

**Photographic Journal**  
**Deep Cleaning / Deodorization Project**  
**1887 Weber grand**  
**Behm Piano Service, Boone, Iowa**



*Photo 1: The piano arrives at the shop. The smoky odor was not over-powering, but definitely there. The first thing my wife said when she came out to see the piano was “Have you been burning something?” Then I told her that was the reason the piano was in the shop. Her response: “Good luck!”*



*Photo 2: The first step was to disassemble the case. The lid, fallboard, end blocks, etc. were removed and stored on a piano parts dolly.*





*Photo 3: With the case parts removed, problem areas are clearly revealed. The old bass damper felts need to be replaced. These are soft felt, designed to absorb the vibrations of the strings when they drop back onto the strings. They are like little sponges when it comes to odors.*



*Photo 4: The treble dampers need to be replaced as well.*





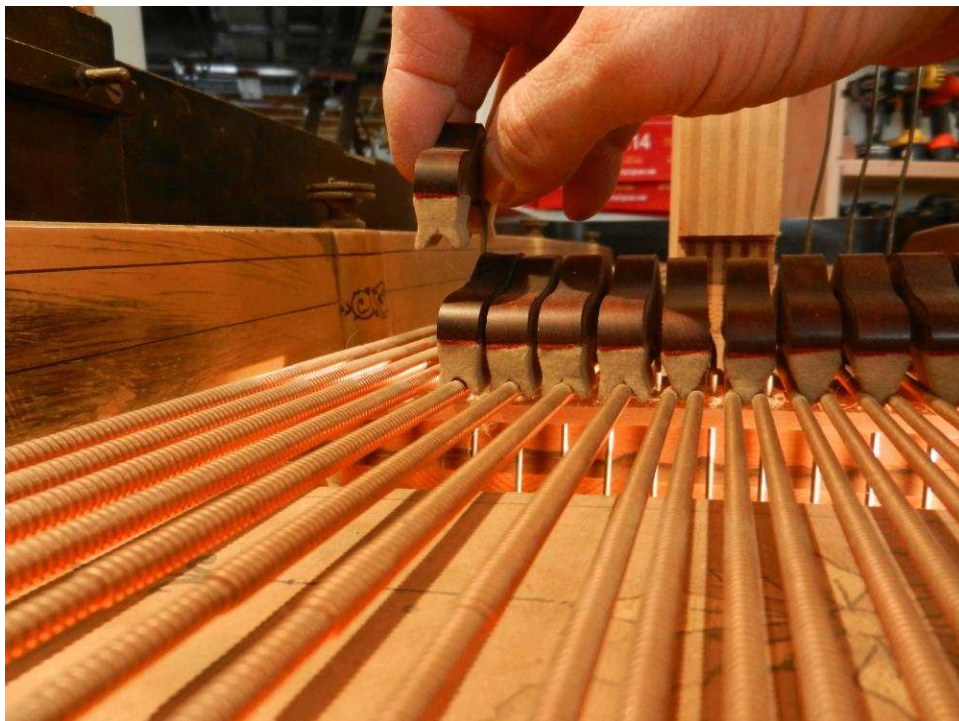
*Photo 5: The piano action is removed to reveal the damper control mechanism (the back action) down below the level of the strings. Filthy conditions with debris that would also soak up odors would obviously need to be cleaned up.*



*Photo 6: After vacuuming, before anything is actually taken apart, a reference block is made for the purpose of later reinstalling the new dampers at the correct height.*



