NEW AND USED STEINWAY PIANOS: A TECHNICAL COMPARISON

A LEGACY OF INNOVATION

Recent advancements in design, technology, process, equipment, materials and engineering available only in today's Steinway models

1. New High-Gloss Polyester Finish

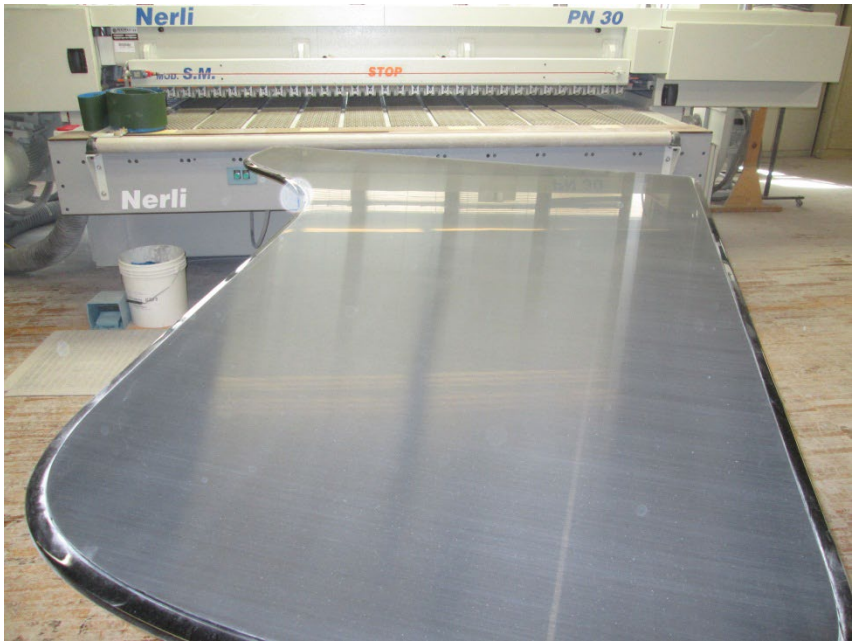
More resistant to scratches, chemicals, and liquids. Significantly longer lasting than satin lacquer finishes, and cannot be duplicated without multi-million dollar equipment investment.

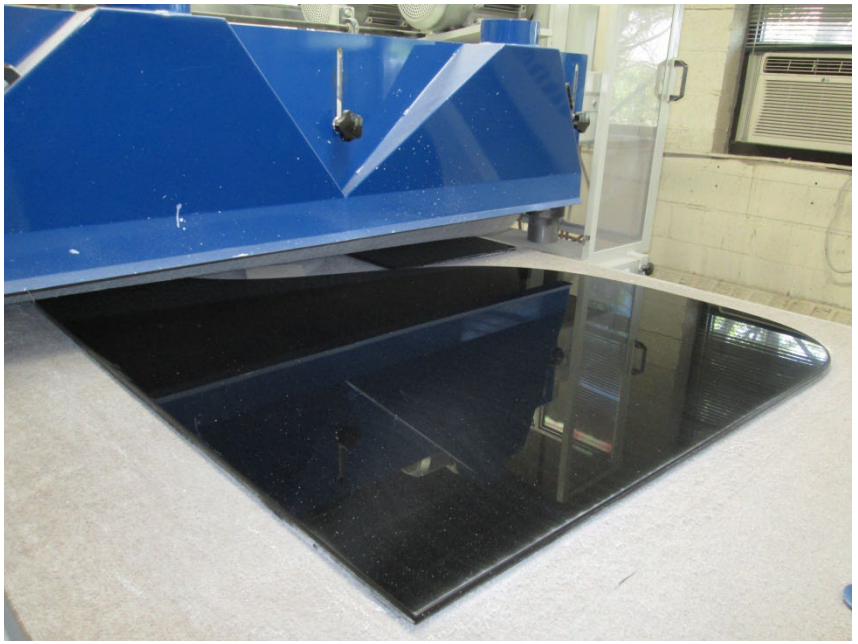
What makes Steinway's New High-Gloss Polyester Finish Different…
Over $2 million Equipment Investment

- The material used is Paraffinated Polyester, the best polyester for high quality finishes. When sprayed, a layer of paraffin rises to the top to block the oxygen from negatively affecting the catalyst process. This process blocks the oxygen for a stronger, harder, perfectly bonded polyester.
- Polyester is sprayed in six consecutive coats at 15-minute intervals. Each coat cures and chemically bonds together forming a solid layer of polyester.
- Final thickness is 20-30 mils, 3 to 4 times the thickness of lacquer.
- Paraffinated polyester requires investment in environmental climate controls, specialized spraying booths, and high labor content to sand and polish to a mirror finish.
- Polyester finishes endure wear and tear very well over long periods of time and are not available on older models.
- This specialized polyester process would require millions of dollars of investment not possible for independent shops.

Specialized Polyester Polishing Machines

The best Italian furniture polishing equipment – enables the factory to create the finest quality, high-gloss finish. Shown below, polishing of polyester tops with the new machinery.





Multi-orbital brilliance polishing machine

Produces more refined finishes that will last longer than our older models.
This type of machine is also cost prohibitive to rebuilders and refinishers.

Robotic Polyester Polishing Arm

An extremely important part of the finishing process, this equipment precisely controls the amount of material rubbed and polished, and the amount of pressure used during the application. This procedure produces a consistent and even finish on all parts of the piano. Manual polishing leaves inconsistent finish applictions that will be noticeable throughout the piano.

2. Significant Soundboard Improvements

Selection and fabrication is now more tightly controlled than it was in previous years - better materials, more consistent assembly. We know this because of our experience inspecting many used Steinways traded by clients. We have also invested $500,000 in machinery to ensure a perfect diaphragmatic soundboard taper as specified in the original Steinway patent. This means today's soundboard adheres more precisely to Steinway's original soundboard design, producing more consistent tone. Steinway soundboards are not for sale to anyone – even Steinway dealers. So if the soundboard has been replaced by anyone other than the Steinway factory, it is not a Steinway.

Soundboard selection, no compromise

$500,000 investment to insure 1936 diaphragmatic soundboard taper.

Soundboard Varnishing – Positive Pressure Room

New positive pressure soundboard varnishing room results in defect free and clean finish. Improved varnish coatings reduce exchange of moisture within the spruce panel, producing more consistency and better tone. This process was not used on older models.

Dust free varnishing room, and tapered soundboard close-up.

Improved selection and preparation of soundboard materials

Used Steinway on left, vs new Steinway on right. The quality of materials been improved along with significant assembly improvements. Higher quality soundboard material and better assembly produces a finer, more consistent tone across the keyboard than used models. The piano is also more cosmetically attractive.

3. Improvements in Rim Construction

The inner and outer cauls have been bolstered and strengthened. The outer cauls (blocks that are tightened to press against the rim as it is bent around the rim press), are now laminated and more stable. The inner cauls are also now laminated and have been reinforced with steel plates. The cauls were previously made of wood and would begin to distort over time. These new materials increase the precision of the curves, reduce rim press marks, and results in a more uniform, smoother, straighter outer rim. Instead of hand tightening, we now use pneumatic wrenches with an adjustable clutch which releases when a certain torque is reached. If the rim press is over-tightened, it will squeeze out too much glue which could lead to rim lamination separation. If not tightened hard enough, it could lead to a weakened joint. The pneumatic wrench produces the ideal amount of glue between each rim lamination. This results in longer rim longevity, reduces the chances of lamination failure, and provides greater assurance that the ideal shape of the rim stays in place.

