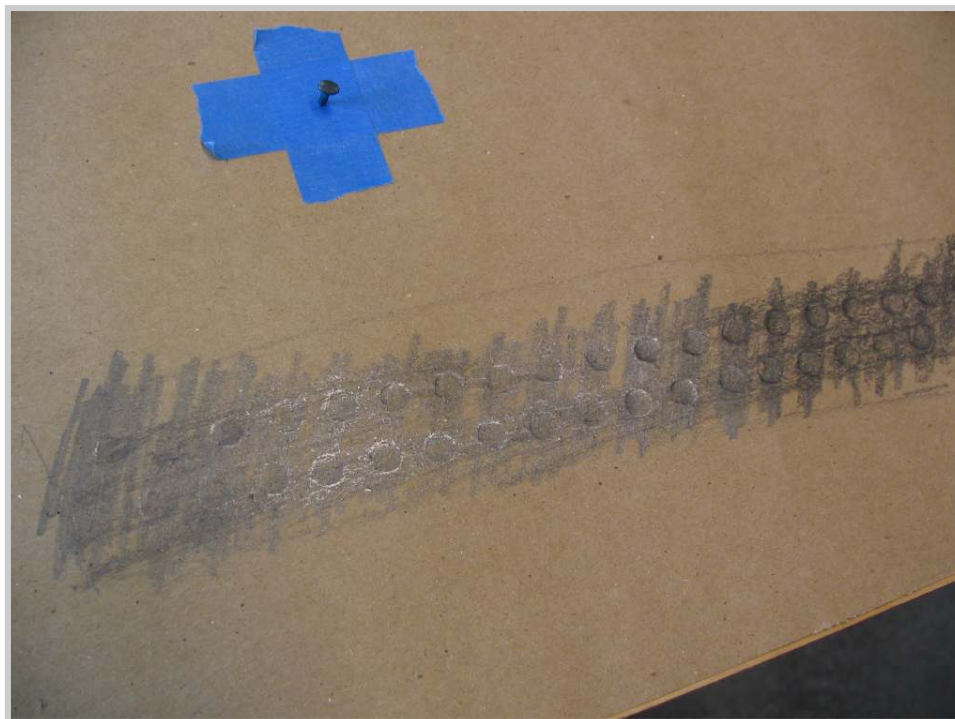


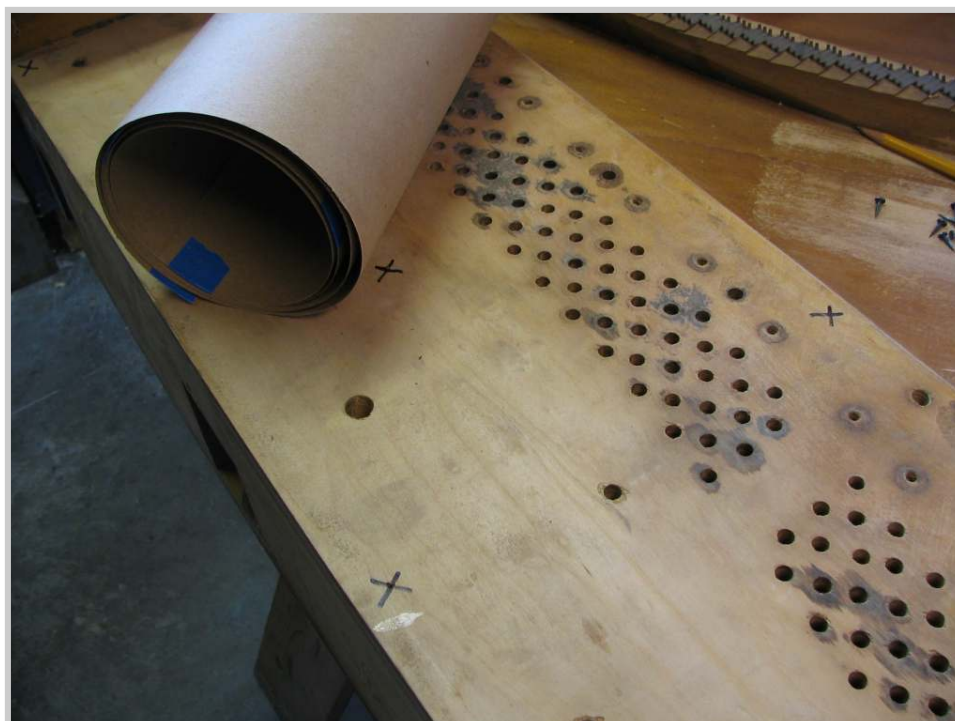
*Photo 147: The pinblock. The pin fields will be replaced with new pinblock 1 3/8" hardrock maple pinblock panels.*



