

# **12/11 Solid Top Hammered Dulcimer Kit**



**Musicmaker's Kits Inc.**

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## 12/11 HAMMERED DULCIMER KIT

### Parts List:

1 Soundboard (1/4" solid wood)  
1 Back (1/4" plywood)  
1 Front rail (longest)  
1 Rear rail (shortest)  
4 Inner braces  
2 Pinblocks (right & left)  
2 Wood dowels (1/4" dia, 12" long)  
2 Wood dowels (1/4" dia, 14" long)  
2 Bridges (maple)

### Hardware:

46 tuning pins  
23 RH screws 1" X #8 (hitch pins)  
1 Drill bit (3/16")  
Music wire  
    50 ft of .018" (#7 gauge)  
    50 ft of .020" (#8 gauge)  
    50 ft of .022" (#9 gauge)  
Black delrin rod (30")  
Tuning wrench  
2 Brass tubes (3/8" dia, 15" & 16")  
Double sided playing hammers  
Assembly instructions & tuning chart on transparency

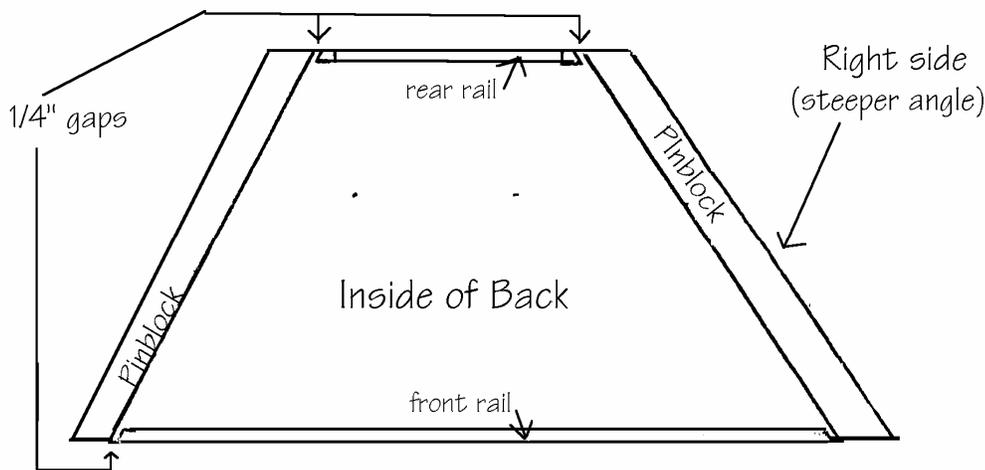
### INSTRUCTIONS:

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\_\_\_1. Check over your kit to identify all the parts. If you have ordered our Partially Assembled kit, the first seven of these parts have already been assembled. You should check the remaining parts in your kit, and then skip to step #13 and begin there. If anything is missing or unsatisfactory, let us know right away so we can supply replacements without causing you too much delay in the project.

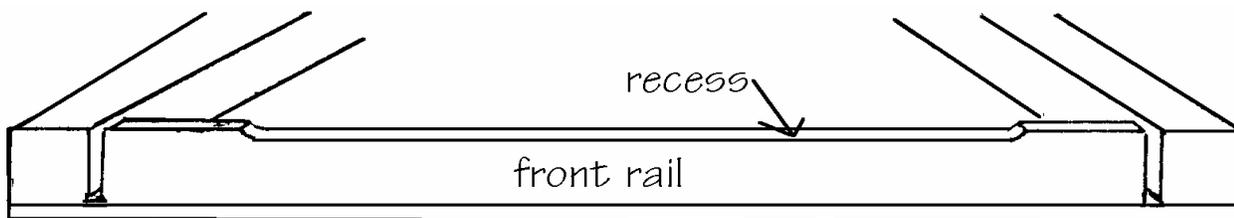
\_\_\_2. Begin by placing the plywood **BACK** on your work table so that the **PUNCH MARKS FACE UP**. This is important because this hammered dulcimer is not symmetrical: **THERE IS A RIGHT AND A LEFT TO THIS BOX!** The right side is cut at a steeper angle than the left, to allow the bridges to be about parallel to each other when you string it up. (The punch marks have no other significance other than to show you which side faces up.)

**NOTE:** This instrument will have 46 wire strings stretched across the top, all trying to break the glue joints and destroy your handiwork, so take care to assemble the box securely. When gluing parts together, you should wipe off any dust that is on the surfaces to be joined, use enough woodworking glue to allow some to squeeze out between the parts when clamped, and use enough clamps to draw the wood surfaces together without any cracks showing. If you are short on clamps, circle the neighborhood and borrow some more! Do not attempt to assemble this box without woodworking clamps.



\_\_\_ **3.** Place the two laminated maple **PINBLOCKS** on the **BACK**, so that they line up with the edges of the plywood. Note that the right-hand pinblock is longer than the left. When satisfied with the fit, glue the **PINBLOCKS** to the **BACK**, using clamps to hold the parts together firmly until dry.

\_\_\_ **4.** Place the **FRONT RAIL** and the **REAR RAIL** in position between the pinblocks. We **KNOW**, **THEY DO NOT REACH THE PINBLOCKS!** That is intentional. There should be about a 1/4" gap at each end of the rails when you line them up along the edges of the back. This interesting engineering feature allows for better vibration of the top and back, without sacrificing stability.