*Photo 7: The damper set screws are loosened*

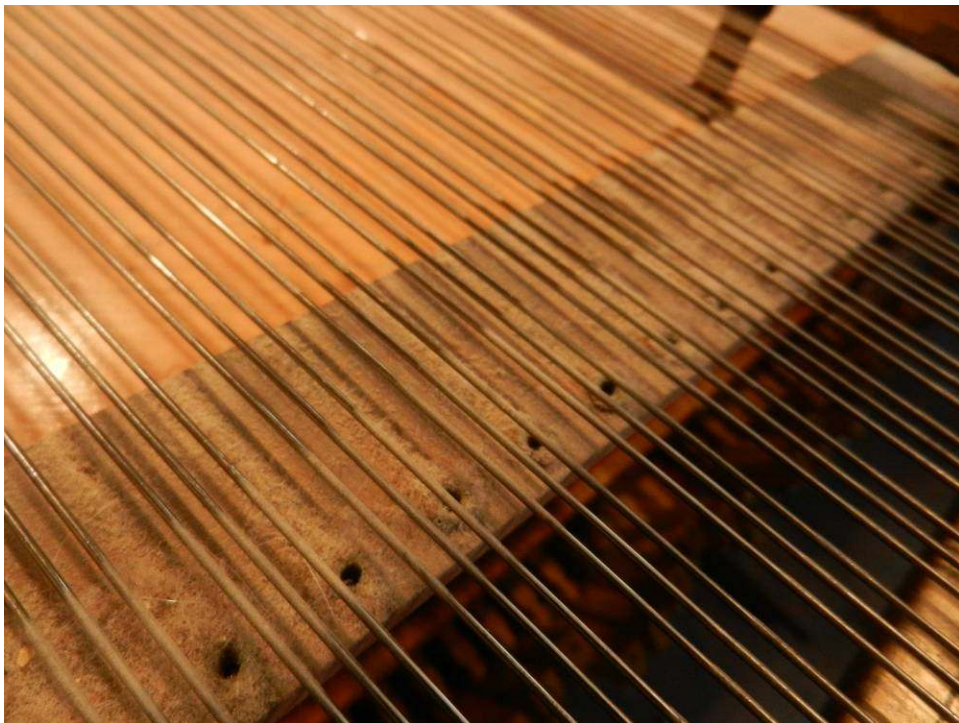


*Photo 8: The dampers are removed one at a time.*



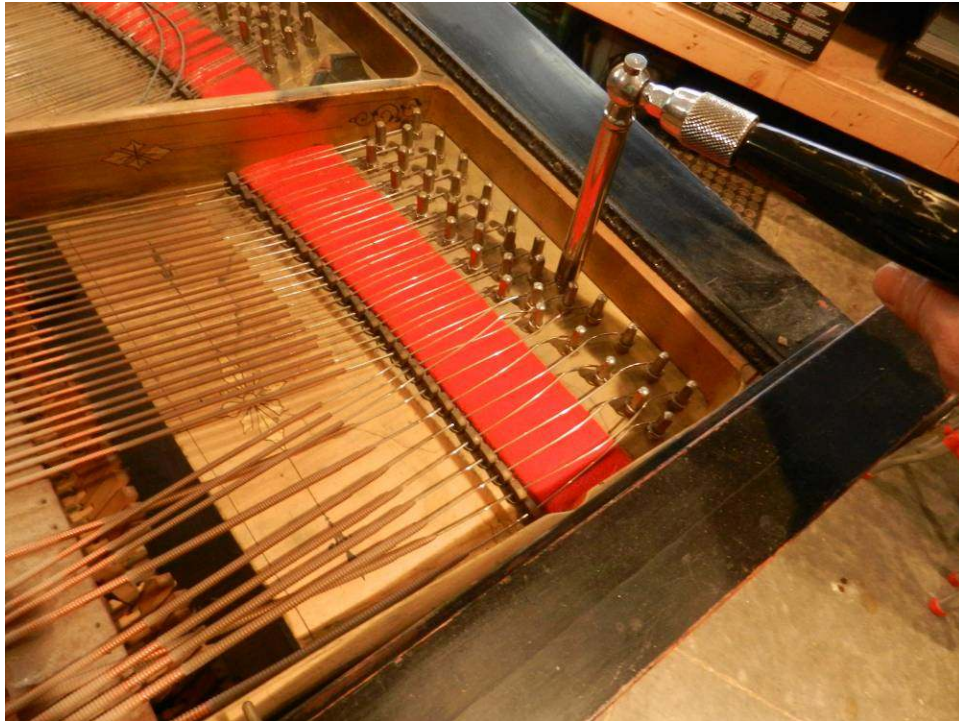


*Photo 9: The dampers are stored for the time being on a special damper holder.*

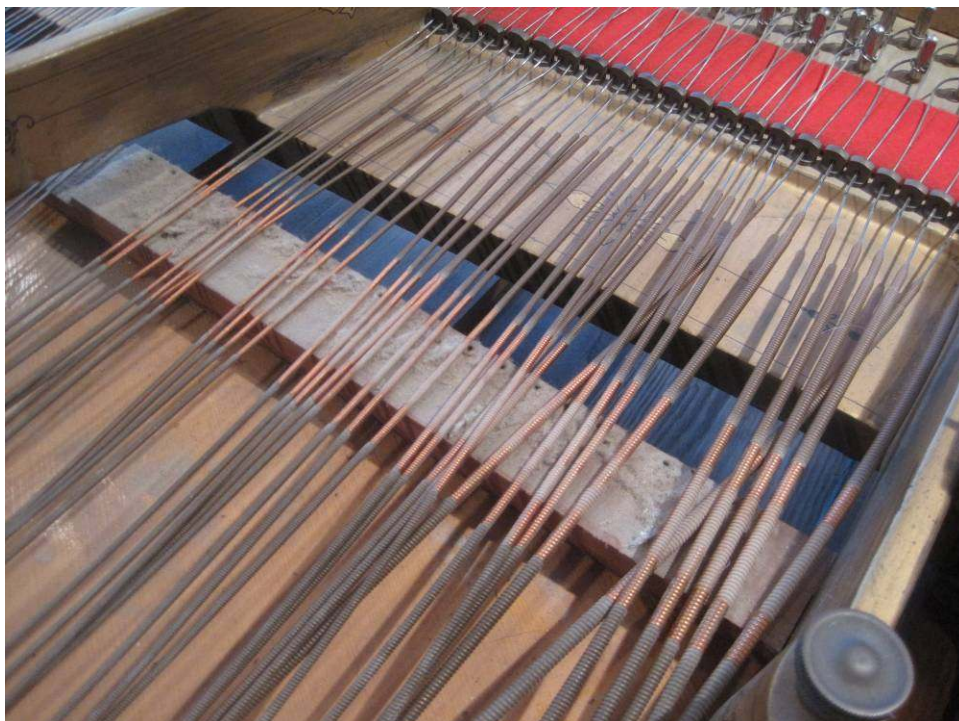


*Photo 10: With the dampers removed, the filthy condition under the strings is more evident. Again, this debris absorbs odors, but tends to cling to the surfaces and resist being vacuumed or even blown out. Temporary removal of the strings will make it possible to clean the soundboard and damper guide rail (shown) more completely.*





*Photo 11: The bass strings need to be removed first. The first step is to loosen them up by giving each tuning pin a full turn.*

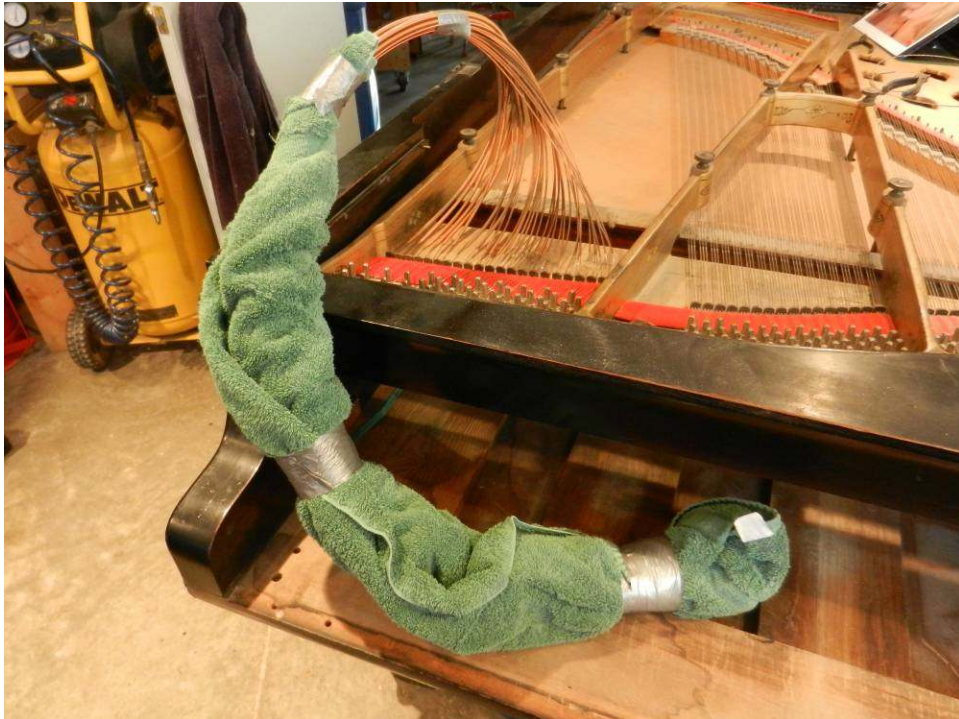


*Photo 12: The bass strings with tension released. Each string will be unattached at the back end, but left attached to the tuning pins.*





*Photo 13: The bass strings are bundled together in correct order by running a wire through the hitch pin loops at the back of the strings.*



*Photo 14: The bundle strings are wrapped in a towel to prevent damaging the case, then pulled up and out of the way.*





*Photo 15: The understring felt will be replaced – photographs are taken to make it possible to duplicate the pattern used.*

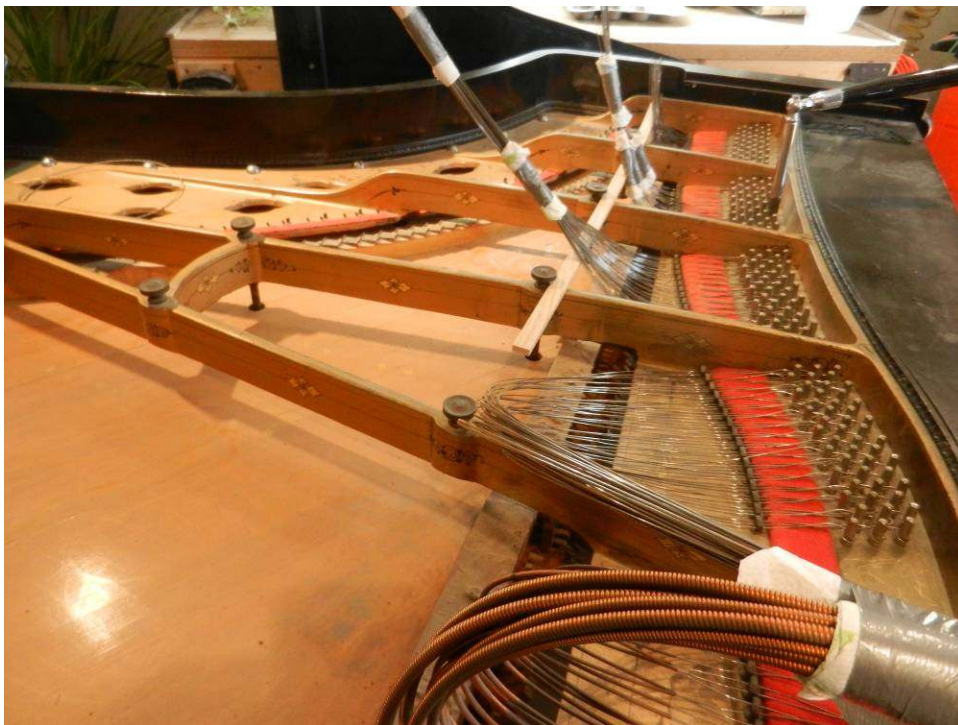


*Photo 16: The tension on the treble strings is now released.*





*Photo 17: The treble strings are also unattached at the back at the hitchpins, but left connected on the front end to the tuning pins.*



*Photo 18: With all the strings removed and bundled out of the way, serious cleaning can proceed.*