*Photo 148: The first step is to spread contractor's paper over the entire pinblock. The approximate location of the pin fields are marked with pencil. The tacks are to locate the exact position of the contractor's paper again at a later step.*

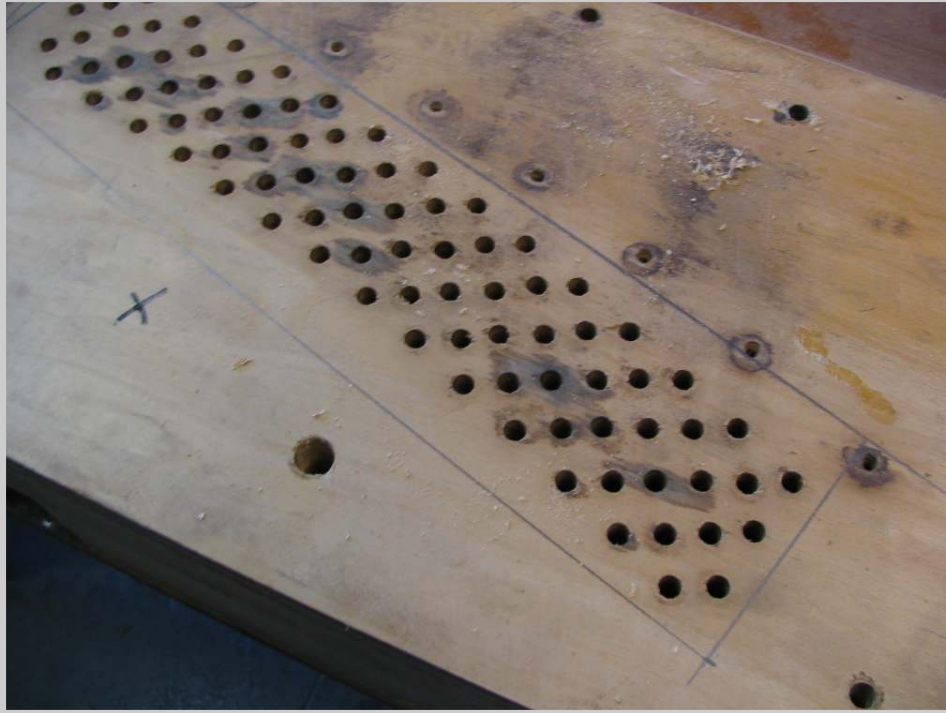


*Photo 149: With the flat side of a pencil, a tracing is made showing the position of all the pin holes for each of the three sections of pins.*

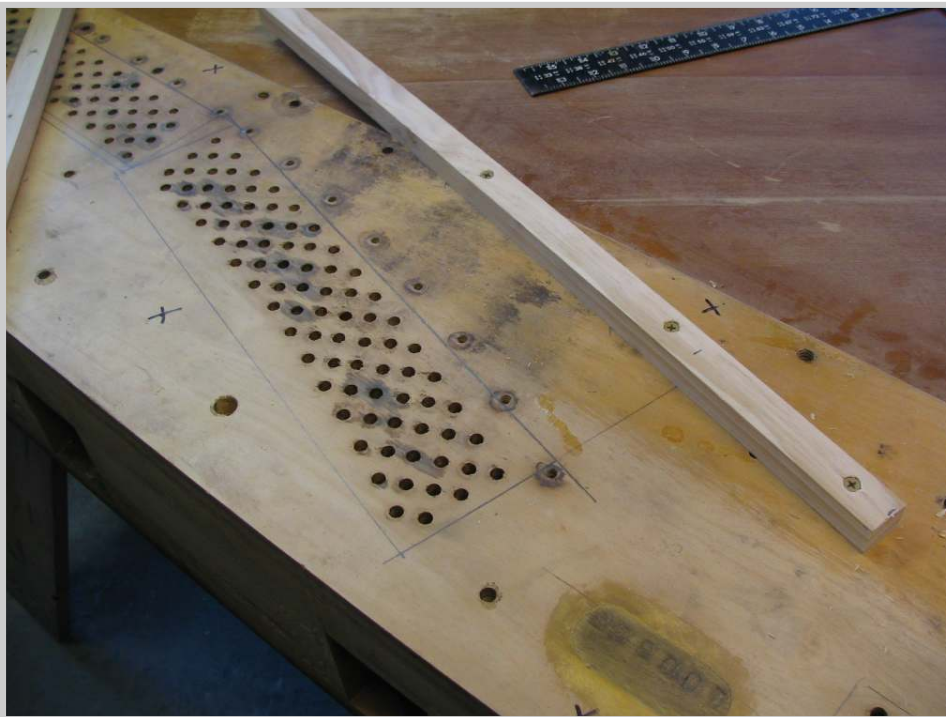


*Photo 150: With all the holes marked the contractor's paper is removed, rolled up and put safely to one side. The tack holes are marked with a sharpie so that their position is not lost at a later time*