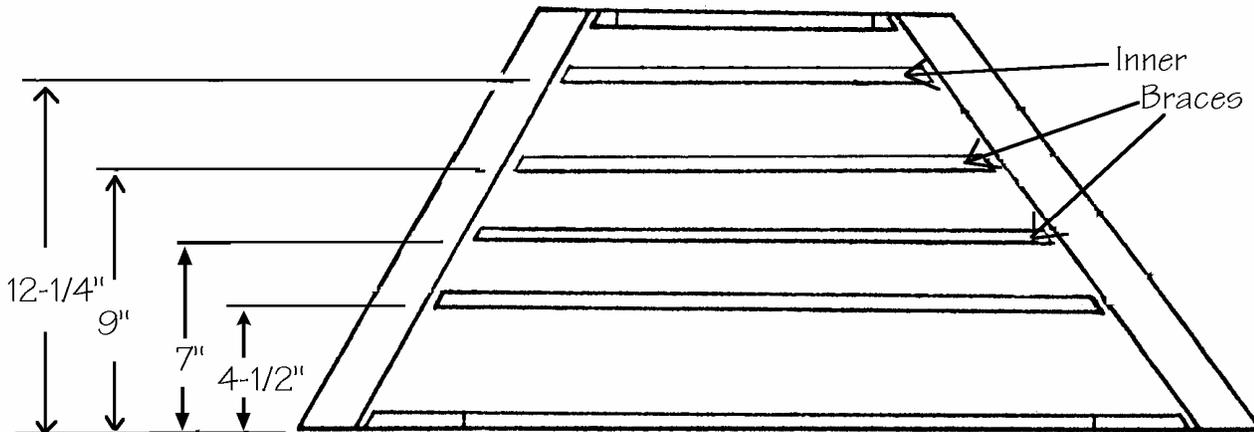


You must also note that these rails are recessed along the top edges. Glue and clamp them to the **BACK** with the recessed edges facing up.

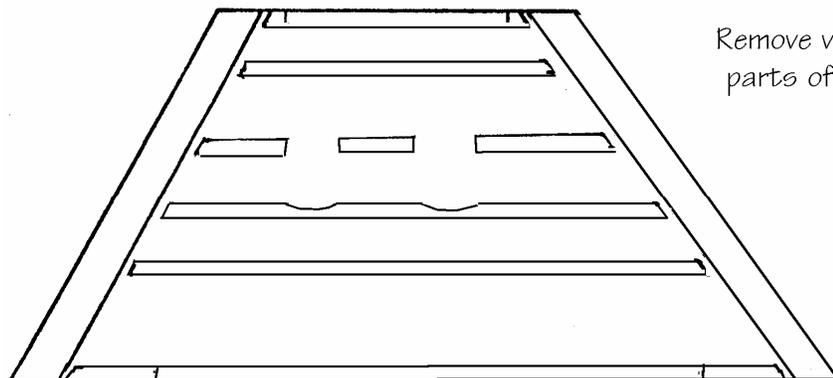
\_\_\_ **5.** Now is the best time to plan out your soundholes in the **SOUNDBOARD**. There are two punches in the top showing where soundholes should be located, but the size and shape of these holes is a matter of your personal artistic preference -- a great opportunity to make this a unique instrument.

The soundholes we cut are 2-1/8" diameter circles to fit the laser-cut Rosettes shown in our catalog, but you may vary from that without affecting the sound of the instrument. Some folks like to cut an interesting shape such as a leaf, an animal, or a geometric pattern right into the wood. Use a **FINE-TOOTHED** blade on your jig saw or saber saw to cut the soundholes (or a **SHARP** drill bit for cutting round holes).

\_\_\_ **6.** Test fit the **INNER BRACES**. They have been cut to fit with pre-determined spaces between them, as shown. Again, these braces should not touch the **PINBLOCKS**. When positioned correctly, outline each piece with a pencil, as you will need to remove some and put them back in the same place.



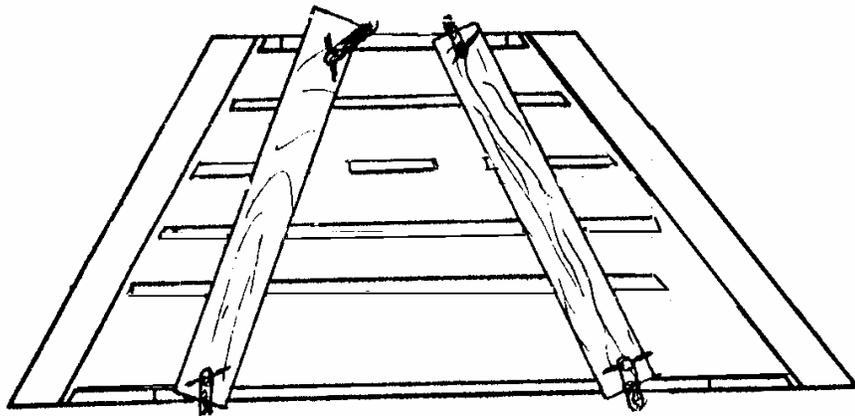
**NOTE: THERE IS A "RIGHT" AND "LEFT" SIDE TO EACH INNER BRACE. THE ANGLE AT ONE END IS SLIGHTLY DIFFERENT FROM THE ANGLE AT THE OTHER END. MATCH THEM TO THE ANGLES OF THE PINBLOCKS.**



**HINT: BEFORE GLUING THESE INNER BRACES INTO PLACE, set the **SOUNDBOARD** on top of the instrument and look through the soundhole(s). If a brace is clearly visible, then you should cut out a section of that brace, as shown.**

Just remove enough of the brace to clear the visibility around the soundholes. This will make the finished dulcimer look nicer, without sacrificing strength.

\_\_\_ **7.** When satisfied with all the **INNER BRACES**, glue and clamp them in place to the plywood **BACK** of the instrument.



**HINT:** We like to cut a couple of scrap pieces of 2 X 4 material, each about 14" long. Lay these across the braces and clamp each end, as shown, so they hold the braces firmly in place until dry. Small sections of **INNER BRACING** may have to be glued and clamped separately, depending on how you trimmed around the soundholes.

