

Schaff Piano Supply Company Presents:

# Duplicating and Replacing the Floating Pinblock

## Part 2 - Cutting and Fitting

Belly Work



By Chuck Behm

# Duplicating and Replacing the Floating Pinblock\*

## Part 2 - Cutting and Fitting



### **-Rationale-**

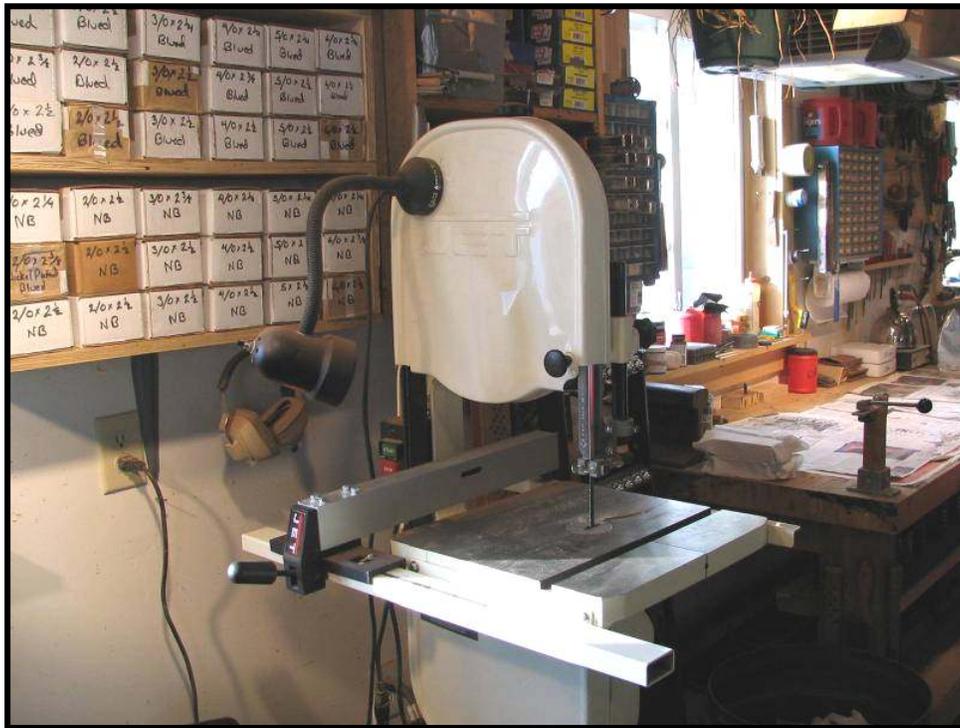
When it comes to pinblock installation, the gold standard of quality is in a perfect fit. When a pinblock is cut and fitted to the plate correctly, a foundation for stable tunings has been laid that will benefit the owner of the piano for decades to come. When such careful workmanship is followed up with similar treatment to the other aspects of the rebuilding job, the restored piano blossoms into a beautiful instrument that is a pleasure to play and to own.

Paying careful attention to detail in the restoration of a piano, especially when it's in work done which, by its nature, is out of sight of the owner (as in the case of the fit between the pinblock and the plate), is the trademark of the true professional. Knowing what it means to do the job right while caring enough to make sure that one's standards never slip is what it takes to be a craftsman.

\* Note: A version of this article first appeared in the August and September, 2009 issue of the Piano Technicians Journal.

### -Basic Procedures-

If you're cutting a new pinblock, a good quality band saw is the tool of choice (Photo 1). Although a small bench model band saw can be made to work (I made do with a little Delta model for two decades before switching to a larger saw), a free-standing, full size model of a good brand will make the job seem much less intimidating. The perennial problem I had with the smaller model of the motor winding down under the strain and the blade binding in the cut have been solved with the investment of a saw which is up to the task.



*Photo #1: Make sure the tools you use are up to the job at hand*

Whatever saw you will be making the cut on, now is a good time for a new blade (1/4" width is ideal for the gradual curves of a pinblock) and a tune up. Get out the owner's manual and adjust all the settings to the factory recommendations. Failure to have your saw set up right will make it hard to follow the line, resulting in more work fitting the block to the plate. (Remember that although your saw might handle 3/4" pine without a problem, cutting through hardrock maple up to 1 1/2" thick poses more of a challenge, especially if your saw is not set up for peak performance.)

