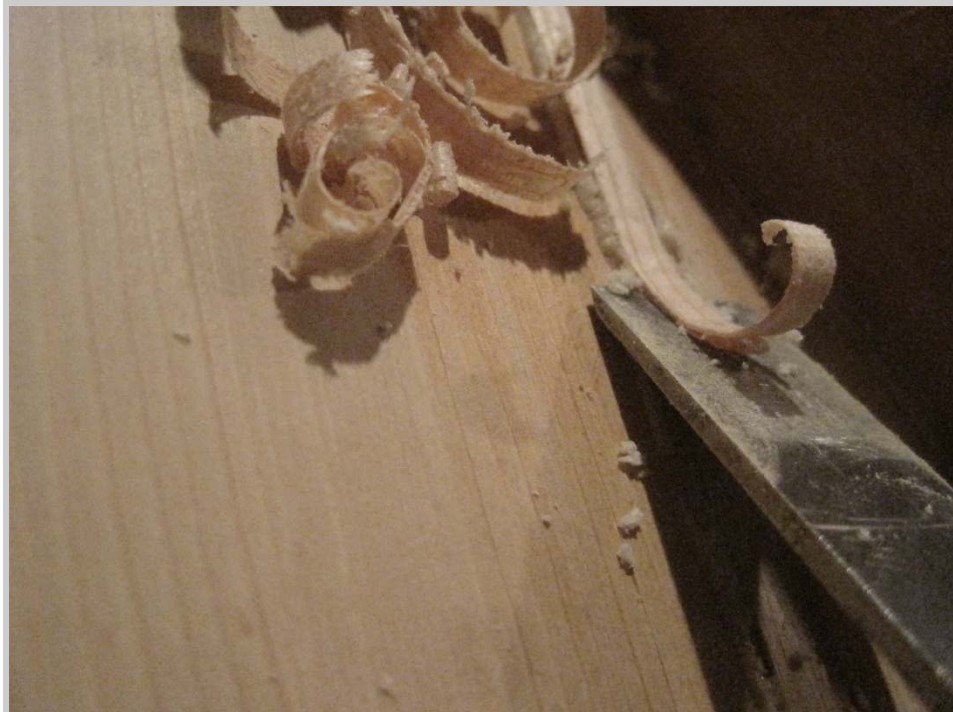


*Photo 59: A row of wooden blocks are placed over the shim, with a layer of folded paper towels in between the shim and the blocks to prevent adhesion of the two wood surfaces. The paper towels will stick to the shims, but are easily scraped off once the glue has dried.*