**NOW IS A GOOD TIME TO SIGN YOUR NAME INSIDE THE INSTRUMENT. WE ENCOURAGE PEOPLE TO IDENTIFY THE NAME, DATE, AND LOCATION OF THE BUILDER FOR FUTURE REFERENCE. DO THIS ON THE INSIDE OF THE BACK WHERE IT CAN BE SEEN THROUGH A SOUNDHOLE.**

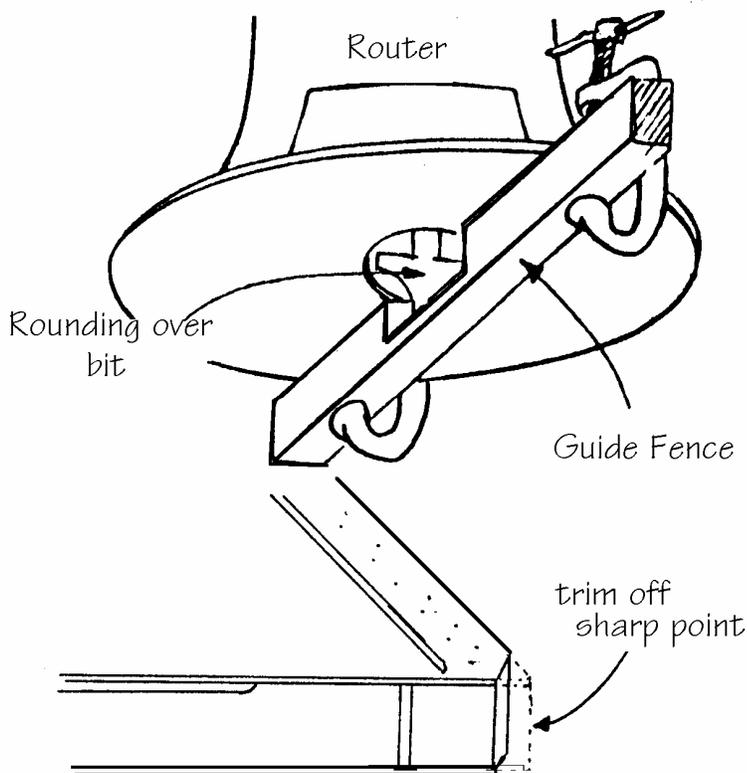
\_\_\_\_**8.** Now you can glue the **SOUNDBOARD** to the dulcimer box. Put adhesive on both **PINBLOCKS** and on the raised edges of the **FRONT AND REAR RAILS**. Carefully position the **SOUNDBOARD** so that all the edges are aligned with the rest of the box, and clamp all glued surfaces securely.

**CAUTION: PAD YOUR CLAMPS** to avoid denting the wood! Use large scraps of wood to distribute the clamping pressure over a wider area and to prevent the clamps from marring the surface of the **SOUNDBOARD** and **BACK**.

**CHECK AGAIN TO MAKE SURE THE TOP IS ALIGNED PROPERLY, NOT CROOKED.**

\_\_\_\_**9.** When the dulcimer box is dry, trim any excess wood from the top and back that overhangs the sides of the box. You will also want to sand around all the edges to smooth out the joints and remove any glue drips and smudges. A power sander is very helpful for this task. Use a coarse (80 grit) sandpaper at first. Then switch to a medium (120 grit) to remove the scratches of the coarse paper.

**CAUTION: BE CAREFUL NOT TO SAND OFF THE PUNCH MARKS FOR THE TUNING PIN HOLES AND HITCH PIN HOLES ALONG THE TWO SIDES OF THE BOX.**



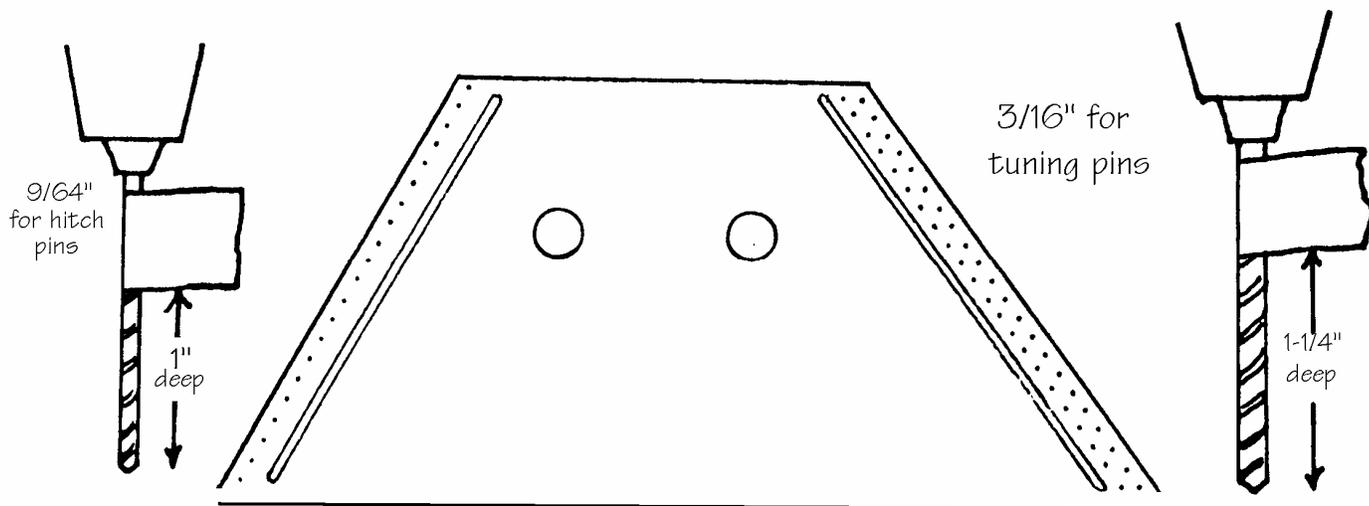
**CAUTION:** If using a router on this box, be careful not to let the router bit “fall into” the gaps in the sides. A good way to prevent this from happening is to clamp a guide fence to the router base, as shown here.

\_\_\_ **10.** We like to trim off the two sharp corners of the box slightly with a bandsaw, as shown. This softens the look of the instrument and also alleviates a potentially dangerous object for small children to bump into.

\_\_\_ **11.** We also recommend rounding over all the sharp edges of the dulcimer to make it smooth to the touch all around. Use either a router or an orbital sander for this operation.

\_\_\_ **12.** Drill the holes for the tuning pins and hitch pins. A drill press would be helpful on this step, but not absolutely necessary. You can achieve

adequate results with a hand electric drill. Just try your best to hold the drill straight (vertical) as you work.



