

Lil' Lyre Kit



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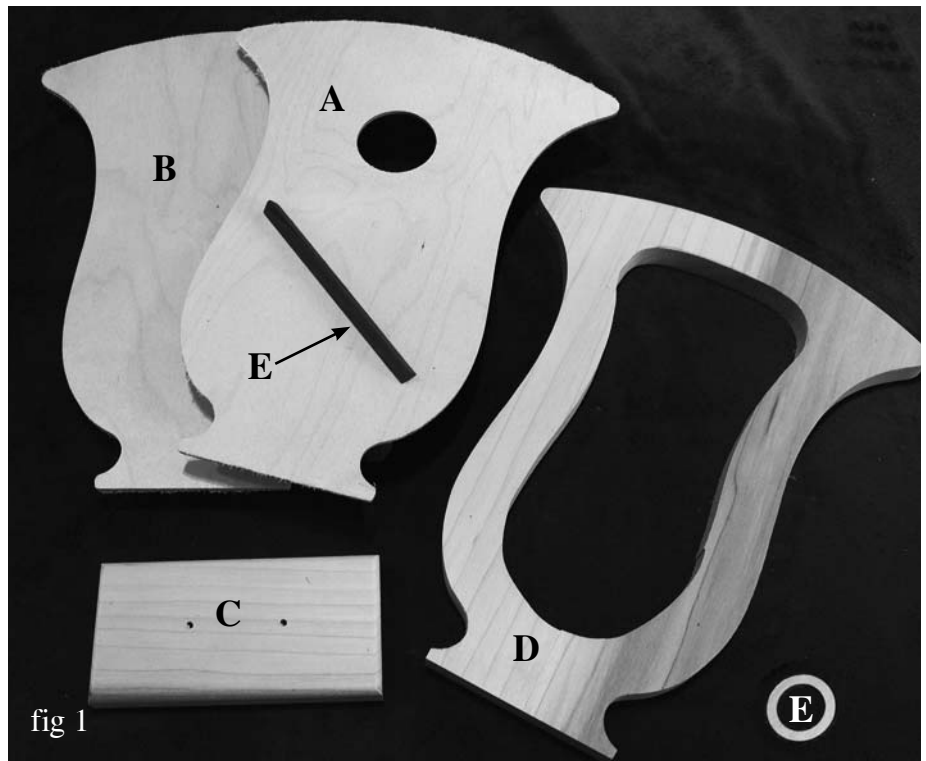
Lil' Lyre Kit

Wood Parts:

- A - Front (with hole)
- B - Back
- C - Base
- D - Frame
- E - Bridge
- F - Donut Ring, small

Hardware:

- 10 Zither Pins, 1-3/4" X 3/16"
- 10 Escutcheon Pins, 3/4 X #16
- 1 Drill Bit, 3/16"
- 2 Wood Screws, 1-5/8"
- 1 Set of 10 strings
- 1 L-handle Tuning Wrench
- 1 Flat Pick



If you have any questions about the assembly of your kit -
please visit our online Builder's Forum
www.harokit.com/forum

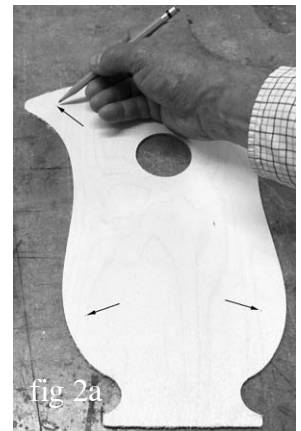
RECOMMENDED GLUE

This woodworking project requires woodworking glue, the easiest and most convenient of which is technically called aliphatic resin glue. Several brands of this adhesive (Elmer's, Titebond, Franklin) are commonly available, and they are yellowish in color. Please **DO NOT USE** hot-melt glue or the plain white school glue -- they will not bond securely enough to hold the string tension.

____ 1. Please check over your kit parts to make sure everything is satisfactory (fig 1). Let us know right away if you are missing parts or have a problem with the order. Then glance over these instructions to make sure you understand the process in general and have the tools and supplies you need for assembling and finishing the instrument.



____ 2. Find the front panel (with the soundhole) and place it on your work table so the side with four little pin-pricks show upward (fig 2a). These punch-marks are left over from our machine pattern, and are meant to be covered up as you build the instrument.



