Small Shop - Big Results

Pinblock Panel Installation in Grands Using Paper Patterns – part 1

By Chuck Behm
Central Iowa Chapter

In Seth Winter's article, "Extreme Routering," the topic of cutting pinblock panels to fit into a curved, mortise pinblock in a 1800's Knabe grand was explored. Faced with the same situation on a similar piano, an 1885 Weber grand, in our own shop, I was helped by Seth through the procedure, and obtained very satisfactory results.

Although the two pianos in our shops were very similar, there were differences. Most importantly for the procedure was the fact that the Weber we had in our shop had an open-faced pinblock, while the Knabe in Seth's did not. Seth was able to use the cast iron plate as the template for drilling the new pinblock holes. I needed to make a paper pattern to follow (Photo 1), since I would be routering out the area where the pins were installed. Additionally, in cutting the panels to fit the cavity we routered out, I again used a paper pattern, mainly because it's a process I'm familiar with. Seth used a panel guide he fabricated from ½" hickory stock.

From Seth's written description of the technique he used, I believe it is good procedure – it certainly worked for him. The method we use also works well, and it is for the sake of having a fall-back procedure that I present it. I don't claim it's a better method, it's just an alternative. The bigger the "bag of tricks" one has as a technician, the better off he is - if "Plan A" doesn't pan out, it's always good to have a "Plan B."

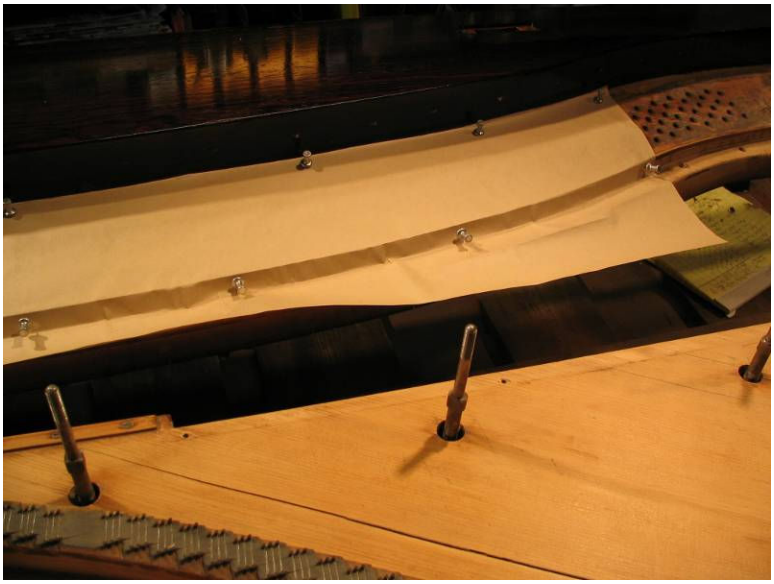


Photo 1: Paper in place to make pattern of pin holes

To back up just a bit, the piano which arrived in our shop was scheduled for refinishing, restoration of the action, repair of the soundboard, restringing and repinning.

This was a piano that I had never tuned, but was called to inspect and give a quote on a restoration. It hadn't been tuned in decades, so I wasn't surprised by how out of tune it was. From the rusted condition of the treble strings, and the tubbiness of the bass, restringing was a given. I put my tuning lever on a dozen or so pins to confirm the lack of torque, but seeing neither cracks in the pinblock between the pins (it was an open faced pinblock), nor any separation between the laminations when inspected from the edge with the fallboard off, I decided that repinning with size 4 pins was a reasonable option. Knowing, however, that a new pinblock might be called for upon further inspection in the shop, I wrote the estimate up both ways, and we left it open for further discussion at a later date. With the sloped pinblock that the Weber had (more about that later), I felt myself leaning towards repinning, if possible. A lack of residue around the pins indicated that no pinblock treatment had been applied, which strengthened my opinion. To me, cracks in between pins, separation of the laminations, and previous attempts to soak the pinblock with pin tightener are the primary factors in recommending the installation of a new pinblock. This piano had none of those.

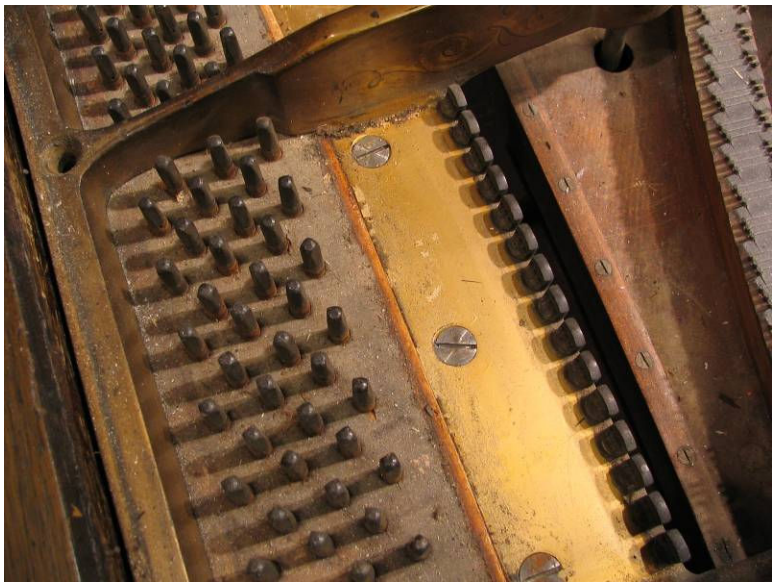


Photo 2: Pins that could be removed with pliers.