Wrap a piece of masking tape around the drill bit to mark the correct depth.

**HITCH PIN HOLES:** Drill the 23 hitch pin holes along the left side of the top with a 9/64" bit, boring ONE INCH deep.

**TUNING PIN HOLES:** Drill the 46 tuning pin holes along the right side of the top using the new 3/16" drill bit provided in this kit. Bore the holes 1-1/4" deep (you do not want the tuning pin to ever reach the very bottom of the hole).

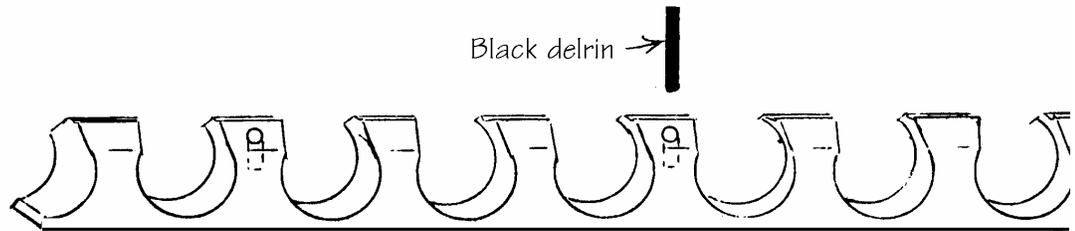
**IF YOU ORDERED A PARTIALLY ASSEMBLED KIT, BEGIN WORKING HERE:**

\_\_\_13. Use a medium (150 grit) sandpaper to smooth out all surfaces so they feel good to your hand. Work the sandpaper with the grain so you don't scratch the surface.

Carefully check all the joints and glue seams to remove any glue residue that might remain visible, because that will show up as ugly smudges under the finish.

\_\_\_14. Sand the maple bridges to remove any rough spots. We like to leave the blackened insides of the bridge "legs" for contrast. It looks great on the finished instrument.

\_\_\_15. Notice that the bridges have a few tiny holes drilled along the tops. These are for marking dots to help guide you in your playing. You need to fill these holes with short pieces of the black delrin



(plastic) rod provided in the kit. Push one end of the delrin rod into a hole and clip it off as close to the wood as you can with a wire cutter. Repeat this procedure for each hole.

**CAUTION: IF YOUR KIT HAS SEVERAL PIECES OF BLACK DELRIN, BE SURE TO LEAVE TWO PIECES LONG ENOUGH TO SPAN THE LENGTH OF THE TWO BRIDGES.**

\_\_\_16. Sand these marking dots smooth with the surface of the bridges.

\_\_\_17. When satisfied with your sanding, apply the finish of your choice. Here are a few suggestions:

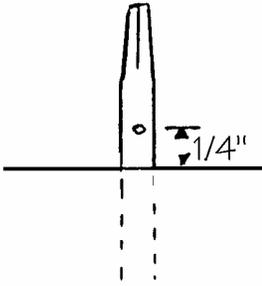
**STAIN -- STAINS** are coloring agents and should only be used if you dislike the natural color of the wood. We usually do not apply stains to our projects, especially when they are made with naturally beautiful hardwoods such as mahogany, cherry or walnut. These woods look very nice with just a clear finish. But, if you want to color the wood differently, your staining should be accomplished before applying a surface finish such as oil, varnish, or lacquer.

**OIL** -- An oil finish will give your wood a low luster appearance, bringing out the natural color of the grain, but it tends to soak into the wood and appear dry and "thirsty" after awhile. The principal advantage of an oil finish is that it can be applied and wiped dry immediately, so you can proceed to installing hardware (and strings) right away. The disadvantages of oil are that it usually does not give much surface protection or sheen, although there are some brands that include waxes and/or varnishes to give more surface build-up and luster.

**VARNISH** -- Any regular varnish will work fine on this project, but we recommend our wipe-on polyurethane called MUSICMAKER'S INSTRUMENT FINISH. Our complete finishing kit (code *FINISHKIT*) includes detailed instructions, sandpaper sheets, along with a 1/2 pint can of wipe on gel urethane varnish. The advantages of finish are its simple application, durability, and deep, soft luster.

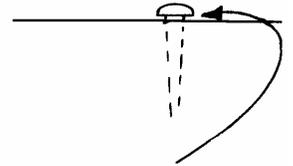
**LACQUER** -- Many professional instrument makers still use lacquer for their finish. The most readily available lacquer is called Deft Clear Wood Finish. It is best to purchase a can of liquid to brush on as a sealer coat first, and then use an aerosol can of the same product to spray on the final coats. The advantage of this finish is its quick drying time, but the disadvantage is the strong odor of the toxic lacquer fumes. **CAUTION:** Lacquer finish will not work over Heat Transfer decorations -- it dissolves the toner.

\_\_\_18. Don't forget to apply finish to the maple bridges and the playing hammers too!



\_\_\_19. Once the finish is dry, you can install the hardware. The 46 holes along the right side of the box are for the threaded tuning pins. Insert these pins right-side up (that is, **THREADED END FIRST**) into the holes using a hammer to tap them until they are about half-way in (the small hole should be about 1/4" above the wood).

**HINT: YOU MAY WISH TO PLACE A SCRAP OF WOOD ON THE SURFACE OF YOUR DULCIMER NEAR WHERE YOU ARE POUNDING, SO THAT YOU DON'T ACCIDENTALLY MAR THE TOP BY AIMING INCORRECTLY WITH THE HAMMER -- OUCH!**



\_\_\_20. The 23 holes along the left side are for the hitch pins (round-head screws). You can use a hammer to pound these in partway, but change to a screwdriver to finish the job, so the screw heads are just slightly above the wood surface.