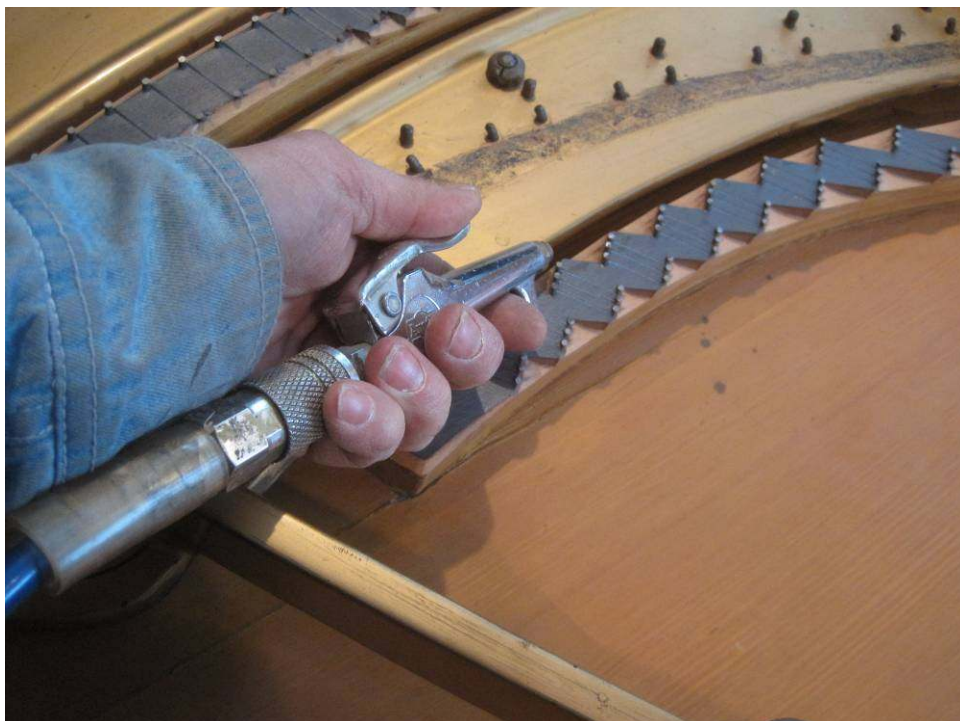
*Photo 19: Grand soundboards are very hard to clean when the strings are in place. Typically, the grime just has to stay there. With the strings out of the way, this odor-holding layer of dust can be properly cleaned up.*



*Photo 20: The plate will need to be cleaned as well. Here, the understring felt glued to the plate is removed. It will be replaced with new felt after everything is cleaned.*



*Photo 21: Loose dust is first vacuumed . . .*



*Photo 22: . . . then blown out. Compressed air is particularly useful for hard to reach crevasses, such as this one between the bass bridge and the cast iron plate.*





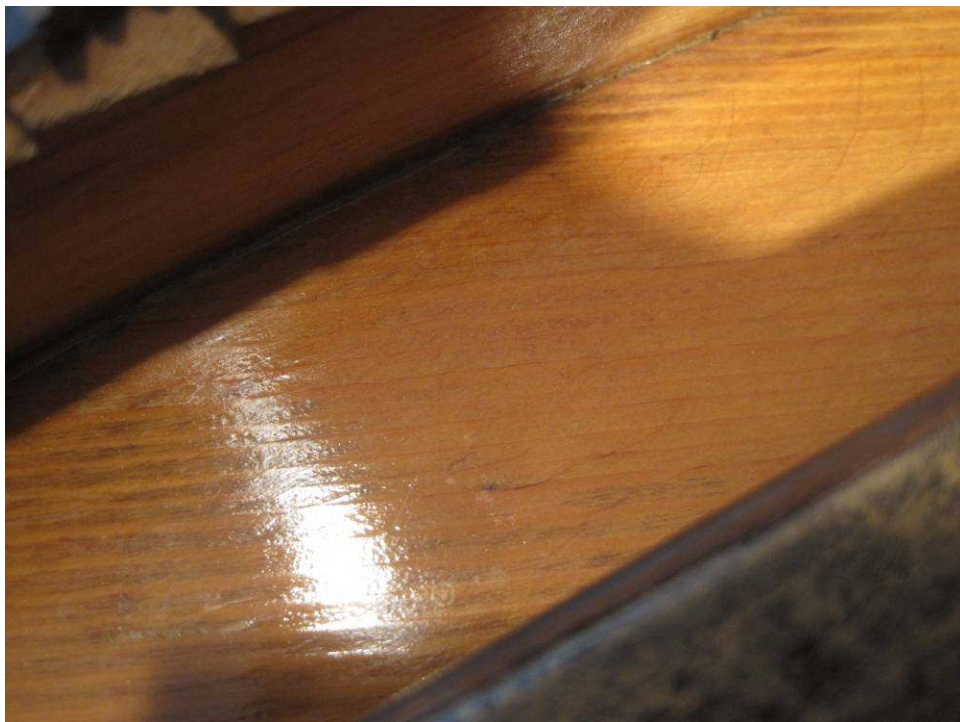
| *Photo 23: The final step of cleaning is to go over the soundboard with Formula 409®. This removes any remaining oils and dust on the surface.*



*Photo 24: The same procedures are used with the cast iron plate, leaving a clean and odorless surface.*



*Photo 25: A section of the soundboard after vacuuming and blowing out with compressed air, showing the stubborn grime still left behind.*



*Photo 26: The same section of soundboard after cleaning with Formula 409.*





*Photo 27: The layer of corrosion on the nosebolts of the cast iron plate needs to be removed. Who knows how many smoke molecules are trapped within the corrosion.*



*Photo 28: With the tension of the strings removed, the nosebolts may be removed one at a time. A strip of buckskin protects the edges of the brass nut from the teeth of the pliers.*



*Photo 29: A wire brush wheel polishes the brass.*

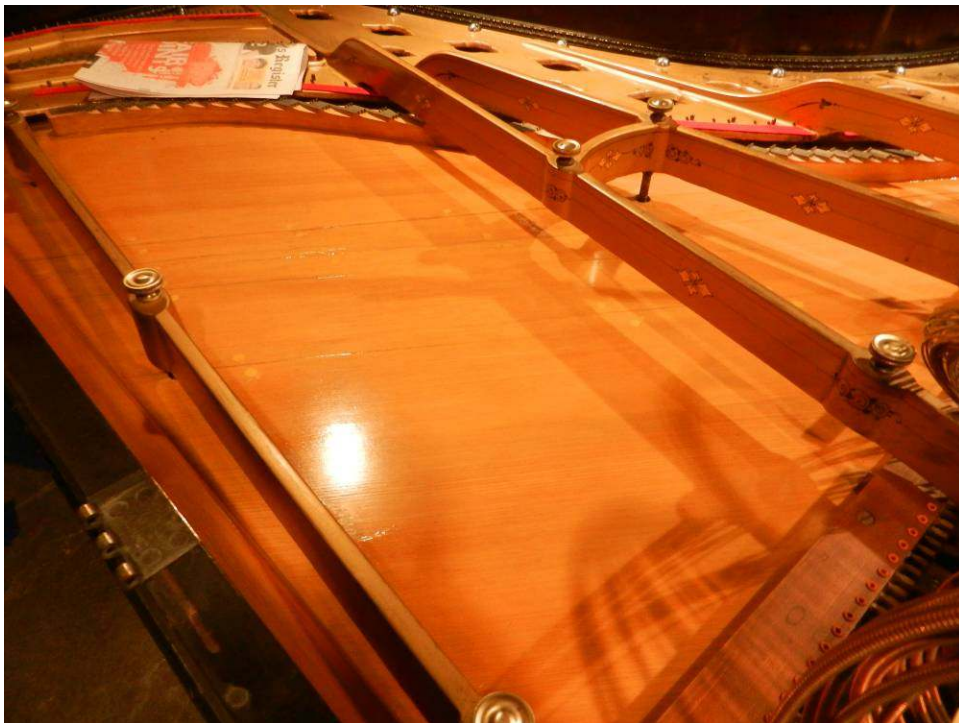


*Photo 30: The polished brass is then sprayed with lacquer to prevent future corrosion, then replaced.*





