

Small Shop - Big Results



Installing Pinblock Panels in an Upright Piano – part 2

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In last month's Journal, we got started on our upright pinblock panel replacement project. This month we will tackle the woodworking end of the project and will be nearly ready to refinish and reinstall the cast iron plate.

Starting from where we left off in the May issue of the Journal, first draw a pencil line (Photo 1) around the area to be replaced. Everything inside of this line will be cut out with your router. To make life easier for yourself when you are cutting out the inserts, make the long lines perfectly straight, and parallel to each other. The insert can then be cut on the table saw. If possible, make the end lines perpendicular to the long lines, again for easier cutting. I would recommend, if possible, that the line be no closer to the nearest pin than $3/4"$ or so. That way, when the holes are drilled at a 5-7 degree angle to the vertical, the bit won't be coming through the side of the wood. Finally, if possible, the distance between the long lines should be less than the distance between the edge of your router plate, and the far side of the router bit. If it is more than this, your router won't be supported on both sides of the cut out area while you are cutting along the edge, making it very hard to hold the tool steady and flat. Your router, in this situation, will want to tip in towards the center, making your cut too deep.



Photo 1: Pencil lines mark outer perimeter of cut

Next, you will need to build a frame (Photo 2) around the pencil line which you have drawn on the pinblock. I prefer to use smooth 1 1/2" finishing nails to hold the frame down. If pilot holes are drilled to drive the nails into, very little damage is done, even if the nails are driven into the soundboard. Just make sure the frame is solid. I glue the corners together. The distance from the pencil line to the inside edge of the frame corresponds to the distance from the outer edge of the router to the outer edge of the bit. The bit will cut out everything inside the line.

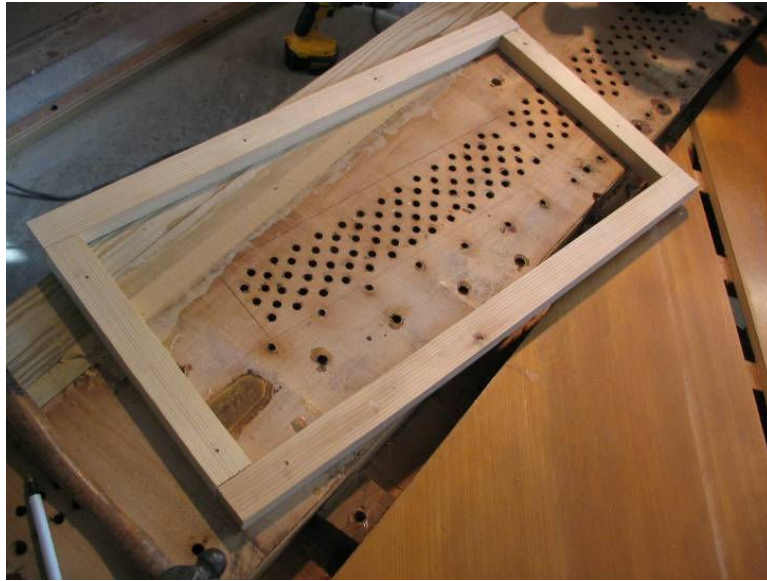


Photo 2: A solid frame is essential for a good job

The subject of your router now becomes of importance. Although this job could be done with an ordinary router, I would recommend a plunge router for this job. You will be routing out the material to be removed in increments, and the plunge feature of the router I used (a Bosch) really makes the job simple. As a tool junkie always looking for a new 'fix,' I know that the temptation to buy a new tool sometimes overcomes reason, but in this case, the purchase would be well warranted. A plunge router is a tool that is very useful.

With the router bit in place, set the depth adjustment so that the bit starts from 0 depth. Before turning the router on, you should be wearing protective goggles and hearing protection.

With this job there will be chips flying everywhere. Placing the router inside the frame, turn it on, and then plunge the bit down to the first stop. As the bit cuts into the pinblock material, move the router so that the round edge of the router plate is up against the frame you have built. If your router plate has a flat edge on one side (mine does), it is imperative that you keep this turned away from your frame, or your cut will not follow the line.



Photo 3: Begin cutting 1/4" at a time

If you will first go all the way around the outside of area to be routed, you can then go back and clean out the middle area (Photo 3). The secret to doing this job easily is to advance the depth of your router no more than 1/4" at a shot. If you try to do more depth at one time, you will find that it's a lot harder to control the router, plus the motor is working a lot harder to make the cut. Now, began to deepen the cut, one step on the router at a time (Photo 4). Occasionally stop to vacuum out the chips and check the depth. I use a 1 1/4" pinblock to cut the panels from, so the depth gauge I use is simply a small piece of pinblock material.