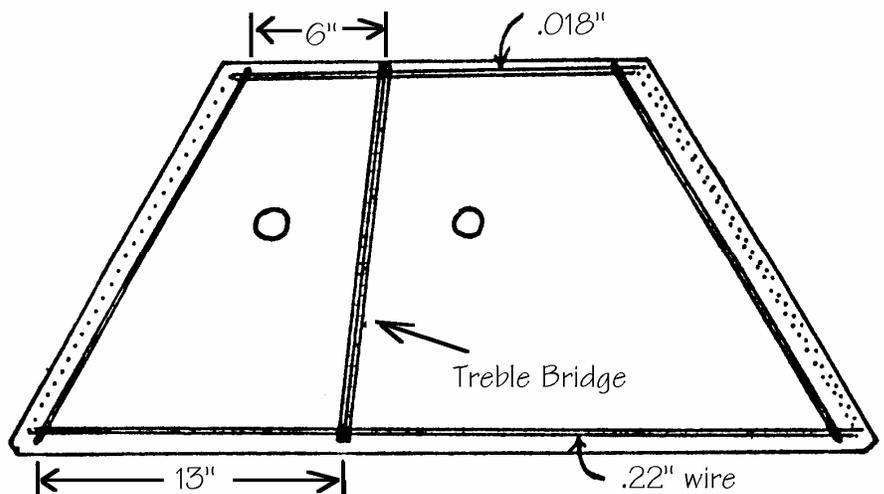
**NOW YOU ARE READY FOR STRINGING!** You may want to ask a friend to help you with this part of the project, as it often seems to require more than two hands....

**YOU ALSO WILL NEED THE TUNING WRENCH (SUPPLIED IN THE KIT), SOME MASKING TAPE, AND A WIRE CUTTER FOR THESE NEXT FEW STEPS.**

\_\_\_21. Place both brass tubes in their grooves along either side of the instrument and hold them in place with a little masking tape until you have a few strings in place.

\_\_\_22. Cut the black delrin into two long pieces to fit along the top of each maple bridge. They are meant to rest in the grooves along the tops of the bridge "legs".

\_\_\_23. Stand the **TREBLE BRIDGE** (it is the longer of the two) on the instrument so that the upper end is about 6 inches from the brass tube to the left, and the lower end is about 13 inches from the lower end of the same brass tube. Hold the bridge in place temporarily with a little masking tape. **BE SURE TO PUT THE BLACK DELRIN ROD ALONG THE TOP.**

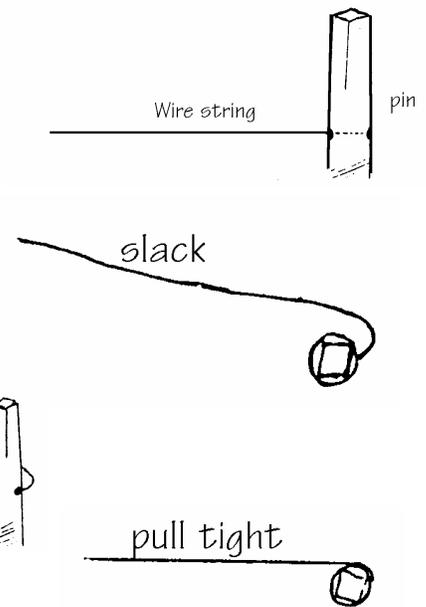


\_\_\_24. Locate the coil of wire marked #9 (.022") and pull out about 8 feet from one end. This will be used for the longest course (pair) of strings at the front of the instrument. Here is how to install it:

a) Poke the end of the wire into, but not so far through that it could poke your finger, the small hole in the lowest tuning pin at the lower right corner of the dulcimer.

b) Use the tuning wrench to turn the pin **CLOCKWISE** about one-half turn before putting tension on the wire.

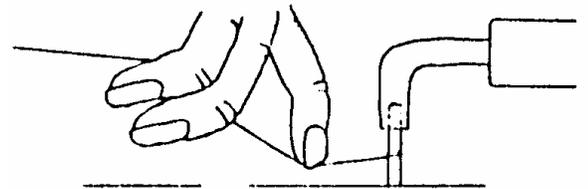
c) Pull on the wire to "set" it in the pin. This puts a kink in the wire at the point where it enters the tiny hole in the tuning pin. If the wire pulls out of the pin when you pull on it, cut off the kinked end and try again.



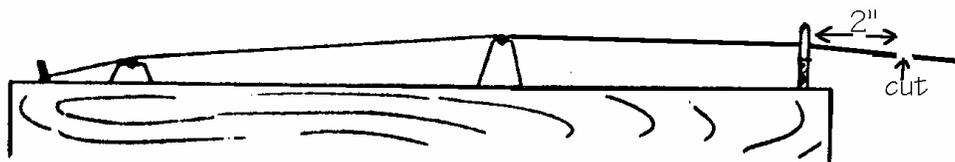
**NOTE:** This may seem like a silly exercise, especially if the wire keeps coming out of its place when you pull. You will appreciate installing strings this way because the sharp ends are left hidden in the tuning pins where they can't poke your fingers or catch on your clothing. It does work....

d) Keeping tension on the wire at all times, turn the pin about two complete revolutions with the tuning wrench, guiding the wire **DOWNWARD** as it winds around the pin.

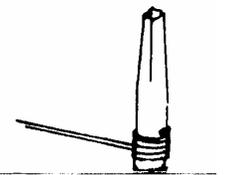
e) Maintain tension on the wire as you stretch it across the dulcimer (over the treble bridge) to the lower left corner and wind it around the lowest brass screw.



f) Pull the wire back across (over the treble bridge) to the right corner again and cut it off from the coil so that you have about 2 inches excess wire to wind onto the second tuning pin. No need for more than a 1/2 loop around the hitch pin because the wires will be equal tension.



g) Poke that end of the wire into (but not all the way through) the second tuning pin and turn the pin about one-half turn clockwise before "setting" the wire as you did with the other end.



h) Continue turning the pin clockwise to wind the excess wire **DOWNWARD** toward the wood until all the slack is taken up.

