

Small Shop – Big Results

Removing the Cast Iron Plate – part 2

By Chuck Behm

Operating a piano restoration shop does not mean having to give up a career as a tuner/technician. Maintaining a dual occupation is not only possible, but I believe very practical. I've had both jobs for over 30 years, and I find they dovetail very nicely with one another.

If you've never had a shop, but have always wanted to give restoration a try for whatever reason, consider starting into the rebuilding business gradually. Find a spot in your home or garage to clear out some space, bring a piano home, and begin the journey. If you're anything like me, you'll never look back.

Now, to continue on from where we left off in last month's issue.

4. Remove the bass strings in order and bundle them up to send off to a stringing factory for duplication. Bass strings are copper (or steel) wound strings which must be duplicated in the factory if they are to be replaced. When removing the cast iron plate from the piano, the bass strings must be taken out. Since the coil of each string needs to be cut off before the string is pulled through the agraffe, this necessitates replacement of the strings.



Photo #1: The restoration of a Kimball grand nears completion

Once you've come so far with a piano, such as in this 300+ hour restoration of a Kimball grand shown in Photo 1, you wouldn't want to put the old bass strings back in, even if you could. Appearance and sound are enhanced with a new set of strings.

Once the tension has been let off the piano, removal of the bass strings is a relatively easy process. The only precaution is that they must not be mixed up – the order that the strings come off the piano is vital. For this process, you will need a small, flat-bladed screwdriver, and a pair of wire cutters. Also, a two foot section of copper wire (the ground wire pulled out from a piece of Romex is perfect) is needed to bundle the strings.

Start with the string for the lowest A. Usually, the set of wound strings extends from this string, A0, to the break between the overstrung bass and the treble, but not always. Sometimes there are also several sets of wound strings to the right of the break. You will include those in with the set to be duplicated if they are present.

For A0, remove the coil of the string from the tuning pin. To do this, use your small screwdriver to pry the end of the wire from the hole in the pin. Once the wire is free from the hole, push the screwdriver under the bent end of the wire (the becket) and pry the coil off of the end of the pin. With the coil free from the pin, lift it and cut the string between the coil and the agraffe. Discard the coil, pull the end of the string through the agraffe, and remove from the hitch pin at the back of the piano.

Now, you are ready to begin bundling the bass strings together. Run the piece of copper ground wire from the Romex through the eye of the loop on the A0 string where it was attached to the hitchpin. Make a knot of the copper wire around this loop to provide a secure end to the bundle. As you continue removing strings in order from the piano, thread the loop of each string onto the copper wire. Note any missing strings with a center rail felt. When finished with the entire set, use the end of the copper wire to tie them together, as in Photo 2.



Photo #2: Bundle the bass strings together

Finally, as shown in Photo 3 below, use several pieces of duct tape to secure the strings into a circular loop. Package the wires in a string box, include your identification along with the make and size of the piano, and then ship to a string maker (such as Schaff) for duplication.

By the way, an excellent source for your reference library if you are contemplating any sort of restoration work involving repinning or restringing is John W. Travis' book, *A Guide to Restringing*. It goes into much more detail than one could possibly cover in an article or two, plus it has stringing schedules, the topic of the next step of this article, for hundreds of pianos. Whenever possible, read about a procedure from as many different sources as are available before actually trying it yourself. Each author will have his or her own set of experiences to draw from that you can learn from. (You'll be standing on the shoulders of giants.) My own library of *Journals* (starting with Vol. 1, No. 1, Jan. '58) and books has provided me with a wealth of information over the years. I am indebted to every author I've ever read.



Photo #3: Strings ready to be boxed

5. Mike and remove the treble strings. Record the stringing schedule (sizes) on a chart which you must not lose. Starting from the left hand side of the steel strings section, remove the strings, one set at a time. Most all of the steel treble strings will be in sets of two, with the string leaving one pin, traveling back around the hitchpin then returning to the next pin. With the tension off, the easiest method of removal is to first cut each of the two strings with wire cutters, up close to the pin. Use a small, flat-bladed screwdriver to pry the becket out of the hole in the tuning pin and pull the coil off the pin. Then, reaching back or going around behind of the piano, pull the rest of the string backward through the agraffe (if the piano has them), then off of the bridge and hitchpin and remove from the piano.



Photo #4: Miking the treble stings

At this point, use a micrometer to measure (mic) the strings. Record the size on a stringing schedule for the piano. Safely dispose of the treble strings by bending them several times and putting them in a heavy bag to put in the trash. In Photo 4 co-worker Dave Richardson uses a micrometer to check the string size before recording on an index card.