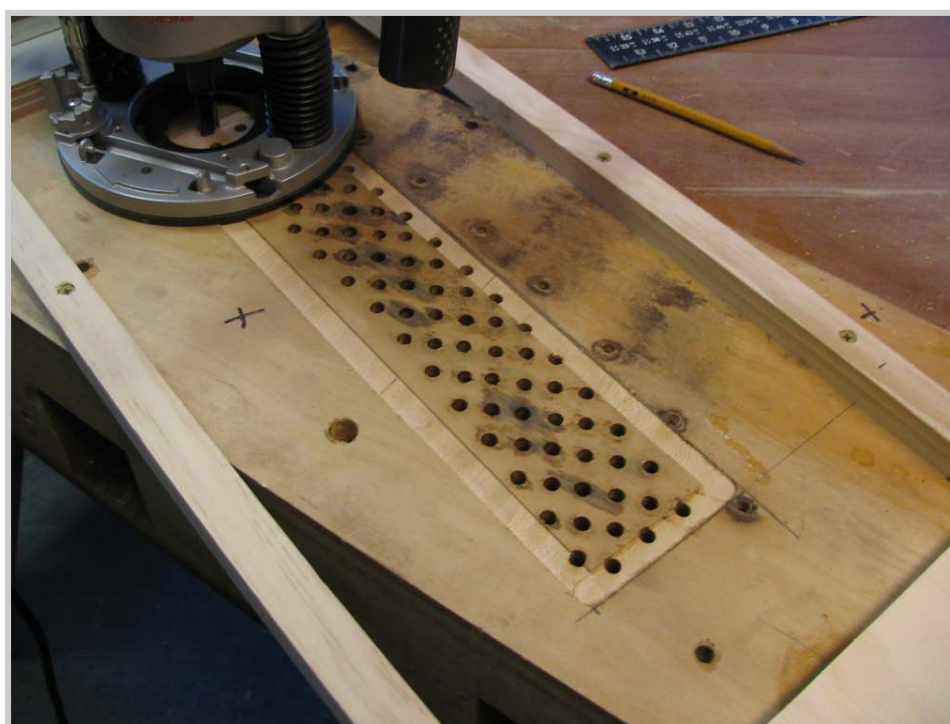
*Photo 151: With a straightedge and square, the exact location of the cutouts are marked in pencil. Care is taken to miss screw holes, but to encompass all the pin holes. The sides of the cutout must be parallel.*



*Photo 152: The first edge of the guide frame is located. The distance between the guide frame and the cutout is determined by the size of the router to be used, and should equal the distance between the edge of the router plate and the inner edge of the router bit, where the cut will be made.*



*Photo 153: The completed guide frame for the middle pin field.*



*Photo 154: The initial cut with the router is made. A Bosch plunge router with a 3/4" straight bit is being used. Each cut made is approximately 1/8" deep for greater control. A deeper cut would make the job faster, but would result in chattering of the router, and an less than smooth cut.*





*Photo 155: With the outside perimeter of the cut made, the router bit is worked back and forth to clear out the wood in the middle. It is important that both sides of the router remain supported by the sides of the original pinblock, to avoid having the router bit dip inward and cut a divot in the bottom of the cutout.*



*Photo 156: After six cuttings, the depth of the excavation is at the limit of the initial router bit. A change of bits is necessary at this point.*



*Photo 157: A long straight bit is substituted at this point. This bit is too long to have begun the cutting process with, but is needed to complete the cutout to the required 1 3/8" depth.*