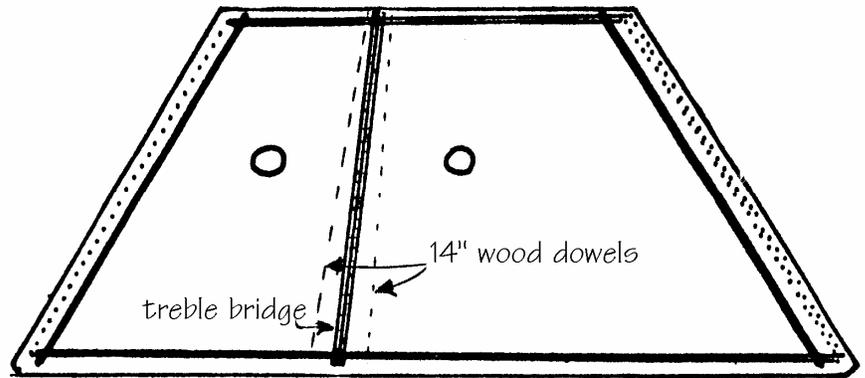
**WA-LA!** You have just installed your first course (pair) of strings. If you are not completely frazzled by now, you'll succeed with the rest of the project just fine!

\_\_\_25. Now, to hold the upper end of the treble bridge firmly in place, we recommend attaching the highest course (pair) of strings at the rear of the instrument. **FIND THE COIL OF WIRE**

**MARKED #7 (.018") FOR THIS COURSE.** Attach this wire in the same way as you installed the first pair, following steps "a" through "h", and using the last pair of tuning pins on the right and the last hitch pin on the left.

\_\_\_ **26.** You should be able to remove the masking tape that was holding the parts in place.

\_\_\_ **27. BEFORE PROCEEDING TO THE REST OF THE STRINGS,** you must insert the two longer 1/4" wood dowels (14" long) under the soundboard to act as bridge supports. These dowels are NOT to be glued permanently in place, but just pinched between the soundboard and the inner bracing. You may wish to move them later to adjust the tone of your instrument. Position them as shown for now.



**IMPORTANT:** These 14" dowels need to rest on both the **FRONT RAIL** and the **REAR RAIL** in order to fully support the soundboard. Be sure to push them far enough so they span the entire frame!

The rest of the strings that cross the treble bridge will be attached to **EVERY OTHER PAIR OF TUNING PINS and EVERY OTHER HITCH PIN.** The pins that are left between these treble courses will be used for the strings that cross the bass bridge. We will get to those later.

**ANOTHER NOTE:** The size of the wire gets smaller as you progress toward the rear of the instrument, and the notes become higher in pitch. Here is the preferred arrangement of wire sizes for the treble bridge:

### **STRING SIZE CHART**

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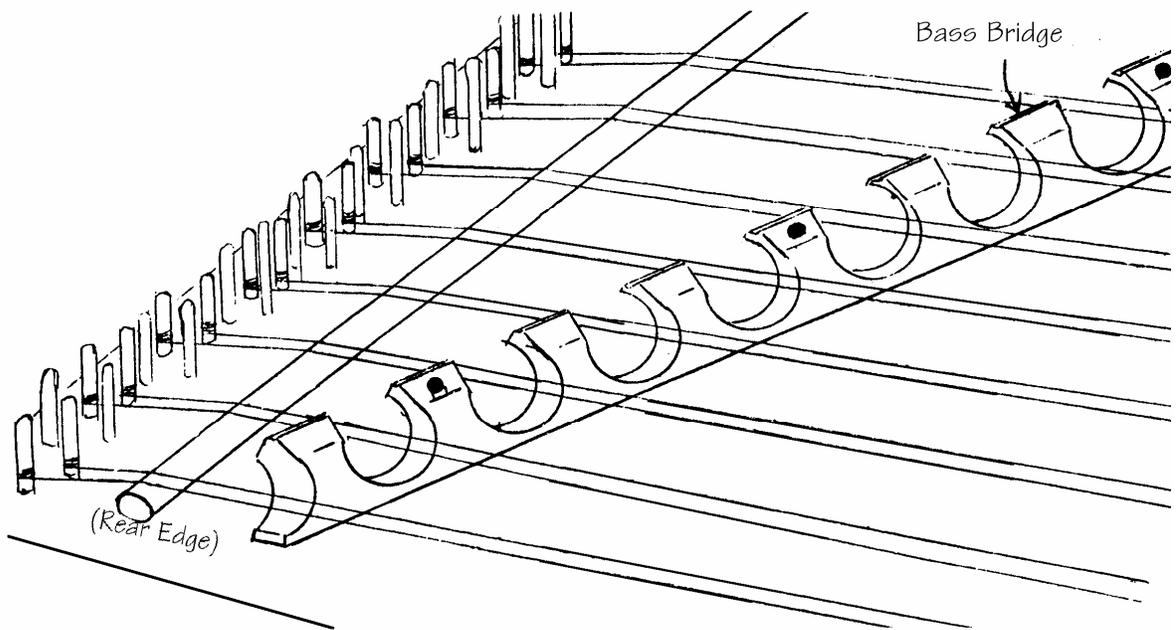
<b>.022" wire</b>	<b>FRONT 4 COURSES</b>
<b>.020" wire</b>	<b>MIDDLE 4 COURSES</b>
<b>.018" wire</b>	<b>REAR 4 COURSES</b>