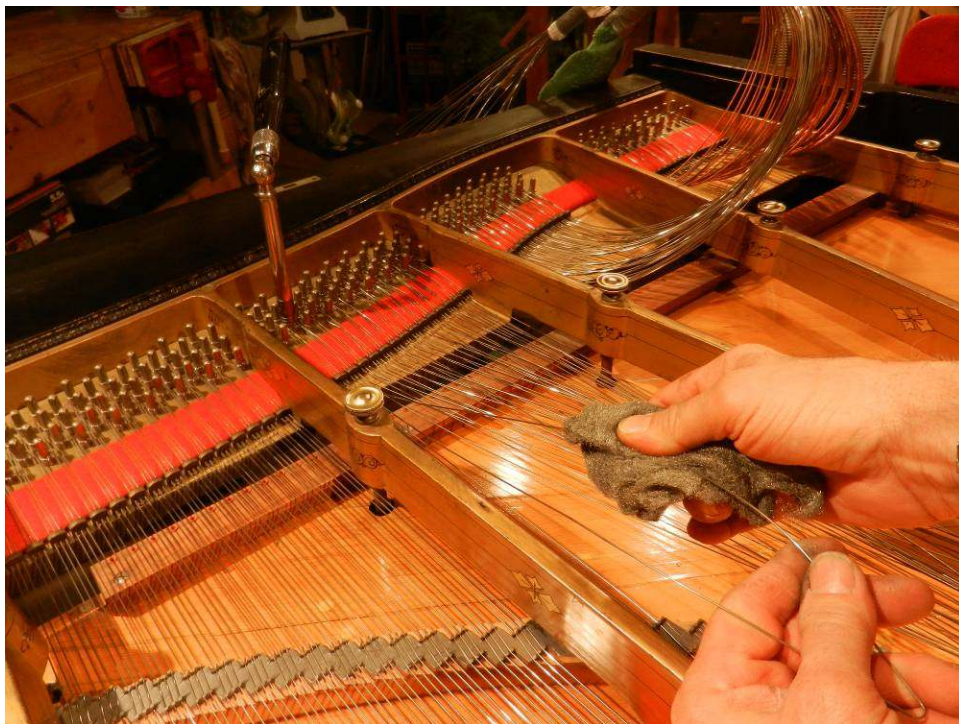
*Photo 31: Before strings are put back on, the soundboard is coated with a sealing coat of shellac.*



*Photo 32: Soundboard cleaned and shellacked, and nosebolts polished.*

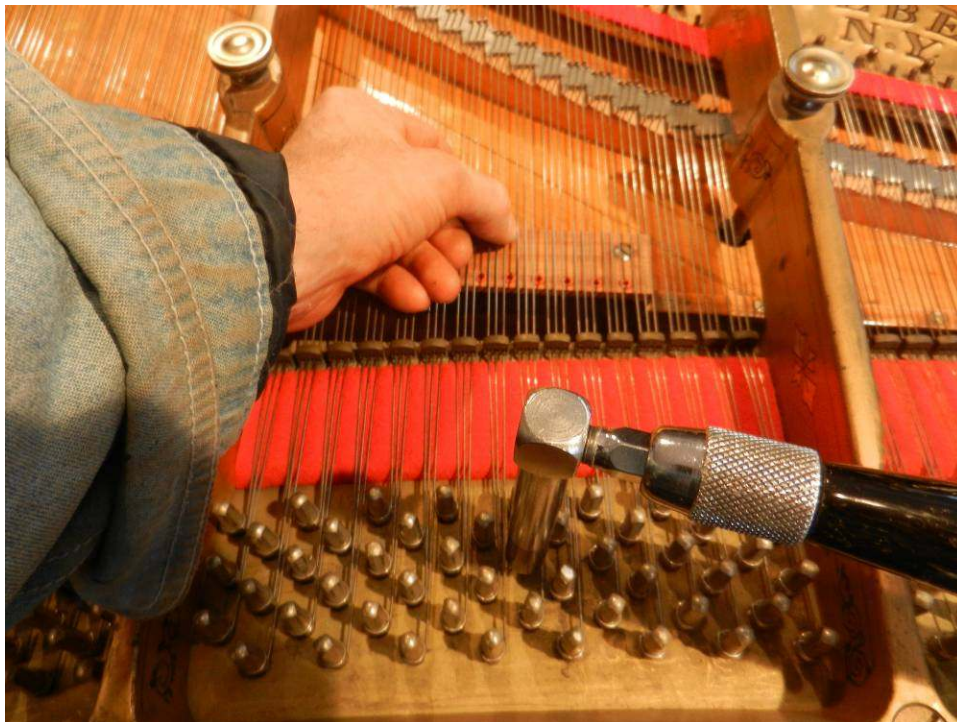


| *Photo 33: The last step before restringing is to coat bridge surfaces with Dag<sup>®</sup>, a lubricant especially designed for bridges and similar areas where friction must be kept to a minimum.*



*Photo 34: Strings are returned in reverse order. Before being attached to the hitchpins, each string is polished with steel wool.*





*Photo 35: As strings are put on, they are chipped up to approximate tension to make for an easier job of tuning later on.*



*Photo 36: Bass strings, as they are being reattached and brought up to tension.*





*Photo 37: Restringing complete – everything cleaned and polished inside the rim of the piano.*



*Photo 38: New understring felt is woven in.*





*Photo 39: Attention is now turned towards the case. The detail work of the carvings obviously harbor a lot of stubborn dust and grime that resists being blown out.*



*Photo 40: A specialized cleaner / wood preservative product is brushed on and worked in to the intricate detail work of the carvings.*



*Photo 41: After cleaning, no debris remains in the hard-to-reach spaces.*

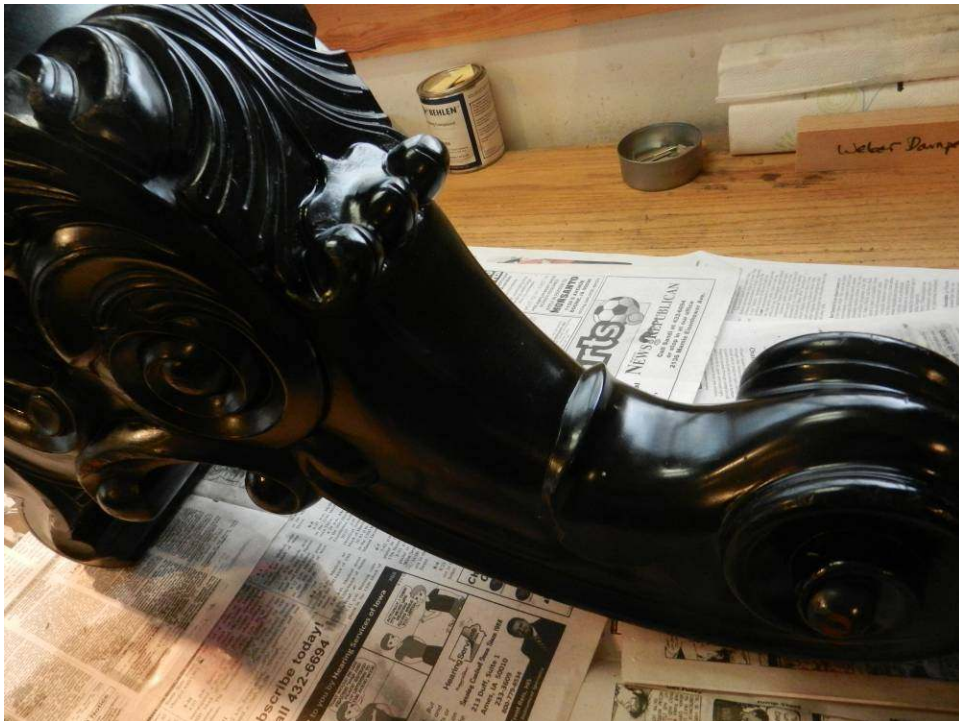


*Photo 42: Each leg is then removed, and worked on while on the bench in order to do a more thorough job.*





*Photo 43: The legs buff of to a beautiful sheen.*



*Photo 44: Really a beautiful set of legs – nothing like you would see on any piano built today!*



*Photo 45: One of the lid hinges which were removed while the rim of the piano was being cleaned before polishing and lacquering.*



*Photo 46: After polishing and lacquering.*





*Photo 47: One other area of concern as far as the body of the piano is the keybed. This is an unfinished expanse of wood that is susceptible to retention of odors. At least, no mice had ever lived in this piano! When that happens this surface can smell like the bottom of a dirty litter box!*



