Schaff Piano Supply Company Presents:

Hammer Butt Restoration

Basic Step-by-Step Procedures

Action Work

By Chuck Behm

Hammer Butt Restoration

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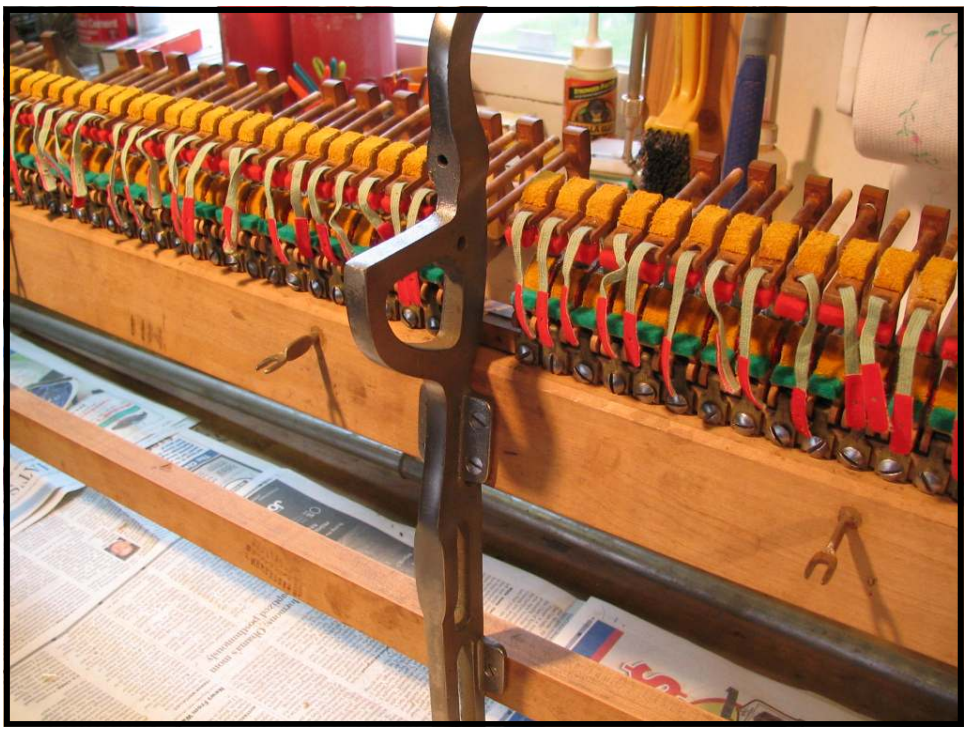


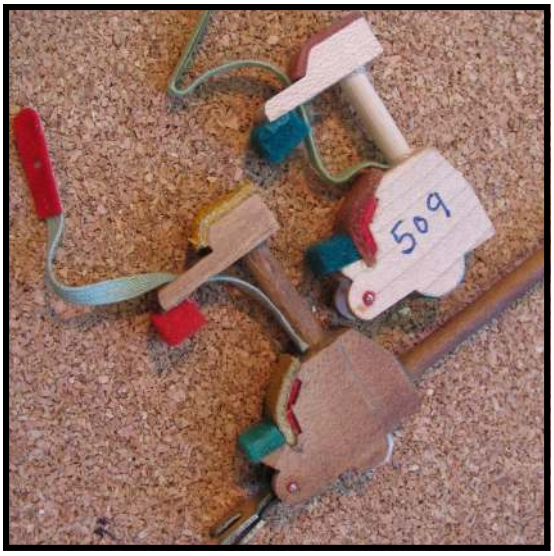
Rationale-

In the restoration of an upright piano, a decision needs to be made concerning action parts. If examination of the whippen, damper lever and hammer butt assembly reveals marked wear, felts that are badly worn or moth-eaten, for example, then they should either be replaced or re-felted.