Spread glue on one side of the frame, as shown in fig 2b. A few swirls are helpful to disperse the glue around the entire surface that will contact the front panel. We don't bother spreading the glue evenly, but you can do that with a small scrap of wood like a popsicle stick if you wish.

Turn the frame over (glue side down) and center it carefully on the front panel. There should be a little excess wood showing all the way around the frame. Hold these two parts together firmly with either heavy weights or clamps (fig 2c). Allow 2-3 hours drying time.



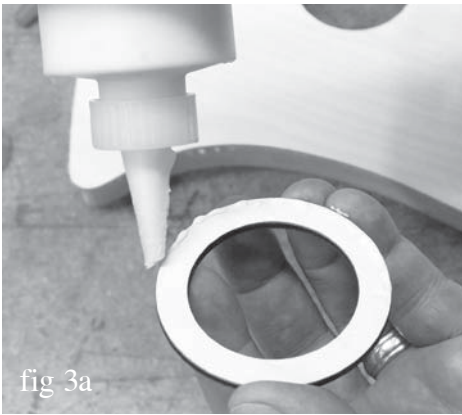


fig 3a

3. If you plan to install a small rosette in the soundhole, then you'll need to glue the small donut ring provided inside the hole to support the rosette. Use a small amount of glue around the edge of the ring (fig 3a) and center it carefully by flipping the assembly over to see how it looks from the front side (fig 3b). Place a small weight (can of soup, bottle of ketchup) on the ring to hold it firmly until the glue sets (1/2 hour). You'll install the rosette later.

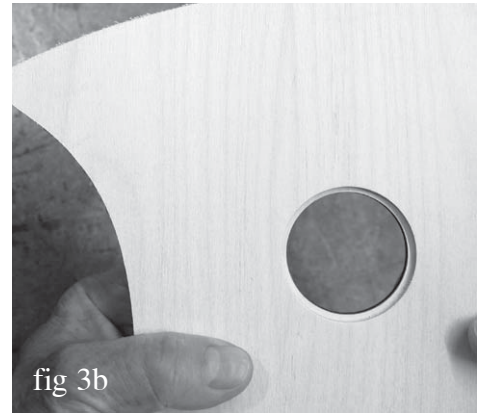


fig 3b

4. Look carefully at the back panel and find the 4 punch marks on one side -- this is the inside of the back. We recommend signing and dating the inside, up near the top where you'll be able to see it through the soundhole (fig 4a).

Then you can go ahead and spread glue on the back of the frame (fig 4b), the same way you did the front. Use weights or clamps to hold the parts together firmly until dry (fig 4c). Allow 2-3 hours for drying.



fig 4a



fig 4b



fig 4c

5. When the glue is dry, you can trim and round over the edges of the lyre. The overhanging plywood front and back material is rather difficult to sand off by hand, so here are two easier suggestions:

a) You can purchase sanding drums for your drill quite inexpensively (fig 5a), and they are useful for a variety of sanding operations, especially inside curves. or

b) If you have a router, you can achieve beautiful results very quickly with a flush-trim bit and a 1/4" round-over bit (fig. 5b). Put your instrument on a non-slip pad and move the router clockwise around the instrument, first with the flush trim bit. When you switch to the round-over bit, take care to avoid rounding over the bottom (fig 5d).

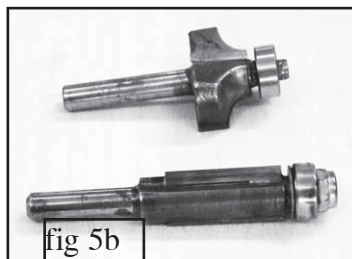


fig 5b



fig 5c

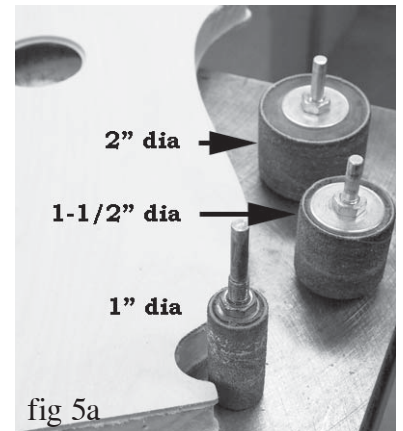


fig 5a



fig 5d

If you have to do all this work by hand, you'll want to use a sanding block with coarse (60-80 grit) sandpaper to do the major trimming and rounding work, and then switch to 150 grit to smooth off the scratches made by the coarse grit.

