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# Restoration of 1889 Franz Schwarzer Concert Zither



**Completed by Ron Cook**

**July 2013**

**For Terry Arthurs**

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## 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. Schwarzer zithers were manufactured until 1952.

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.

This zither has a serial number, 3037, stamped on the first fret of the fingerboard. From a serial number list given to me by the curator of the Washington Historical Society museum, this dates the zither from 1889. A penciled-in date above the label, probably by the first owner, is 1890. Perhaps this is the date this zither was purchased.



Franz Schwarzer Zither Factory c. 1900

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## Valuation

There are quite a few Schwarzer zithers tucked away in attics and closets around the world (there were over 11,000 Schwarzer instruments made), and some occasionally show up at auction and music dealer websites. Prices run from very cheap, under \$50 for those in poor condition, to over \$1000 for ornately decorated instruments in excellent condition.

Valuation is difficult since prices vary so much. This instrument made like a harp zither but smaller like a standard concert zither, has several more strings than a concert zither. A regular concert zither has 32 strings that include 3 contrabass. This one has 38 strings and has 9 contrabass. This is one of the fancier, more beautiful, and more expensive of the early Schwarzer zithers, and, as such, may be one of the more valuable.





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## Day 1: Assessment



On the first day, I always look over an instrument to see how much work is needed to repair or restore it. When I first unpacked this zither, it looked to be in good condition. The fingerboard, of ebonized maple, showed wear from being played a lot. Some of the frets were “scalped”, where finger pressure on the strings wore indentations into the hard wood. The ebony stain was worn in those places showing the lighter maple. This isn't a problem at all, so I didn't have to do much work on the fingerboard at all. The main concerns were the broken pin bridge under the contrabass strings, shrinkage cracks, and a missing piece of mother of pearl on the scroll.

The strings were brittle and corroded, as were all the tuning pins, the tuning gears and cover, and the metal bridge inserts. The strings needed replacing and all hardware cleaned.

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## Day 2: Unstringing and Further Assessment



On Day 2 I took the strings off and explored the zither inside and out for any additional problems that might show themselves. Fortunately, the glue joints looked solid, and all the bracing looked intact. I used an inspection scope to look around inside and could see so additional problems.

All but one of the top cracks were in the veneer only. They didn't go all the way through the spruce top. One, between the large sound hole and the bridge, did go through. This would take a little more work to stabilize. The back had one long shrinkage crack, and would also need to be stabilized.

When I first saw the photos that were sent to me by Mr. Arthurs, the serial number looked like it was stamped 8037, which would date this instrument from 1901. That didn't fit with the penciled in date just above the label: 1890. Turns out, on close inspection, the serial number is 3037. The first 3 had a little chip out of it that made it look like an 8. This dates this zither from 1889.

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## Day 3: Removing Tuning Gears and Pins



On Day 3 I began removing all the hardware.

The tuning gears and cover came off easily. However, one piece of the frame cut out for the gears had broken off. It was an easy fix to glue it back in place.

The tuning pins were a different issue. Several were loose and “wobbled” in their holes. Several of the holes were worn and some of the pins had been pulled forward by string tension over the years. Other pins were in so tightly, it took a little effort to remove them.

Another thing I noted was that there were two sizes of tuning pins, and they seemed randomly placed. At least a half dozen were a few millimeters shorter than the others. My thought is that when this instrument was built, they must have run out of stock for one set of pins and pulled stock from another set to complete it.

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## Day 4: Repairing Broken Pin Bridge



Before I started on any cleaning and crack repairs, I wanted to fix the broken pin bridge. When I took the strings off, a piece of the bridge fell away and several of the pin guides came out (as you can see in the right photo).

Pin bridges always seem to be a problem on many types of the older concert and chord zithers. As wood shrinks and expands, due to dry to humid environments or improper storage, it cracks. The string tension across the pin guides pulls against them, and if cracks develop, the strings straighten and the bridge comes apart.

To start fixing the pin bridge, I first had to clean out the area. Decades of dust had built up as well as wood fibers that needed removing so I could get a good glue joint. Once cleaned, it went into place nicely.

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## Day 5: More Work on Pin Bridge & Cleaning



On Day 5 I reinserted the loose pins on the pin bridge and wicked some CA wood glue into the holes. This helped to set the loose pins.

Later that day, I started cleaning the body. I use a mild liquid dish soap diluted in water.



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## Day 6: Wood Epoxy



There were still a few chips and a small crack running through the middle of the line of contrabass pins on the pin bridge. To fix this, I tried something new.

I found at my local hardware store a two-part epoxy putty especially formulated for wood. This is usually used by carpenters repairing small sections of dry rot in window or door frames. I decided to try it on the pin bridge.

I cut off a small amount, kneaded it until it was ready, and pushed the clay-like putty it into the crack and chips. It worked great!

