
Ron Cook Studios

147 Sacramento Avenue - Santa Cruz, CA - 95060 - (831) 425-4933 - www.roncookstudios.com - ron@roncookstudios.com



Restoration of 1897-1904 Menzenhauer Guitar Zither Model 2 ½



Completed by Ron Cook

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For Klint McKay

Background

Chord zithers, often called Guitar Zithers, were very popular from the late 1800s to the mid-1900s, and hundreds of thousands were made by several companies. Friederich Menzenhauer and Oscar Schmidt were major manufacturers from 1897 to 1900 and called their company the U.S. Guitar-Zither Co. In 1900, Menzenhauer sold his share to Oscar Schmidt, who continued making chord zithers, but his name later became synonymous with autoharps, which are still being made by the Oscar Schmidt Company today.

Chord zithers of various types were already being made in Europe when Friederich Menzenhauer was granted his first guitar zither patent on May 29, 1894. (See below.) Menzenhauer has been called the “father” of the guitar zither in the U.S. and produced, first on his own and then with Oscar Schmidt, thousands of instruments, some using his own label and many others for private labels like Sears and Montgomery Wards.

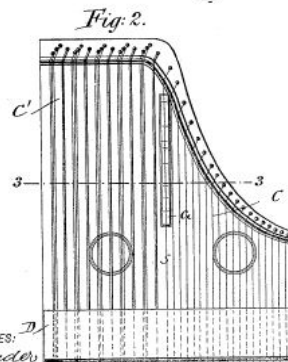
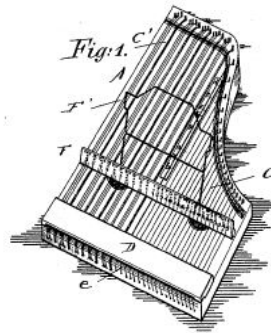
(No Model.)

2 Sheets—Sheet 1.

F. MENZENHAUER.
GUITAR ZITHER.

No. 520,651.

Patented May 29, 1894.



WITNESSES:
Charles Schroeder
Joseph Schaefer

INVENTOR
F. Menzenhauer
BY Joseph W. Ruggen
ATTORNEYS.

THE NATIONAL AUTOMATIC COPIER, WASHINGTON, D. C.

Even though Oscar Schmidt bought out Menzenhauer in 1900, both names still appeared on the instrument labels through 1904.



The instrument I restored is called the Model 2 ½. It was a very popular model from around 1887 through the early 1900s. It has five chords, C, G, F, D, and A, and 21 melody strings.

Valuation

Chord zithers from several U.S. companies were made in the hundreds of thousands and were sold door-to-door through the depression years and by Sears Roebuck and Montgomery Ward catalogs from the late 1800's up to the 1950s. Because so many have survived, prices are relatively low compared to other stringed instruments. Occasionally, very well made and ornately decorated zithers from Germany, Austria, and other Eastern European countries come up for sale and fetch slightly higher prices. It's the more recent popularity of online auctions that has kept prices low for most of these instruments. I've seen prices range from as low as \$10 to over \$300, depending on condition and rarity of a particular model.

But, for many people, the value of an instrument is not monetary, but sentimental. To be able to have a restored piece of family history on display, to know its use, its background, and who played it, and to be able to pass it down to future generations, is priceless.

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. The biggest problem with this zither was the failed glue joint at the tail block. The entire block had come loose, due to the zither being stored with the strings tight. This caused the top to warp and crack. (Top left photo.) The tail pin cover (top right photo) had been nearly broken through, lengthwise, and had been haphazardly glued many years ago. It was very loose because the screws holding it in place couldn't hold well due to stripped screw holes.

The back had a crack along one edge, also caused by the failed tail block glue joint. (Bottom left photo.) The back was also covered with scratches and small gouges. The top showed much wear from years of playing, probably from finger picks. The note decal (bottom right photo) was chipped and unreadable. The top also had several cracks running lengthwise on both sides of the sound hole.

Because old zithers were made with hide glue, joint failures are usually caused by dampness, which makes the hide glue become viscous again. With the strings still tight, the tension pulls parts of the top and frame right out of the softened glue, and when it dries again, there's no connection.

Day 2: Remove Strings and Hardware



On the second day, I removed the strings, tuning pins, and bridge wires. The bridges have several small steel rods that sit in little grooves that the strings go over. Without these rods, the strings would cut through the wood bridges. (This is often the case on cheaper “children’s” zithers.) The rods, like the tuning pins, were very corroded and needed cleaning.

Day 3: Cleaning



Now that all the hardware was off, I was able to clean all the years of dust and grime off of the instrument. I use tepid water mixed with a little liquid dish soap. It took a few passes to get all the grime off.

The white strip on the top is the C-string fret marker. This only appeared on a couple of Menzenhauer/Schmidt four and five chord zither models. Pressing down on the first melody C string at the fret markers allows you to play different notes on the one string. I have never heard of anyone using this and have never found directions on using it.