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With your saw tuned up and ready to go, adjust the tilt of the saw bed so that the blade lines up true with the curved edge of the old pinblock. Usually the curved edge is cut at approximately 5 degrees off a right angle. To set this accurately, do not push the pinblock hard against the blade. Doing so will distort the blade, and may result in an incorrect angle. Instead, place the pinblock close to the blade, and gently tap it towards the blade until the pinblock makes contact with a saw tooth at the top of the block, and a saw tooth at the bottom at precisely the same moment (Photo 2). Make sure to lock the bed in place before proceeding.



*Photo #2: Matching the blade to the bevel*

With the bed of the saw at the correct slant, you are ready to cut. (See part 1 of this series for preliminary instructions to prepare the pinblock stock for this step, if you haven't already done so.)

**Note:** The full length of the blank will almost always be longer than the finished pinblock. Do not cut the ends off until you have both finished the curved cut and have done any planing to thickness which is necessary to match the dimensions of the old pinblock. It is much easier to lead into the cut and to follow through at the end of the cut if you have some excess stock on either end.

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Place the blank on the band saw bed, with the straight edge away from the throat of the saw (Photo 3). Start your cut, focusing on sawing at a moderate, controlled speed. Cut down the center of the pencil line instead of trying to keep the blade on one side of the line or the other.



*Photo #3: Making the cut*

If you haven't used a band saw frequently in the past, the most common problem for an inexperienced user is that of overcorrection (somewhat similar to a new driver tending to overcorrect the steering of a car). If the blade begins to drift to one side of the cut or the other, don't overreact. Visualize of merging the blade and the line several inches from where you're at, and begin the correction gradually. (If you are using a new saw for the first time, consider practicing on a length of 2 x 8 Douglas Fir marked with gently curving lines to get the feel for the tool before working with the more expensive pinblock material.)

With the length of the pinblock being what it is, it is helpful to either set up an extension to the bed to support the weight of the block on the outfeed side, or to have a helper assist. Otherwise, cutting the last few inches becomes tricky, as you attempt to feed the pinblock through on the tail end of the cut, while supporting it in midair on the front end.

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During the cutting process, by the way, it will become obvious if the blade on your saw needs replacing, or if the tool as a whole needs a tune-up. A well adjusted saw with a sharp blade will cut through the hardrock maple stock like butter. If the saw is straining to make the cut, something needs attention.



*Photo #4: Old block, new block and scrap piece*

Photo 4 above illustrates how efficient this method of cutting pinblocks is. The narrow length of scrap is the only waste produced thus far. When the next pinblock is cut from the blank, switching sides on which the wide end of the block is cut will help make the most of the remaining pinblock material. As was shown in part 1 of this article, getting 4 pinblocks from a 22" width of pinblock stock is possible using this method..