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## Day 7: Touching Up Epoxy Wood Putty



After letting the epoxy putty cure overnight, I sanded it a then took a black paint pen to touch up the pin bridge.

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## Days 8-10: Stabilizing Back Crack, Touch Up Back



On Day 8 I worked on the back crack. To stabilize it, I wicked thin CA wood glue into it and clamped it from side to side. The clamping didn't really do much, since most of the crack was only in the veneer and not all the way through the softer wood underneath.

I used a few different types of thinned filler and stain on the crack, let it dry a few hours then repeated the process.

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## Day 11: Polishing Back



After letting the finish I applied to the back cure for a few days, I started polishing.

This is a three-step process. I first sprinkle finely ground pumice and rub it in circular motions with a rag soaked in mineral oil, then back and forth along the grain. I then do the same with rottenstone. After cleaning the residue off, I apply paste wax for the final polishing.

Pumice is a fine abrasive and will remove any dust or brush streaks. Rottenstone is an extra fine abrasive and leaves the surface smooth and nearly polished. The paste wax is not abrasive. It shines and protects the surface.

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## Day 12: Mother of Pearl Inlay



To replace the missing mother of pearl inlay, I first traced the pattern on a piece of paper, transferred it to a small piece of abalone shell, and used my rotary carving tool to carve the shape.

Once glued in I used some ebony paste to fill voids around the replaced mother of pearl inlay.

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## Day 13: Re-ebonizing the Fingerboard



On Day 13 I re-ebonized the fingerboard with a water-based ebony stain. I applied two coats.

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## Day 14: Oiling & Polishing Fingerboard, Cleaning & Polishing Shell



Once the ebony stain cured, I finished work on the fingerboard by applying fretboard oil, then, when that was dry, applied some paste wax to polish it up.

Fretboard oil is a special formula that brings life back into dry fingerboard woods and keeps them from drying up again. It's a good practice, especially if the instrument is out on display or even stored away for long periods, to reapply fingerboard oil every year. Small bottles of oil or spray bottles are available from most music stores.

Also on Day 14 I cleaned and polished the carved decorative "shell".

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## Day 15: Cleaning Hardware, Top Crack Repair



On Day 15, I cleaned all the hardware. I cleaned the tuning pins with a small fine wire wheel attached to my rotary carving tool. Cleaning 34 tuning pins took several hours.

I cleaned the metal wire bridge inserts with 0000 (very fine) steel wool. Once these and the pins were cleaned, they shined like new.

By now I had stabilized all the top cracks. The one deep crack, just below the large soundhole, took a little more work. Because these are shrinkage cracks, they couldn't be completely closed. I first melted in a little bit of rosewood-colored laquer stick to fill a tiny void, then to keep the crack from widening again, I glued a couple of wood cleats across the crack on the underside of the top.

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## Day 16: Polishing Hardware and the Top



Day 16 started with polishing the tuning gears and the cover. With nearly 125 years of use, the gears and cover were dirty and a little corroded inside. I use an imported polish that is very good for many metals.

Also on this day I polished the top, using my pumice, rottenstone, and paste wax process.

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## Day 17: Swelling Liquid



I'd mentioned before when I was removing the tuning pins that some of them were very loose. To "shrink" the holes a little, I use a special liquid called Chair-loc. It is most often used on loose chair rungs. It swells the wood so joints fit more tightly. I pour it in the tuning pin holes and let it set for a day.

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## Days 18 & 19: Re-installing Hardware



For the next two days I reinstalled the tuning gears and tuning pins. Because reinstalling the tuning pins has to be done manually, I could only do half of them a day. My wrist got pretty sore from all the turning.

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## Days 20 & 21: Stringing Up



With 39 strings, it took two full days to string this zither. After I strung the first 32 strings, I realized I didn't have enough contrabass strings to finish it. This zither is unusual in that it has 10 contrabass strings. Full sized harp zithers can have 12 contrabass strings, but this zither is much smaller, more like a standard concert zither.

Actually, after installing the first 32 strings, it was the beginning of July and my wife and I went on vacation. Before I left, I ordered seven single contrabass strings from my supplier in Germany. They arrived the day I returned, and I installed them the following day.

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## Day 22: Tuning and Completion



Finally, on Day 22 I tuned the zither nearly to pitch. These are new strings and they will stretch for a little while. They will have to be tuned two or three more times before they settle in. This completed the restoration.

I always enjoy the challenge of restoring or repairing zithers. Every instrument is different and it requires quite a bit of thought and research to complete the task. This Schwartzer zither is very special because of its style and decorative features.

I find it very satisfying to be able to keep antique and family heirloom musical instruments in working order for future generations to enjoy.

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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 a accordion layout.

**Fretboard**  
**Munich Tuning**

a-440 - tuning fork or digital tuner

**Accompaniment Strings 1-12**

1 2 3 4 5 6 7 8 9 10 11 12

**Bass Strings 13-24**

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

**Contra Bass Strings 25-37**

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