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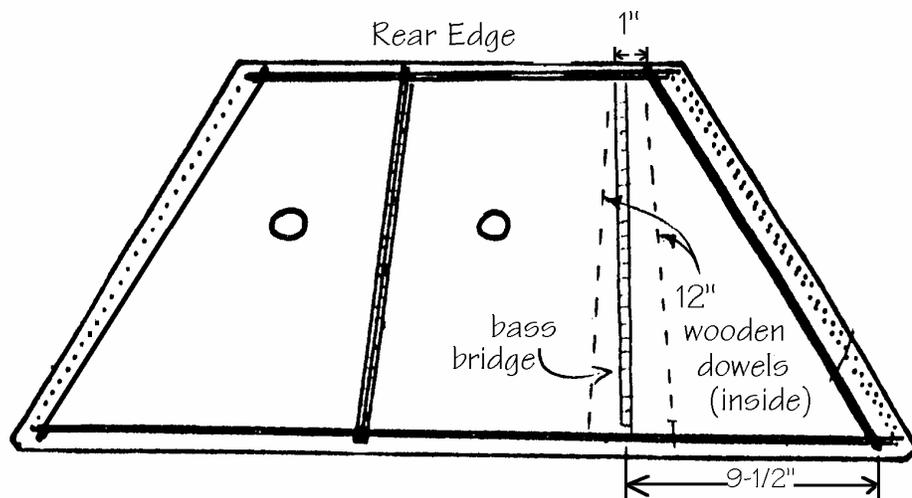
**THIS MAKES A TOTAL OF 12 COURSES OF WIRE ON THE TREBLE BRIDGE, ONE OVER EACH "LEG" OF THE BRIDGE.**

\_\_\_ **28.** Continue stringing the wires across the treble bridge, bringing them up to a reasonable tension, but not trying to actually tune them yet. Be sure to change sizes of wire according to the chart above.

\_\_\_ **29.** When all 12 courses are in place on the treble bridge, you can begin stringing the bass bridge. Stand the bass bridge toward the right side of the instrument as shown in the **drawing.** You will have to tip it sideways in order to slide it into place under the other strings. The "legs" should all fit between the wires that pass over the treble bridge.



**IMPORTANT:** One end of the bass bridge is marked with an inlay dot at the very end (on top of the last "leg"). That end should be placed toward the front of the instrument, for the longest string.



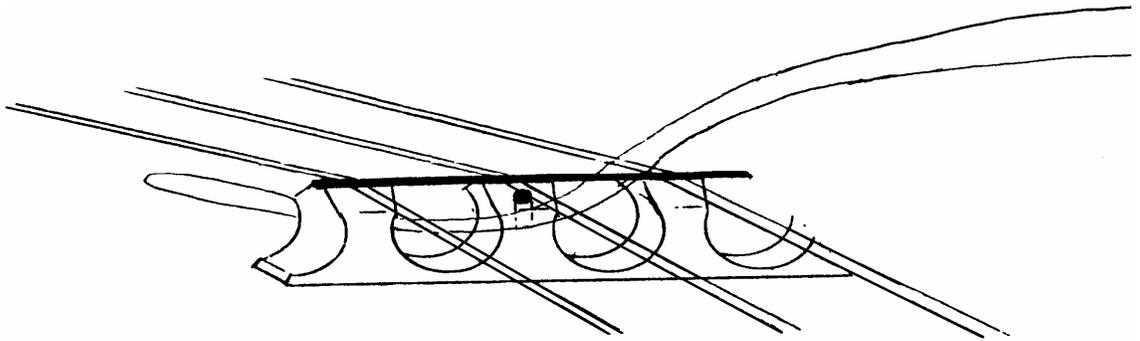
\_\_\_ **30.** When satisfied with the placement, lay the black delrin in its groove on the bridge, and hold the parts in position temporarily with masking tape.

\_\_\_ **31.** Insert the other 1/4" wood dowels (12" long) under the soundboard on either side of the bass bridge, as shown. These 12" dowels do not need to reach the rear rail – just push them in so the ends are resting on the front rail. Again, these dowels can be moved around later to enhance the sound of the bass notes.

\_\_\_ **32.** The longest course (near the front of the instrument) will be .022" wire. You will attach it to the dulcimer in virtually the same manner as you did the treble strings, **WITH ONE IMPORTANT EXCEPTION:** the bass strings must go **OVER THE BASS BRIDGE, and UNDER THE TREBLE BRIDGE!** Just an interesting twist to complicate matters a little for you...

**HINT:** We find the easiest way to put the string under the treble bridge is to put a bend in the wire about 3' from the end, then push that bend under the treble bridge and hook it around the hitch pin. Then the two ends can be cut to proper length and attached to the tuning pins.

\_\_\_ **33.** String all 11 bass courses in the same way you did the treble ones (you're an expert by now, right?), changing wire sizes according to the following chart:



### **STRING SIZE CHART**

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<b>.022" wire</b>	<b>FRONT 3 COURSES</b>
<b>.020" wire</b>	<b>MIDDLE 4 COURSES</b>
<b>.018" wire</b>	<b>REAR 4 COURSES</b>

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This makes a total of 11 courses of wire on the bass bridge, one over each "leg".

**HURRAH!! THE STRINGS ARE ALL IN PLACE.** I hope you aren't keeping track of all the time invested in this project....

### **TUNING**

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\_\_\_ **34.** Before you can successfully tune this instrument, you must make sure the **TREBLE BRIDGE** is in just the right position. It must divide the vibrating portion of its strings into a perfect ratio of 2:3 in order to play a proper scale, because you will play some notes on the right side and some on the left, and the length of the strings helps determine their pitch.

You can slide the treble bridge sideways one way or the other to achieve this proper placement. You may make careful measurements and calculations to verify its location, or you may verify it "by ear", which is perhaps the better approach, since your ear is what will complain if the darn thing is out of tune!

Here's how to go about it:

**a)** Pluck the lowest string (at the front of the instrument), on the right side of the treble bridge. If the string is so loose that it just "twangs", then tighten it up until you get a clear sound.

**b)** Pluck **THAT SAME STRING** on the left side of the bridge to see if that note is a musical fifth interval above the first note. "So, what is a musical fifth interval?" you ask.

The **FIFTH INTERVAL** is the span between "do" and "sol" on the scale. So if you pluck the string on the right side of the bridge and consider that note as "do", then you can sing "do, re, mi, fa, sol" and check to see if the note on the left side of the bridge (same string) matches the note "sol". Or, a quicker way to sing the fifth interval is to hum the song "Twinkle, Twinkle, Little Star". The span between the first "Twinkle" and the second "Twinkle" is a fifth interval. Of course, if you can't sing in tune, then you'll find this a worthless exercise! Go back to measuring the 2:3 ratio of vibrating lengths, or find a musical friend.... Seriously, you can obtain perfect accuracy regardless of your musical ear by using an electronic tuner. We offer a good one in our MUSICMAKER'S catalog.