Replacement of parts, while ordinarily simpler and less time-consuming, is also more costly. The felt and leather used to restore the original parts may be purchased at a considerable savings compared to buying all new parts. An added benefit is that since the original profile of the parts is retained, adjusting parts to compensate for a change in the geometry of the action should not be needed.

Following is a step-by-step set of procedures to successfully remove the old felt and leather of the typical hammer butt and to replace with new.

The Problem: Insect damage and wear would make fine regulating of the subject piano very difficult. Hammer butt felts were missing or damaged. The catcher buckskins were worn very thin, in places down to the wood. The most problematic situation was with the felts under the hammer butt buckskin. In places the underfelt was missing either partially or altogether. Plumping out with yarn would not be effective because of this inconsistency.



The Options: To properly restore this piano, either outright replacement of the set of hammer butts, or complete restoration of the original butts with a replacement of all leather and felt was necessary. The choice came down to balancing the cost of replacement against the time required for stripping and replacing the old felts and leathers.

The Choice: In this instance, the choice was made to restore the original parts. There was a slight difference in the placement of the catcher shanks which would cause a slight difference in the geometry of the action. The desire to keep as much of the piano as original as possible was also a factor. The felts and leathers pictured are what's replaced in this type of restoration. Following are step-by-step procedures to complete this repair.

Step 1: As you remove hammer butts from the action, number them in order, starting with #1 for A0 to #88 for C8. Then, remove the remains of the hot glue from the hammer shanks (if the old hammers have been removed) using a hammer shank reducer (Cat. No. 75) along with a combination tool handle (Cat. No. 26). Turn the nut on the reducer to remove just the glue, and none of the wood of the hammer shank.

Step 2: If a stub of glue or wood remains on the end any of the hammer shanks, use a 1/2 inch chisel from chisel set (Cat. No. 292) to remove. The best method is to put the hammer shank flat on the bench, and to pivot the sharp edge of the blade, with the flat side in towards the end of the shank, across the surface of the wood. Use the bench to steady the corner of the blade as shown.

Step 3: Holding the hammer butt assembly by the hammer shank with the hammer butt up, cleanly cut the end of the bridle strap by rocking a sharp razor back and forth over the catcher shank flush with the body of the hammer butt.

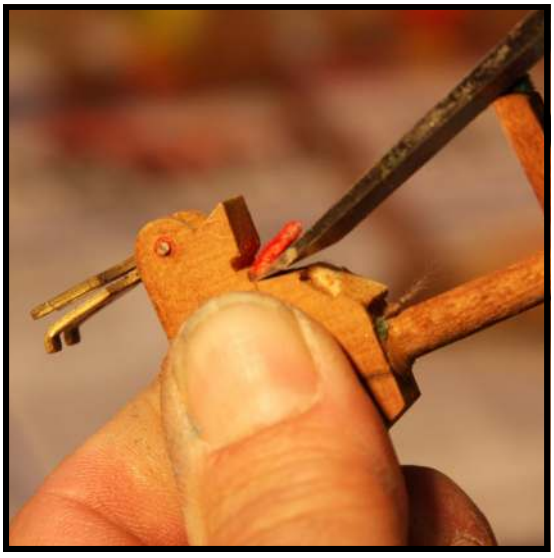
Step 4: With the flat edge of your 1/2" chisel up against the underside of the catcher, shave off the catcher felt. A pivoting motion, with the corner of the chisel against the bench, works best. The chisel must be sharp for this operation and even so, there may be felt and glue residue which remains. Be cautious not to remove wood from the catcher in the process. You will clean up any residue with a file in a later step.

Step 5: Without putting your chisel down, proceed to the removal of the catcher buckskin. Start from the back, working from the corner down. Try to keep the flat edge of the chisel against the wood of the catcher as you shave the leather off. This takes one or two strokes of the chisel on the flat end of the catcher and one more stroke straight downward on the curved end. You will be left with a small amount of leather residue to file off.

