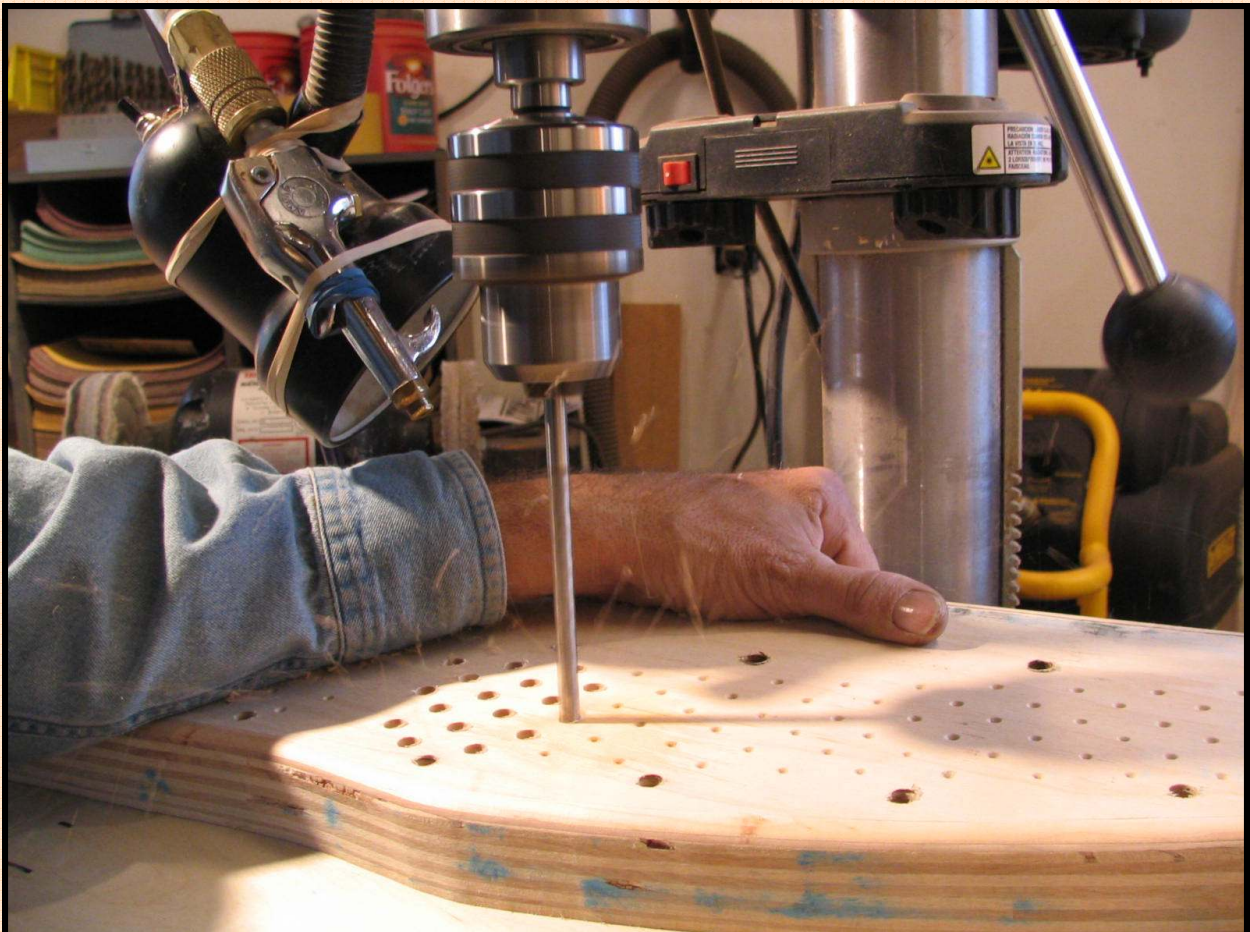


Schaff Piano Supply Company Presents:

