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**Ron Cook Studios**

147 Sacramento Avenue - Santa Cruz, CA - 95060 - (831) 425-4933 - [www.roncookstudios.com](http://www.roncookstudios.com) - [ron@roncookstudios.com](mailto:ron@roncookstudios.com)



# **Restoration of a 1907 Franz Schwarzer Concert Zither**



**Completed by Ron Cook**

**November 2016**

**For Pam Ruggaber**

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## Franz Schwarzer Zither Background

This fine zither was crafted in Washington, Missouri, at a small company founded by a German immigrant, Franz Schwarzer. Washington began as a Missouri River boat landing. The St. Johns settlement from which it grew was at the extreme western edge of the frontier when Lewis and Clark's "Corps of Discovery" camped nearby in May of 1804. By 1818, when Franklin County was formed, thousands of American settlers had already arrived. Many of these were friends, family and followers of Daniel Boone and his sons who had come to the area in 1799. Daniel Boone served as the Spanish syndic (judge) on the north side of the River. The first ferry in the area was licensed to run in 1814. It connected the settlements of La Charrette and Marthasville on the north bank to the Franklin County settlements.

An early German visitor was so taken by his trip to the area that he returned to Germany and convinced many German immigrants to settle there, making Washington the largest German community west of Pennsylvania. Franz Schwarzer arrived in Washington in 1865. By 1869 he had started a zither factory, soon turning out International Award winning instruments. By the 1920s, when the Washington factory closed, over 11,000 zithers had been made.

The history of Washington, Missouri, of the German immigrants who settled the region, and of Franz Schwarzer, is a fascinating look at the era of westward expansion, at a new American experience for a group of people, and at one of those people who adapted old-world music, musical instruments, and craftsmanship into a business that lasted over 85 years.



Home of world famous zither maker Franz Schwarzer. Washington, Missouri

Photo courtesy of the Washington Historical Society © 2001

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## Valuation

With 11,000+ zithers made, there are quite a few Schwarzer zithers tucked away in attics and closets around the world, and some occasionally show up at auction and music dealer websites. I found one 1890 Franz Schwarzer zither, with case, and the dealer was asking \$300 for it. The case was missing all the bottom padding and zither-shaped framework, and the back had a huge blemish. The finish was rubbed off one area showing the wood beneath. At least two of the ivory feet were replaced with pieces nearly twice as large as the remaining original. Prices for other Schwarzer zithers I found ran from \$50 to well over \$1000. The higher valued ones often have very intricate carving and inlay work.

Valuation is difficult since prices vary so much. However, this is an unusual model in that it is long and narrow. It has string lengths that are approximately two inches longer than standard concert zithers. It uses the longer “harp-zither” strings.

I feel that this instrument, when restored, can be worth at least \$500, perhaps more to a collector. It is not one of the earliest of Schwarzer zithers. The serial number, 9447, shows that this zither was made in 1907.

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## Day 1: Assessment



On the first day I always do a thorough assessment of the instrument. This beautiful zither had some problems, but not enough to require taking it apart. This zither did show a lot of wear from playing. It appears to have been played often. As often with zithers of this age, all the metal parts were corroded. The steel tuning pins were rusty, and the tuning gears and cover were discolored. The fingerboard was very dirty and dry. A few cracks had opened through the first several frets in the area played the most. One of the spiked Bakelite feet was missing and a large wooden foot was glued in. The glue did not hold well, so it came out with a light pull.

The tailpiece appeared to have been bumped at one time and a crack ran a few inches from the end. Glue joints around all but one corner were in good shape.

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## Day 2: String and Hardware Removal 1



On the second day, I began removing the strings and the tuning gears. I started by removing the five strings from the fingerboard, and then removed the gears. I noticed the first guide pin had pulled over and was very loose. I would fix that later when I worked on the fingerboard.

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## Day 3: String and Hardware Removal 2



This day I finished removing the strings. Where the tuning gears and gear plate screwed down, several of the small laminated pieces between the gear knobs had come loose. I've seen this to be a very common occurrence. Several zithers I've restored have had the same problem.