____6. Now it is time for final sanding. Use 150 grit sandpaper to smooth out all surfaces and edges, sanding with the grain direction whenever possible. Look for machine marks and any glue residue that might be left on the outside of the box. Don't forget to sand the wood base, the bridge, and the rosette also.

When you are happy with the smoothness of the wood and the rounded edges, then you can proceed with the finishing process. Note that we like to apply the finish before drilling holes for the tuning pins and hitch pins, because we don't want to have the finish run into those holes.

____7. When it comes to finish, you have lots of choices. We like to stain the wood dark, using dark mahogany colored stain from the hardware store, but you can choose any color you like. Or, perhaps you'd rather paint the instrument with a bright color, or make an interesting woodburning pattern on the surface.

When you choose your medium, we recommend coating the entire instrument, front and back, being careful to avoid spilling into the sound hole. In fact, if you will be gluing a rosette in the hole, you should leave that ledge unfinished, because glue will not adhere to a finished surface.

Speaking of the rosette, you can also decorate that if you like. Just leave the backside un-finished so you can glue the piece securely into the hole. We like coloring rosettes with fine-tipped markers from an art store, or acrylic paints, or water-color pencils. There are lots of choices!

____8. Once you have decorated or stained the instrument, you should add at least one clear top coat to seal everything and protect the wood from moisture (fig 8). We use polyurethane for this purpose. Minwax brand has a good polyurethane that is readily available at most stores, but we use a gel topcoat here that is easier to apply because you just wipe it on with a clean rag, and the gel does not run or drip. You can find this product in our catalog or on our website.

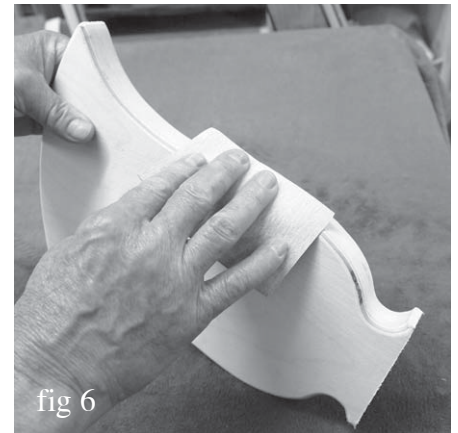
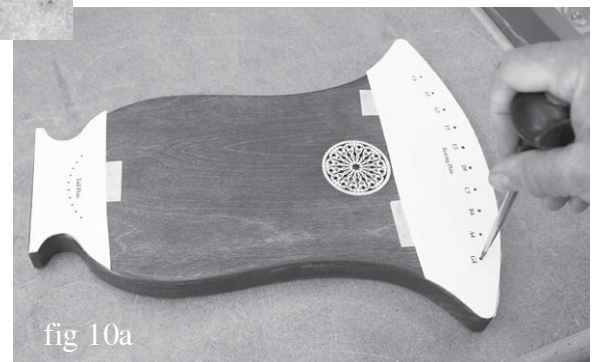
Be sure to put a clear coat on the base, the rosette, and the bridge too!

When the first coat of clear finish is nice and dry, sand all surfaces lightly with 600 grit sandpaper to make them baby-smooth. You can stop at this point, or apply more coats, sanding lightly between each application. The more clear finish you apply over your decorations or stain, the nicer your project will look.

____9. When you are satisfied with the finish, then glue the rosette into place in the soundhole (fig 9). NOTE: You may need to sand the outside edges of the rosette a little to get the rosette to fit nicely. We use a sanding block with 100 grit sandpaper to remove the dark finish all the way around the edge of the ring.