Rim Stabilizers added to rim construction process

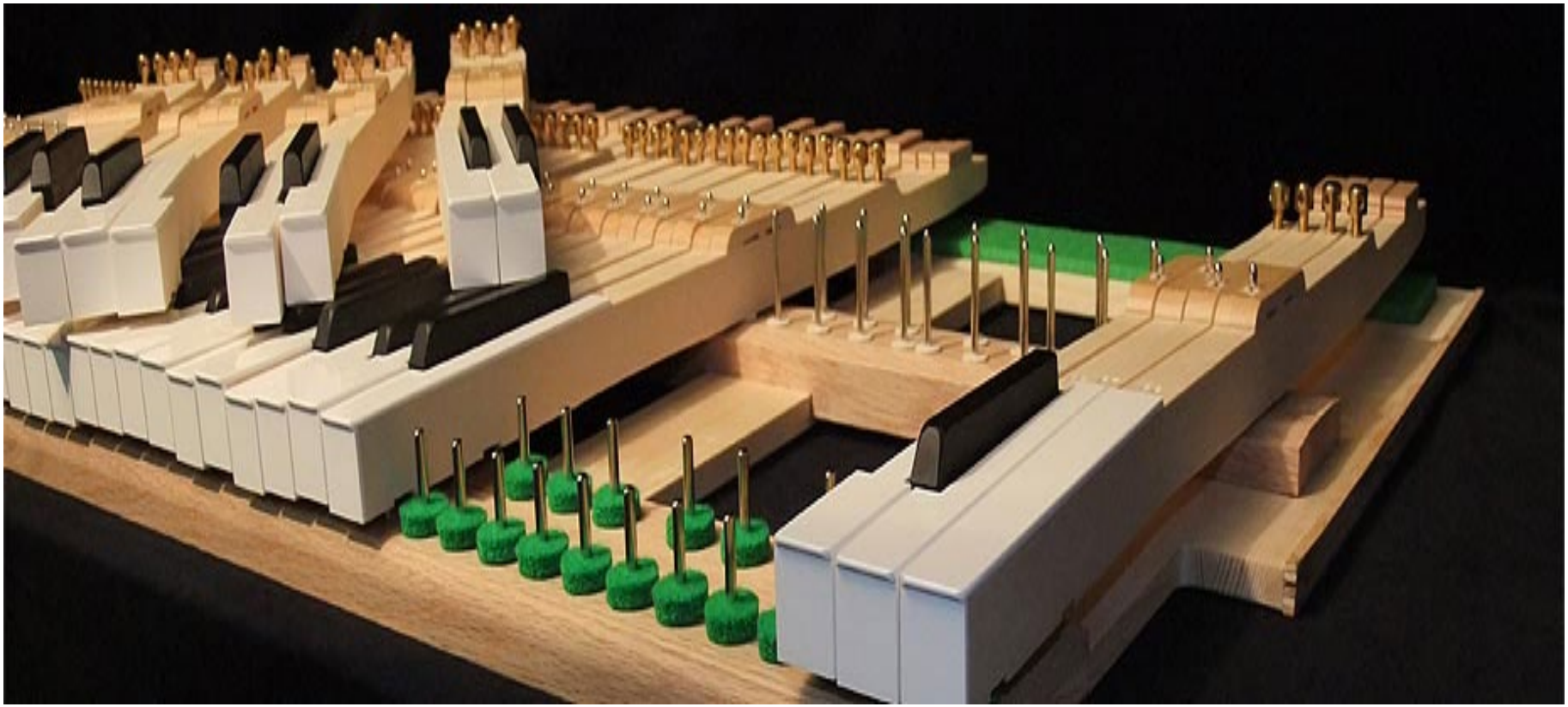
These stabilizers help maintain the ideal rim shape as originally designed by Steinway. The improved rim stability adheres more closely to the original design intent than older models. This ensures a straighter, more stable rim, adding to the longevity and structural integrity of the piano.

Clear Braces and Natural Finish Case Bottoms

Enhances details of Case Construction patents introduced by C.F.T. STEINWAY 1878. Selection of structural braces precisely hand fit into rim and back bottom, bronzed treble bell. Since all is exposed – not painted over - selection of wood, fit and finish have been significantly improved compared to older models. This is a good way to see if you have a modern Steinway: Look under the piano and see if the braces and case bottom is clear (as shown below) or painted black.

4. Improved Action

Today's keyboards are produced in Germany by Kluge which was established in 1876. Now owned and managed by Steinway, Kluge replaces Pratt Reade keyboards. This older model keyboard was lower quality, and out of Steinway's direct control. Keyboard machining, bushings, fit/finish, and lubrication have all been significantly improved over ten past years. These improvements combine to achieve more responsive keyboards and actions than previous models.