**c)** Now, if the note on the left of the bridge is **HIGHER** than it should be (more than a fifth interval above the right side), then you must **LENGTHEN** the amount of wire on that left side of the bridge to lower the pitch. Do that by sliding the bridge to the right, just a little. Then test the interval again.

**d)** If the note on the left side of the bridge is **LOWER** than it should be (less than a fifth interval above the right side), then you must **SHORTEN** the length of wire vibrating on the left side of the bridge to raise the pitch. Do that by sliding the bridge to the left, just a little. Then test the interval again.

**e)** Once you are satisfied with the interval on the longest string at the front of the dulcimer, test it also on the shortest string toward the rear of the dulcimer. Use the same techniques for adjusting until you hear a perfect fifth.

**f)** Now that the front and rear of the treble bridge are correctly placed, you need only make sure that the rest of the bridge is lined up in a straight line between the ends. That should ensure that all the strings will give a fifth interval from the right side to the left.

**NOTE:** If you happen to find a string that does not sound a fifth interval across the treble bridge, then something else is amiss. Chances are, the string is not making firm contact with the brass tube along the right-hand side. To correct this problem, you must unwind the string part way from the tuning pin and then re-wind it so that the windings go **DOWNWARD** toward the wood, making firm contact with the brass tube. (This is only important for strings that cross the treble bridge. No need to worry about those that cross the bass bridge.)

### **WHEW! NOW YOU CAN ACTUALLY BEGIN TUNING....**

**35.** We like to start with just the bass bridge strings first, beginning at the lowest strings near the front of the dulcimer. You may want to cut out the tuning chart provided in the kit and slide it under the strings for ease in determining what note to tune the strings to.

### **ALL PAIRS ARE TO BE TUNED IN UNISON**

The lowest pair of strings crossing the bass bridge will be tuned to the G below middle C. The next pair that crosses the bass bridge will be tuned to A below middle C and the next to B, and the next pair to middle C, etc, as shown on the tuning chart.

**IMPORTANT!** Be careful to check that you are turning the proper pin for the string you wish to tune. Then pluck the string and turn the pin while string is still vibrating so you can hear the pitch change and you can stop turning when you reach the proper tone.

Tune all the strings that cross the bass bridge, according to the tuning chart (note that you must skip every other pair of pins on your way toward the rear of the instrument).

\_\_\_**36.** Because the treble bridge is placed to give you a fifth interval from the right side to the left, you need only tune one side of the treble bridge -- the other side will automatically come into correct pitch. (That's the first break you've had in this project, huh?)

So, go ahead and tune the longest pair of wires at the front of the instrument to middle C# on the right side of the treble bridge. Tune the next pair to D above middle C and the next to E, etc, as indicated on the tuning chart.

\_\_\_**37.** Now, don't expect the instrument to be playable yet.... By the time you finish tuning the highest string on the treble bridge, the bass strings will have already gone out of tune. Don't give up! This won't happen every time. Two things are occurring that contribute to the problem on a new instrument: 1) the wire is actually stretching a little, and 2) the box is flexing slightly under the tension of all those strings.

Give the instrument a little time to adjust (say, overnight) and then tune it again. It should hold pretty well after the second or third tuning.

**CONGRATULATIONS!** YOU REALLY DID IT. WE HOPE YOU ENJOY LEARNING TO PLAY YOUR HAMMERED DULCIMER. WITH PROPER CARE, IT SHOULD GIVE YOU MANY YEARS OF MUSICAL PLEASURE.

## **DULCIMER HAMMERS**

Our double-sided hammers come with one side plain wood and the other padded with leather, so you can change the brightness of your instrument by simply rolling the hammers over.



# CARE AND FEEDING OF A HAMMERED DULCIMER

**STRINGS:** You should not need to replace the strings of your instrument unless they break or become rusty. To prevent rusting, I simply wipe the strings occasionally with a rag dipped in household oil.

**TUNING PINS:** Occasionally we hear from someone whose tuning pins have rusted. This can happen if exposed to excessive moisture or salt water. So if you live in a humid climate or near the ocean, I recommend treating the tuning pins to an occasional oil bath too.

**WOOD SURFACES:** The main challenge will be to remove the dust from under the strings. Not that I mind a little dust, but when you finally decide to tackle the situation, I recommend pushing a rag through the narrow spaces with a small dowel or thin stick. You may wish to treat the rag with a dust-gathering solvent or a furniture polish -- that's fine. We often use Endust, Aulwood, Old English, or plain old Johnson's Lemon Wax. They all work well.

## TONE ADJUSTMENTS

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As you begin playing your dulcimer, you may find a need to adjust the volume or tone of certain areas of the instrument. You want a nice even volume from bass to treble.

If you wish to increase the sound of the low notes on the bass bridge, for example, you may slide the wood dowels away from the bridge a little bit. You may have to loosen the bass strings to accomplish this. A small adjustment (1/2") makes quite a difference in sound!

The same thing can be done with the dowels under the treble bridge. Sliding the dowels closer to the bridge will quiet the sound, and moving them further way from the bridge will make it louder. If you find the sound ringing or "howling" too much, you will want to slide the tone dowels closer to the bridge.

## ACCESSORIES FOR THE HAMMERED DULCIMER

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We carry a number of items to help you enjoy playing this unusual instrument. Here is a brief list of accessories – *please refer to our website our catalog for current pricing.*

Pair double-side hammers  
Gig bag for 12/11 Hammered Dulcimer  
Electronic Tuner (chromatic)  
External Pickup & Cord for Tuner

Scissor Stand kit, 25”  
Finished Scissor Stand, 25”  
Scissor Stand kit, 37”  
Finished Scissor Stand, 37”



Adjustable Hammered Dulcimer Stand kit  
Finished Adjustable Stand



Podium music stand kit (cherry)  
Finished Cherry Podium  
Podium music stand kit (walnut)  
Finished Walnut Podium



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