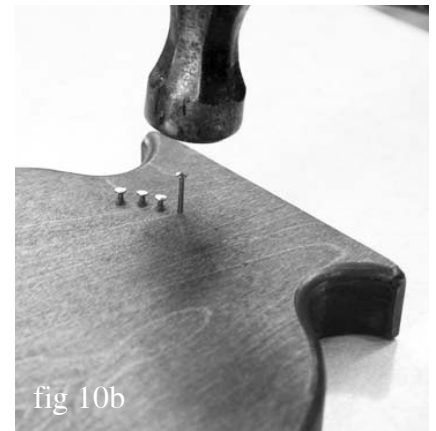
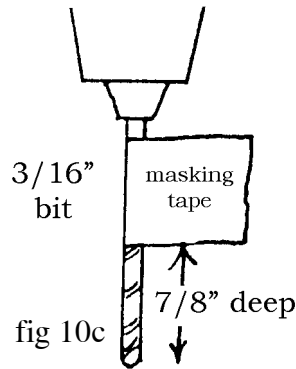


____10. Cut out the templates on page 7 and tape them in place at the top and bottom of the front of the Lyre (same side as the soundhole). Use an awl or nail to punch through the paper to mark the locations of the tuning pins and the tail pins (fig 10a).

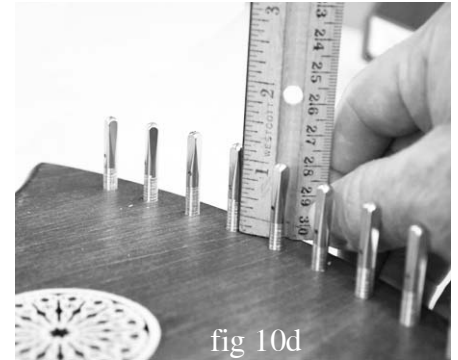


The tail pins can just be pounded in at the bottom marks. Leave the heads about 1/8" above the surface so you can slip the string loop under the head (fig 10b).

We have included a 3/16" drill bit in this kit for drilling tuning pin holes. Please use this new bit, not another 3/16" bit that you might have in your shop, because it is important to have the zither pins fit tightly so the instrument stays in tune. Drill each hole just 7/8" deep, not quite all the way through the instrument. If you don't have a drill press, be sure to wrap masking tape around the drill bit for a depth guide (fig 10c).

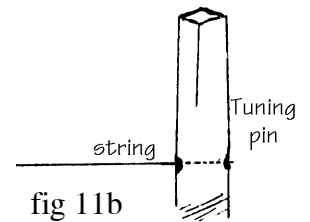


Use a hammer to pound the zither pins into these holes until about 1-1/8" remains standing above the wood (fig 10d). **Note: Square end up!**

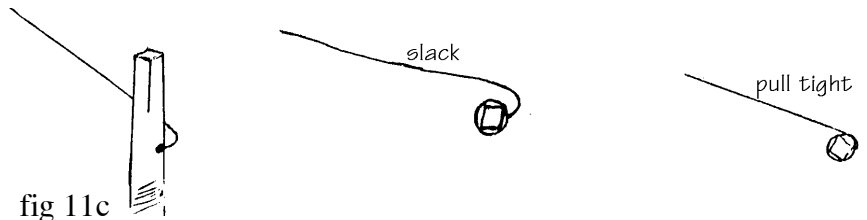


____ 11. Now you are ready for stringing. Notice that there are two different sizes of strings, and they are very similar. Keep them separated so you don't get confused. Here's the stringing procedure:

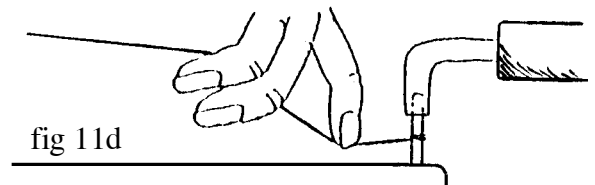
a) Begin with one of the thicker strings, .016" diameter. Hook the loop of that string onto the first tail pin on the right side of the lyre. This will be your lowest note (C above Middle C). The string is much longer than necessary, so we clip it about 2" beyond the tuning pin where it will be attached (fig 11a).



b) Poke the end of the wire through the correct tuning pin, just so the end shows on the other side of the pin. Hold the wire in this position as you begin turning the pin clockwise (fig 11c). When you've made 1/2 turn, pull the wire tight to "set the hook" so it holds in the hole of the pin.



c) Use one finger to guide the windings downward on the tuning pin as you continue to turn the pin clockwise until the slack is taken up in the wire. CAREFUL! Don't over-tighten the wire -- it may break.



d) Your goal should be to wind the wire neatly in downward spirals on the pin, as shown in fig 11e.