Step 6: The last step with the hammer butt oriented this way is to slice down between the hammer butt buckskin and the beveled corner of the hammer butt next to the catcher shank. The buckskin is stretched, not glued, over the two pieces of underfelt, and will come loose from them once the corner edge is sliced free.

Step 7: Turning the hammer over to the opposite side, use your chisel to slice off the hammer butt felt with one clean stroke.

Step 8: Putting your chisel down and taking up a pair of ordinary pliers, grasp the hammer butt buckskin by the end, and pull it free from the notch which it is glued into. If any glue or leather remains in this notch use the flat end of a screwdriver from the mini screw driver and awl kit (Cat. No. 56) works perfectly to clean it out.



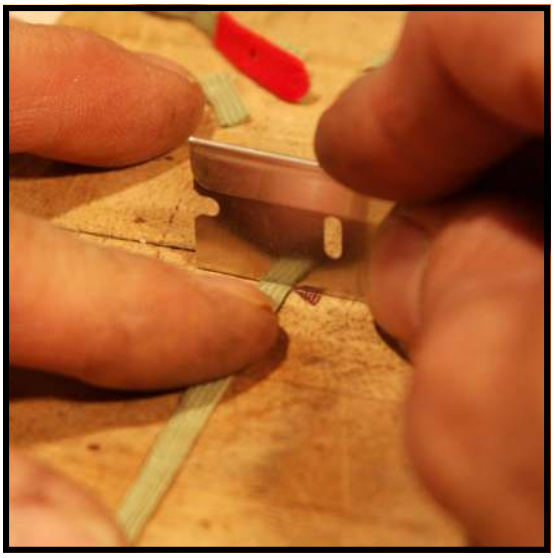
Step 9: Use your 1/2" chisel one last time to remove the piece of underfelt nearest the flange. Turn the chisel so that the bevel is down, and rock it back and forth slightly as you push to cut the felt loose. (Note: On some pianos this felt will not appear to be glued in place, and will simply fall out when the buckskin is removed.) Use the chisel turned on edge to clean any residue from the corner.

Step 10: Use either a small chisel, or a small, flat-bladed screwdriver that has been filed to a sharp edge to scrape out the underfelt in the recessed slot.

Step 11: Using a flat bastard, coarse cut 10" file (Cat. No. 252), clean off any remaining felt on the underside of the catcher and on the outer side of the catcher, where the catcher buckskin was removed. Be cautious not to remove any wood in the process.

Step 12: Peel the old spring punching from the groove on the back of the hammer butt. Clean out any residue with a rat tail file.

Step 13: With all the felt and leather removed from the hammer butt (the center pin bushings were not replaced on this particular piano), it's now a good time to prepare for installation of new materials used in restoring the hammer butt. First, a small batch of hot animal hide glue should be prepared, using an electric glue pot (Cat. No. G-1155), and dry cabinet glue (Cat. No. 399-1/2). Use slightly more water than glue for the correct consistency.



Step 14: If any of the original bridle straps are intact, measure the length of one from where it emerges from the catcher shank, and cut your new original standard bridle straps (Cat. No. 1515) to the same length. Cork bridle straps (Cat No. 6516S, M, or L) are an option. (While completing these other steps, go back to your glue pot occasionally and stir your glue with a hammer shank.)

Step 15: Cut the replacement felts and leathers to the correct size using the Hale felt cutter (Cat. No. 279). To replace the buckskin on the hammer butts, use upright butt leather (Cat. No. 329B or 2350B). For the catchers, use upright catcher leather (Cat. No. 329A, or 2350A). The lower priced leathers are cow hide, and the higher priced leathers are actual deer hide.

Step 16: For the two underfelts which lay beneath the hammer butt buckskin to cushion it and round it out, the Hale felt cutter may also be used. A good felt to use is extra quality key bushing cloth (Cat. No. 321C). Thinner sizes also available if needed. To set up the cutter for the correct width of cut, push the blade down to the wood, put an intact original felt up against the blade, and slide the adjustment piece up to the felt. Tighten the screw and try a test cut on a new strip of felt.

