



Small Shop - Big Results
Grand Action Reconstruction – Part 9
(Hammer Head Installation)
By Chuck Behm
Central Iowa Chapter

(Disclaimer: My methodology for hanging hammers is a no-frills approach – not what anyone would call state of the art. Many readers of the Journal are much more experienced at hammer installation than I. For the technician just getting a business up and running, however, my approach might make a useful starting point to becoming proficient.

What I would really recommend for the beginner is to read everything you can get your hands on about the topic – hammer selection, preparation and installation is an art form – as much as tuning is perhaps, and what I’m presenting here are just few of the basics as I’ve learned them over the years. Even better, attend a regional or national conference, and sign up for any of the classes offered on related topics by people who really know their stuff.)

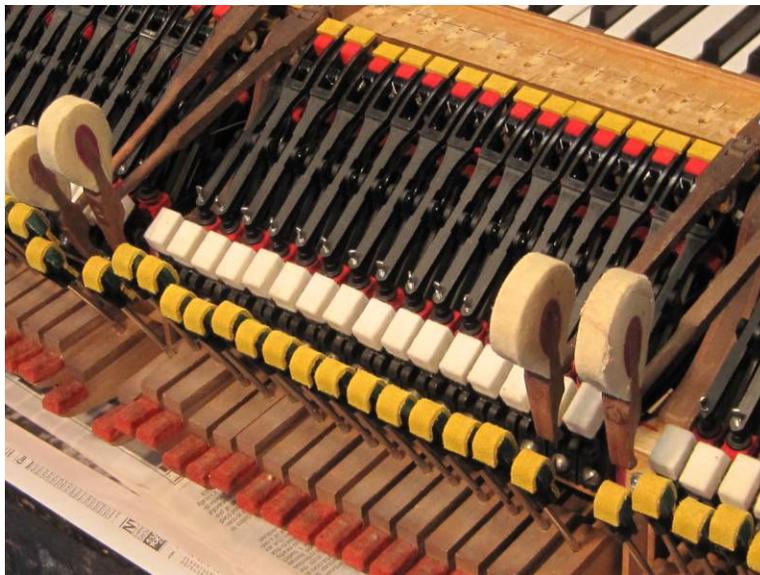


Photo 1: Setting the outer limits.

To me, hammer installation is all about positioning – making sure the hammer is where it’s supposed to be, at rest position and when it strikes the strings. To begin the installation of the set of new hammers (which I purchased predrilled from Schaff) for the newly refurbished Weber grand action, I align the outside guide hammers of each set, (which Schaff will return), to the strings by sliding the partially reassembled action into the piano. Check the position of each hammer by slowly depressing the key until just before escapement occurs, and line up the hammer to the string visually. If the action at this point doesn’t have the adjacent hammer shank flanges in place to use for leverage to shift the position of each of the hammers, you will need to slide the action back in and out to make adjustments until the positioning is perfected.

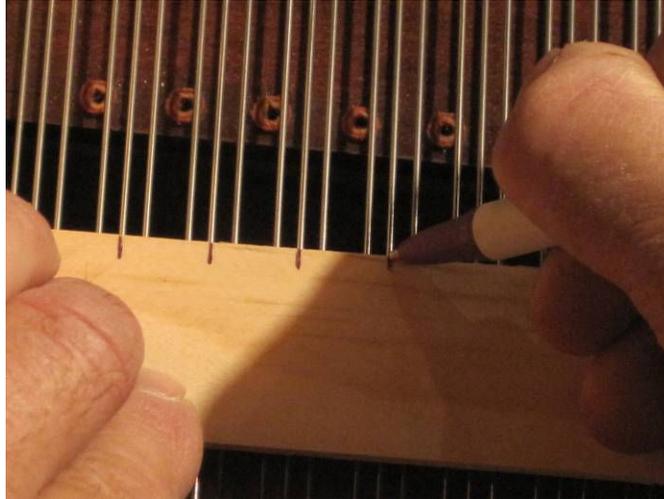


Photo 2: Lining up the strings.

With this done, turn your attention to the piano strings. For each section of strings, cut a thin strip of wood to length so that it will fit snugly inside the struts over the strings. Position the upper edge of the guide strip along the line where the hammers strike the strings. Mark the position of the center string of each set of three strings (Photo 2), and the middle point for each set of two strings (Photo 3).

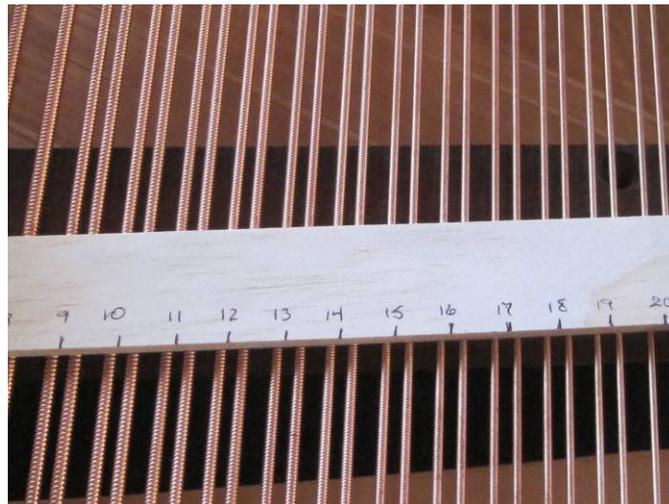


Photo 3: An optical illusion.