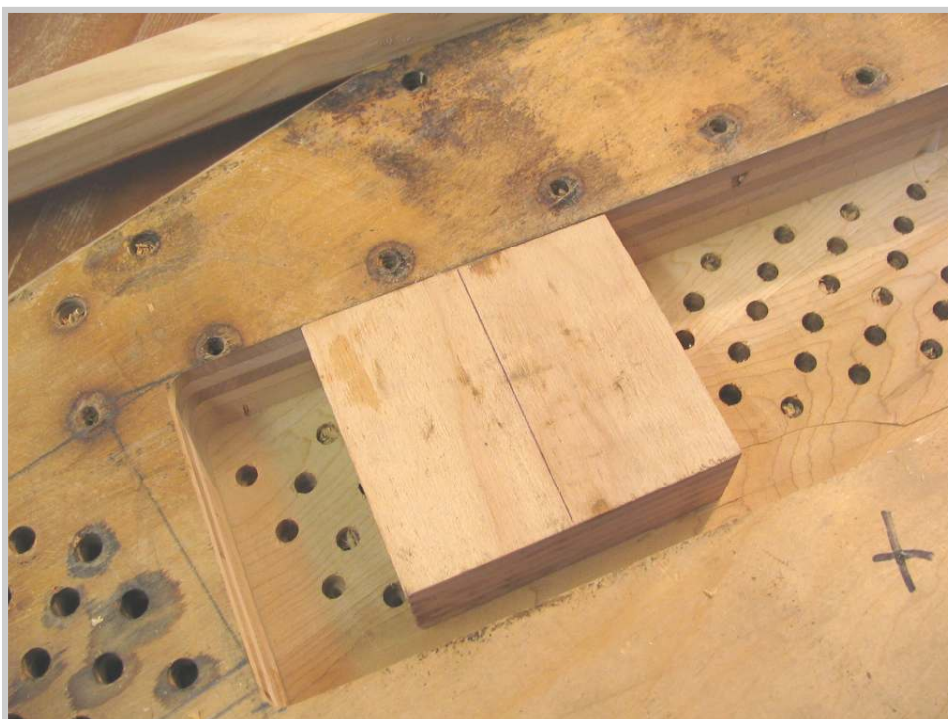


*Photo 158: The cutting continues, using the guide frame to cut the outer perimeter first. Each cut is made in the same way, with the perimeter cut made first, then the inner area cleaned out. Again, the cut proceeds at 1/8" increments for a perfectly smooth finish to the cut.*





*Photo 159: The full depth of the cut is accomplished. The bottoms of the original pin holes remain, in that they were drilled deeper than the thickness of the replacement panels which will be used.*



*Photo 160: A scrap of pinblock material is used to check for a perfectly flush upper edge.*

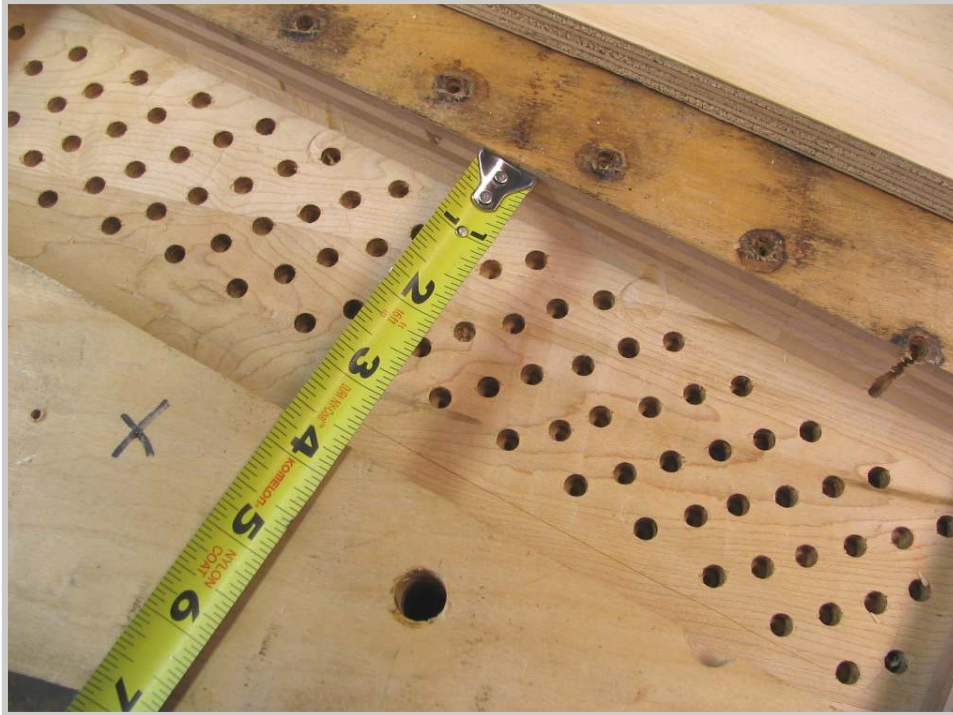


*Photo 161: With the middle pin field cutout made, guide frames are made for the pin fields on the bass and treble ends of the pinblock. These cutouts are then made in a similar manner.*



*Photo 162: For the very ends of the bass and treble cutouts, an offset router is used to get in closer to the edge than possible with the big plunge router.*





*Photo 163: The exact dimensions of the cutouts are measured.*



*Photo 164: The panels will be cut from 1 3/8" hardrock maple pinblock stock.*



*Photo 165: The middle panel is cut to approximate size. I like to cut it just a bit big, then shave it down a hair at a time until it just slides into the cutout hole without binding. I shouldn't be so tight that it has to be pounded in, since it will be put in and pulled back out several times in process of drilling the pin holes.*