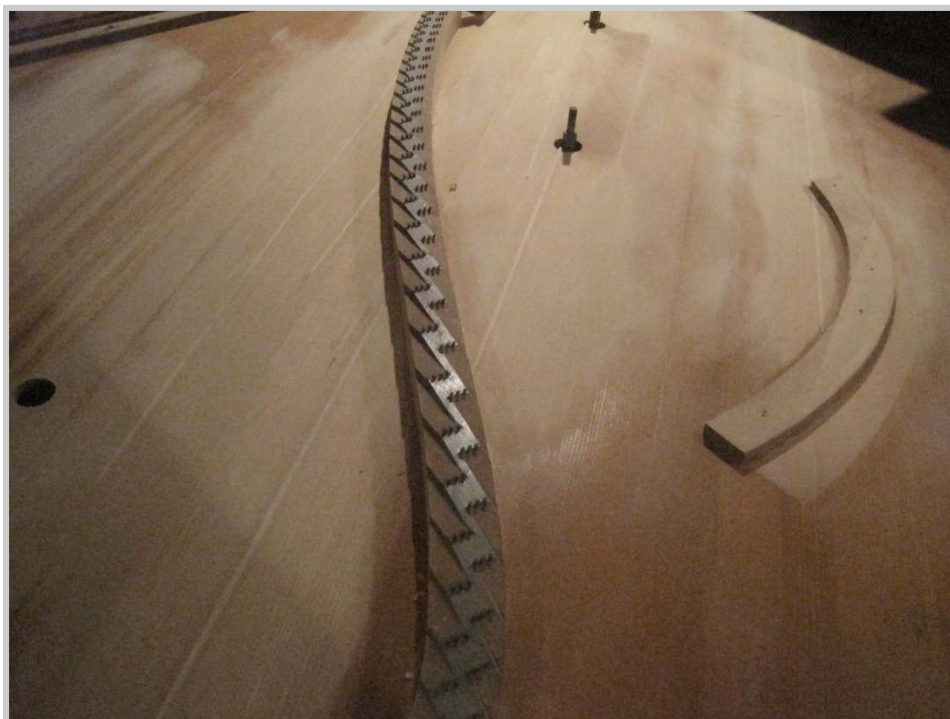




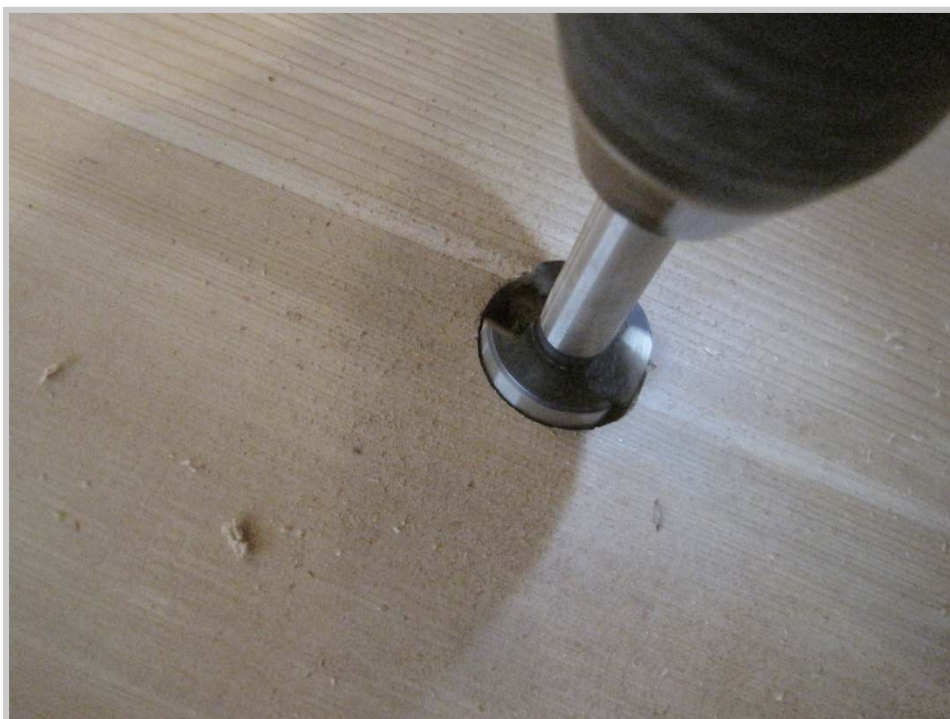
*Photo 60: For tight fitting shims, bags of sand provide enough weight to hold the shim in place while the fast-acting glue sets. Gorilla glue expands a bit, filling any tiny discrepancy between the sides of the groove and the shim.*



*Photo 61: After curing overnight, the excess shimming material is removed, first with a sharp chisel, then by sanding with a palm sander.*



*Photo 62: The soundboard after all shims are glued in place, then trimmed and rough sanded. The bass bridge is being repaired and will be reattached in the near future.*