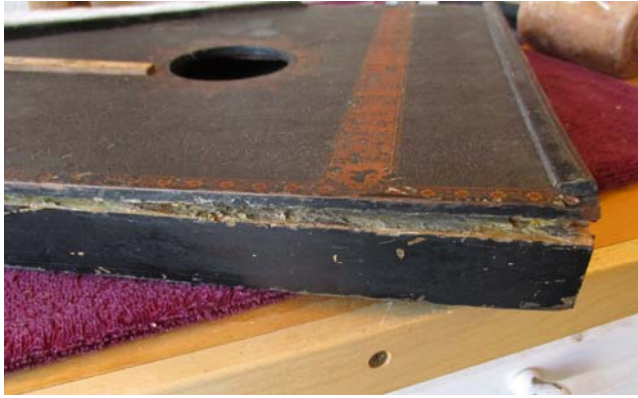
Day 4: Beginning to Remove Top



Removing the top was going to be a long delicate process. I first had to remove all the metal string guides, because they went through the top and into the pin block. The top couldn't come off with those in place.

I have a special hot iron, similar to a soldering pen, with a fine knife blade. I started at the bottom side, next to the tail pin block, and spritzed a little water before inserting the warm knife. Little by little, the hide glue softened, and the top slowly began to pull away from the frame.

Day 5: Top Removal



It took two days to remove the top. On this day, after several more hours, the top finally popped off.

Notice in the right photo the brace that had come loose. This was where the top had warped and pulled it loose as well as the pin block.

Day 6: Removing Old Hide Glue



In a couple of interior areas, you could see evidence of all the hide glue squeezed out during manufacturing back in the late 1800s. When this zither was assembled in the factory, a worker brushed on the glue quite thickly. Some glue was nearly 1/8" thick. I need to remove it and clean the areas for when I reassembled the pieces.

Notice the red label beneath the regular Menzenhauer-Schmidt label. This isn't definite, but this zither might have originally intended to be sold by one of the catalog companies (Sears, Wards) with their label, but got switched to be a Menzenhauer-Schmidt instrument. Menzenhauer-Schmidt made quite a few zithers for the catalog companies who used their own labeling.

Day 7: Regluing Brace



After cleaning off all the glue, I was able to set and reglue the loose brace. To keep with tradition, I also used hide glue, but not as thickly applied as the original maker.

Day 8: Closing Back Crack & Patching



The one back crack was relatively simple to repair. For crack repairs, I use regular white or yellow wood glues. Hide glue is for the body of the instrument. Cracks need a permanent, non-reversible glue.

On this day, I also patched up the deep scratches and gouges in the back. I used an ebony-colored filler that fills well, doesn't shrink, and is hidden when painted over.

Day 9: Closing Top Cracks



Today it was time to work on the top cracks. Where the cracks occurred, the surface was uneven. I forced white glue into the cracks and clamped them with mini clamps to even out the surface and close the cracks.

Day 10: Soundhole Brace & Cleats



On the underside of the top, I always add cleats to stabilize cracks. I also added a longer thin brace on the underside of the soundhole to protect the area from ever cracking again. The top and bottom of soundholes are weak areas on old zithers.

Day 11: Strengthen Frame



When I have a zither apart, I like to add small tapered blocks to help strengthen weak areas. I glued two blocks on the inside of the tail block. (Under the clamps.)

I've learned over the years that many zither frames have weak areas. With up to 40 tight strings pulling across the soundboard, there is a lot of tension. One small glue failure, often from not enough glue being used during manufacture, will cause problems several years down the line.

Day 12: Pulling In the Sides and Glue Pin Cover Crack



Before gluing the top on, I needed to make sure the frame was ready for it. The frame was slightly wider than the top. I noticed the lower brace I glued back in still had a small problem. Glue was too thick on each end of the brace. I didn't scrape the extra glue off the frame, so when I glued the brace back in, that extra hardened glue kept the frame from fitting properly.

I used a thin saw blade to saw through the glue at each end of the brace, then forced glue in and reclamp it closed. The top was now the correct width.

Later, I cleaned out the crack on the tail pin cover, applied glue, and clamped it closed.

Day 13: Gluing Top



Today it was time to glue the top back on. I spread a thick layer of Titebond Hide Glue over the frame and braces, then set the top on and clamped it all around the perimeter.

Hide glue has a long working time. It won't set up fully for 24 hours. This gives me plenty of time to set the top and clamp it down.

Day 14: Scraping Glue Off & Patching Pin Guard



The next day I removed all the clamps. Some of the hide glue squeezed out during clamping, so I used a card scraper to clean off the sides and prepare them for painting. This is normal.

The wooden pin guard was now glued together well, but it still had a couple of gouges. I rubbed some of my special ebony filler into the voids, let it dry, then added a little more to even out the surface.

Day 15: Preparing to Paint



Before painting the sides and back, I needed to protect the decorative decals that went around the zither's perimeter. I used painter's tape for this process.

Days 16 to 20: Painting



For the next several days, I applied several coats of black enamel paint to duplicate the zither's original finish.