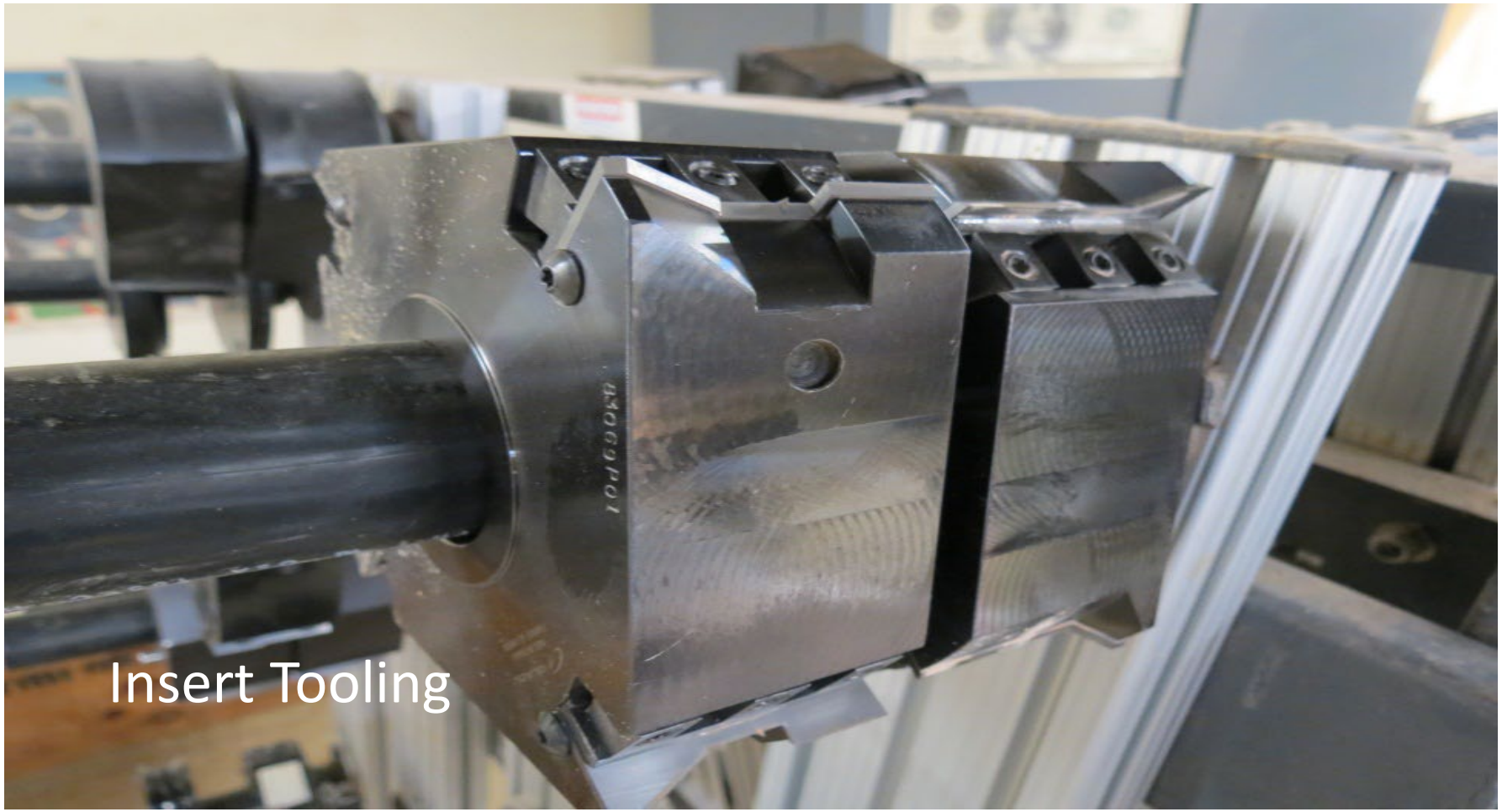


Action Improvements – Faster repetition and key return

Steinway has drastically reduced the amount of lead weights inserted into the keys. Touch weight is now centered at 50 grams and provides a key return in the range of 27 – 30 grams, yet with minimal weight in the keys. Compare older instruments with heavier touch, slower return, and more weight in the keys. The new Steinway is easier to play, more responsive, with significantly faster repetition than older models.

Insert tooling producing precise sizing of action parts

Recently, insert tooling has been used for most of the molder operations. Inserts are made from carbide steel to the exact profile of a given part. When an insert gets dull, it is simply replaced. In the past, molding knives were hand sharpened adding to variation between parts. Variation in action produces inconsistent regulation. This new procedure enhances uniformity of touch, note by note.

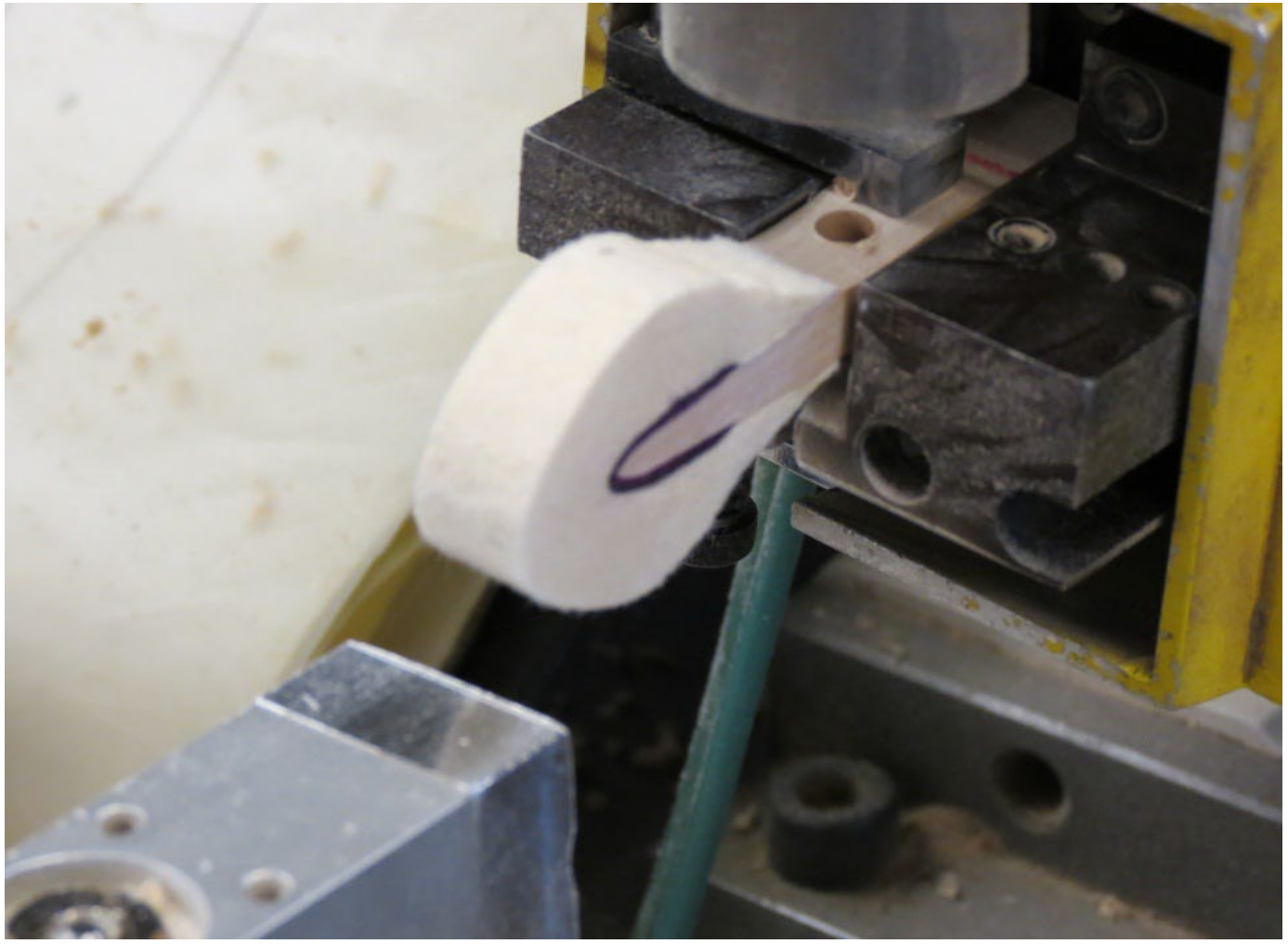


New Hammer Felt

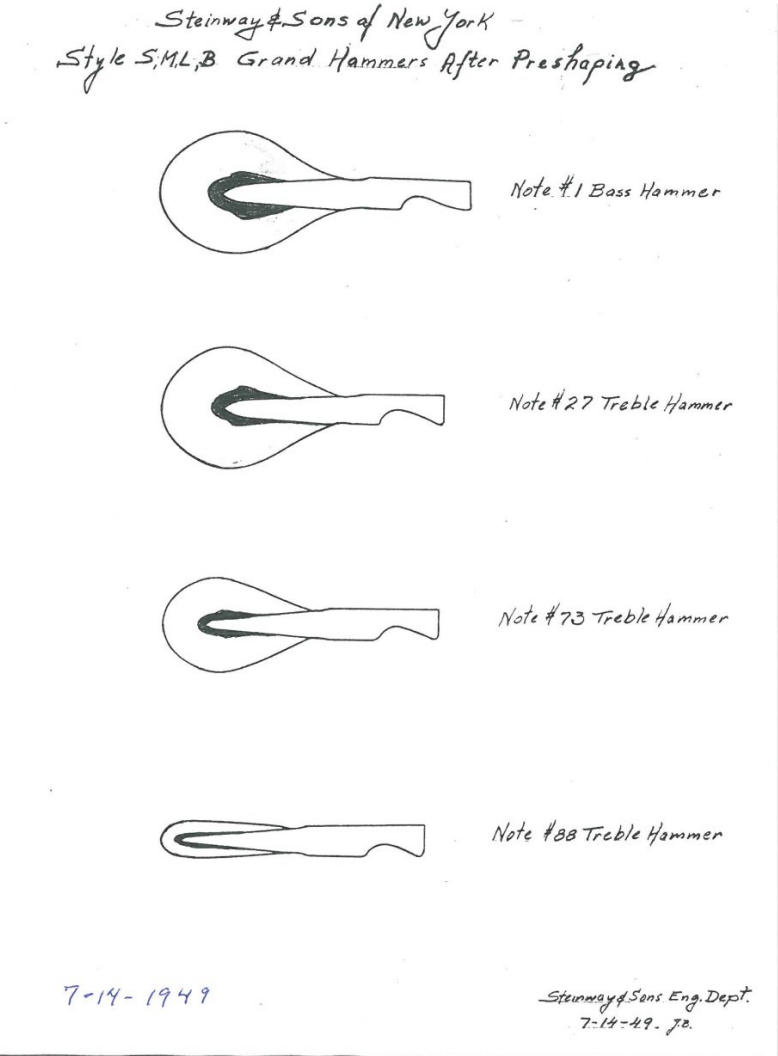
Today's new Steinway hammers are made from fibers that are processed to avoid damaging their natural barbs, thereby enhancing their "felting" quality. This new fiber processing also helps to retain their lanolin-oils. Therefore, less juicing is required as resilience and firmness is increased. The new hammers are also significantly denser, producing a more powerful tone quality with more sustain than previous models.

