

Photo 363: The piano action is now ready for its new set of Abel hammers. Titebond glue is swabbed into the predrilled hole in the molding of the hammer using a somewhat flattened Q-Tip.



Photo 364: Each hammer has a tiny hole where the point of the drill bit penetrated. Adhesive squeezing out through this hole indicates the proper amount of glue has been applied. It will be cleaned off after the glue sets up.



Photo 365: As hammers are glued into place, they are leveled four at a time. The glue on the hammers to the left has set. The four on the right have just been put into place. They are aligned with the strings, then leveled with the previous set.



Photo 366: Except for cleaning off the dried glue, the installation of the new set of hammers is complete.



Photo 367: The finished hammer line. Refer to photo #42 of photo essay 3 to view original hammers.



Photo 368: Another concern - the hammer spring rail. These springs are positioned in the action to assist the hammers in returning to rest position after each note is played. The original springs shown here are clearly in unusable condition. My pet theory on this is that the mice inhabiting the piano used these springs to floss after a hard day of gnawing on the keyframe. There's nothing as irritating as wood chips stuck in your teeth!



*Photo 369: The back of the hammer spring rail is felted. To replace the springs, this felt must be removed. The rail is put in the vise, and the bulk of the felt is pulled loose. The wood will be scrapped clean and lightly sanded after the old springs are removed.* 



Photo 370: To remove the old springs, the coil is first stretched out.



Photo 371: The spring is next firmly grasped with a pair of needle nose pliers close to the insertion point into the rail. By slowly turning the pliers clockwise and rotating them against the body of the rail, the end of the wire is pulled loose from the tiny hole in which it is held in place.



*Photo 372: With all the springs removed, the rail is returned to the vise, where the remaining felt is scraped clean. Both sides of the rail are then lightly sanded in preparation for new springs and felt.* 



Photo 373: The correct replacement spring must be chosen from several lengths which are available. The long tail of the new spring will be inserted into the original hole in the rail, and then drawn through a newly drilled second hole to cinch it tightly into place.



*Photo 374: The drill bit needed to drill the take-up hole for the tail of the spring. Only 25 thousands of an inch in diameter, it is dwarfed by a 1/16" drill which itself is the smallest size in most ordinary drill indexes.* 



Photo 375: With this size of bit, the collet in the chuck of a normal drill won't come close to being able to hold it in place. Instead the bit is here placed in a zero clearance collet of a pin vise.



*Photo 376: Although the pin vise is ordinarily used by itself, for this application it is placed into the chuck of an electric drill.* 



Photo 377: The new hole is drilled at the end of the slot that the tail will be drawn into.



*Photo 378: The new springs right out of the sack, looking very much like a batch of Christmas ornament hooks. Creating order out of chaos is day-to-day part of the restoration process.* 



Photo 379: With the rail held firmly in place in a vise, the new hooks are inserted through the original spring holes. The black wire in the slot being held in place by the rubber band is actually just a piece of coat hanger wire, which is temporarily used to hold the coils of the springs in position. The hole underneath each spring is the takeup hole through which the tails of the springs will be drawn.



Photo 380: Once a section of springs have been positioned, clamps are used to hold the coat hanger wire in place.



*Photo 381: The rail is then removed from the vise, and turned around. Each tail is bent in a U shaped loop, so that the end of the tail may be pushed through the newly drilled take-up hole.* 



Photo 382: Back to the front side of the rail, the tail is drawn up tight by grasping the end of the tail with a pair of round nose pliers and using them as a lever against the edge of the rail to pull the slack out of the loop on the back of the rail.



Photo 383: The excess is snipped with a pair of wire nippers.



*Photo 384: With the new springs installed, the rail is again placed in a vise. Notice the helter-skelter nature of the springs at this point. Very unruly looking.* 



Photo 385: Minor adjustments are made along the line of springs to bring them into harmony with one another. Side to side deviations are corrected by using the forefinger on either hand to gently pinch the coil of the spring and to "persuade" it to tilt in the desired direction.



Photo 386: Springs with too much or too little arc are "massaged" between the thumb and forefinger of the left hand, while the coil is held in place by a finger of the right hand.



Photo 387: The spring line after adjusments are made, looking for all the world like the chorus line of the Rockettes kicking up their legs. Much more in unison than before.



*Photo 388: The spring rail cloth is now ready to glue in place on the back side of the rail. Titebond is my choice of glue for this particular application.* 



*Photo 389: The felt is clamped in place to dry using a specially cut strip of oak to spread out the pressure of the clamps evenly.* 



Photo 390: The new felt once the clamps are removed the next morning.



*Photo 391: The spring rail is returned to its position in the action. It is screwed to the action brackets. The original spacers are used in between the bracket and the front side of the rail.* 



Photo 392: The springs are placed into position. Final adjustments need to be made before the job is finished.



Photo 393: The springs installed are slightly too long. The bend on the end of the string should fall with the boundaries of the felt punching. Also, some of the springs are not sitting straight, but are tending to veer to one side or the other, now that they are seated and at tension.



*Photo 394: The issue of length is first attended to. Using the wire nippers, the very end of the spring is cut off flush with the bottom of the felt punching. The spring on the left is still its original length, while the spring on the right has been nipped and its lower bend reformed.* 



Photo 395: Reforming the bend is done by grasping the end of the spring with a medium pair of round nose pliers held in one hand, while at the same time pushing with the middle finger of the other hand outward against the arc of the spring. The pliers are then rotated slightly in a clockwise direction to complete the procedure.



*Photo 396: Any sideways cant is corrected by grasping the coil with a pair of needle nose pliers, and gently turning the coil in the correct direction* 



Mission accomplished.

Coming soon: The whippens will be refelted as promised, and returned to the action. Two weeks to go, and something needs to be accomplished every day. Being that this is the busiest season for tuning, work in the shop is confined to early morning and late evening hours. I'm enjoying the process immensely, but am looking forward to finally being able to relax once the project is done, and the piano is returned to the owner.

Every time I begin to fret about the amount of work I have to do, however, I reflect upon those folks who are jobless, and would give anything to be this busy. Life is what you make it. It can be a positive or a negative thing, depending on your outlook. I choose to be positive.

Enjoy your own journeys in this life.