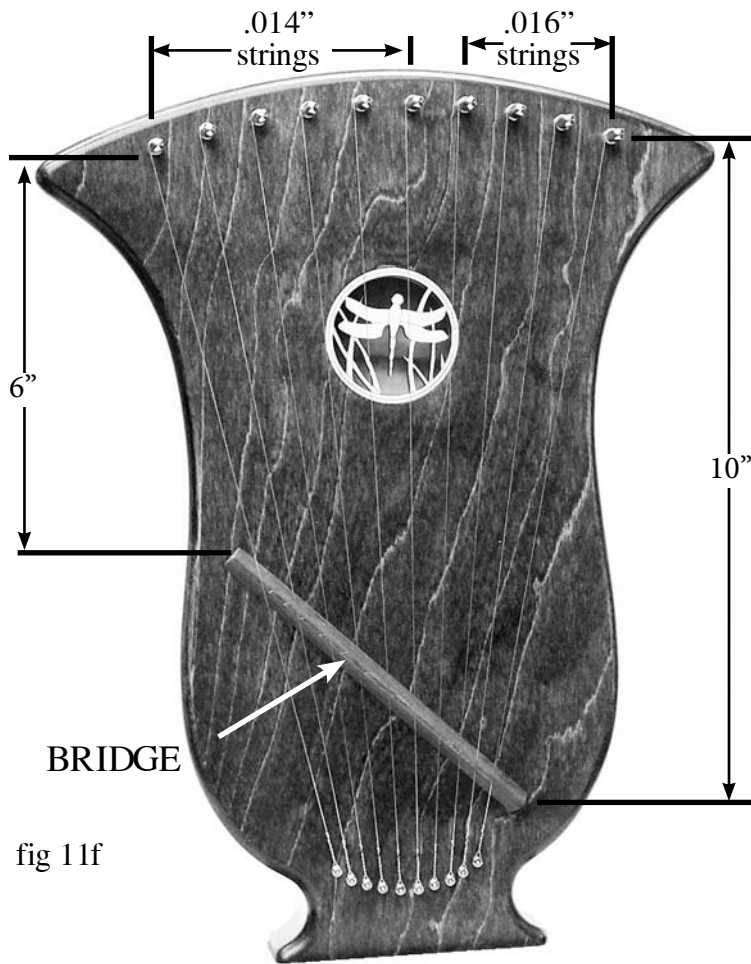


fig 11f

e) Once you have a string or two installed, slide the bridge under the strings and position it as shown in fig 11f. Then continue installing the rest of the strings. Check the illustration at right to see which gauges of wire go in each position.

____ 12. When you get all the strings installed, begin tuning at the longest string, which should sound at the first C note above Middle C. As you move to shorter strings, the pitches go up the scale, as shown on the keyboard below (fig 12).

This is the C-major scale, so “do” of the scale begins on C5 (an octave above Middle C). The scale continues up in diatonically.

You may also tune the lyre to the key of G by simply changing the F string to F#.