CNC Hammer Drilling

Another example of using technology to insure the recipe: Investment in expensive CNC machines used where precision is required. This small enhancement positively effects tone because accuracy in the hammer strike line is refined. This replaces a foot pedal machine where hammers were held in place by hand – much less precise.

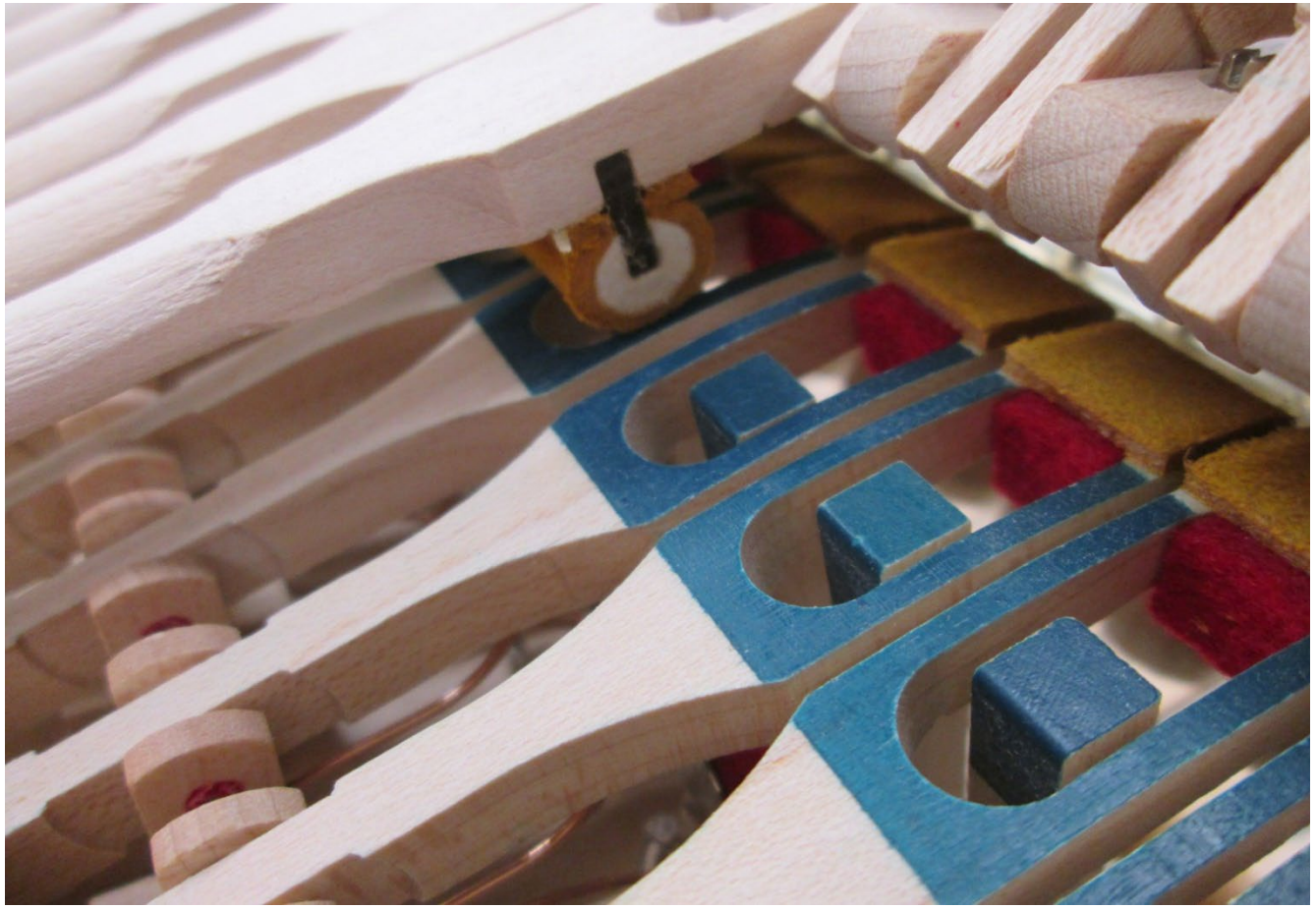


Hammer skiving (slicing). Improvements in technology and machining preserves the Steinway standard. Here, “skiving” felt strips to correct profiles results in the proper and unique STEINWAY shape as detailed in factory engineering records. More precise hammer shape produces and preserves the unique Steinway tone.