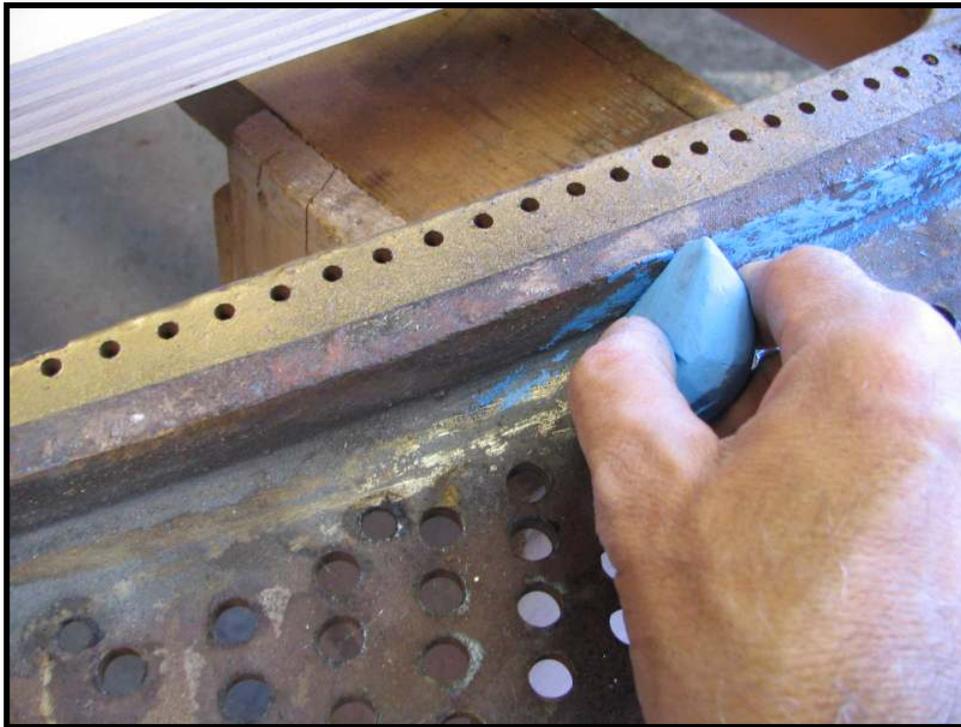
At this point, run the block through a thickness planer if the thickness of the new block is greater than the thickness of the old block. With the bottom side of the block turned up as you push it into the planer, turn the blades of the planer down until they just barely engage, then run the pinblock through. Take off material one shallow pass at a time until the thickness of the new pinblock is correct.

Finally, cut off the ends. Using the chisel cuts made earlier to line up the old pinblock on top of the new, mark the ends of the block with a pencil line, and cut on the table saw or a miter saw. With that step completed, you are ready to fit the block to the plate.

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When you first put your newly cut pinblock in position on the cast iron plate to check the fit, don't be disappointed if it doesn't fit like a glove. There will almost certainly be gaps between the block and the plate, but rest assured those gaps would have been much wider if you had not exercised care in cutting the pinblock to size.

Two possible fixes present themselves at this point. Either the gap may be filled with a filler, such as an epoxy or fiberglass. This is done by some factories and rebuilders alike, with varying degrees of success. The only real advantage to this method, in my opinion, is that it's quick, and therefore cheap. The other solution is to actually fit the pinblock to the plate, by grinding off the high spots until the pinblock makes contact with the flange along its entire length. That is the method which I'll discuss. Done with the right equipment, it doesn't take as long as you might imagine. It's worth the extra effort to know that the job is done right.



*Photo #5: Chalk it up*

To fit the pinblock to the plate, place the plate upside down on a pair of sawhorses. Use a piece of plumb chalk (Photo 5) to heavily coat the inside of the flange that the pinblock butts up against and position the pinblock in place.

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*Photo #6: Improvement is needed here*

Now, push the pinblock firmly up against the flange of the plate. Most likely the fit will be close in places, but not so good in others. Gaps such as seen in Photo 6 above are unacceptable. The pinblock needs to be seated securely against the flange of the plate.