It took two days for two coats on the back, and three days for the sides. During this time I hung the tail pin guard and painted it with three coats of black enamel.

Day 21: Cleaning Hardware



I spent most of this day cleaning all the hardware. The wire bridges were very corroded, but I was able to clean them with 320 grit wet/dry sandpaper and 0000 steel wool.

For the tuning pins, I used my rotary carving tool with a wire brush attachment and got all the corrosion off them. These are “blued” tuning pins, so they don’t shine like electroplated stainless-steel pins. Blued pins are basically uncoated. The blue color is from the forging process.

Note: electroplating has been around since the early 1800s.

Day 22: Gluing Pin Bridge



This day it was time to glue the tuning pin bridge back in place. Because there are 41 guide pin holes, I had to make sure all the holes in the bridge lined up with the holes in the pin block.

Days 23 & 24: Top Painting



Over these two days, I did some touch up to the top. This was a delicate procedure because of all the decals. I had to use a fine-point artist brush to get around the intricate decals. Even with applying two coats, the “crackled” surface still showed through. Also because of the decals, I couldn’t sand the top to completely smooth the surface.

The top surface had what is known as alligatoring. This has the appearance of alligator skin. This is caused by age and weather conditions. The original varnish crackled from heat, cold, and/or moisture (humidity). This is a common condition for certain types of varnishes. Even popular guitars from the 1950s and 1960s, such as Gibson and Guild, had the same problem where even small variations in environmental conditions caused the surface to crackle. (Leaving in a sunny place by a window or leaving by a heater will cause surface problems on any varnished instrument, even piano cases.)

Day 25: Reinstalling Guide Pins & Fret Marker



Now that all the painted surfaces had dried, I reinstalled the 41 small guide pins in the tuning pin bridge. Later, I dabbed a little hide glue on the back of the C-string fret marker, and reinstalled it on the soundboard (right photo). This also had two flat-head brads holding it in place.

Day 26: Creating New Note “Decal”



The original note decal was heavily damaged, obviously from years of playing this instrument with a pick or fingerpicks.

I took photos of the decal and uploaded it to my computer. I used Photoshop to copy, size, and move undamaged note letters and numbers to fill in the damaged ones. This took nearly four hours.

Once done, I printed first a paper copy to test the size and spacing on the zither. After a little more tweaking and testing, I printed a high-resolution copy on photo paper, trimmed it, then glued it on the zither with a thin coat of hide glue.

Day 27: Swelling the Wood



When I removed the tuning pins at the beginning of this restoration process, I noticed several of the tuning pins were very loose in the holes. More became loose when I removed them, because the threads in the pin holes were stripped.

Before reinstalling the tuning pins, I filled each of the 41 pin holes with a special swelling liquid. As it soaks in, it actually swells the wood so the tuning pins will fit much tighter in the holes.

This swelling liquid is commonly used for furniture repairs. It is often dripped into chair rung mortises to tighten loose chair joints.

Days 28 & 29: Top Varnish



To protect the existing decals, and the new note card, I coated the surface with a new clear varnish.

My choice of varnish is tung oil. It is natural tung oil with an alcohol drying agent. I applied two coats, allowing 24 hours between coats.

Day 30: Pumice & Rottenstone



On this day I began the rub out and polishing process. For back and sides I applied first, pumice, rubbing it with a mineral-oil soaked pad, then rottenstone, doing the same. This process smooths out paint streaks, dust spots, and light scratches.

Pumice is a very fine abrasive, and rottenstone is an even finer abrasive. After rottenstone, the surface is almost polished.

Day 31: Polishing



After cleaning all the abrasives and mineral oil off the surfaces, I polished the entire zither with a clear past wax.

Day 32: Reinstalling Tuning Pins



Now begins the laborious process of reinstalling the tuning pins and then stringing the zither. This is one of those jobs where repetition can wear out my wrist quickly. I had to take breaks after installing each half-dozen pins. It took around six hours just to reinstall all the tuning pins.

Days 33 & 34: Stringing



The next two days were for stringing. After installing most of the strings, I found out that I was short four of the chord string sets. I had to contact my supplier in Germany to have the rest of the strings shipped. Fortunately, they came within the next week, and I was able to complete stringing the zither.

Day 35: Screw Problem



I got ready to reinstall the tail pin guard and found a broken screw in one of the holes. It was broken inside the hole, so I wasn't able to remove it. I ended up redrilling new pilot holes for the screws directly above the broken one. I put on the tail pin cover and it worked fine. I took the cover back off while I tuned up the zither.

Day 36: Tuning & Completion



The last day was time to tune up the zither. I have a digital tuner that attaches to a part of the instrument with a clip, usually clipped to one of the tuning pins. When a string is plucked, the vibration is picked up through the clip, which has a contact microphone on it, and displays on the tuner's screen. With 41 strings, this took a little time.

Like many zithers from this era, the tone is unique and very beautiful. I'm happy I was able to restore an instrument that is over 100 years old to be playable again. I'm sure that with continuous playing and good care, this Menzenhauer/Oscar Schmidt Guitar Zither should last another 100 years.