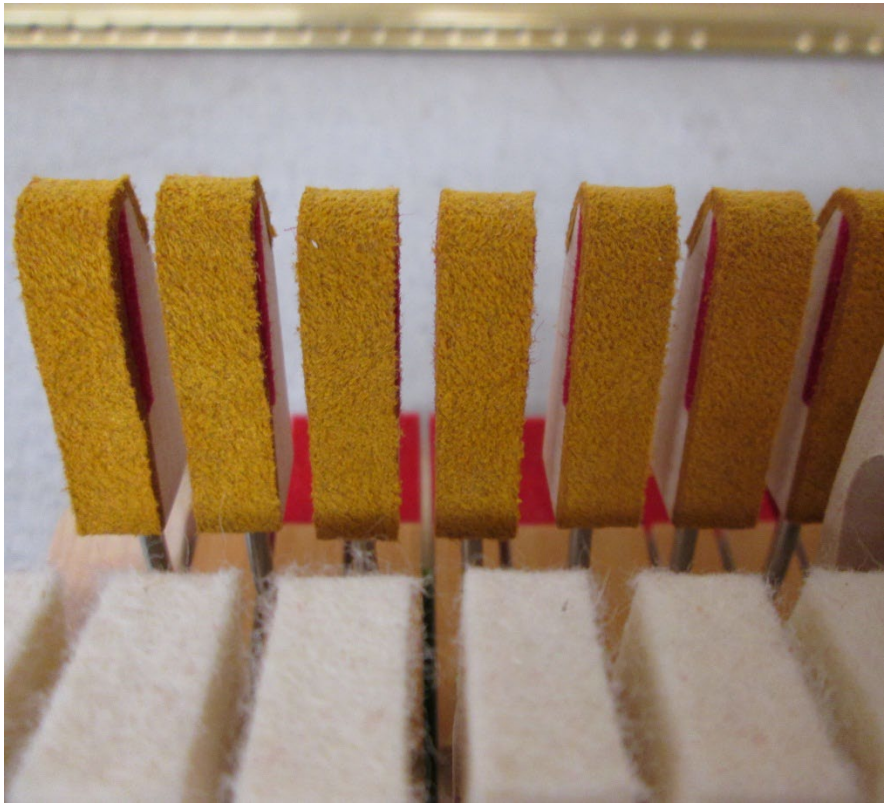


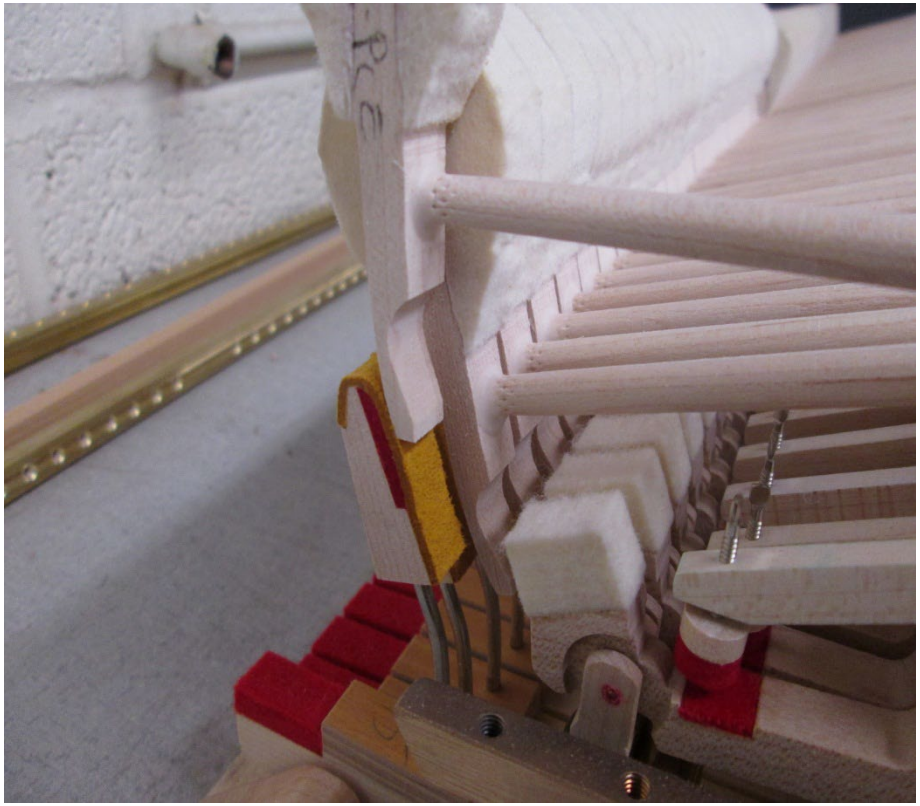
Improved Action Performance - Emralon

New improved Emralon formulation significantly reduces friction and decreases wear. Improved synthetic “buckskin” replaces natural leather that varied from skin to skin. These new materials have proven to last longer, and reduce noise in the action – a common complaint in used Steinways.

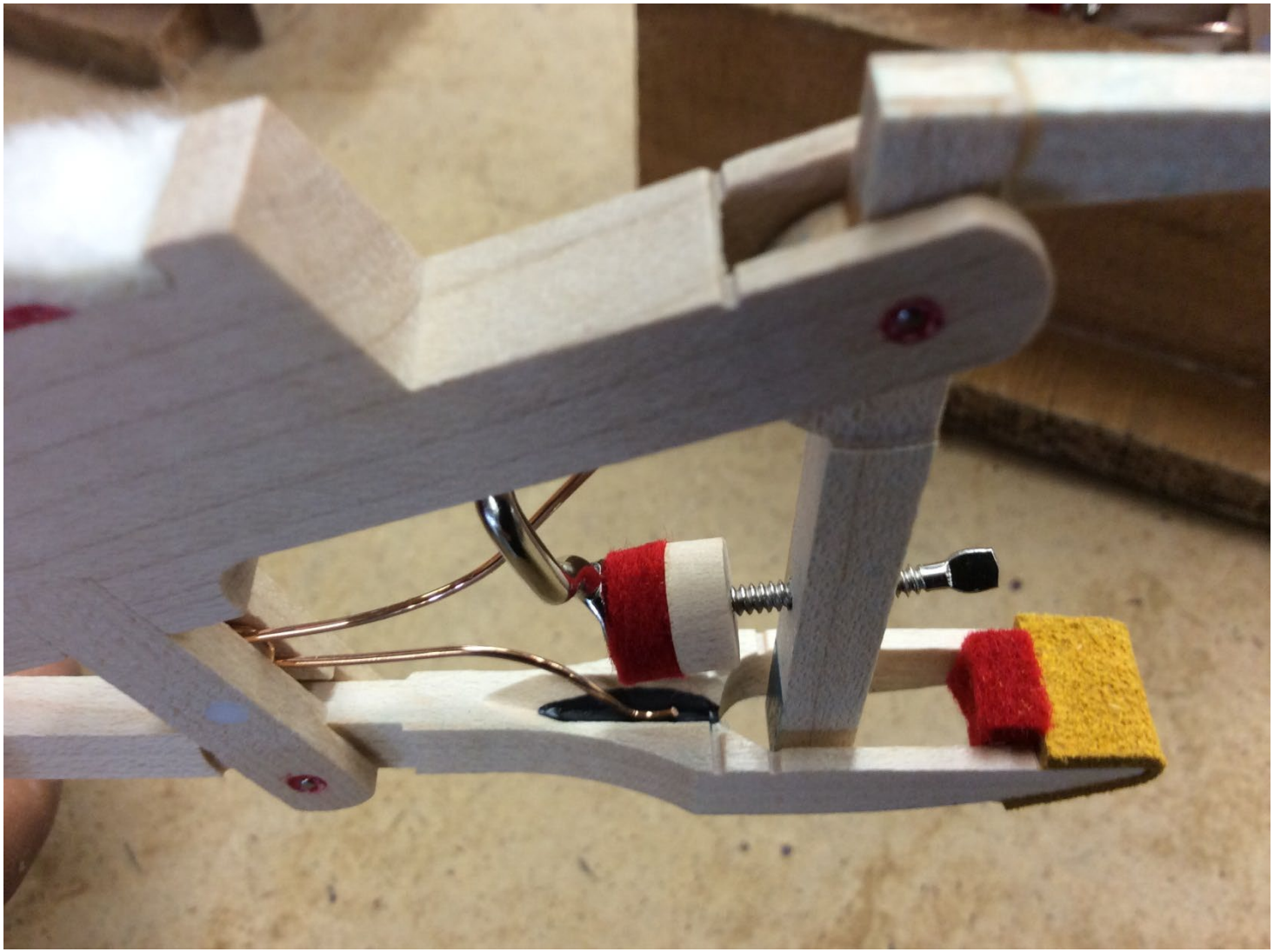


Improved synthetic buckskin on backchecks significantly reduces action noise and increase durability.