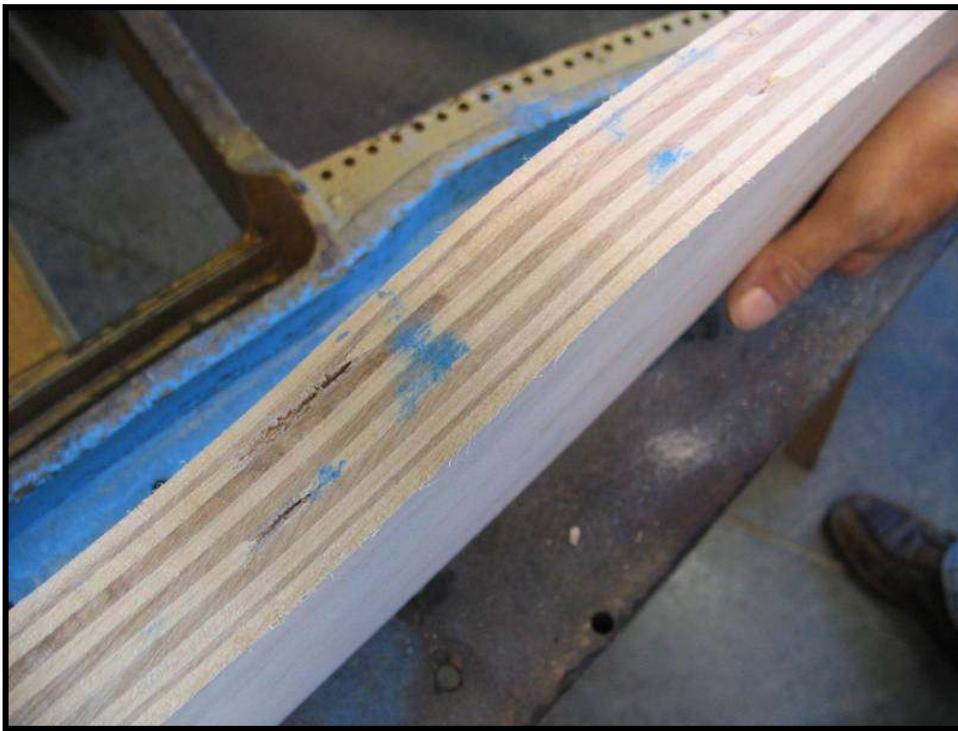


*Photo #7: Tap, tap, tap*

With a rubber mallet, tap the straight side of the pinblock in several spots along its length to mark the high spots (Photo 7).

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*Caution: Before completing this step, make sure that the block doesn't rock back and forth. Put a hand on either end of the pinblock and alternate sides that you push. If it does rock, you must locate the fulcrum and concentrate on grinding it down first. Otherwise, if you grind down the 'high spot' on either end, you will just increase the amount of rocking that occurs. If this rocking condition is not fixed properly, the resulting pinblock will not seat properly, and will result in a piano which will not ever maintain a stable tuning. When the bass on such an instrument is tuned, the treble will go out of tune, and vice-versa. I've personally seen two pianos that came from the factory that way that required new pinblocks.*



*Photo #8: Initial contact*

Photo 8 shows what the curved face of the pinblock is likely to look like after the first trial run with the chalk and the mallet. The blue spots represent the high points – places where the plate and block are making contact. By grinding those areas down, more and more contact will result.

Place the pinblock with the curved face up in a woodworking vise (or better yet, in a pair of woodworking vises, as in Photo 9, next page). Clamp the vises down securely to prevent the pinblock from slipping. (A good idea is to line your woodworking vises with cork, which can be cranked down very tightly on the work piece without fear of ever damaging the surface – even on finished pieces.)

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*Photo #9: This set-up grips the work firmly*

To grind off the high spots, use a drum sander with a coarse grit (Photo 10). A heavy-duty, plug-in drill that won't slow down when taxed makes the job easier.