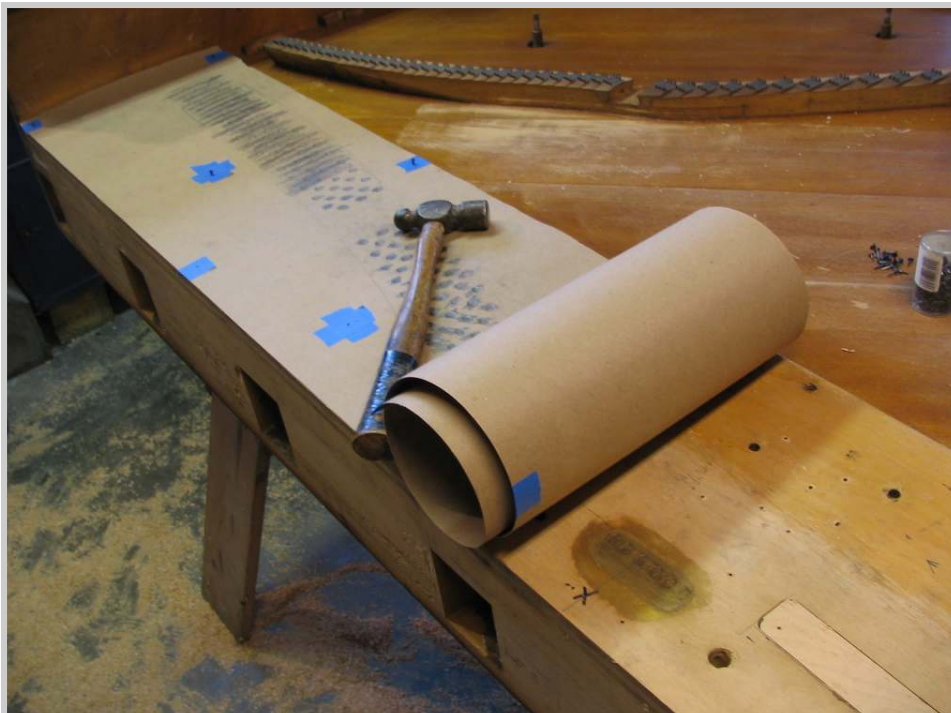


*Photo 166: Final fitting. The corners of the panel have been rounded on the router table to match the inner curvature of the corners of the cutout.*

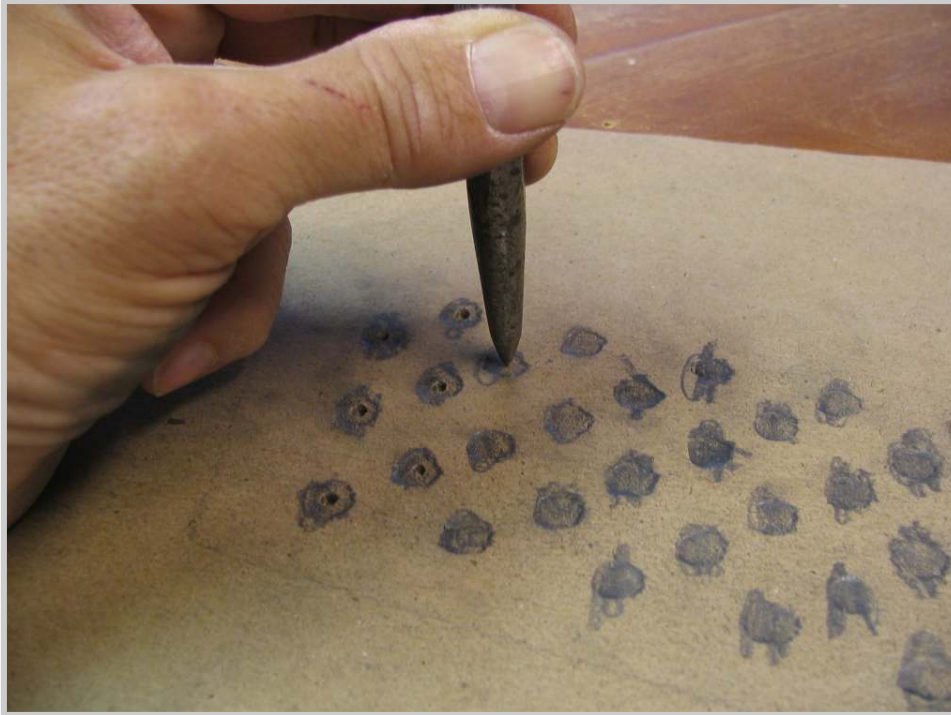




*Photo 167: The three panels fitted and in place and ready to mark for pin holes.*



*Photo 168: Using the tack holes as reference points, the contractor's paper is once again spread out over the entire pinblock area.*