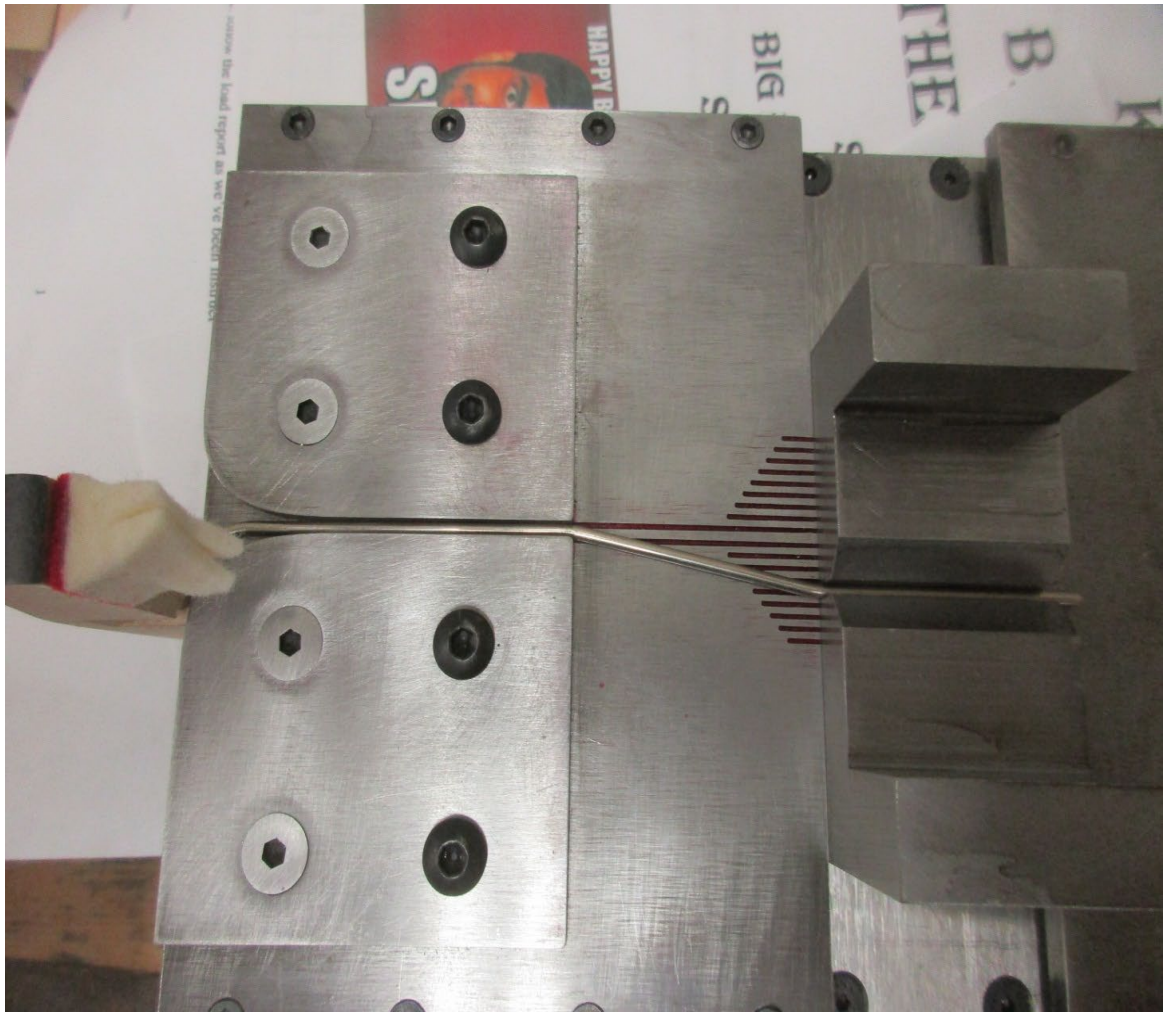




Improved Action Parts Lubrication, Emralon and Synthetic Buckskin



New damper wire bending fixture to ensure parallel "double bending" and straight travel. Eliminates variation, and reduces friction.



Transition to case mounted sostenuto for all models, not just SPIRIO

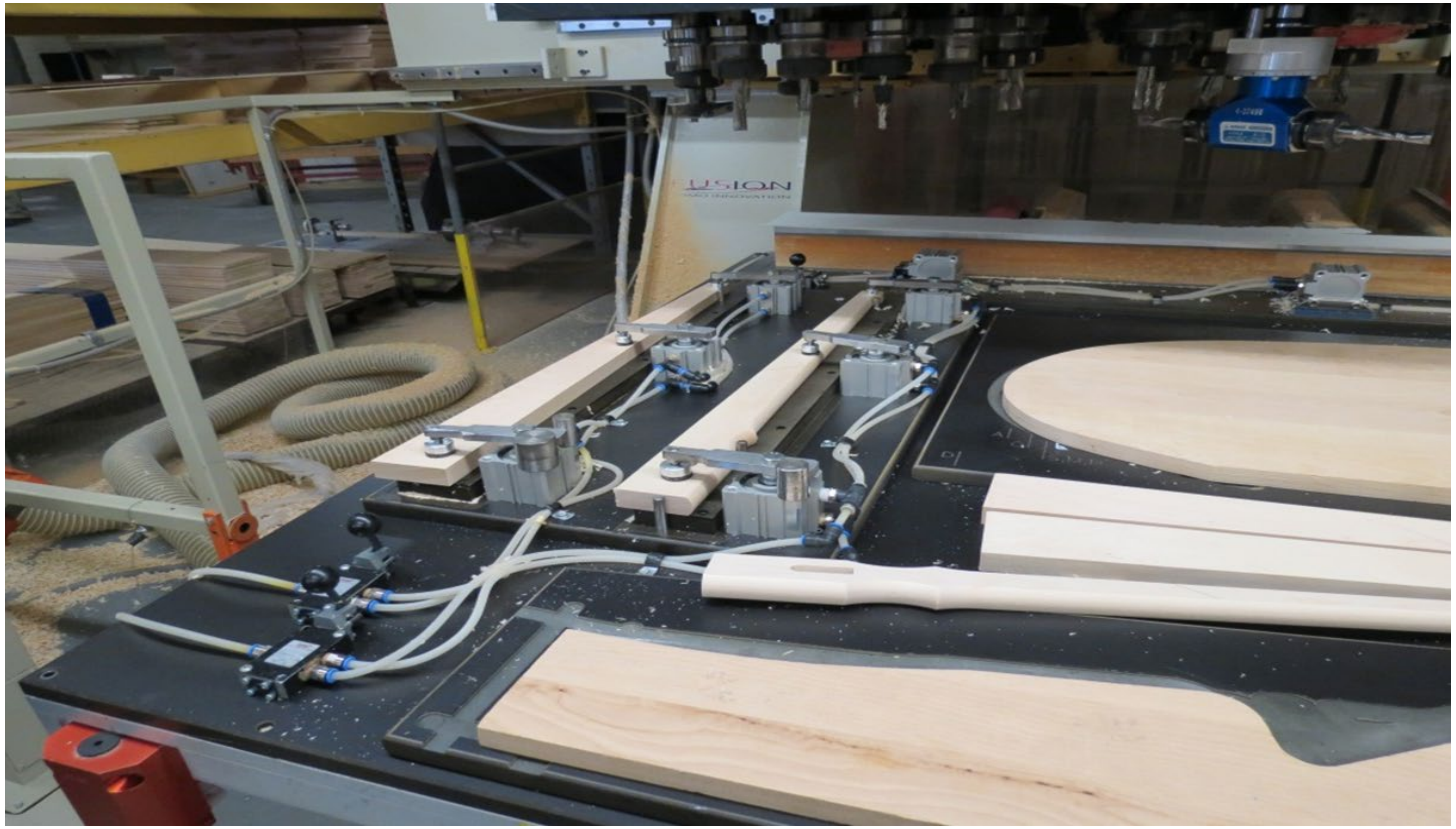
This results in a more stable installation of the sostenuto pedal, and better performance for the pianist.

5. Finish and Case Part Improvements

This veneer calibrating sander, not available in past years, allows Steinway to sand cross banding mahogany veneer to precise thickness and smooth texture. Previously sanded manually, the result is a finished top with a flatter, smoother appearance that will reduce telegraphing (lines on the surface of the piano developed over time), helping to maintain the finish longevity.