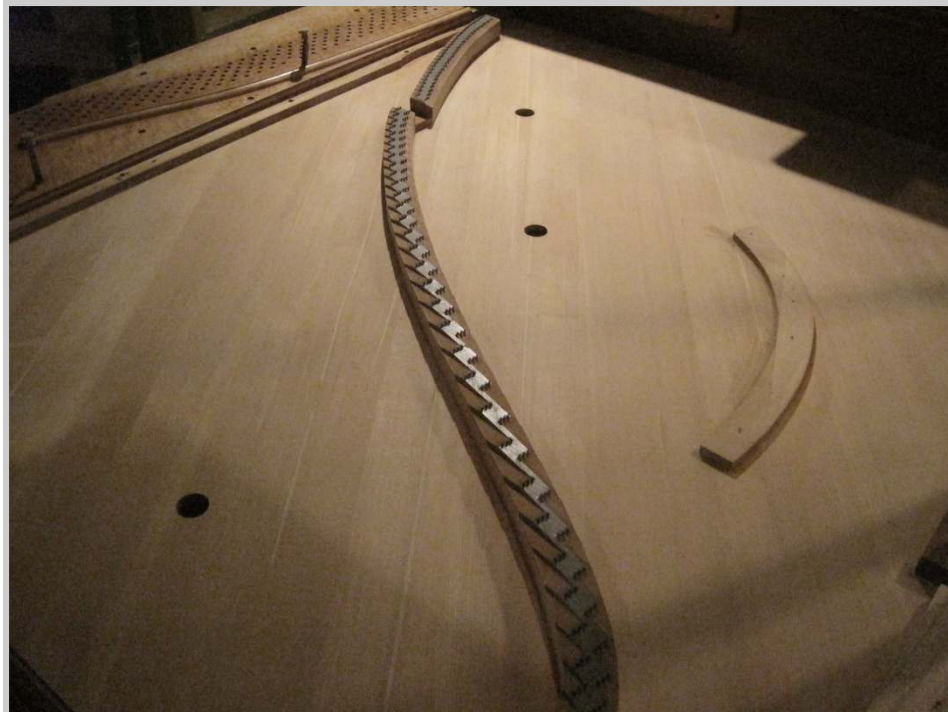


*Photo 63: Where shims run across bolt holes, they are easily trimmed after gluing with a Forstner bit.*





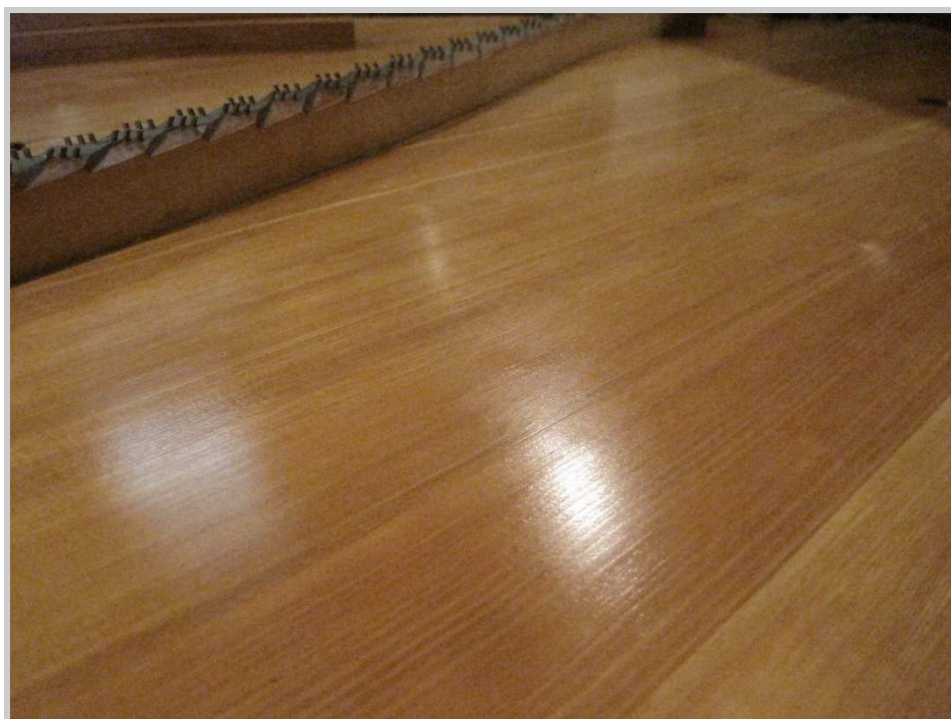
*Photo 64: Well-fitted shims will blend in to the point of invisibility when the soundboard is sanded down. The only evidence of shims will be a difference in coloration with the shim material usually being a lighter shade.*