Step 17: Before cutting any more pieces of felt, visually compare the new piece of underfelt to the old. If the two don't match exactly, make an appropriate adjustment on the felt cutter.

Step 18: When the cutter is set to the exact width of cut needed, cut all 88 felts needed for one of the two pieces, then measure for the other piece and cut all of those. In the production of any type of part, you will make the best use of your time if you finish one operation in its entirety before moving on to the next. To make efficient use of the felt cutter, have the side guide rails adjusted to hold the felt strip somewhat loosely, so that it doesn't bind. After each piece is cut, flick it out to the side with a small flat-bladed screwdriver.

Step 19: Insert the bridle strap through the hole in the catcher. Holding the hammer butt as shown, with your middle finger supporting the end of the strap, apply a drop of Titebond glue (Cat. No 392-4). A small amount put in a bottle cap, then applied with a Q-Tip, makes for less mess than using out of the squeeze bottle.

Step 20: Holding the end of the strap firmly in place for a moment, pull the excess of the bridle strap on through the hole in the catcher.

Step 21: Use a small clamp to hold the bridle strap in place for 5 minutes or more.

Step 22: Stir your hot glue again with the hammer shank. It should be the consistency of honey with the pot set at 160 degrees. Use a glue brush (Cat. No. 438) to apply a small amount of hot glue to a spring punching (Cat. No. 330E). If you're unable to grip the felt by the edge with your fingers, use the pointed end of a pair of needle nose pliers (Cat. No. 239) to grasp the felt while the glue is applied.

Step 23: Before the glue is allowed to cool, hold the felt between your thumb and third finger, and push together slightly to pucker it outward. Insert into the spring groove on the back side of the hammer butt. Push into place.

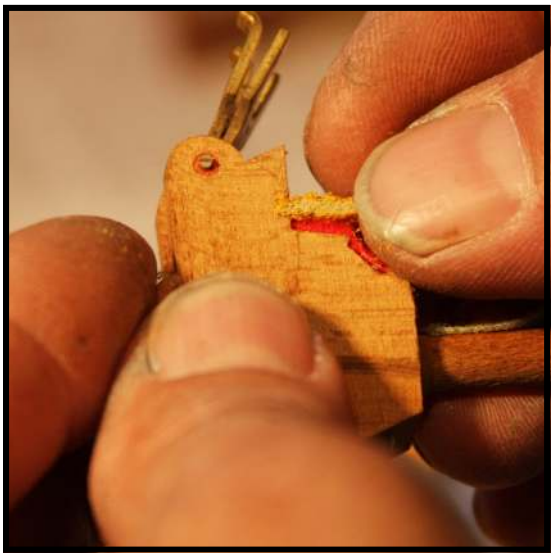
Step 24: Clamp in place using a hammer shank held in position with a small rubber band.

Step 25: Using a hammer shank flattened on one end apply PVC-E glue (Cat. No. 387-16) to the smaller of the two underfelts. The PVC-E glue will not harden as much as other glues, leaving the underfelt more resilient as a cushion.

Step 26: The small felt should fit snugly into the groove in the hammer butt which is provided for it. Push it firmly into place. Wipe off any squeeze-out of glue.

Step 27: Apply glue to the second piece of underfelt and position into place. It should fit snugly up against the edge of the slot which is intended for the end of the hammer butt buck skin. Use the flat end of your small screwdriver to tamp it down. Clamping is not required.

Step 28: Determine the direction of the grain of the hammer butt buckskin by running your finger along a piece lengthwise. Going with the grain will smooth it down, going against the grain will rough it up. The direction the grain runs points to the end of the buckskin that will fit into the slot in the hammer butt. Check the fit. If it's too tight, hold the buckskin with your thumb over the end to be inserted, and drag it towards you over a coarse file to remove a slight amount of leather. Repeat as needed.