Duplicating and Replacing the Floating Pinblock

Part 3 - Drilling and Reinstallation

Belly Work



By Chuck Behm

Duplicating and Replacing the Floating Pinblock*

Part 3 - Drilling and Reinstallation



-Rationale-

The final step in a pinblock installation of this nature (where the pinblock merely attaches to the plate and is not mortised into the rim of the piano) is to drill the pinblock for the tuning pins. Although there is more than one approach to this procedure, it is imperative that whatever method is used the pinholes be drilled precisely. Sloppy workmanship at this stage of the job will effectively negate all the care that has been taken in duplicating the pinblock and fitting it to the plate. As has been stated earlier in this series, owning the correct tools (and knowing how to use them) makes a world of difference. For drilling the pinblock, a simple hand-held electric drill is not up to the task. A good quality, heavy-duty drill press, either a stationary floor model or one that has been modified to roll over the pinblock once it is in place in the piano, is necessary. The good news is that a quality tool should pay off for years to come in the form of higher quality workmanship.

* Note: A version of this article first appeared in the November, 2009 issue of the Piano Technicians Journal.

-Basic Procedures-

In replacing a pinblock, precise drilling is essential. If the pinblock is to be drilled on a drill press, accurately centering the holes is a must. The method used in our shop, although not the simplest (or only) approach, does ensure a perfectly duplicated pinblock if done correctly.



Photo #1: Pinblock clamped firmly in place.

Assuming that the pinblock of your project piano has been successfully fitted to the plate, the first task in drilling the pinblock is to mark the pilot holes for the plate screws. To make sure the holes are marked precisely, clamp the pinblock in place using the configuration of clamps shown in Photo 1 on either side of the plate. Notice that the c-clamp goes underneath the sawhorse, thus avoiding putting direct pressure on the webbing of the plate.

Next, use a creeper and roll yourself under the plate to mark the visible holes for the plate screws - a few will be concealed by the saw horse but you can get those a bit later. Use a sharp #2 pencil to mark the entire circle of each hole as shown in Photo 2 on the next page. The plate screw holes will be along the perimeter of the webbing and should be recognizable by their bevel.

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Do not mark the pin holes at this point. (I apologize, by the way, for the fact that the Photo 2 is slightly out of focus. I was lying on my back on my creeper looking up, marking a plate screw hole with my right hand while trying to take a picture with the camera in my left hand – an awkward job at best!).



Photo #2: Things are looking up!

Once all the visible screw holes are marked, roll out from under the plate, unclamp the pinblock, and move on to the drill press.

The issue at this point is to select the right size bit to drill the pilot holes with. The drill needs to be larger than you would ordinarily select if you were turning your screws into pine, or even oak. The hardrock maple (or similar wood) of the pinblock doesn't have much give to it, so you need a hole that the threads of the screws can bite into, without being so hard to turn that you twist the heads of the screws off altogether. Use a piece of scrap pinblock material to conduct a trial run. Drill several sizes of holes in descending order, then put the test piece in your wood vise, and actually try one of the screws to determine a reasonable torque. I use a square-shanked screwdriver with a crescent wrench to help turn it. (The head of the screwdriver should ideally be as wide as the slot in the screw, otherwise you risk having the screwdriver damage the slot.) With the correct size bit selected, drill the pilot holes in the pinblock.

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Photo #3: Drilling the pilot holes for the plate screws.

When drilling both the pilot holes (Photo 3), and later the pin holes, adjust the drill press table so that the tip of the bit is a mere fraction of an inch above the block. That way, you can align it under the bit more accurately.