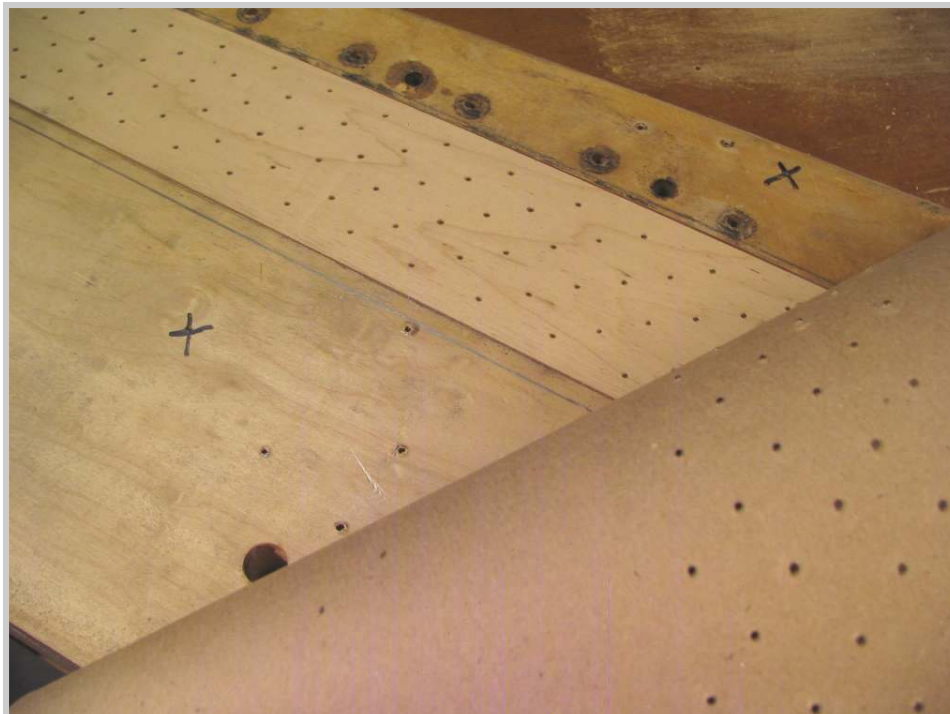


*Photo 169: A center punch is used to mark the location of the holes.*

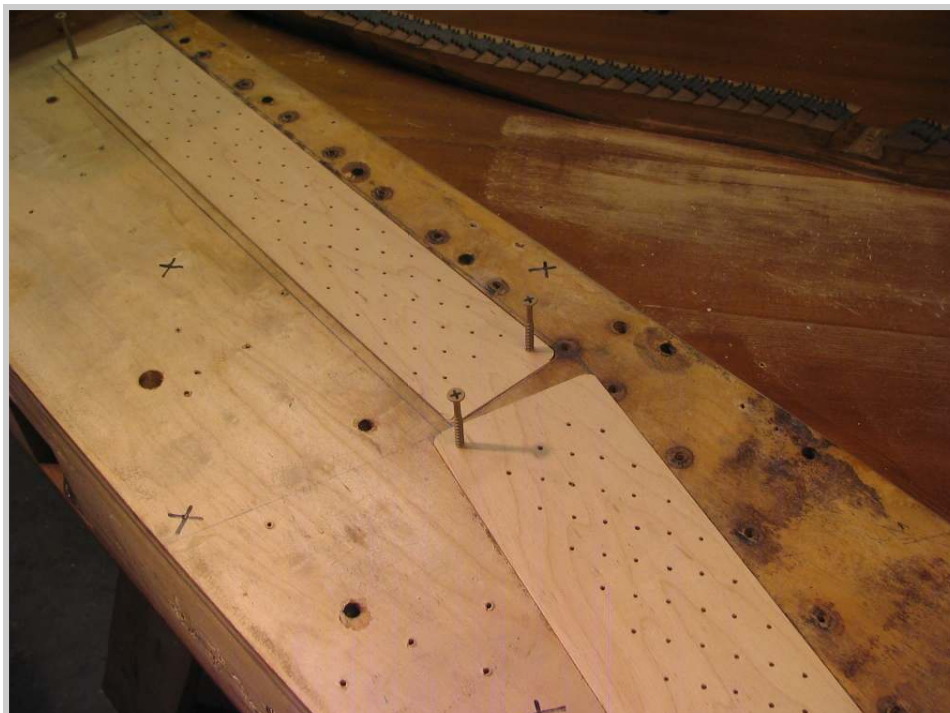


*Photo 170: The position of each of the pins in the three pin fields is thus marked.*





*Photo 171: Once all the pinholes have been marked, the tacks are removed, and the contractor's paper peeled away.*



*Photo 172: The location for hold-down screws is determined in the corners, away from the tuning pin holes. The screws are initially driven in a bit to facilitate lifting the panels from the cutouts.*