*Photo 65: The soundboard after overall sanding down to 220 grit has been accomplished. When thumped, the soundboard now has a very mellow and long-lasting vibration—unlike before the repairs when it was dead.*



*Photo 66: A first coat of shellac is applied.*



*Photo 67: The board after the third coat of shellac.*





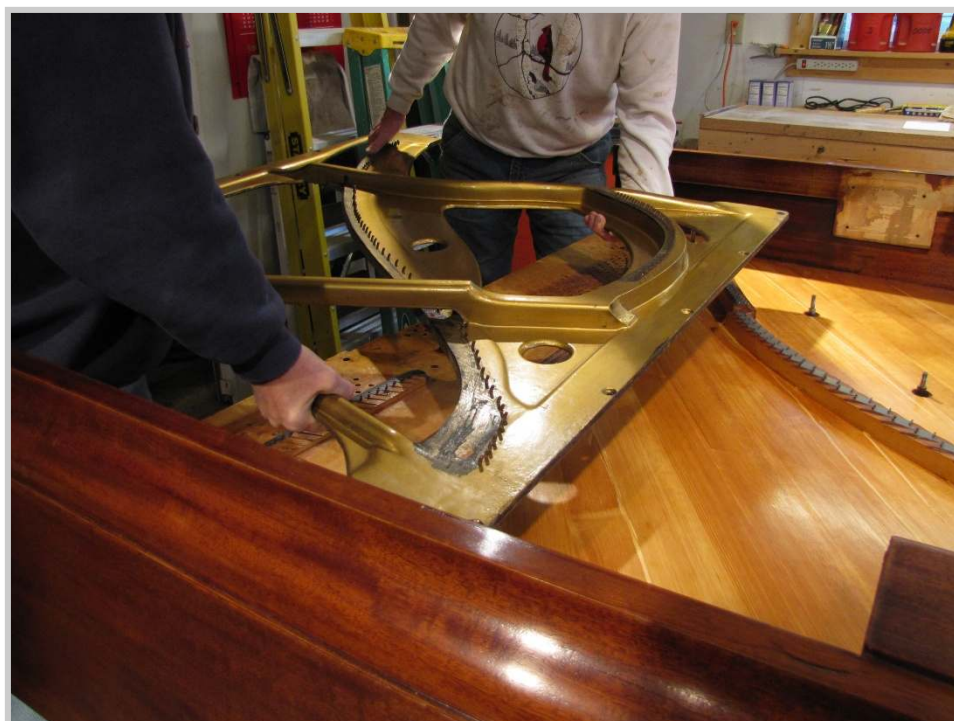
*Photo 68: Before the plate is reinstalled, one other repair must be made—that of the loose joint between the pin-block and the back. Titebond glue is worked into the joint, then clamps are applied overnight.*