When the piano was delivered to the shop, however, and we began the process of tear-down, I began to have second thoughts about a simple. With the strings off and miked we began to remove the pins. Some of the pins were extraordinarily loose, to the point where they could simply be pulled out with pliers. When we pulled the plate, I found that the field around the pins had be sheathed in bird's-eye maple veneer, a hard wood, but that the actual pinblock material seemed something softer in nature than what one would expect, with more of the compressive nature of fir than hardrock maple. Pushing on the exposed wood of the pinblock with the end of a flat-edge screwdriver blade produced a pronounced divot. Doing the same with new pinblock material does not. (Try this test with a piece of scrap pine or fir, and a scrap of pinblock and you'll see the difference.) The importance of this is that if the material that a pinblock is made from is compressed too easily, that driving in a pin that is slightly larger than the hole will not produce a tight fit that will last.

Whether the effects of time (the piano being over 120 years old), or simply the use of a species of wood with less density than maple, the integrity of the pinblock material was called into question. I felt the only responsible course of action was replacement, and upon consultation, the owner agreed to that procedure.

Having decided that, however, opened a new can of worms for me. The pinblock was not a simple one at all. It appeared to be mortised into both the sides of the rim and the stringer, plus it was sloped from front to back, with the front of the block (closest to the stringer) being thicker than any standard pinblock material. Finally, the back of the pinblock was cut in for the plate (Photo 3).Trying to duplicate the entire pinblock seemed an insurmountable task, so instead I decided to opt for replacement of the areas around the pins in the form of panels using 1 ¼" pinblock stock, much as we do in our shop with upright pinblock replacement.

Photo 3: Nothing straightforward at all.

There was a problem with this also, however, in that the stringer was in the way of both the large and small routers I ordinarily use. I couldn't get in close enough to the stringer to cut out the entire pinhole area. I was truly stumped. For several days, I was at unsure of how to proceed. I sent out e-mails to people more experienced than I. It was then that Ed Sutton, editor of the Journal, sent me a picture of what appeared to be the same pinblock in the same piano as what was in my shop, completely routered out, ready for the installation of panels.

It was as if the gloomy clouds of doubt had parted, and the sun was shining once again. Excited to learn the process, I e-mailed Seth Winters, in whose shop the twin piano was being worked on, to learn his methods. The key, I found, was in using tools I wasn't aware of. He informed me of the compressed air driven grinder that he used, and also alerted me to an off-set router that might be practical as well.

For me, the off-set router proved to be the key. It basically is a small router, with the bit driven by a small belt out of line with the spindle of the motor. It's a low powered router, and would not be practical at all for heavy routering, but has the capability to cut an initial line in very close to an obstacle, such as in this case the stringer of the piano.

Before any routering could be done, however, it was essential to create a record of pin placement, since this piano, unlike the Knabe that Seth was working on, had an open-faced pinblock. A paper pattern of the location of the pins would suffice for this purpose.

There are two keys to the successful creation and use of a paper pattern for this purpose. First, the paper itself must be suitable for the task at hand. Individual sheets of typing paper would be less than ideal, since several would have to be linked together to stretch across the face of the pinblock. Ordinary gift wrapping paper, while long enough, is more flimsy in nature than what's needed. The best paper for the job, I've found, is contractor's paper, sold in inexpensive bulk rolls at home improvement stores.

The second necessity is to firmly affix the paper to the work site with stick pins in locations that will be untouched by the routering out process, creating reference points for later. For this pinblock, the extreme edges were the areas used. The stick pins were tapped in with a mallet to create a clearly visible hole, and once the pattern was complete, and the paper removed, the holes were marked with a penciled X for easy visibility later on.

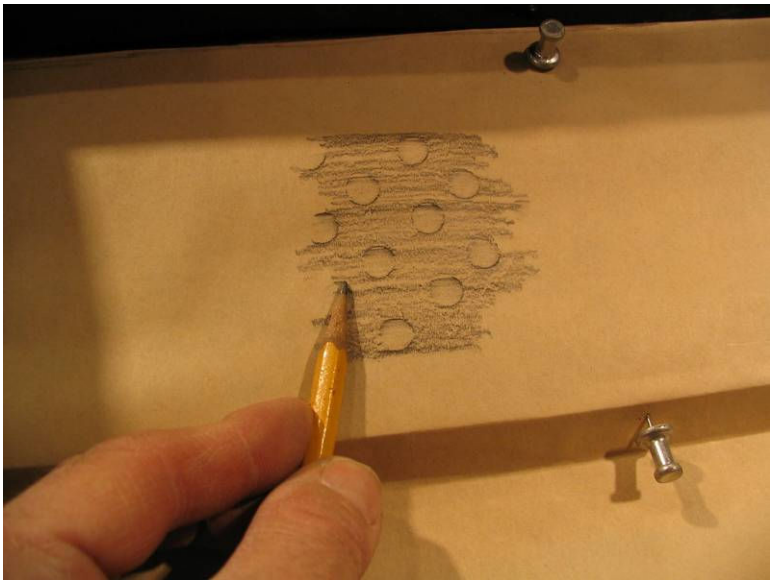


Photo 4: Making an etching.