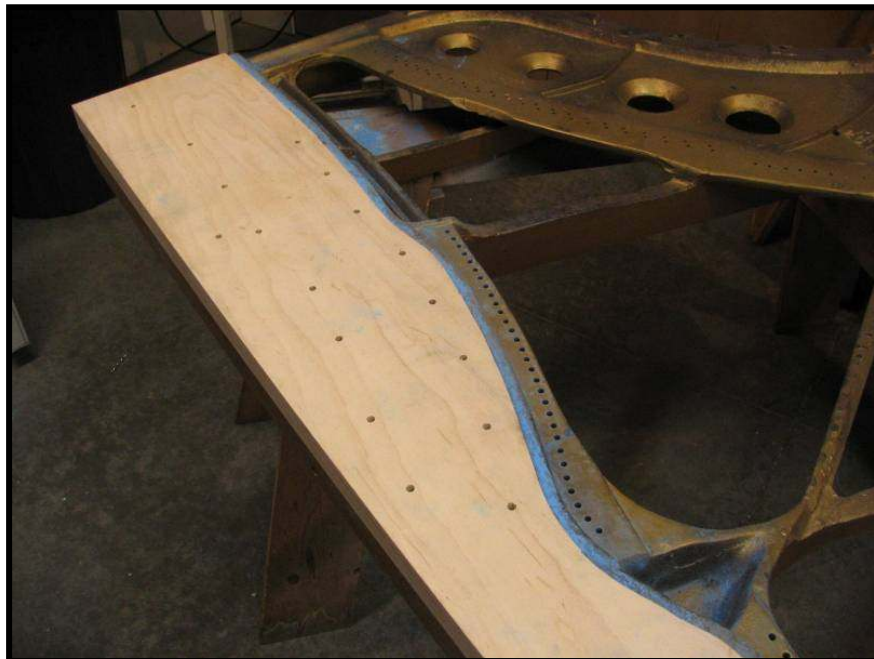


Photo #4: Pinblock back in place with plate screw holes drilled.

With the pinblock back in place on the plate (Photo 4), reposition it, reclamp it, and scoot back underneath on your creeper. From this position, insert

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and tighten down two screws on either end to insure correct placement. At that point remove the clamps, and with the help of a co-worker, turn the plate with attached pinblock back over again. (As you are turning the plate, go easy on your back by keeping the weight of the plate on the top of your sawhorses.)

Caution: Under no circumstances should one attempt a major repositioning of a cast iron plate without the assistance of a helper. The plate, besides being heavy, is just too big and awkward to try to move by oneself. Attempting to do so is tempting fate and putting the future of the piano (plus one's own well-being) in jeopardy.



Photo #5: Pinblock ready to punch.

At this point, turn in the rest of the screws (Photo 5) to insure that when you use the punch to tap the centering points for the tuning pins, there will be no mistakes in positioning caused by a loose fit.

Use a punch (Schaff's [tuning pin bushing punch](#) [Cat. No. 174C] adapts well to the job) and a [ball peen hammer](#) (Cat. No. MF-1916) to tap the center points for the tuning pin holes (Photo 6, next page). If the punch is loose in the hole in the webbing of the plate, try wrapping the end with just enough electrical tape to eliminate any wobble. Make sure that as you are using the punch, you are holding it perpendicular to the face of the plate. If there's any tilt to the punch, the point will not be centered correctly.

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Photo #6: Punching the center points.

With all the tuning holes centered (be sure to double check), remove the plate screws and store them in the holder, and remove the pinblock from under the plate. Before doing anything else, mark each end of the block with a slanted arrow (Photo 7) to indicate the direction that the slant of the pins will take, away from the fitted, curved edge of the pinblock. Better safe than sorry.