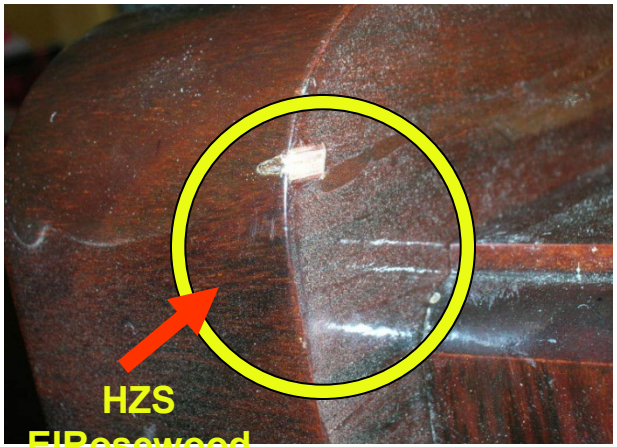
CNC Equipment used to produce furniture components

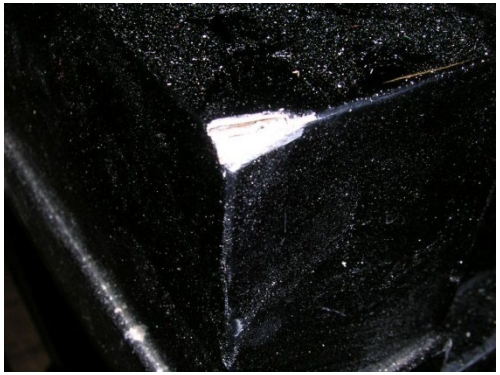
Computer **N**umerically **C**ontrolled equipment guides the precise path of a tool. This technology, new to the Steinway factory, is ideal for parts that do not require custom fitting within a unique case, but for cabinetry that is added to the case. Tops, key beds, consoles, back bottom, top sticks, lock bars, top slips, etc. This significantly improves the fit, finish, and alignment of piano parts.

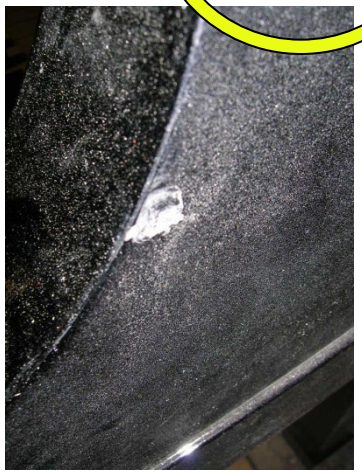


Improved Protection virtually eliminating cosmetic flaws

Protection provided throughout the manufacturing process means the finished piano is more beautiful and damage free from the factory. Here are three examples of damage prevented by this new procedure.





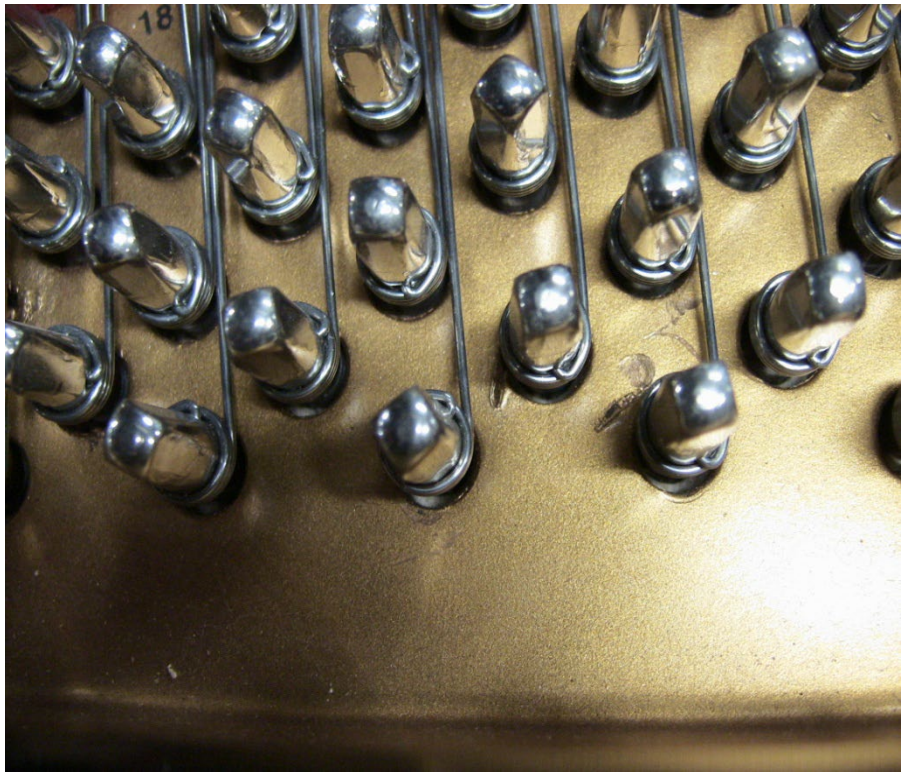


Case Damages observed 12/14/06 in Grand Finishing & Tone Reg. Repairs show up over time. Damages are now virtually eliminated by use of case protection and piano armor.

Plate protection now used to avoid cosmetic damages on plate.
Equals improved fit and finish details.

