

## *Small Shop – Big Results*

### **Removing the Cast Iron Plate – Part 3**

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Where do pianos to work on for a restoration business come from? Some shops have a connection with a piano store. Top name trade-ins which the store acquires are funneled to the restoration shop, where they are refinished and rebuilt before being returned to the store for resale. The store and the restoration shop both profit from the arrangement. Other shops buy, rebuild and sell pianos, again typically top names such as Steinway and Mason and Hamlin.

In the case of my own shop, the pianos that are brought in for restoration typically come from my own tuning customer base. When I service a piano for the first time, I routinely inquire about the history of the piano. A substantial percentage of the pianos I tune, I have found, are what I would term “family pianos.” They are instruments that were first purchased by a parent, grandparent or even great-grandparent of the current owner.

The words “mother’s piano,” or “grandma’s piano” have an almost magical quality. When, as an adult, your customer can remember going to bed in the evening as a child and listening to their mother playing the music she loved on the very piano that you are now servicing, a discussion of the possibility of restoration often comes up spontaneously.

While such pianos may not have great commercial value, being oftentimes a brand unfamiliar to most people, they have an enormous amount of sentimental value to the owner.



Photo #1: 1903 Starr grand in Zebrawood

The piano in Photo 1, for example, belongs to a customer whose great-grandfather bought the instrument new to present to his daughter (the customer’s grandmother) as a wedding present in 1903. It had been since passed down to the customer’s mother, and then to him. When we first discussed the possibility of restoring the piano, I mentioned to my client that for what he would be spending, he could purchase a new grand piano of moderate quality.

The man looked me in the eye and asked this question. “Will it be my grandmother’s piano?” No, clearly, it wouldn’t be. Therein lays the magic.

To complete the steps involved in removing the cast iron plate from a piano, we pick up from where we left off in last month's issue.

8. Remove all plate screws, bolts, and nuts and store in prepared screw holder. Before unscrewing a single screw, bolt or nut from the cast iron plate, construct a holder for the hardware which will be removed. It is important to store all the plate screws, bolts and nuts in such a way that they will be ready to return to the same spot from which they were taken. The screws and bolts will be of various lengths, depending on their location. Putting a short screw in a deep hole, or vice-versa, would cause problems.

To build your screw holder, start with a plywood blank large enough for the job. Draw a simple diagram of the plate and rim of the piano with a sharpie on the plywood and mark with an X the position of each screw, taking care to locate every screw and nut which you will be removing. Check carefully between the rim and the very front left hand side of the plate, as screws are often present, but hard to spot. Also check to see if there are any screws going horizontally through the front lip of the plate into the stringer.

Remove one screw and one bolt to check on shank sizes. Select bits which will allow the screws and the bolts to drop through the wood up to the head. Next, drill all the holes for your screws. For nose bolt nuts, use forstner bits to drill shallow holes for the nuts to fit in. The last step in preparing your screw holder is to mount it on legs. I use 3 short lengths of 2 X 4's which are longer than the longest screw or bolt. Finding spots in the holder where the legs won't block any screw hole, attach the legs with self-tapping screws and a power drill.



*Photo #2: Screw holder for a typical grand*

Now you are ready to start turning out screws. For plate screws you will need a large, square-shanked flat bladed screwdriver (or possibly Phillips, if the piano is of a more modern vintage), in combination with a crescent wrench. The end of the blade of your screwdriver should fit securely in the slot of the screw to be removed. A loose fitting screwdriver will damage the head of the screw, so if you don't have a proper fitting screwdriver, buy one. Place each screw in the hole intended for that screw as soon as it is backed out (Photo 1), to avoid ending up with a pile of screws, and no clear idea of where they go.

9. Develop a plan for how to take the plate out and safely store it before actually lifting it out of the piano. Do not attempt to remove a cast iron plate from a piano unless you have sufficient manpower or adequate equipment to do the job safely. Not only are the health and welfare of people involved, but if the job is performed haphazardly the integrity of the plate becomes an issue as well. Needless to say, if the plate were to be damaged in a bungled job of removal, the future use of the piano could be in jeopardy.

Once the plate has been lifted from the piano, it should be placed on a solid support where it will be safe. The question, "OK, now where do we put it?" should not be asked with you and your friends holding the plate in midair above the piano, and the shop in a state of disarray. Have a plan in place.



*Photo #3: A secure spot to store the plate is necessary*

Sawhorses or a study bench are adequate for the job (Photo 3), if they are solidly built. Alternatively, the plate may be leaned up against a wall or the back of an upright piano, if it is at a sufficient angle so that there is no chance of it falling over. In a shop where there are a number of upright pianos, you might sandwich the plate in between two pianos that are placed back to back to each other. If you do lean it against a wall or the back of an upright piano, place the forward edge down so that the weight of the plate is divided over a long, straight section of cast iron. In particular, if the plate has a horn on the bass side, avoid putting that side on the floor.

One other factor to plan for is the fact that at some point in time the plate will have to be turned upside down for fitting the pinblock. This means that there should be adequate room above the plate for the back end to be lifted up in the process of turning it over. With the plate upside down, as shown in Photo 4, the flange against which the pinblock is fitted is exposed. Once the new pinblock is cut from a blank, the edge where the block butts up against the flange is filed until the fit is perfect. When done correctly, the fit between the pinblock and the flange of the plate should be tight enough that the edge of a business card may not be slid in at any point. This tight fit is imperative for tuning stability. For background reading on this procedure, study Arthur A. Reblitz's explanation in *Piano Servicing, Tuning & Rebuilding*. This fitting of the pinblock is to be done, by the way, before the plate is itself refinished, to avoid scratching the new gold lacquer.