As you work from one side of the section to the other, move your head slightly along each time, so that your eye is directly above the set of strings being marked – otherwise your reference lines will be off as you view the strings from a sideways angle (notice the effect in Photo 3, with the lens of the camera in line with string set 16 – the outer markings appear to be off, although they are not). Once the markings have been made, number the string sets as shown to prevent any confusion when switching from one guide strip to another.



Photo 4: Tighten, but don't over-do it.

You are now ready to do the initial spacing of the hammer shanks in preparation for installing the hammers. If you haven't done so yet, install all the hammer shanks / flanges. Snug the screws down (Photo 4) without over-tightening.



Photo 5: Checking the hammer shank spacing.



Photo 6: Making needed adjustments

If you put the action on your bench with the back of the action facing you, you can now easily check the spacing of the hammer shanks (Photo 5) and make needed adjustments (Photo 6). By reaching over the action with a small, flat-bladed screwdriver in your right hand while holding the guide strip in place with your left (line up on the outside guide hammers), you should be able to pivot hammer flanges as needed to center each shank with the marking on the guide strip. Adjust the spacing by inserting the blade of your screwdriver in between the tapered ends of the flanges and using the screwdriver as a lever to pivot the shanks slightly to the right or left. (With practice, this becomes an easy process, and may be done with the action in the piano as well, eliminating the need to pull the action in and out to precisely space the hammers to the strings.)



Photo 7: The line (not the high point of the badly shaped hammer) marks the ideal strike point.

At this point (if you haven't done so already), the strike point on the outside guide hammers needs to be marked. Do so by using a ruler to extending a line corresponding to the middle of the molding up and over the top of the hammer, as has been done in Photo 7. This will be the basis for the alignment of the rest of the hammers. (Note – If the hammers are badly worn, or have been filed, don't simply go by the highest point of felt – it may or may not be in line with the center of the molding.)



Photo 8: Immobilization.



Photo 9: Double-checking the alignment.

For the remainder of the installation process, it will work best to immobilize the hammer shanks in relation to each other. Do so by putting a wooden strip above and below the set of hammer shanks you wish to work on, and using a spring loaded clamp on either end of the set to hold the wooden strips (and the hammer shanks) in place (Photo 8). It's not visible in the photo, but the inside of each strip is lined with a felt cushion – self-adhesive nameboard felt works great for this. Once the set-up is made, double-check the alignment by placing the guide strip over the hammer shanks (Photo 9). If things have shifted, make necessary adjustments.



Photo 10: Marking the strike point on the new hammers.

Now, mark the strike point of the two new hammers which will be going inside the guide hammers which you've positioned on either end of the set. Again, extend a line using a ruler, going through the middle of the molding, and up and over the top of the hammer (Photo 10).

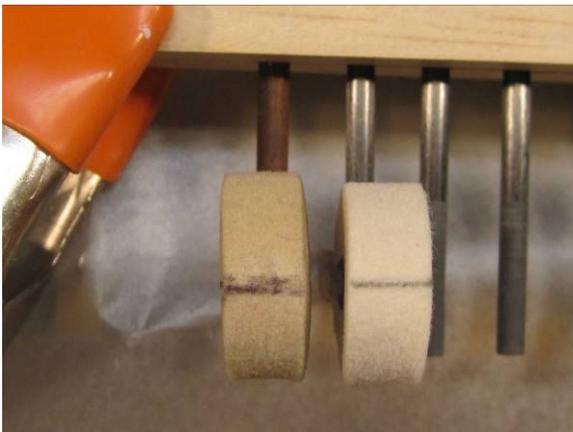


Photo 11: Lining up the strike points.



Photo 12: Hammers are parallel

A dry run of the installation of the first of the new hammers is highly advisable. Slide the first two hammers to be glued on to their corresponding shanks. Peer down at each of the hammers from directly overhead to line up the strike point lines of the old and the new hammers (as shown in Photo 11). Push the new hammers backward or forward as needed so that the strike point line of the new and old hammers line up. Then, reposition yourself to view the hammers from the vantage point shown in Photo 12, and swivel the new hammers if necessary so that they are running in a parallel lines to the old hammers.



Photo 13: Applying glue to hammerhead.



Photo 14: Ready to rock and roll – I think!

On the advice of WNG, I used a thicker viscosity C.A. glue for installing the hammers on the composite shanks. (Caution: From here on out, make sure you're wearing latex or rubber gloves. Also, put several layers of paper towels under the hammer shanks to absorb any dripping glue.) Although I've used C.A. glue for various applications in the past, this was the first time I had tried it for hammers. So, with more than just a bit of trepidation, I applied a couple drops to the hole in the hammer molding (Photo 13), and a couple more on the hammer shank (Photo 14).