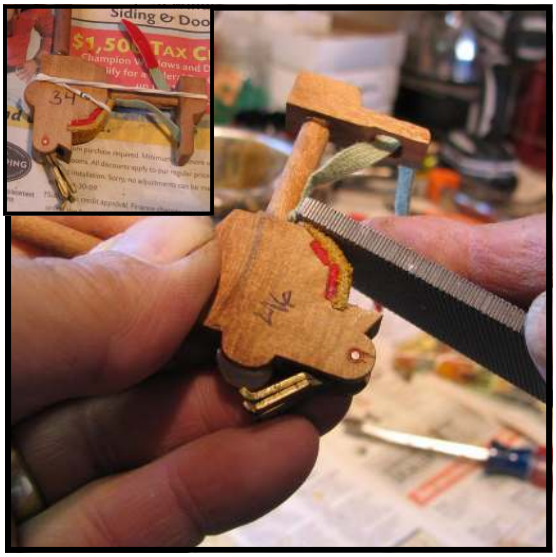


Step 29: When you've achieved a snug fit, you're ready to glue. The buckskin is glued into the slot on the one end, and to the wood of the hammer butt on the other end. It is not, however, glued to the underfelt in between those two points, but rather stretched over the felts at tension.

Step 30: Apply a small amount of hot glue to the correct end of the hammer butt buckskin using a hammer shank as an applicator. Make sure you have glue on both sides and on the very end of the piece of leather.

Step 31: Once the hot glue is applied, quickly insert the end of the hammer butt buckskin into the slot. Make sure that the fit is tight on both the left and right side. Let glue cure for 10 minutes or more before going to the next step.

Step 32: After the glue has set on the end of the buckskin inserted into the slot, apply a small amount of hot glue to the other end, on the inside edge only. (The glue will work best for this step if it is a little less runny than before.) Attach the glued end of the buckskin to the beveled wood of the hammer butt closest to the catcher shank. Go immediately to the next step.

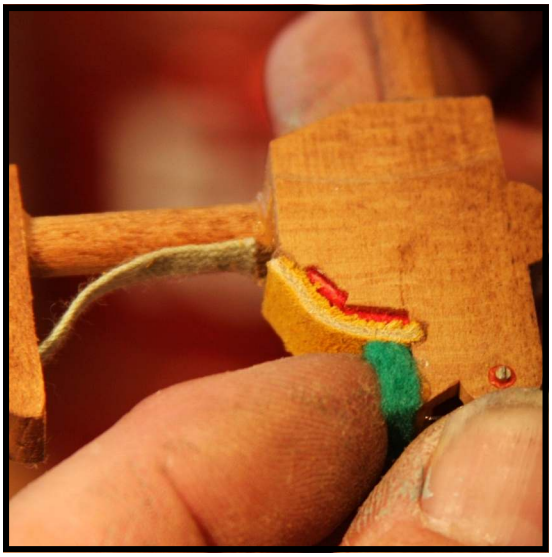


Step 33: With the squared off end of your coarse file, push the buckskin up towards the catcher shank. The teeth of the file will grip the leather, and you will see the leather stretch over the underfelts as you firmly push upward. Hold the buckskin in place for a slow count of 10, then release. If the consistency of the glue is correct, the buckskin will stay in place. Use a small rubber band around the body of the hammer butt to clamp the end of the buckskin while the glue cures.