Another loose item was the top bridge. The old hide glue had failed and it popped loose after the strings were removed. Unlike permanent glues, like yellow wood glues or all-purpose white glues, hide glue is reversible. Moisture causes hide glue to get tacky again. Sometimes annual climate changes, seasons of dampness and dryness, can make hide glue loosen enough for instrument pieces to fail. The gear area and the bridge (bottom photos), as well as one corner of the body, are the result of decades of climate changes.

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## Day 4: Cleaning Hardware



On Day 4, I spent several hours removing the rust and corrosion from the 32 tuning pins. To clean them, I use a rotary carving tool with a one inch wire brush.

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## Day 5: Cleaning Surfaces and Fixing Tailpiece



This day I cleaned all the surfaces with a rag, using lukewarm water and a mild dish soap.

Once I had all the surfaces clean, I applied glue to the tailpiece crack and clamped it closed.



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## Day 6: Fixing Failed Glue Joint & Prep for New Foot



Early on this day I injected glue into the top corner of the zither at the one place the glue had failed. I used a strong bar clamp to force it shut.

Later in the day, after the glue was set enough to remove the clamp, I used a drill to clean out the built up glue that was plugging the foot hole where the wooden replacement foot had been.

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## Day 7: Fingerboard Repairs



Fingerboard cracks are caused by wood shrinkage over the years. Wood expands and contracts with temperature and climate changes. Sometimes the cracks expand to a point that a complete removal of the fingerboard would be necessary to fix it. Fortunately, that was not the case here.

I used a special ebony filler to fill in the cracks. After it dried, I used very fine steel wool to smooth out the surface.

During this time I also fixed the loose guide pin. I removed it, filled the hole with epoxy, and pushed the pin back in at the right angle.

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## Day 8: Repair Gear Area



On this day I glued the loose tuning gear lamination pieces.

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## Day 9: Cleaning off Built-up Residues



Even though I cleaned all the surfaces earlier, there were still areas with built-up residue. The top had a few areas with “lumps” in it that my cleaning with a sponge couldn’t remove. The sides and back seemed to have paint lumps, which made me think there had been earlier paint touch-ups done, perhaps when the wooden foot was glued in.

While cleaning the top surface earlier, I noticed many areas had nicks. The pattern of nicks showed up where most of the playing was done. They were probably made from finger picks that zither players use to pluck the strings. The top wood is a thin rosewood veneer over spruce. (This is the same wood as the back.) Gouges and nicks in the rosewood can’t be sanded down, because the spruce underneath would be exposed. Instead, I used touch-up stains to match the top’s color.

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## Day 10: Preparing to Carve New Foot



I have a few spare parts for zither repairs and restorations, but no Bakelite feet. As I've done before, I drill a plug from a tagua nut. Tagua is a seed from the ivory palm that grows in Central and South America, especially in Panama and Ecuador. It is an ivory substitute and looks very similar to the ivory-colored Bakelite feet.

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## Day 10 (Continued): Some Case Repair



Later that same day, I took a look at the case and noticed some of the brass corners were coming off. I reset them with new brass brads. Also, one of the front latches was gone, so I made up a new one so the case could shut properly.

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## Days 11 to 14: Repainting the Back and Sides



The next several days were spent applying a new painted finish on the back and sides.

To protect the top, I put painter's tape around the edges so no paint could get brushed or dripped on it.

During this time we were having damp weather, so the two coats of paint on each surface took extra time to dry.

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## Day 15: Carving New Foot



This day I carved the replacement foot out of the tagua nut plug I made the previous week. I hand carved it using a rotary carving tool.

Once carved, I cut threads on the base so the new foot could screw in like the originals.

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## Day 16: Ebonizing Fingerboard



With the fingerboard clean, and the ebony filler in the crack dry and sanded, I re-ebonized the fingerboard with a black water-based stain.