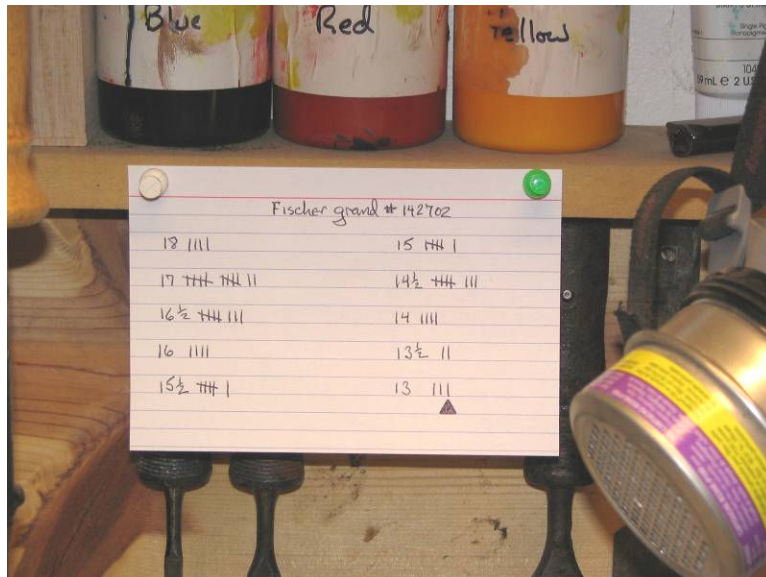


Photo #5: Stringing schedule

The tally marks recorded on the card shown in Photo 5 represent the number of notes with each size of treble string. Generally, each note has three pins. Since treble wire goes from one pin to the next, one wire will be found to extend from the third pin of one note to the first pin of the next. Two notes in the treble would therefore have six strings (or pins), but only three pieces of wire. The piano in question here had four notes with size 18 treble wire. Those four notes would six pieces of wire representing 12 strings. Most of the sizes will come out with an even number of notes. If there is an odd number of notes, one of the strings is a singleton, with a loop at the hitchpin end of the wire. Make sure that you note this on your stringing schedule. The black arrow on the card in the photo shows that the last note (size 13) has a singleton.

6. Turn out and toss the tuning pins into the recycling barrel.



Photo #6: Removing pins using a brace

One method to remove pins, shown above in Photo 6, is to use a brace with a tuning pin socket, and back the pins out by hand. This method is good exercise and is easy on your pocket book. As you are turning the pins out, begin to pull up slightly when the pin is nearly out. The pins are etched and will turn themselves out at first, but sometimes will start to spin in the hole when nearly out. Pulling up with the brace will usually bring the pin out. Otherwise, if the pin is loose enough, you might simply pull it out the rest of the way with a pair of pliers.



Photo #7: My son backs out pins with his cordless drill

The other method is to use a power drill set up to back the pins out. Either a quality cordless drill, or a heavier plug in drill should be sufficient for the job, as long as it has a ½” chuck and adequate torque. In Photo 7 my son Jason uses a cordless drill to remove pins. Personally, I prefer a plug in drill with plenty of torque to do the job, especially when the pins are tight in places. Too small of a drill will fail to turn out tighter pins and will in general perform poorly. I attach my drill to a power tuning pin socket (Schaff part #63). This is a definite time saver over using a hand brace.*

One precaution is that you should not use this method on a piano where the original block is to be repinned, unless your drill has a variable speed capability and you are conservative with the speed in backing the pins out. If you are not careful, the speed at which an electric drill will turn the pin out will build up excessive heat and could char the wood, leading to jumping pins down the road. To avoid this scenario, if I am saving the old block but putting in new pins, I play it safe and use a brace.

Once the pins are removed, save them for recycling. Although you would never put an old set in another piano, they are high quality steel and should not be simply tossed in the trash. Keep the earth green. (Word to the wise – avoid throwing old pins in a container that is going to a pain to move when it’s full. See photo 8 below.)

* In a timed trial, I backed out ten pins in 90 seconds with a brace, while my son, using his cordless drill at a reasonable speed, backed out the next ten pins in 40 seconds. The drill, of course, could maintain that speed indefinitely. I, on the other hand, would soon be worn out.



Photo #8: Anchors aweigh

7. Measure the exact location of the plate for future reference. Removing the plate should only be attempted after careful measurement of its exact position inside the piano. Although the plate is bolted into place, its exact position can vary slightly, due to the fact that the holes for the bolts usually allow for a little play. Whether or not the location of the plate a few millimeters one way or the other would really matter, I believe in erring on the side of caution whenever possible, and not having to later worry if it would make a difference or not.



Photo 9: Positioning the plate using wedges

In Photo 9, the position of a plate being reinstalled is referenced using wooden wedges which fit in between the plate and the inner rim of the piano. Each wedge was marked with a horizontal line where it lined up with the top of the plate, before the bolts were removed in the first place, and numbered to correspond with a specific bolt hole. Wedges are blunted so that the tips do not touch the soundboard. While the piano is being refinished, the wedges should be bundled or boxed together, and kept with all the other parts to that particular piano. To be safe, I would label at least one of the wedges with the name of the piano being worked on. The main issue of concern is the location of the plate in reference to the fixed position of the bass and treble bridges.



Photo #10: Potential problems

In Photo 10, the plate of an Apollo grand had been returned to the piano, but the alignment had not yet been checked. As it turned out, quite a bit of variation was possible, owing to rather large bolt hole sizes. The position was adjusted using wedges which had been prepared before the plate was originally removed, thus avoiding potential problems with misalignment.

In the next issue of the *Journal*, I'll detail the final five steps of the process of removing the cast iron plate.

Until next month, then, we'll keep the coffee pot on. Stop by anytime.



Photo #11: Main room of the shop

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