The grab time on this glue is very quick, especially if you swab the inside of the hole with a damp Q-Tip before applying the glue. You do not want to hesitate in getting the hammer in place and positioned just the way you want it, or you will risk having it seize up, and be impossible to adjust. With each hammer I installed, I started a count-down of seconds, beginning with 15. Much more than that, and I was risking reaching the point of "no return," where further adjustments were out of the question.



Photo 15: One down, 87 to go.

If a hammer does in fact seize up out of position, the only remedy, as far as I could tell, is to clip the shank off beneath the hammer, and ream out the hole. This

sacrifices the hammer shank, obviously, so it might be a good idea to have a few extras on hand – I ruined 3 shanks this way during the course of the installation.

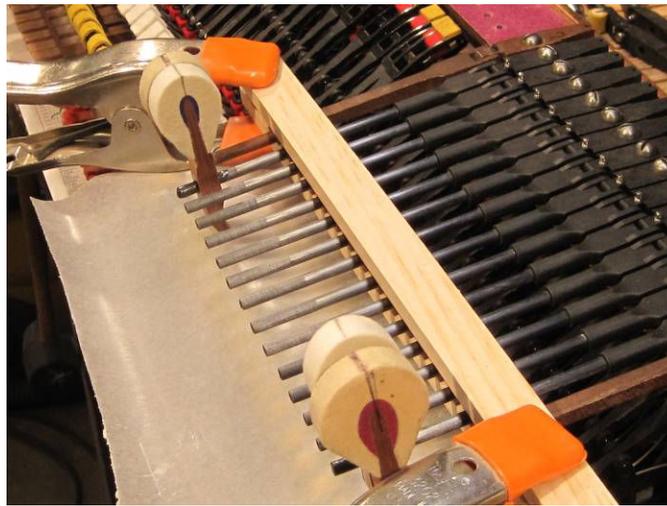


Photo 16: New outer hammers in position.

Once your first two new hammers are in place for each set, you will not have to worry about any further aligning the strike points of the remaining hammers for the set. Your installation will now focus on creating an even line of hammers in between the ones on the outside which have been carefully positioned (Photo 16).



Photo 17: Custom-made straightedge



Photo 18: Exact positioning

At this point, get out a good steel straightedge, or make one from thin stock – I prefer making my own so that I can make it the exact length I need (Photo 17). To position each hammer you first line up the back edge of the felt body of the hammer with the hammers already in place using the straightedge (Photo 18). You then quickly make any adjustment in rotation to position the hammer in a line parallel to the hammers which have been glued in place. (Important note: Do not use the numbered guide strip at this time to adjust hammer spacing by swiveling the hammerheads until they line up – this will produce hammers which are not parallel to one another.) Minor adjustments in alignment will be done once the hammers are all glued in place.



Photo 19: Perfect alignment.



Photo 20: Ready to fill in the set.

Instead of working your way from one end of the set of hammers to the other end, I would suggest gluing in a couple of the interior hammers at evenly spaced intervals (Photo 19). Once they are securely positioned in place, it will be easier to check the rotation of the in-between hammers (Photo 20).

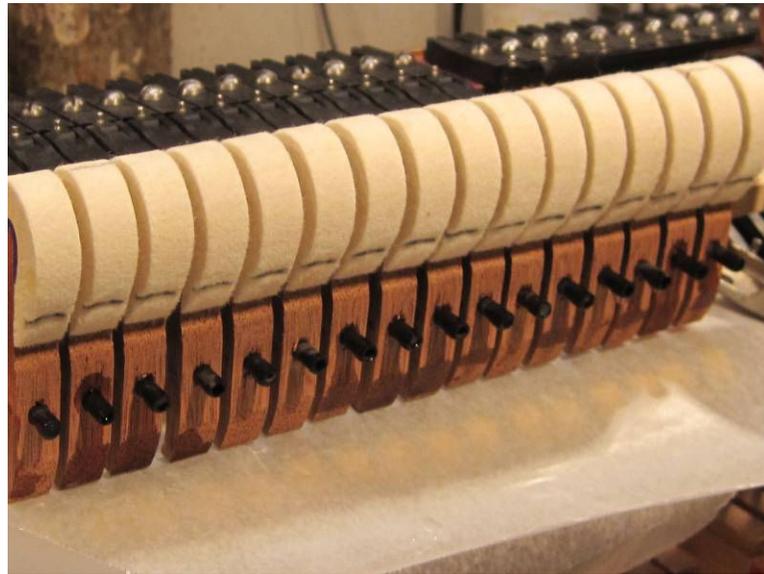


Photo 21: Hammers are in place, and the day is done.

With the new hammers glued in (Photo 21), it's time to call it a day. The list of steps needed to be done (starting with trimming the ends of the shanks off) grows ever shorter. I'm beginning to feel as if the goal line is in sight. At last.

If you're passing by, stop by for a shop tour and a visit. The coffee pot is on.

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