Again, I put painter's tape around the area so no stain could get on the top.

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## Days 17 to 20: Top Refinishing & Touchup



As I mentioned before, the top has quite a few tiny gouges where fingerpicks nicked the thin top veneer. Because sanding would expose the spruce under the veneer, I opted to touch up all the nicks with a touch-up pen of the same color as the top.

The tuning pin block surface was worn and the finish was very dull. I wiped a special gel stain to make the surface as nice as the rest of the top.

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## Day 21: Cleaning and Polishing Tuning Gears and Gear Plate



The tuning gears and the German silver gear plate were very corroded. I first cleaned the gears with a rotary wire brush to get all the built-up grime and corrosion off. I also checked to make sure the gears on the device worked properly. I've had a few restorations where some gear teeth were broken and had to be replaced. These gears were fine.

I then cleaned and polished the gear plate using a special metal polish.

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## Day 22: Install New Foot and Polish Back



To install the new foot, I first had to rethread the hole so the foot could screw in properly. I also had to do a little more work on the new foot's thread to make it fit. I'm pleased with the results.

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## Day 23: Polishing the Top & Applying Swelling Liquid



Before reinstalling the hardware, I gave the top a good polishing.

All the holes where the tuning pins screw in are a tiny bit oversized. This occurs when tuning pins are removed.

There is a liquid available that swells the wood. It is commonly used by furniture restorers to expand chair rung ends to fit into chairs tighter. The liquid also works well when I fill each tuning pin hole with it. After 24 hours, the liquid is fully soaked into the surrounding wood, and the tuning pins will fit tightly again.

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## Day 24: Installing Tuning Gears

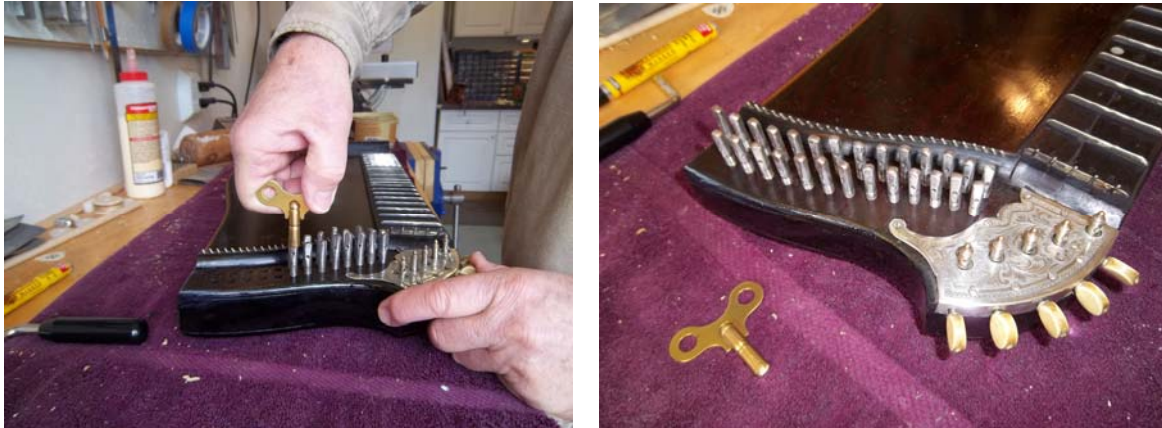


It's now time to install the hardware. I started by reinstalling the tuning gears.

I realized when I began that all the small screws that held it in place were still corroded. I rubbed each screw against a fine grit sandpaper until it shined.