*Photo 69: A bit of squeeze-out indicates a tight fit.*

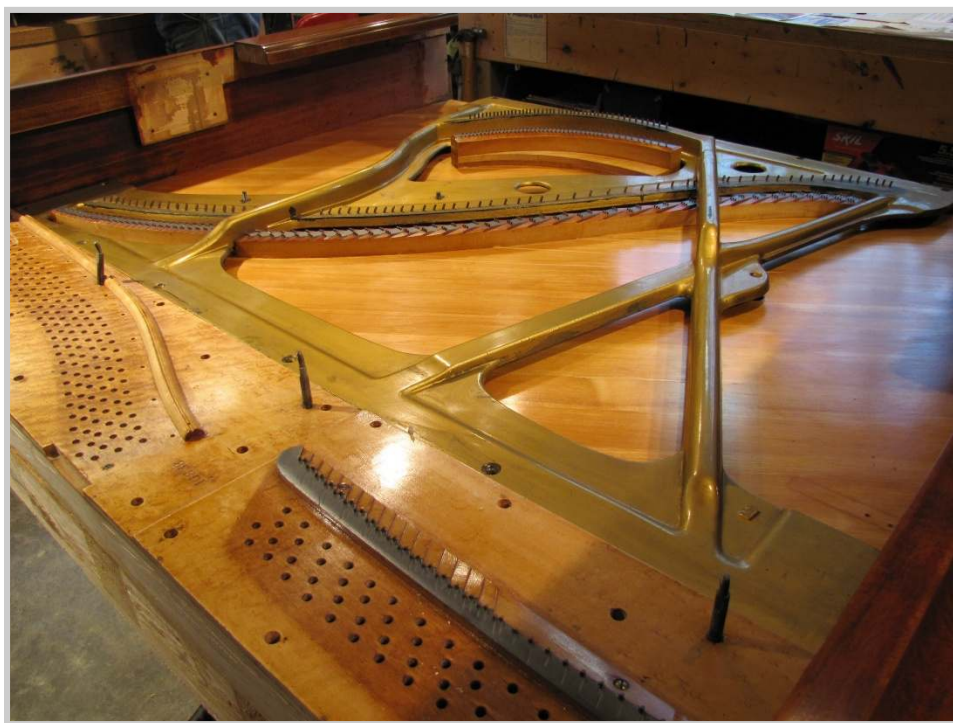


*Photo 70: The completed soundboard, with bass bridge reinstalled. The bridges have also been shellacked, with the upper surfaces painted with DAG <sup>®</sup>, a specialized lubricant. All is ready for the reinstallation of the cast iron plate, which has been cleaned and is ready to go.*



*Photo 71: The plate must be slid in from the top to miss protruding case parts—otherwise a hoist would make the operation simpler.*