*Photo 48: The clean-up of the keybed begins with a light sanding.*



*Photo 49: Even with just that step, a big improvement can be seen.*

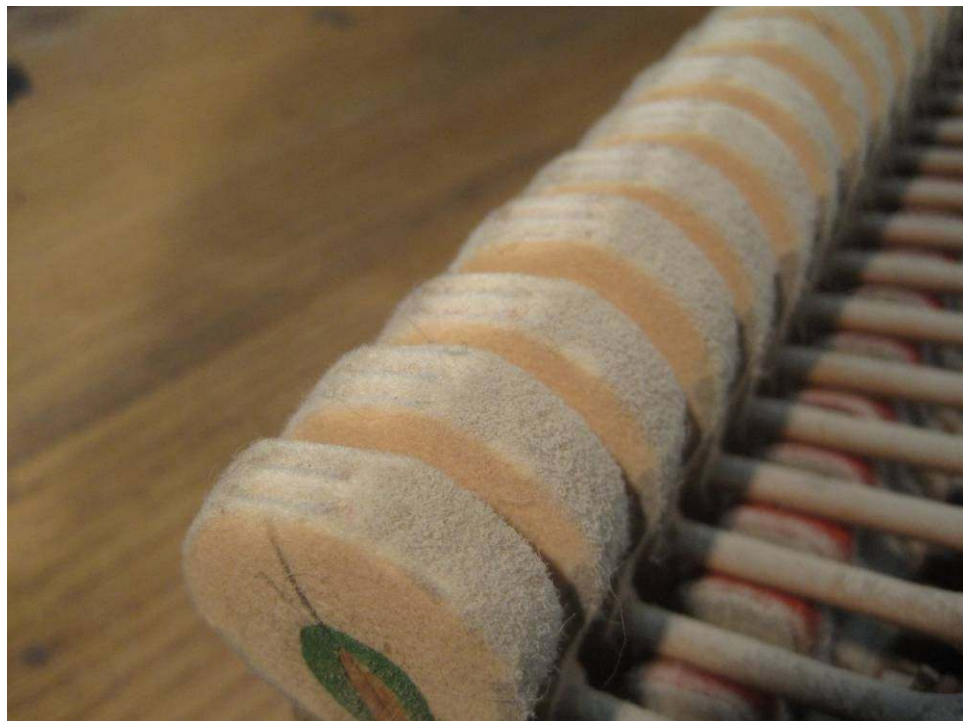


*Photo 50: To make sure any lingering odor is removed, a dam is attached to the front of the keybed, and the entire surface is covered with baking soda.*

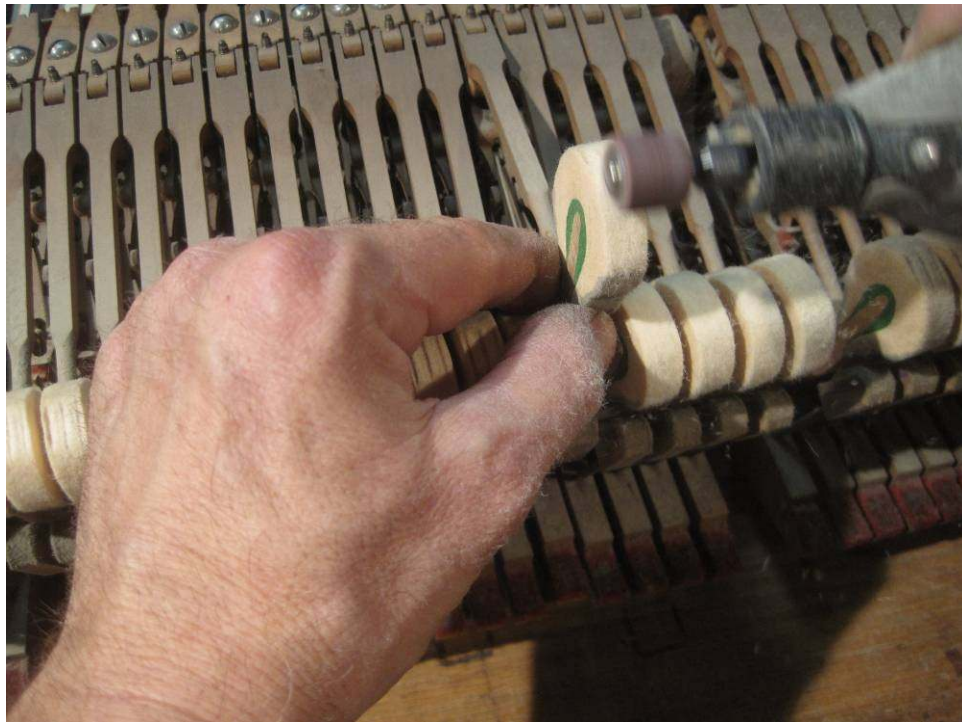




*Photo 51: The inch deep layer of baking soda (24 pounds) is allowed to do its work for 7 days, while work on the action of the piano begins.*



*Photo 52: The hammers need attention. Although a much denser type of felt than the soft dampers, the hammers have a layer of pulpy, worn felt on the outer surface that needs to be shaved off to eliminate potential odors harbored within.*



*Photo 53: A Dremel tool with a miniature drum sander is used to file off the worn felt.*



*Photo 54: Hammers before filing on the left, hammers after filing on the right.*





*Photo 55: Once done, the surface of the hammers looks nearly new.*



*Photo 56: The old debris and new dust from filing is vacuumed up.*



*Photo 57: To complete the deodorization process, the entire set is place inside a custom made box. . .*



*Photo 58: . . . and covered with baking soda.*





*Photo 59: Question: How much baking soda does it take to completely cover a set of grand hammers?*



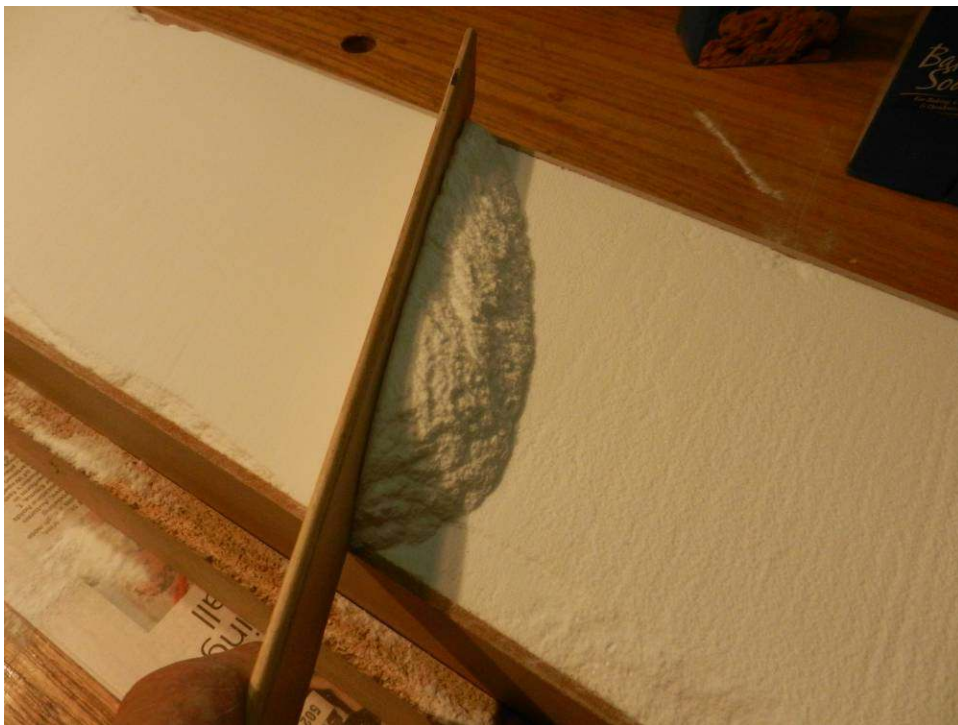
*Photo 60: Answer: 36 pounds. The box is placed aside on another bench to allow the baking soda to do its work, and attention is turned to the other half of the action.*