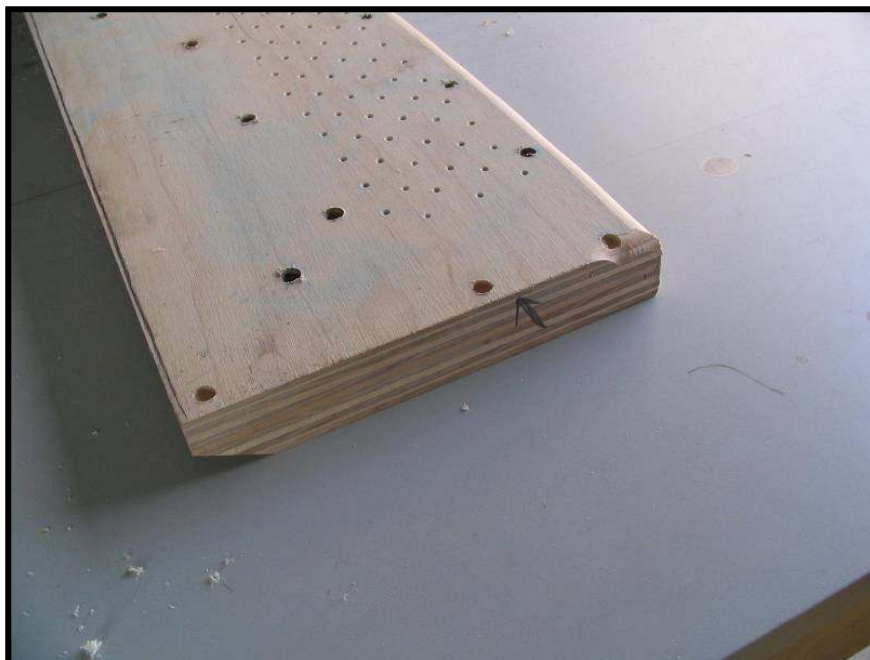


Photo #7: Making sure of the slant.

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Now, back to the drill press. In my own shop I have an extra wide auxiliary bed clamped to the existing cast iron bed to provide stable support for the pinblock as it is slid from side to side. The bed of drill is canted forward at a 7 degree angle, with the curved, fitted edge of the pinblock frontward. The bit is cooled by a continuous stream of compressed air as the drilling is taking place. Again, the drill press table height is adjusted so that the bit is very close to the face of the pinblock to facilitate lining the bit up with the center point.



Photo #8: Let the chips fall where they may

I hold the block down with my left hand and arm while drilling (Photo 8), really leaning into it with my weight to prevent any movement of the block during the process. (If you are not holding the block firmly enough, you'll feel a slight 'bump' on the upstroke which indicates that the block has momentarily shifted. This will cause the hole to be slightly elongated, and must be avoided.)

Drill at a continuous speed, so that the bit remains at a stable temperature. Your goal is producing pinholes which grip the pins tightly, consistently and without any hint of jumpiness. (There is, of course, more than one way to drill a pinblock. This particular method has worked well for me for over 30 years, but I would be the first to say that there are other avenues of thought on the subject. Do your research, and find the method that works best for you in your own shop.)

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With the pinblock drilled, reinstall the block in the plate. (If the plate has not been cleaned or refinished, of course, do that first. Likewise, if the plate screws have not been polished at this point, do that also before replacing them in the plate.) When installing the screws, tighten them down using a square shank screwdriver and wrench. Take your time with this step to avoid having the screwdriver slip from the slot and mar the finish of the plate. For years, I've tightened the screws snug without the use of a torque wrench – going by feel instead. Using a calibrated torque wrench, however, to eliminate any guesswork in attaining a consistent tightness of each of the screws would be what I would recommend for someone starting out.