*Photo #4: Plate upside down for fitting the pinblock*

10. Either using sufficient manpower and / or equipment lift the cast iron plate out of the piano. Set in a safe place. Assuming you've completed the 9 steps outlined above, you are now at last ready to remove the plate from the piano, using one of the following three methods.

A. Relying on friends and neighbors. Although some smaller plates may be physically hoisted out by you and one other person, I believe this to be very risky. Even though we have done this in our own shop, we should know better. If one person trips or one person's fingers start to slip, you're going to drop the plate. Cast iron hitting concrete is not a recipe for success.



*Photo #5: Hoisting a plate using a crowd of relatives*

A better idea is to gather several friends or relatives as shown in Photo 5, and make an event of the procedure. The obvious advantage to dividing up the labor like this is that no one person has to exert that much effort. The key is to discuss the plan of where the plate is going, and who is going to step around what to get there.

The disadvantage is that with novices, accidents can still happen. My dad, when once assisting with several of my friends in the reinstallation of a plate (either our second or third pinblock job), got his thumb wedged in between the plate and the rim of the piano, leaving a gouge in his thumb which required stitches. The next day we bought an engine puller from an auto supply store.

B. Using an engine puller from an auto supply store. This method, in my opinion, is better than relying on friends. The procedure may be accomplished with no outside help, and is relatively easy on the pocketbook. I bought mine new from an auto supply store for less than \$200. In addition to the engine puller itself, you will also need some method of securing the plate to the hook of the puller. I have used both chains and straps. Although I used chains at first, I later switched to straps, in the belief that straps are easier on the finish of the plate when it is reinstalled. Whatever method you employ, remember the old adage about a chain being no stronger than its weakest link. Make sure that every segment of the system you employ is up to the requirements of the task.

With an engine puller, such as the one Dave is shown using in Photo 6, the puller itself is rolled into position over either the piano or the support on which you have placed the plate. Maneuvering the base of the puller around the legs of the piano, or whatever supports you have the piano or the plate sitting on, can be a challenge. Try to locate the hook of the puller over the center of gravity of the plate, and attach your chains or straps to the struts of the plate. With chains, you want to be cautious not to damage the plate. I put the chains through the arms cut from old sweatshirts and hold them in place with rubber bands at the point where the chains go around the struts of the plate.



*Photo #6: Removing a plate with the engine puller*

Use the pneumatic pump to gently start lifting the setup, noting the tightness of the chains or straps. If one is tighter than the rest, back off and readjust the other to take up the slack. As much as possible, you want the plate to come out at an even keel from the piano

Once again, there are advantages and disadvantages to this procedure. The main thing I don't like about using an engine puller is the lack of control that you have upon reinstallation. To lower the plate into the piano, you turn a valve to release air from the pump. I find it difficult to turn this valve just the right amount. Turn it a hair too much, and your plate will drop into the piano with a thud.

Once the plate is high enough to safely clear the rim, roll the setup out away from the piano (or roll the piano out from underneath the plate) and set the plate down on a secure location, such as a set of sawhorses, or a solid cabinet or bench. This method is practical, relatively inexpensive, and safe. However, because of the lack of precise control in reinstalling the plate into the piano, it is not the method that I prefer.

C. Using an overhead chain hoist. If a solid enough overhead support is in place, a chain hoist is the method which gives you the most delicate touch in removing and reinstalling the cast iron plate. Especially when replacing the plate inside the newly refinished rim of a grand, you will appreciate the amount of control that this type of hoist will give you. You can raise or lower the plate a hair's width at a time, without any trouble at all. Hoists come in various sizes. Dad and I bought one rated at 1000 pounds, and have never had a moments trouble with it. I still occasionally use the engine puller when the shop becomes crowded, and the mobility of the puller is needed, but given my choice, I will always use the hoist.



*Photo #7: Solid support for a hoist is essential*

*The key to using a hoist is the overhead support. Our shop was built with a 2 X 6 frame. The overhead trusses have 2 X 8 cords. In the walls, where the hoist was going to go, we put in 6 X 6's centered under the 2 X 8 cord. We then sandwiched the 2 X 8 in with 2 X 12 beams, as shown in Photo 7. With this amount of support, and the 1000 lb. rating on the hoist, the system lifts the plate out of an average home piano effortlessly. (Caution: Only have a licensed contractor install an overhead beam or support.)*

The only disadvantage to using a hoist as compared to an engine puller is that the hoist is stationary (unless your shop has a setup with I-beams and rollers), thus the piano

must be rolled out from under the hoist, and the support placed under the plate. There is a moment in time which always seems disquieting to me, when the plate is suspended in mid-air, as in Photo 8 below, with nothing underneath it. Suffice it to say that I never take a lunch break or go for a leisurely stroll at this exact moment.



*Photo #8: This just makes me nervous*

If you follow the 10 steps outlined above, removing the cast iron plate from a grand piano becomes, after a time, a routine job in your shop. The type of work that having this equipment and ability enables you to do, such as pinblock replacement or soundboard repair, makes it well worth the expenditure and effort.

I would enjoy hearing from other technicians or small shop owners interested in restoration. If you're coming through the Midwest, give us a call or stop by.



*Photo #10: The shop in the spring*

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