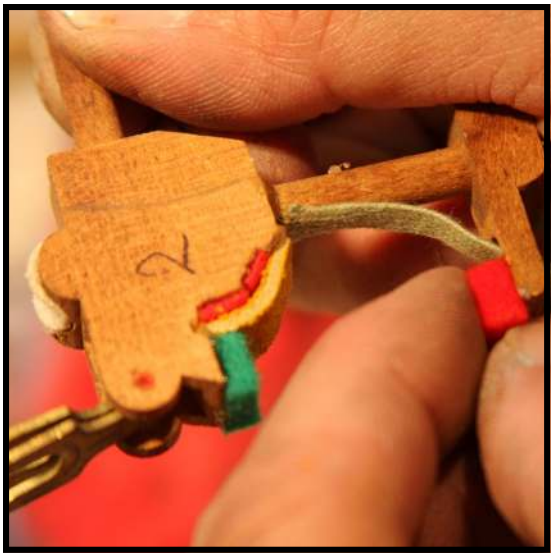
Step 34: Cut catcher buckskin approximately to size. Apply contact cement to both the catcher and the buckskin and allow to sit for at least 15 minutes, or until tacky. An alternate method is to clamp together a number of hammer butts with the catchers in line and to glue a strip of buckskin over the catchers from one end to the other.

Step 35: At the point nearest the hole in the catcher for the bridle strap, press the buckskin and catcher firmly together. Push the buckskin up and over the hump and down upon the flat portion. The advantage of contact glue for this step becomes obvious here, as there is no difficulty in gluing up and over the bend in the surface of the catcher. The bond formed between the leather and wood is immediate.

Step 36: Use a sharp razor to trim the excess buckskin from the sides of the catcher. If further cleaning of the sides of the catcher is necessary, use a sandpaper file (Cat. No. 218).



Step 37: Apply hot glue to a square cut from a strip of hammer butt felt (Cat. No. 307, 308 or 309), and press firmly into place below the hammer butt buckskin.



Step 38: Apply hot glue to one half of a side of a hammer butt felt, and press into place below the bridle strap hole in the catcher.

Before and after: With hammer butts outfitted with new leather and new felt, regulating the action for consistent response is a much more attainable goal. A job well worth the time and effort.

Shop Set-up and Work Suggestions:

For this procedure, clearing off an entire bench top and dedicating it to the job from start to finish seems the most practical approach. With all the steps involved, and with the number of pieces that need to be laid out, it would be very inconvenient to put everything away between sessions.

To keep the task from becoming too tedious, try keeping several piles of hammer butts in progressively more complete stages. Work on the hammer butts from one pile for a while, moving each part to the next batch as the step is completed. After doing that for awhile, move to the next pile for a change of pace.

In the left of the picture are the hammer butts in original condition. To the right of that are the hammer butts that are stripped, followed by the butts with the bridle straps installed, and so forth. When a pile on the far left is complete, shift everything over and begin a new step on the right, thus keeping the progress moving forward. Chuck

Tool and Supplies

For your convenience, all the tools and supplies necessary to complete this repair are listed with corresponding catalogue number.

Tools:

Hammer shank reducer……..…….Cat. No. 75
Combination tool handle…….....…...…...Cat. No. 26
Chisel set…….……Cat. No 292
Mini screwdriver and awl kit……..……..Cat. No. 56
Flat bastard coarse cut 10” file……...……Cat. No. 252
Electric glue pot…….....Cat. No. G-1155
Hale felt cutter……..Cat. No. 279
Sandpaper file……...Cat. No. 218
Glue brush……Cat. No. 438
Needle nose pliers……Cat. No. 239

Supplies:

Dry Cabinet glue……...Cat. No. 399-1/2
Original standard bridle straps…….……..Cat. No. 1515
Cork bridle straps (optional)……....……...Cat. 6516 S-M-L
Upright butt leather……....Cat. No. 329B or 2350B
Upright catcher leather…….....Cat. No. 329A or 2350A
Extra quality key bushing cloth…...……..Cat. No. 321C
Titebond glue…….……..Cat. No. 392-4
Spring punching…….....Cat. No. 330E
PCV-E glue……..……...Cat. No. 387-16
Hammer butt felt……....…..Cat. No. 307, 308 or 309

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

Notes on Procedures