Once the contractor's paper is in place, marking the holes is an easy job. Use the edge of lead pencil to make an etching of all the pin holes (Photo 4). With the pattern completed, remove one row of the stick pins, and carefully lift the paper to ascertain that all the holes were marked. Then remove the pattern entirely, label, and store away out of harm's way.

The area to be routered out has carefully defined borders. On the one hand, the cavity must extend far enough from the outer limits of the field of pins that the slant of the pins is accounted for – the pin holes must not emerge from the pinblock panels along their lower perimeter. Even on the side of the field where the hole at the top of the pinblock is the leading edge (the pin slants away from the side of the cavity), a ¼" comfort zone of new wood around the pin holes seems reasonable.

While on the one hand it necessary to encase every pin in new wood, on the other hand the pinblock panels need to be framed in a 'fitting bead' of the old pinblock material

to ascertain the height and slope of the completed installation. One must not router out the old material completely flush with the edge of the stringer, for example, but must leave a rim of the old wood to serve as a runner for the router to maintain the correct depth of the cut. The same is true on the opposite side, away from the stringer. Without a level support on either side, the routers would tend tip in during the excavation of material, leaving the floor of the cavity uneven.

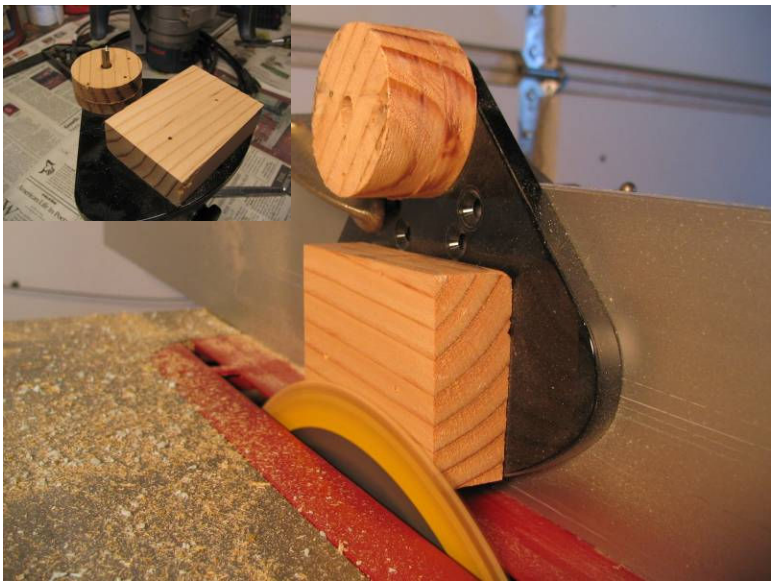
Photo 5: First cut

For the first cut, I used the off-set router mounted on specially made blocks to begin the edge of the cavity closest to the stringer (Photo 5). Notice the shallowness of this initial cut. Due to the low power of the belt driven mechanism, more than about 1/4" depth to the cut at a time really puts a strain on the tool. Also notice the X-marked stick pin hole for later referencing of the paper pattern.

The fact that the off-set router I purchased did not come with a plunge feature necessitated the use of blocks mounted to the base plate (Photo 5 inset). The round block enclosing the bit served a dual function of determining not only the depth of the cut, but also the distance of the bit from the stringer. With the block being a circle with the bit at the center point, the orientation of the router to the stringer didn't matter, as long as contact between the block and the edge of the stringer was maintained.

This use of the blocks to set the depth of the cut of the router bit was not particularly convenient, and if a tool could be found to provide the close in cutting while at the same time offering a plunge feature, it would be well worth considering for purchase. With the set-up I had, to increase the depth of the cut, I had to detach the base plate from the housing of the router, clamp the plate with the wooden blocks to the fence of my table saw, and raise the blade with the saw running to shave off a layer of wood from one of the two blocks (Photo 6). The blade was then lowered; the base plate removed and turned the other way, so that the other block could be trimmed as well. With that done, the base plate was remounted to the housing of the router, a deeper cut was made into the pinblock, and then the process was completed all over again, each time

with the router bit protruding a bit more from the wooden base for a deeper cut (Photo 6 insert).



Next month, we overcome further obstacles, and complete the routering operation.

Chuck Behm is the owner of River City Piano Restorations in Boone, Iowa. He can be contacted at behmpiano@gmail.com.