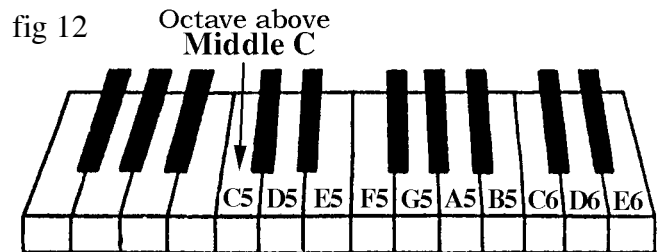


fig 12

____ 13. The last thing is to screw the base on to the bottom of the instrument using the two screws provided (fig 13).

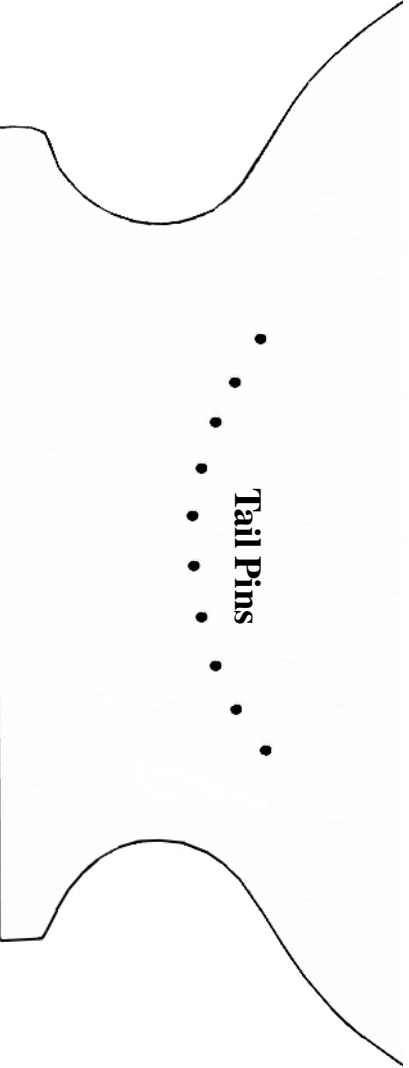
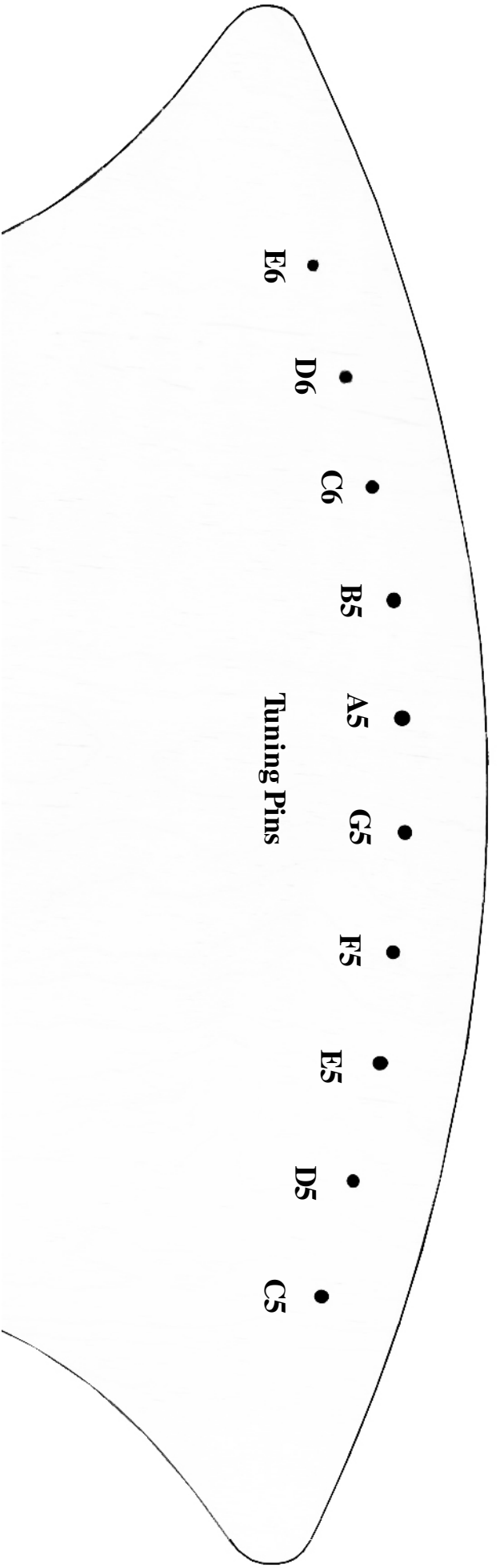
A nice optional step would be to cut some felt to fit under the base for padding. You could use double-stick tape to hold the felt in place.



fig 13

CONGRATULATIONS! We hope you have enjoyed building this Lil’ Lyre. Once you get used to the notes on this instrument, you’ll be able to play common melodies very easily. You might try plucking 3 or 4 strings at a time too, making chords. If you want sheet music for it, look for any melodies written in the key of C. We believe, however, that a simple instrument like this will be more fun to learn by just “noodling” around and discovering familiar tunes or making up your own songs.

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Alternate Tunings

Some people have asked if this instrument can be tuned to a pentatonic (5-tone) scale, and we have tested a couple of ideas that work quite well. Here are those alternate tunings:

Key of C Pentatonic Tuning:

G4-A4-C5-D5-E5-G5-A5-C6-D6-E6

Key of G Pentatonic Tuning:

G4-A4-B4-D5-E5-G5-A5-B5-D6-E6