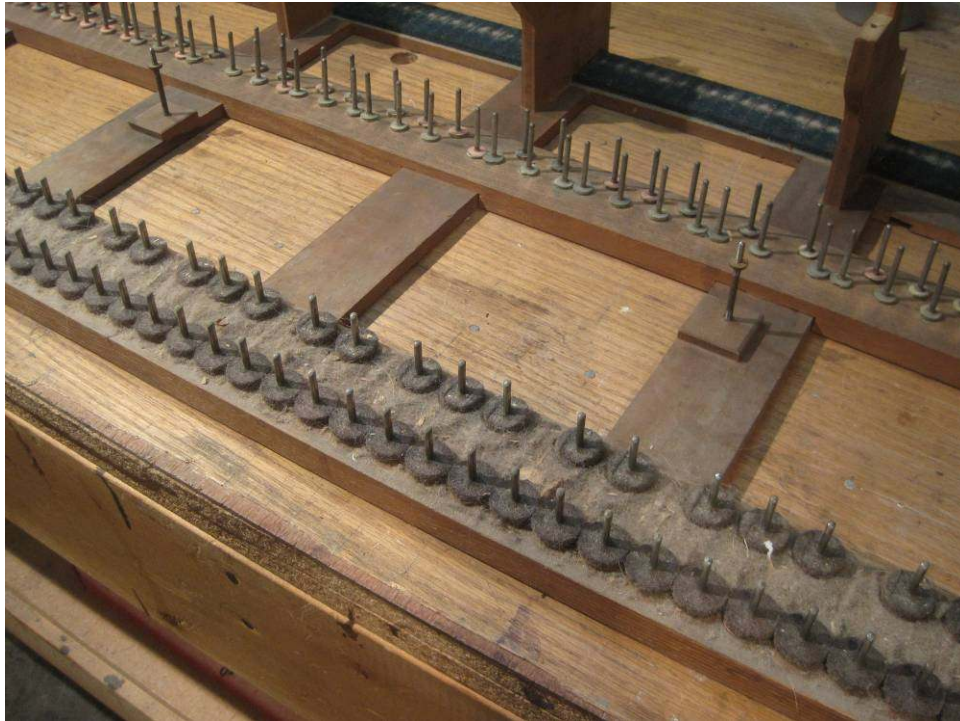




*Photo 63: A slightly smaller custom box is made, another trip to HyVee for more baking soda (28 pounds), and the entire set is covered.*



*Photo 64: With a bit of baking soda to spare. I can bake cookies!*

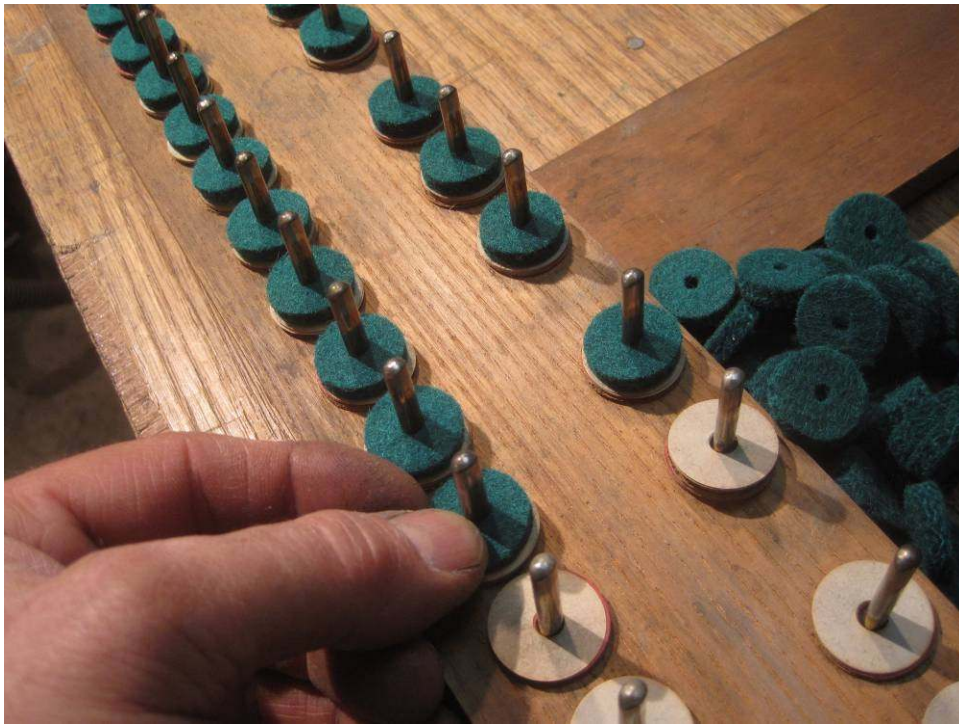


*Photo 65: The keys are removed for polishing, revealing the keyframe that the keys ride on.*



*Photo 66: Obviously a problem area. Cleaning and felt replacement will make a big difference here.*





*Photo 67: After cleaning the entire key rail assembly, the old front rail felts are removed and replaced with a matching set of new felts.*



*Photo 68: Followed by the balance rail felts.*

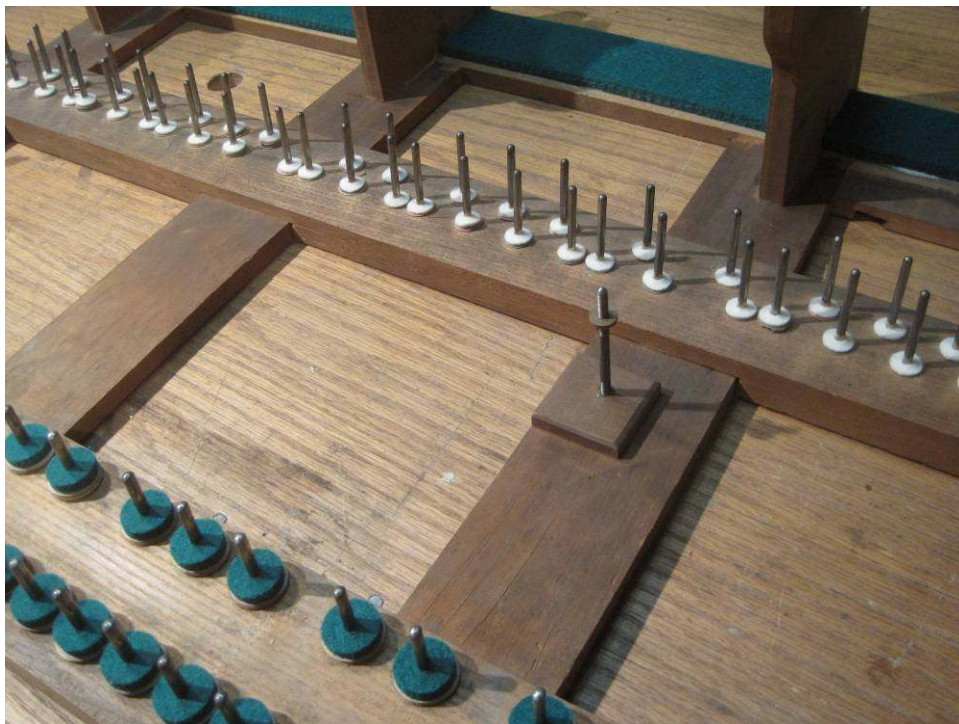


*Photo 69: Finally, the back rail felts are removed, and the old glue is scraped off.*



*Photo 70: The 5 sections of back rail felt are cut to size and glued into place.*

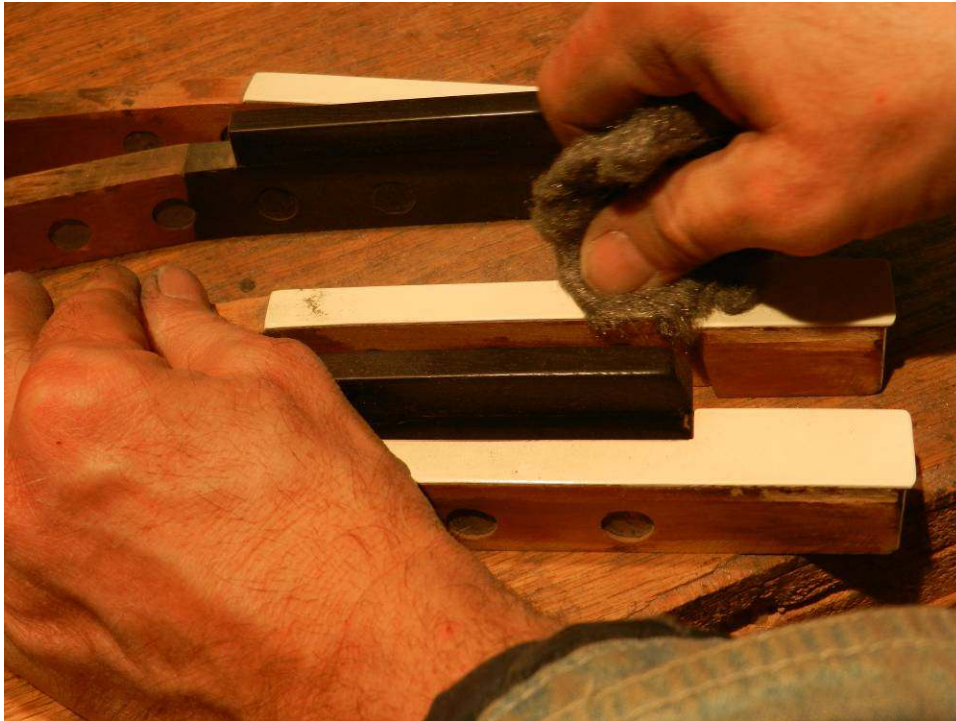




*Photo 71: The refelted keyframe – much improved.*



*Photo 72: Now the keys themselves need work.*



*Photo 73: Each key (both naturals and sharps) is first scrubbed clean with 0000 steel wool. . .*