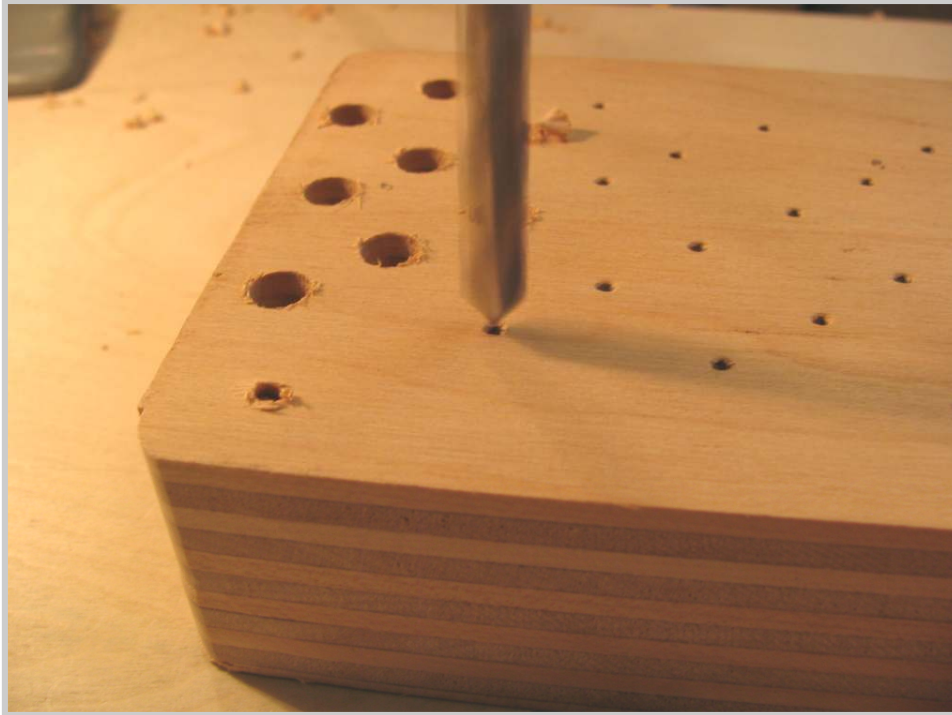


*Photo 173: The panels are removed for drilling the pin holes. The slanted line on the sides of the panels references the orientation of the holes to be drilled, which will slant backwards 7 degrees from the vertical. The pins will lean slightly back from the soundboard area of the piano.*

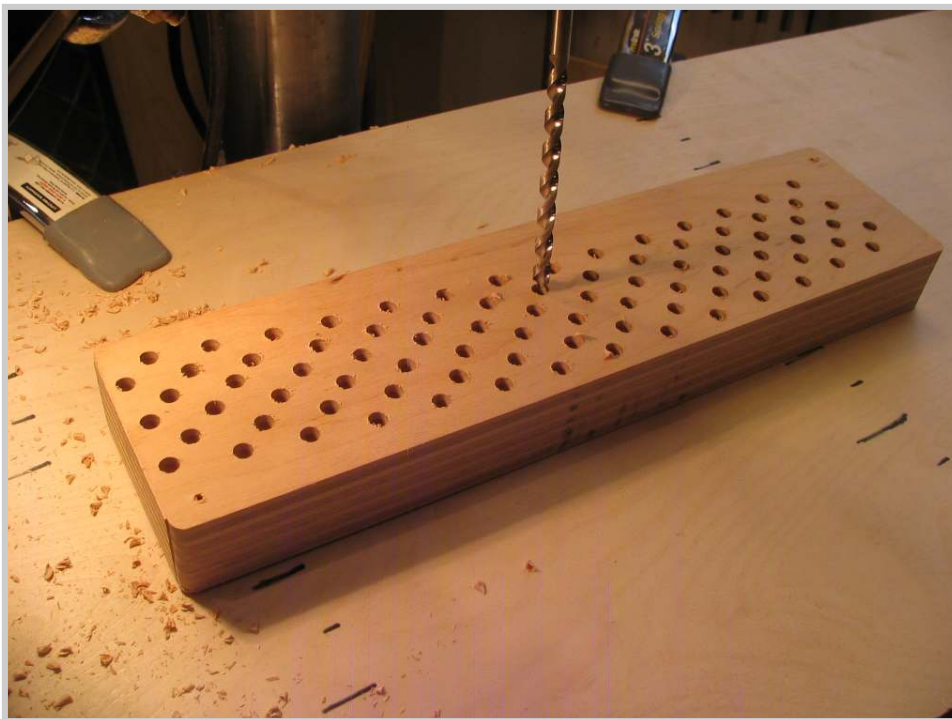


*Photo 174: The pin holes are drilled on the drill press. A high speed drill bit is used which is .01" smaller than the size 2 pins to be driven in. A air stream is focused on the drill bit, which helps to keep it cool. With this setup, one hole can be drilled every several seconds continuously. The bit is slightly warm when all the holes are finished.*