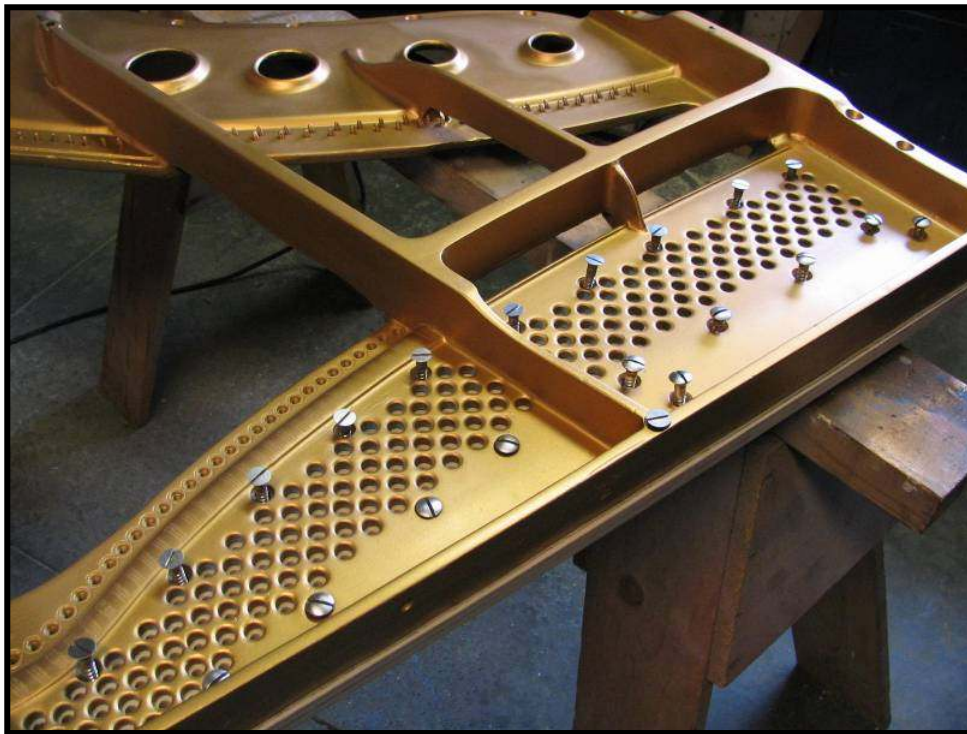


Photo #9: Screws polished and ready to be turned down

With the plate screws reinserted (Photo 9), tightened them down. The plate with attached pinblock is now ready for installation in the piano.

Caution: A reminder again that it is important to use the correct screwdriver for the job to avoid damaging the screws. Also, avoid over-tightening the screws. Once they are solidly turned into place, stop applying torque. Breaking the top half of the screw off in the screw hole will result in a lot more work to remove the threaded portion left in the hole.

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Photo #10: Plate ready to reinsert in piano.

With your hoist over the plate, double knot the straps around the struts of the plate. Although I always attempt to locate the hook directly over the center of gravity of the plate and tie the straps with an even amount of tightness, usually when I start lifting the plate, one side comes up before the other, resulting in the plate being tilted at an odd angle (which you don't want). If this is the case, don't lower the plate and retie the straps. Instead, place weights on the high end to bring it down. What I use are freezer bags filled with sand (Photo 10) – they won't mar the finish of the plate, and are easy to procure – just buy sandbox sand from any home improvement store, and fill your bags.

Caution: *It's a good idea to double bag your sand, in that after a couple of years of use, leaks can spring at an inopportune time.*

To avoid marring the finish of the inside of the rim – the last thing you want to have happen at this point – use dowels to help guide the plate down safely. The clearance can be very tight, but with dowels running down through the bolt holes of the plate and into the holes around the edge of the sounding board. (Photo 11, next page), it's much easier to lower the plate without touching the rim at all.

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Photo #11: Guide dowels help lower the plate safely

Easy does it on the lowering process. If you are using an engine puller with a hydraulic lift (as I was doing in this case), turn the release valve to lower the hoist with extreme caution. This type of hoist has ample capacity for the job, but not the amount of feather control that a chain hoist provides.