New piano with protection

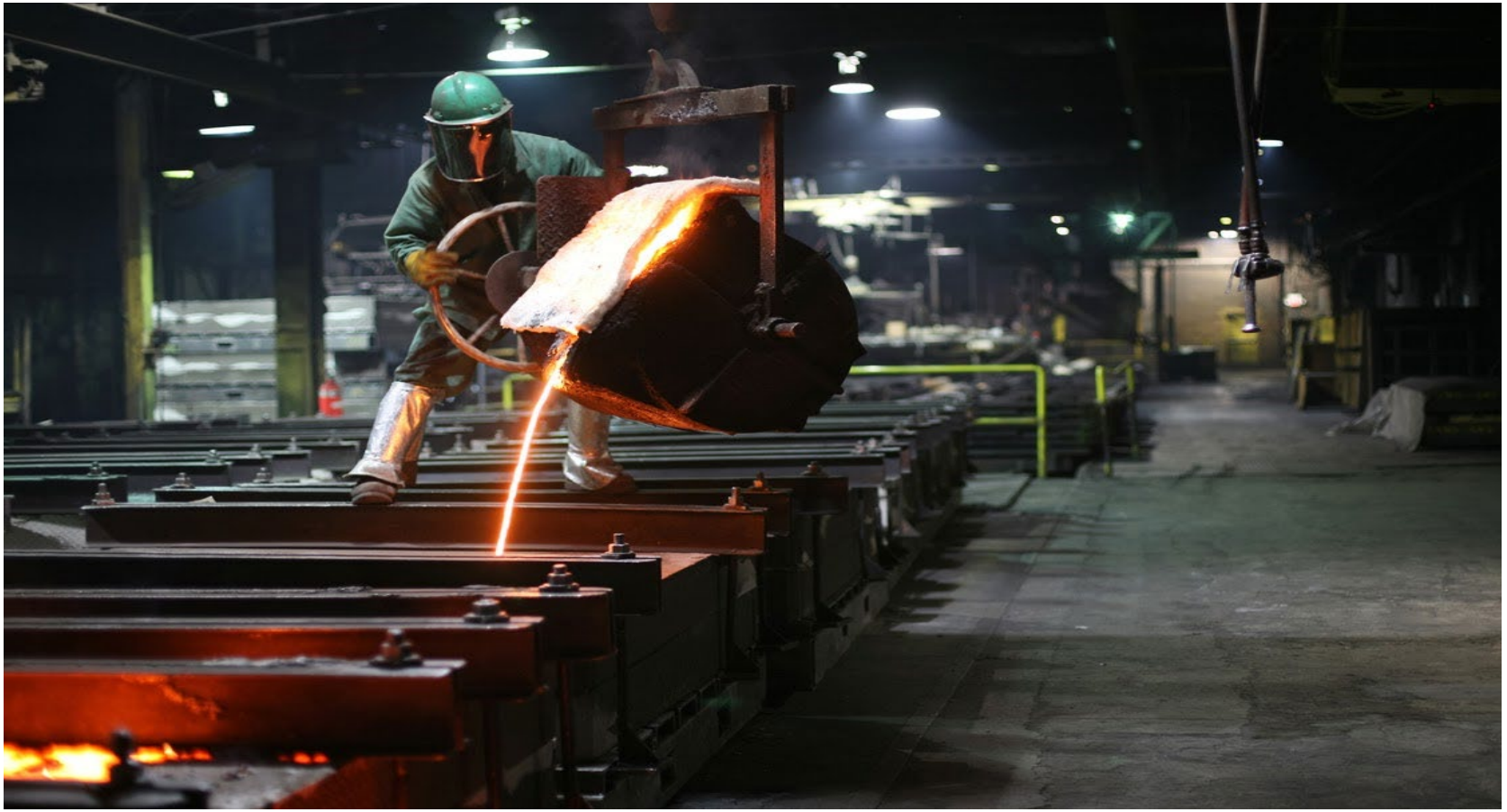
Older piano results



Cleaner result and details

6. Improved Cast Iron Plates

The O.S. Kelly Foundry in Springfield, Ohio (founded 1890) is now owned by Steinway. This foundry produces grey cast iron piano plates for all Steinway factories worldwide. With Steinway's investment in new manufacturing processes and machinery, quality control has improved, making today's plate the best ever produced. These improvements allow the plate to fit better for greater tuning stability and more consistent tone quality.

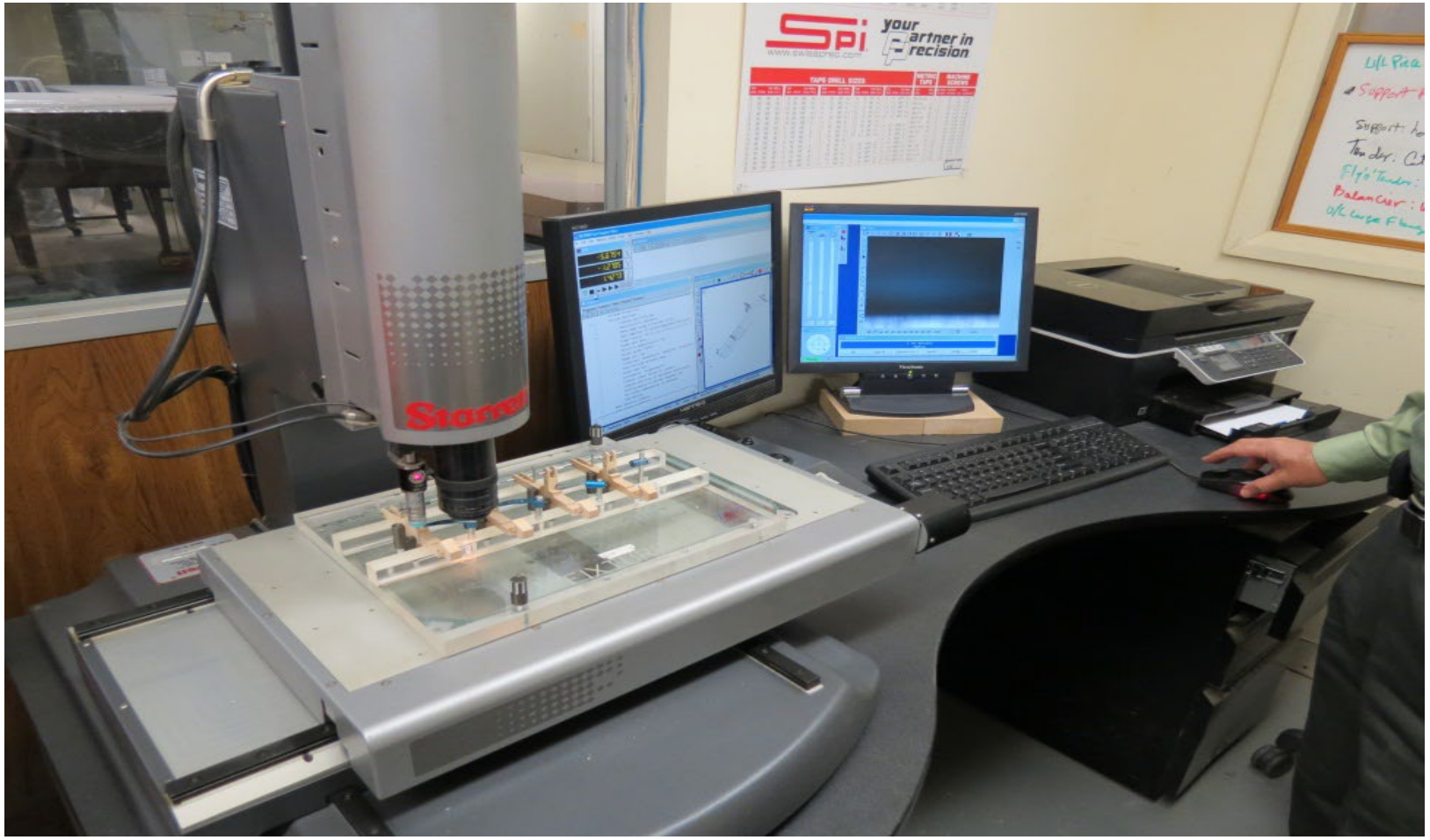


Steinway Produced Piano Plates

Compare today's plate with one from an older piano. It is easy to see the improvements that have been made.

7. Material and Parts Management Improvements

The recently added CMM (Computer Measurement Machine) is an inspection device which uses a touch probe to take precision dimensional data of production parts. With this machine, allowable tolerances have been reduced to a fraction of previous years. This means all parts on the Steinway consistently fit better than those on older pianos. This improves the overall performance of the today's Steinway compared to older models.



PLC Conditioning Rooms (Programmable Logic Control)

Steinway now has fifteen PLC Material Conditioning Rooms to carefully control the temperature and humidity of many critical piano parts. Electrical sensors automatically adjust humidity and temperature to set points. Wood is hydroscopic (takes on and releases moisture). If not precisely controlled, dimensions on critical parts such as action moldings & soundboards will drift due to humidity changes. These details add stability to action performance (friction and side-play) and helps to insure long term soundboard crown. This technology was not available in past years.

Better conditioned materials

Parts are now tracked by computer rather than handwritten tags. This ensures accurate “dwell” times of parts, rims, glued panels, and other wood. Nothing moves into production before meeting the time required for stabilization. Improved controls increase stability of the wood within the piano. This results in more consistent fit and finish, along stability of regulation, tuning, and quality tone longevity.

8. Small Details That Make A Big Difference

New multi-position adjustable music desk, pivots at many angles, allowing the pianist to view sheet music at the most comfortable position. Not available on older models.

Acoustic designed voicing rooms for each factory technician, resulting in more consistent voicing on each piano

For more information about new and used Steinways, visit www.steinwaypianodc.com