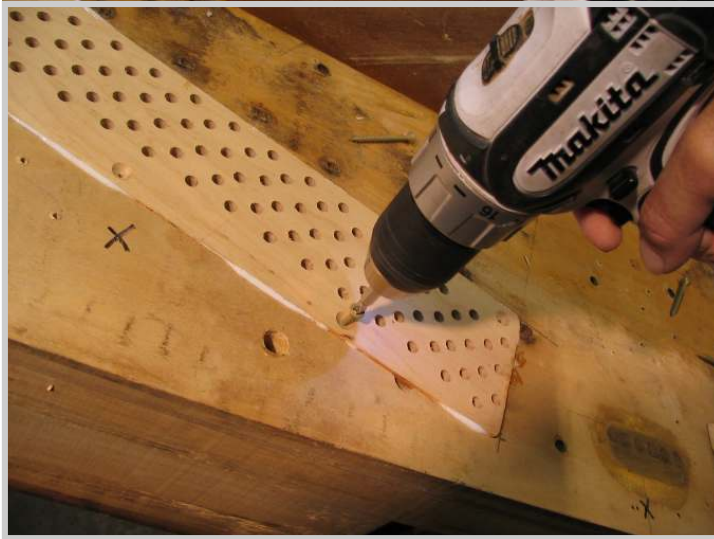




*Photo 175: The platform on the drill press is set so that the tip of the bit is barely above the pinblock material, making the centering of the holes before drilling much easier.*



*Photo 176: A completed panel.*



*Photo 177: White Gorilla brand glue is applied, and the panel is screwed down into place. The screws act as clamps while the glue cures.*

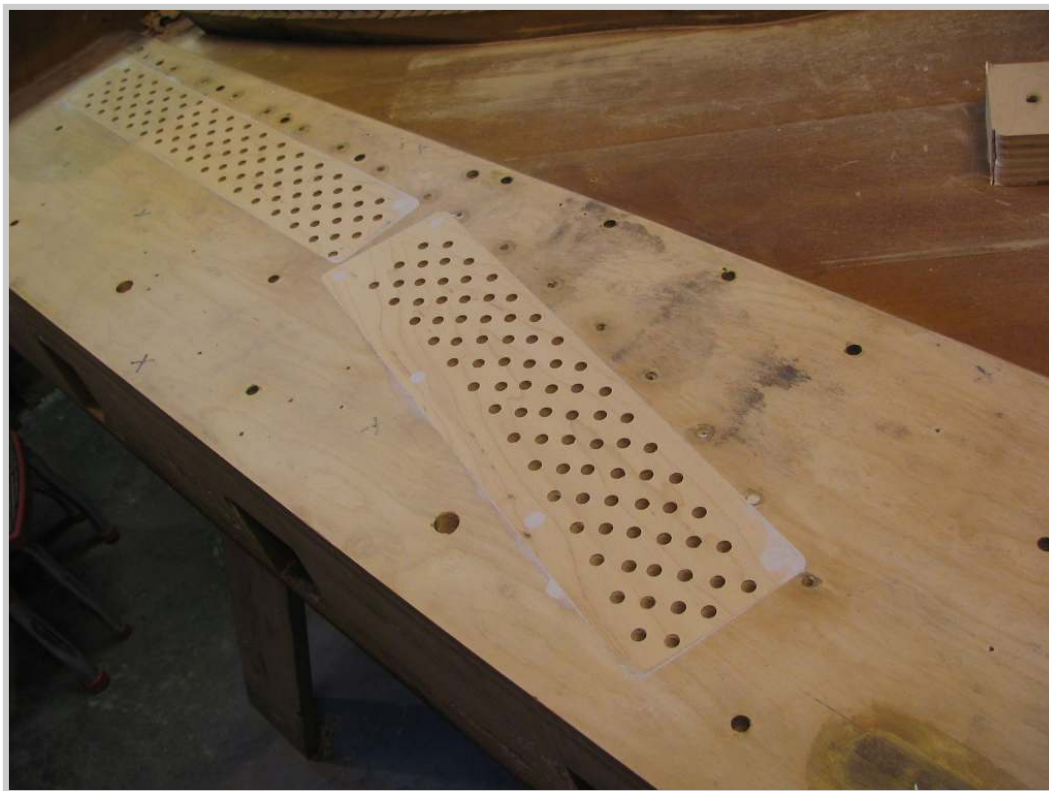


*Photo 178: All three panels glued and screwed into place.*





*Photo 179: The top of the screw holes are filled with epoxy.*



*Photo 180: The final sanding is done, and the job is complete. New pinblock material to receive new factory size tuning pins.*