Photo 4: Deepening the cut

With the routing done, the pinblock panels are cut lengthwise on the table saw and on the ends with either the table saw or the miter saw. Cut the panels to be a snug, but not extremely tight fit. You should be able to push the panels in place by hand. If you

have to pound them in with a mallet, you're going to regret it when it comes time to take them out for drilling. You'll notice that I have rounded the corners of the panels (Photo 5) on the router table so that they match the rounded corners of the cut-out area. An alternative would be to chisel the corners of the cut-out area square. Also notice the holes drilled into the panels for screws to be driven into the underlying pinblock material. Make sure these screw holes miss any tuning pin hole. I use self-tapping screws, so no pilot holes in the bottom of the mortise are needed.



Photo 5: Fitting the panels

With the pinblock panels cut and fitted into place, screw them down (but don't glue them into place, yet). Before driving the screws in, be sure to ascertain if there is any play in the fit of the panel. If there is any movement of the panel that will result in up and down play (the piano is now on its back, of course), put veneer shims in what will be the top edge, so that the bottom of the panel will be anchored on solid wood.

Now, carefully place the cast iron plate back into the piano, and bolt it down with at least one bolt in each corner. It is at this point that I wish that our shop had the drilling rig of the type that rolls up over the plate. If you don't have this equipment, refer to the article in the September, 1979 issue of the Journal, written by Jack Krefting titled "Pinblock Drilling." In the article is a detailed description and comparison of the 5 different methods of pinblock drilling. It is an excellent source of information.



Photo 6: Using a centering punch to mark the panels for drilling

In our shop, however, we drill the pinblocks on a stationary drill press, which means that the holes for the pins must be marked with a centering punch (Photo 6) using the plate as a template. Once the holes have been punched, we then unbolt the plate, remove it once again from the piano, and take the panels out to drill on the drill press. You can see why I have the other type of equipment on my wish list. Oh, well. I have yet to meet a shop owner who didn't want some other new piece of equipment. I just keep telling myself I don't have room in the shop for a stationary drill press, a portable drill press and a roll around drill press. (Note to wife - what I do need is a bigger shop! Oh, I'm sorry, dear. Yes, certainly, I'll take out the trash.)

With the panels out of the piano, make sure you stop and think about the slant the holes need to be drilled at. The holes should angle slightly away from the strings. This is one of those situations under the old saying, "measure twice, cut once," except that I think it through two or three times, just to make sure I've got it right. I've always had this fear of drilling the pinblock, getting everything back together and bolted down, only to drive the first pin and discover that the pins are angled towards the string. (I've done dumber things.) Anyway, I always mark the angle of the hole on either end of the block, just to make sure that I remember which way I'm going when I'm setting up at the drill press.

In Photo 7, you'll notice the arrow on the side on the pinblock panel indicating the slant of the holes to be drilled. The table on the drill press is slanted at 7 degrees to give the correct amount of slant to the holes. The green line drawn along the length of the block indicates the line that would be perpendicular to the strings. This line is kept parallel to the edge of the drill press table. You'll notice also the air hose which is duct taped to the light, providing a compressed air stream aimed at the drill bit. Rubber bands hold the air nozzle on. (Although the drill press isn't that loud, the noise of the compressed air is. You'll again want to wear both eye and ear protection for this operation.)



Photo 7: Drilling the pinholes in the panels

The drill bits we use, by the way, are fast spiral bits, size .272 inch. These bits, when used at a speed of approximately 1000 rpm, and with compressed air stream blowing on them, are capable of drilling all 230 or so holes for the typical piano, one hole every several seconds, without excessive heating. The bits never clog. When you get done, you can take out the bit, hold in your hand, and it will be slightly warm, but not hot. If you don't own this type of bit, you need to find a supplier and buy them.

If you haven't drilled a pinblock before, you need to drill each hole quickly (1- 2 seconds), with one motion up and down, holding the work piece down solidly. Remember, the slower the speed at which you drill the hole, the more heating (and thus expansion) of the bit will occur. Tony Geers' website explains this clearly and also explains the advantages of Falconwood, a pinblock material which he can supply for you.

We will end on that note then, having nearly completed the woodworking portion of this repair. In next month's Journal, I'll discuss the final steps in finishing the pinblock work and reassembling the project piano. Until then, feel free to call or stop by. We will always be happy to share ideas or methods.



Main room of the shop

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