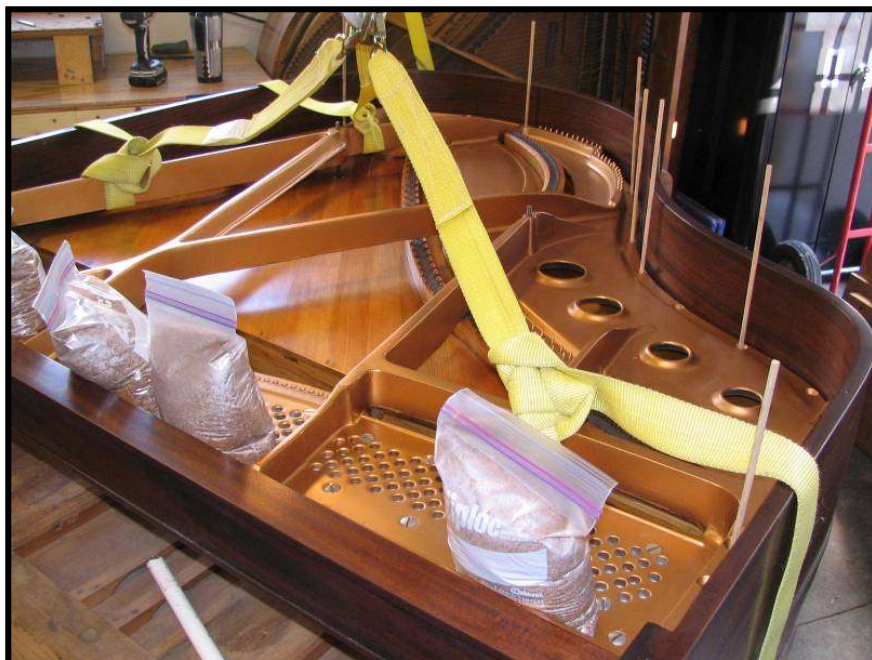


Photo #12: The Eagle has landed

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With the plate safely back in the piano remove straps and dowels and double check its positioning. Tighten down plate screws as you would tighten the lug nuts on a car tire – going back and forth from one to the other several times to tighten down the entire plate evenly.



Photos # 13, 14: Before and after

Enjoy the transformation you've accomplished.

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Taking One Step at a Time

Learning how to successfully duplicate and replace the simple "floating" type of pinblock is a good first step on the road to mastery of more complex pinblock replacements. Above, the replacement of the pinblock panels (after having routed out the old pin fields) in a curved and mortised pinblock is shown.

With pinblocks, there are many variations on a theme, and just when one thinks he has seen it all, something new will be delivered to the shop. This goes for other types of repair work as well, especially in a shop where a wide variety of piano brands are worked upon. The key is to approach each job with the positive vision that whatever it takes, the piano will not leave the shop until it is repaired correctly. Sometimes, the answers as to how to repair a certain problem can be quite elusive and take a great deal of thought. But almost always there is a doable solution if one looks hard enough.

The challenge of tackling work which does not come easy at first is one of the great pleasures of working in a piano restoration workshop. If everything were too simple, the rewards would not be as great. It is when one overcomes a really challenging problem that one feels a real sense of accomplishment.

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Tools and supplies:

For your convenience, all the tools and supplies necessary to complete this procedure are listed with corresponding catalogue numbers. (This list is partly repeated from part 1 of this series.)

Tools:

Tuning pin bushing punch.....Cat. No. 174C
Ball peen hammer.....Cat. No. MF-1916

Supplies:

Maple pin block material

9-1/2" widths.....Cat. No. 563, 562, 564
22" widths.....Cat. No. 563D, 562D and 564D

Multi-laminated Delignit® beech pin block material

9-1/4" widths.....Cat. No. 490, 493 and 496
18-1/2" widths.....Cat. No. 491, 494 and 497
47-1/4" widths.....Cat. No. 492, 495 and 498

5-ply pin block, rifted or quarter sawn maple....Cat. No. RM5 and QM5

Important note: Ordering information is given
for the use of Schaff account holders only.

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or go on-line at <http://www.schaffpiano.com/>

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Notes on Procedures