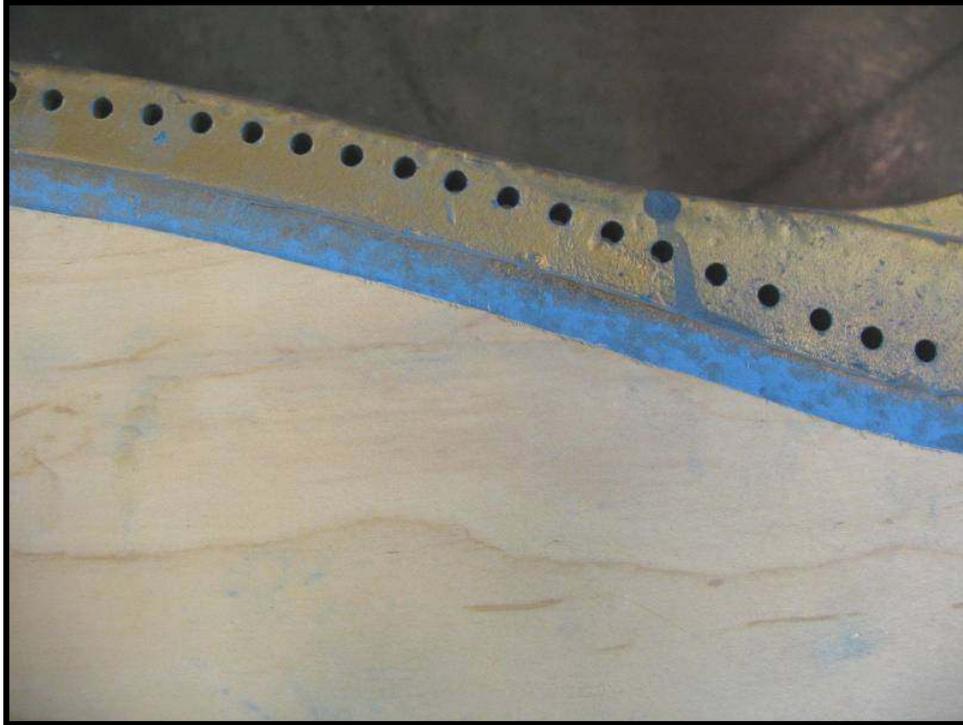


*Photo #10: Grinding away*

While grinding off the blue spots, make sure you are taking off wood from underneath the chalk – don't just use the grinder to clean off the chalk.

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After removing wood from all the high spots, rechalk the flange, put the block back in place on the plate, and tap it again with the mallet. Repeat the process until a line of blue spots runs the entire length of the pinblock. Figure anywhere from 25-50 repetitions will be needed to achieve a close fit, as seen in Photo 11.



*Photo #11: A snug fit (compare to Photo #6)*

One last hint: Check the angle between bottom of the flange and the webbing of the plate. If it curves slightly instead of being an abrupt right angle, use a hand held router with a laminate trimmer to put a corresponding curvature on the edge of the pinblock.

An absolutely tight fit in between the pinblock and the plate is thus an achievable goal if one is tenacious. The highest form of craftsmanship, in my opinion, is when one is particular about the details *in the places that the customer never sees*. Only when we hold ourselves accountable to do the best work possible, given our knowledge and experience, may we hold our heads high knowing that we are, indeed, craftsmen.

For a description of the drilling process, refer Part 3 of this series which describes a simple method of drilling the pinblock on a drill press, using the plate as the template for marking the pinholes.

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### A Tale of Two Pinblocks

One of my first rebuilds back in the '70's was a Mason and Hamlin grand. My father had come to my shop to help pull the plate, and when we flipped it over on sawhorses then removed the pinblock from the piano, we put the two components back together to check the fit that had been done at the factory.

It was perfect. The fit of the pinblock was so exacting that when the surfaces were brought together, there were absolutely no gaps anywhere. Dad explained to me the 'business card' test, and it passed with flying colors. With the block held in place, a business card could not be inserted anywhere. We noticed a bulge in the flange of the plate at one point, and checking the pinblock saw that a corresponding hollow had been scooped out of the pinblock. (See photo above - I kept the pinblock all these years as a reminder of how the job should be done.)

A few years later I replaced a pinblock in a piano that would never hold a stable tuning, despite the fact that the piano at the time was not even 20 years old. When the treble was tuned, the bass would go out of tune, and vice-versa. With the cast iron plate out of the piano, I checked the fit of the pinblock and found that it only touched the flange of the plate in 3 spots. Even worse, it didn't touch all 3 spots at the same time. Rather, the block rocked on a middle spot acting as a fulcrum, then pivoted approximately 1/8" either way to contact one side point or the other. It was a teeter-totter. I cut that one up for scrap wood.

Does craftsmanship still matter? It should indeed. Otherwise, what's the point?

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### Supplies:

For your convenience, the supplies necessary to complete this procedure are listed with corresponding catalog numbers.

(This list is repeated from part 1 of this series.)

#### 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 material in either rifted or quarter sawn maple

(Cat. No. RM5 and QM5)

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

**To order, call Schaff Piano Supply at 1-800-747-4266,  
or go on-line at <http://www.schaffpiano.com/>**

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### Notes on Procedures