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## Day 25: Installing Tuning Pins

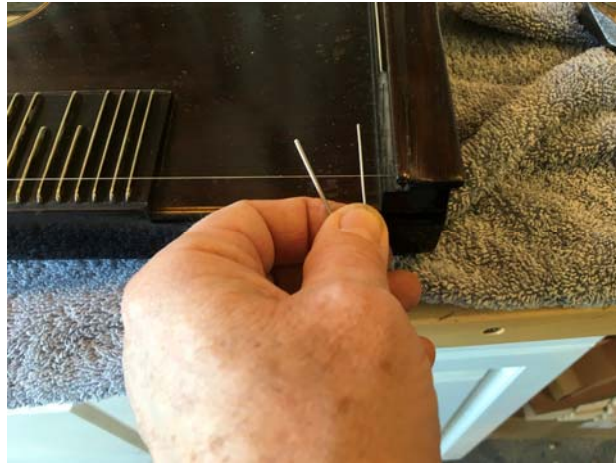


The 32 tuning pins took half a day to insert and screw in. I had to adapt two tuning keys to be able to get all the rectangular-head pins turned and set at the same level. Unfortunately, there was no original tuning key in the zither's case.

Original tuning keys often get lost, because they get left out for tuning and not put back in the case when done. Out of all the antique zithers I've restored, only a few had the original tuning keys.

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## Day 26: Begin Stringing & Make New Fingerboard Bridge



I started to string up the fingerboard, but after putting on one string I needed to insert the short lower wire bridge. It didn't work! The bridge I removed turned out to be a replacement that someone, many, many years ago put in. I remembered that when I removed it, it was jammed up under the tailpiece, which was probably why the tailpiece was cracked at that location.

When I reinserted the same thin wire where it was supposed to sit, the string didn't touch it and the wire slipped out.

I have some spare pieces from a completely broken zither I purchased for parts several years ago. I was able to use the larger wire bridge from that one. It was a perfect fit.

At this point I couldn't continue stringing, because the sets of strings I have in stock were for standard concert zithers. This zither has the longer string length of a harp zither. Standard strings are too short, so I had to order harp zither strings from my source in Germany. It usually takes 3 to 4 weeks to get the strings from Europe.

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## Days 27 & 28: Stringing



It was Thanksgiving week, and the strings I ordered finally arrived. The day after Thanksgiving I started stringing.

This process often takes me two days because of the time taken to get each string set. Also, my wrists tend to get very tired, and I need to take a break once in a while.

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## Day 29: Completion



On the last day, I completed the stringing with the bass and contra bass strings.

It took a few hours to tune it up, but by the end of the day, this lovely Franz Schwarzer zither was fully restored and playable.

When I return and ship these instruments, I always have to loosen the strings a little to prevent them from breaking and possibly damaging the surface during shipping, especially across the country or into Canada. The elevation and temperature/climate changes expand and contract strings. If fully tightened, string breakage may occur. Shipping agencies, such as FedEx and UPS often ask me if the strings have been loosened for shipping. The strings should be retuned using the key and tuning chart below before playing. The strings should also be loosened a little if there will be prolonged storage of the instrument.

It was a pleasure restoring this unique Franz Schwarzer concert zither. It should easily last and make music for another 100+ years.

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## Concert Zither String Diagram Munich Tuning

There are two zither stringing formats in use today: Munich and Vienna. Munich is the most commonly used because it incorporates every note in the chromatic scale encompassed by the scope of the instrument. The stringing pattern on the fretboard is like the violin family, a fifth apart. The open strings are in the circle of fifths, broken between Eb and Ab and laid flat on the zither, similar to an accordion layout.

**Fretboard**  
**Munich Tuning**

a-440 - tuning fork or digital tuner

**Accompaniment Strings 1-12**

13 14 15 16 17 18 19 20 21 22 23 24

**Bass Strings 13-24**

25 26 27 28 29 30 31 32 33 34 35 36 37

**Contra Bass Strings 25-37**

In addition to the basic 29 fretboard, accompaniment and bass strings, zithers may have 2, 3, 5, 7, 9 or 13 contra bass strings - the full harp zither has 42 strings (5 fretboard and 37 open strings). In some early versions, and on perfecta zithers, the contra basses were arranged in the same circle of fifths as the accompaniment and bass strings. Munich tuning was often expressed in treble clef (violin key, or similar to guitar clef) but today is mostly written in bass clef.