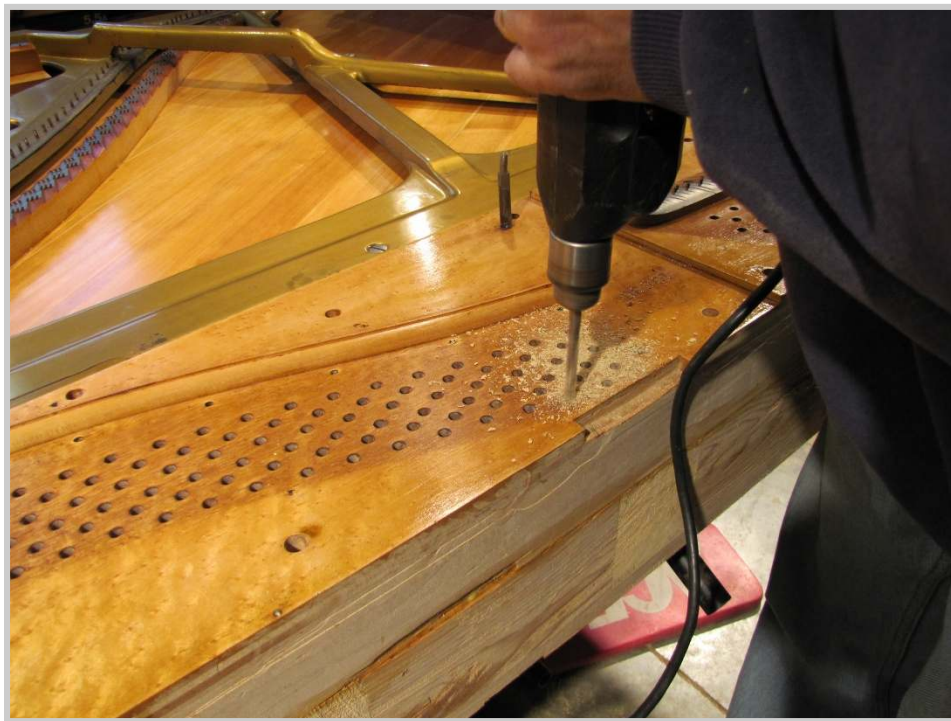




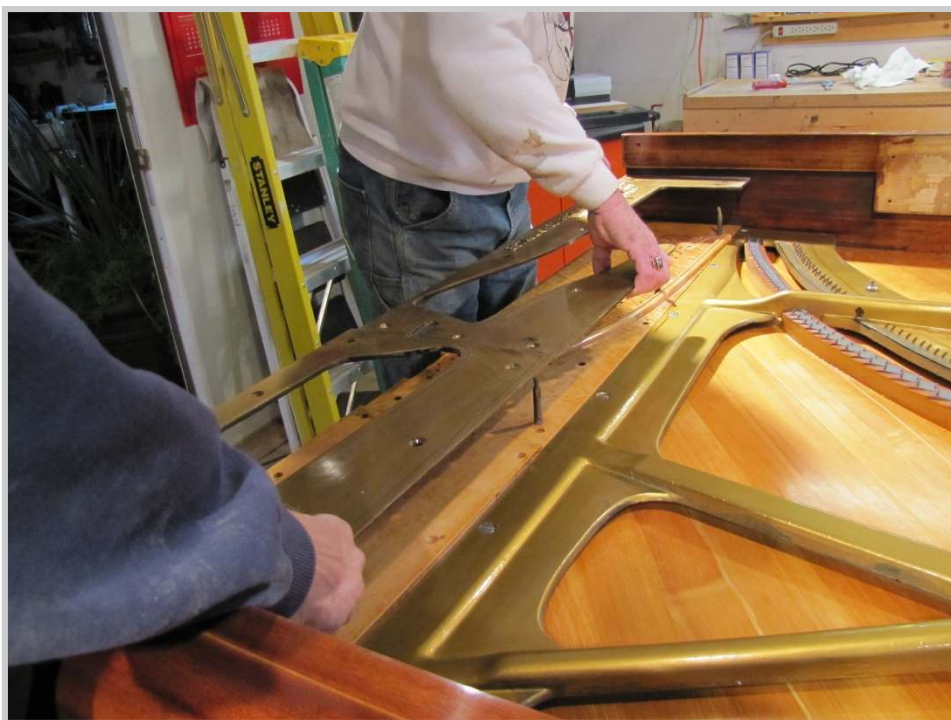
*Photo 72: A perfect fit. Always a good feeling to have the plate safely in place once again.*



*Photo 73: Dave tightens down plate screws.*



*Photo 74: While Dave is on screw-tightening detail, I ream the pin holes with a size 3 (.276") drill (not a reamer) for a fresh cut of wood. This is a quick in and out procedure with very little wood being removed— just enough to take any glazing off the sides of the century old holes.*



*Photo 75: The upper part of the two-part plate is now put into position.*





Photo 76: Test pins (both size 3 and size 4) are driven. The size 3's max out at 60 inch pounds, not enough.



Photo 77: Size 4 pins test out at over 120 inch pounds—much more suitable. Smooth, tight turning, no ratcheting whatsoever. Blue, size 4 Denro <sup>®</sup> pins will be used.



*Photo 78: Dave gets to work on the treble strings. The bass strings have returned and are ready to go..*

Next up: Dave will finish off the stringing this week, then takes off to winter down south. I'll be installing hammers, doing the carving on the missing decorative leaf work, then putting everything back together for regulating and tuning.