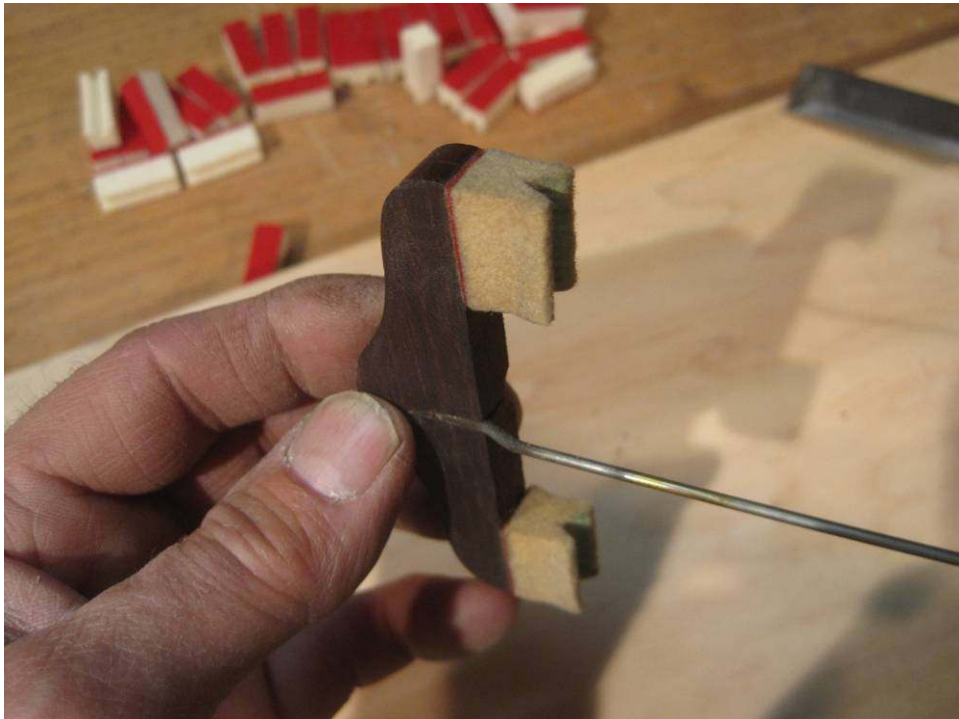


*Photo 74: . . . then buffed with a cotton buffing wheel and a special polish (one for the white keys and another for the black).*





*Photo 75: The keys look new when the job is finished.*



*Photo 76: On to the dampers. Being that the damper felts were the felt which was in the most exposed location (on top of the strings) they still retained a detectable, lingering smoky odor.*



*Photo 77: The felts are removed with a sharp chisel, and the underside of the wooden damper block is scraped clean of old glue.*

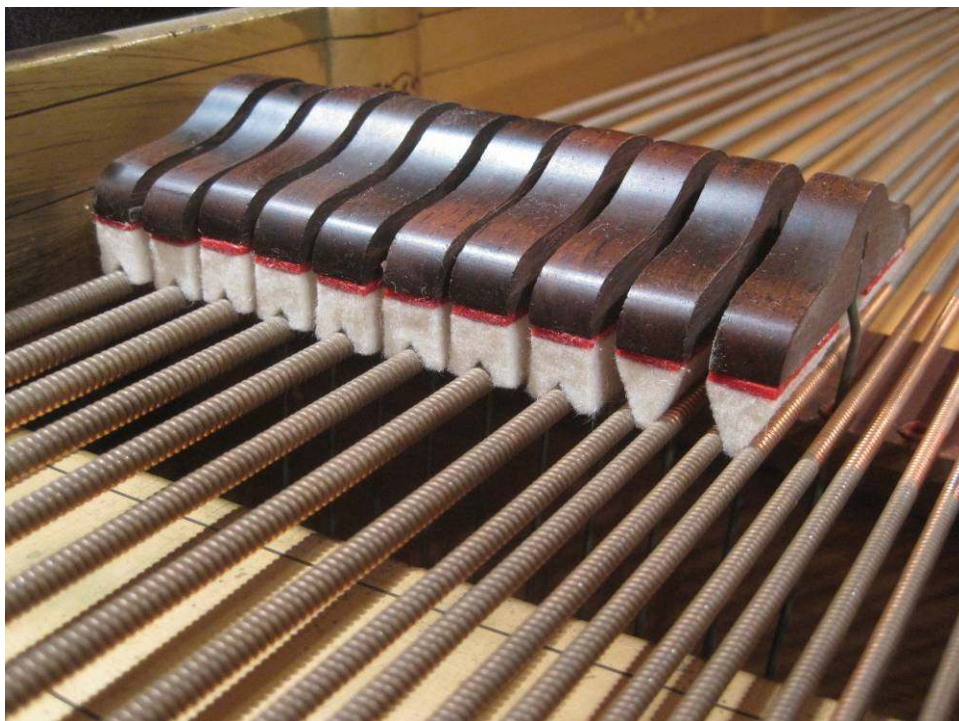


*Photo 78: Titebond glue is applied. . .*

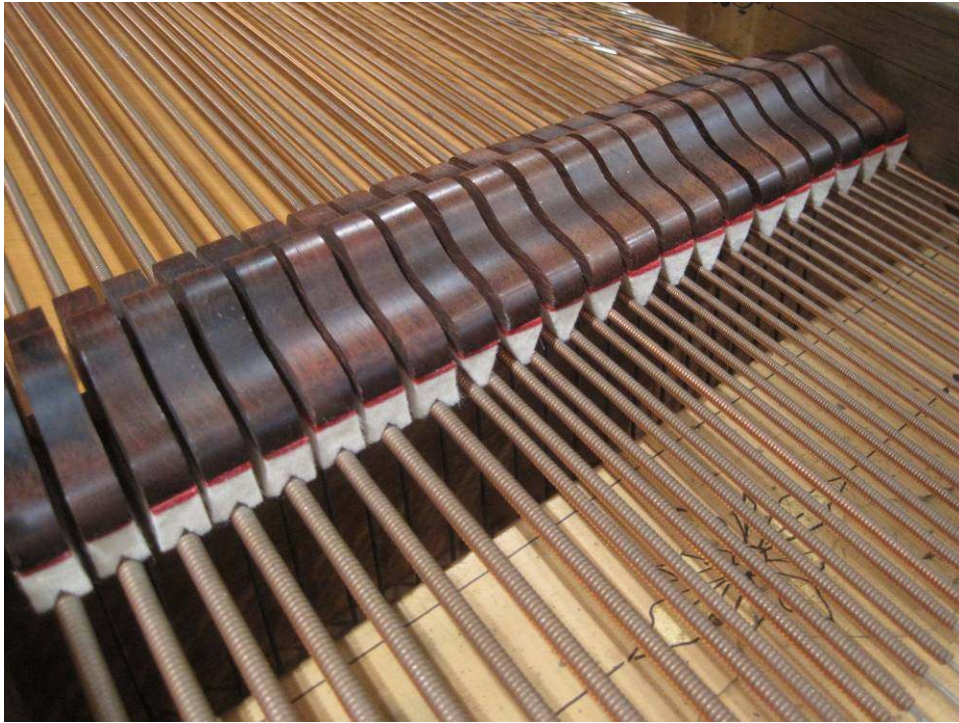




*Photo 79: : . . .and the damper is pressed into place.*



*Photo 80: The dampers are immediately returned to their position on the strings to allow the pull of gravity to do the clamping.*



*Photo 81: The completed section of bass dampers. Not only fresh smelling, but more effective at performing their function as well. Old, misshapen dampers don't work very well.*



*Photo 82: Time to unbury the hammers and wippen and clean off all the baking soda – along with any odors absorbed by the soda. Here are the hammers after removing them from the box they were in.*





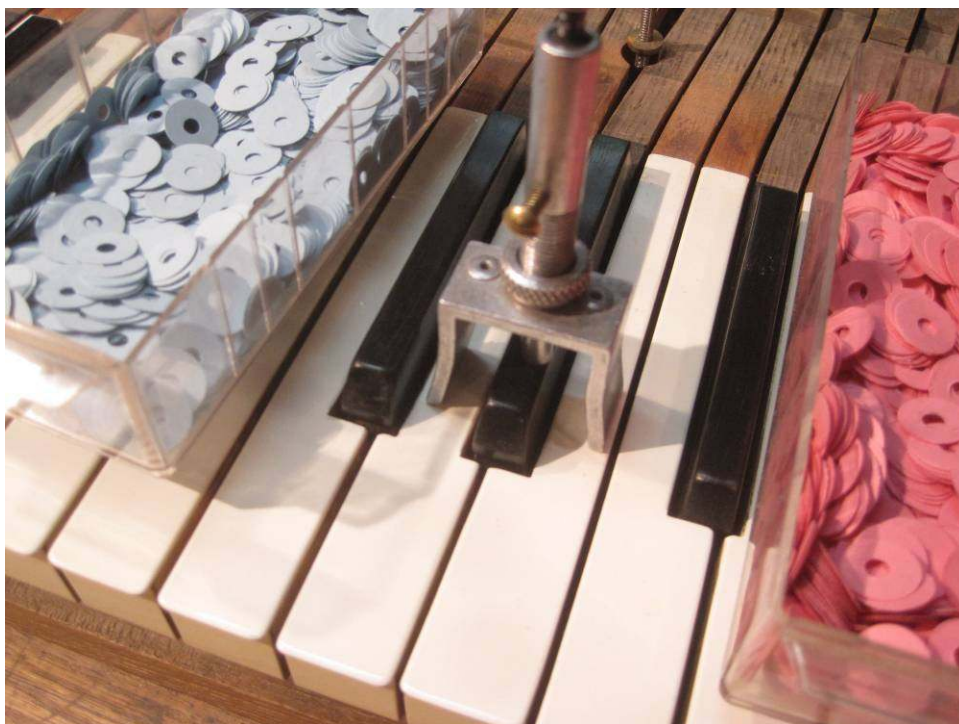
*Photo 83: After vacuuming and blowing out with air the hammers are given the “sniff test.” As fresh as a spring day!*



*Photo 84: After brushing out the baking soda layering the keybed, it is also vacuumed and blown clean with compressed air.*



*Photo 85: The polished keys are returned to the keybed. With the new balance rail felts installed, the keys need to be leveled. The naturals are done first . . .*



*Photo 86: . . . followed by the sharps.*





*Photo 87: After the leveling papers are installed to bring the keys up to level, the papers are flipped so that they are underneath the balance rail felts.*



*Photo 88: The leveled set of keys, ready for the installation of the wippens and hammers.*



*Photo 89: The hammer line, once everything was put back together, was very uneven. More regulation would need to be done, starting with bringing up the hammers to the correct height.*



*Photo 90: Much improved.*





*Photo 91: Regulation work proceeds one section at a time.*



*Photo 92: The action – now cleaned and regulated and ready to reinstall in the piano.*



*Photo 93: With the action back in the piano, tuning work may begin. The piano will be given a half dozen tunings (to restore the tension and stability) before it leaves the shop.*

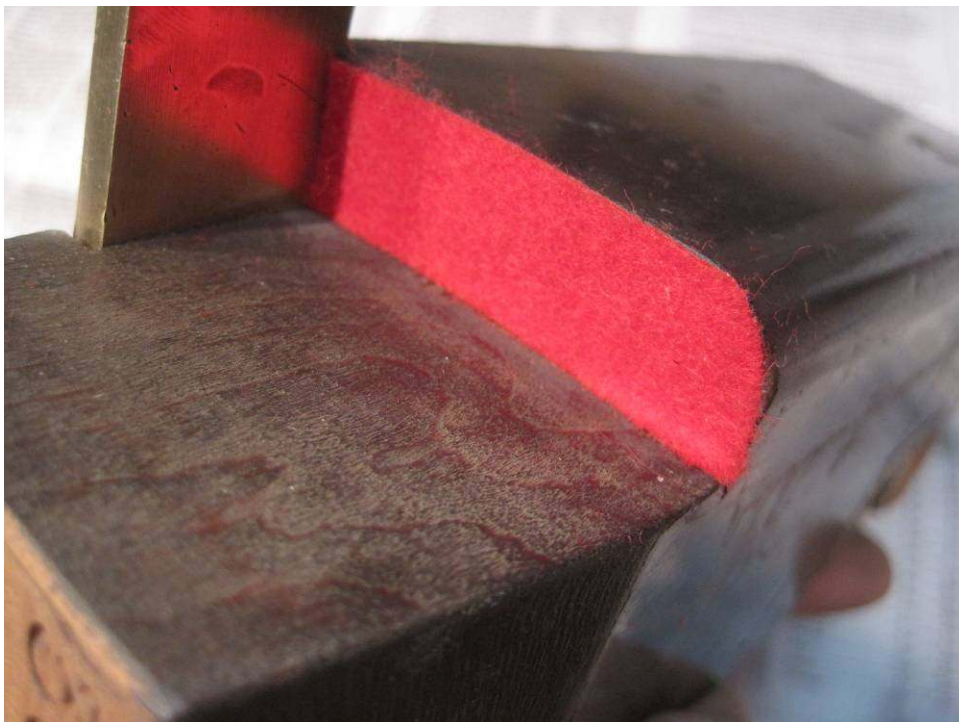


*Photo 94: In between tunings, remaining case parts (such as this end block) will need to be cleaned.*

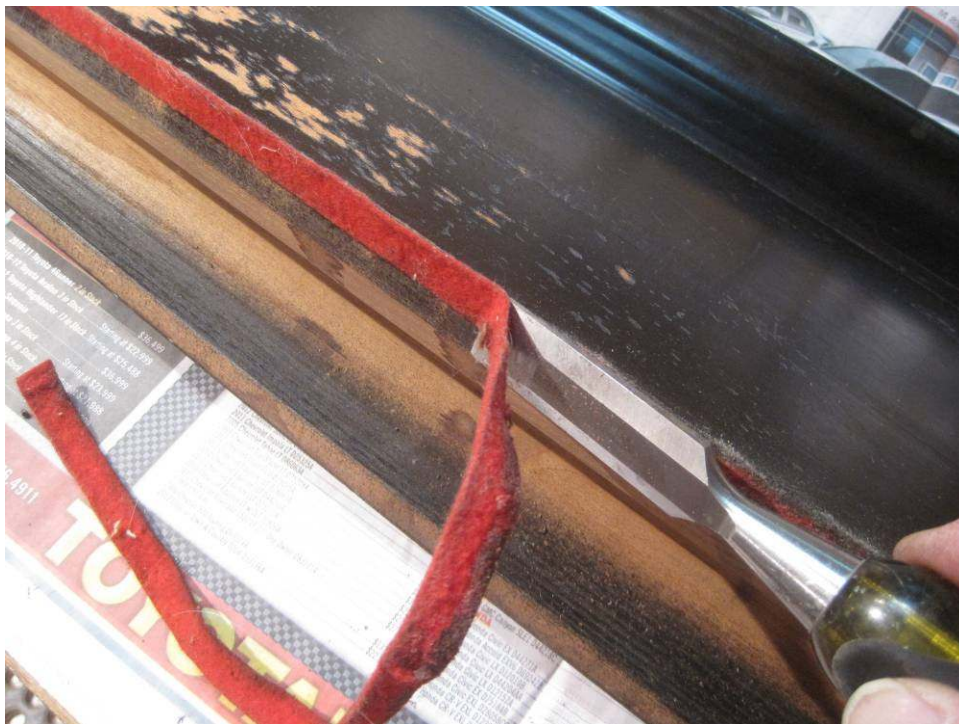




*Photo 95: Worn and dirty felt on the case parts will be replace. This felt on the end block, for example, will be scraped off . . .*



*Photo 96: . . .and replaced with new.*



*Photo 97: Ditto the nameboard felt.*



*Photo 98: A fresh strip of felt, and the nameboard is ready to replace.*





*Photo 99: With the piano completely back together, regulated and tuned it is ready for the owners to inspect. It has been an absolute pleasure working on a piano of this vintage and quality!*