How To Build A Turn of the Century Aeolian Wind Harp

This Aeolian Harp plan is adapted from “Popular Science Monthly” Volume 98 – No. 8, published by the Modern Publishing Company, New York, in August 1921


The Aeolian Harp harkens from the ancient times of King David. The harp uses the power of the wind and an opening that activates the musical strings that produces the sonic reverberation. The harp is very simple in design and its main use is that they can be custom made to range in size to fit any size or type of window. The modern design dates back to England in the late 18th century.

Vintage window harps are a species of musical instruments where sounds are produced by air currents passing over the strings. On windy days, the harp emits low musical tones rising and falling with the strength of the wind. A typical harp design consists of five musical strings but can number up as high as fifteen strings.
The usual mode of building an Aeolian harp is to use thin pieces of wood to make a box that will sit on the window sill. The length, width and depth can vary depending on the desirable size of the harp and the window it will be used in. Supposedly invented by John J. Schnell, musical maker for the Countess d’Artois. However, according to the Babylonian Talmund, it states that “the harp of David sounded when the north wind blew on it”.

For my first attempt at my project harp, I followed some basic instructions I found on the internet during my research. These instructions are attached at the end of the report. I gathered and used the standard/suggested materials to create a wind harp as closely to the instructions used as possible. My second attempt will be to try to construct one that resembles the three illustrations used in my report.

Things that I will need/used are as followed:

- Wooden Picture/Wood, 12 in by 15 in or larger. I have three. 1-the longest and thickest piece that is 30 in by 59 in. 2-a piece of birch 23.5 in by 44.1 in. 3- A smaller piece 18.1 in by 49.1 in.

- Six round nylon guitar or catgut strings. *Use G’s, B’s and E’s. The thinner the string, higher the pitch. The thicker it is, the more bass that is created
- Six “three per side” Classical guitar tuners on metal mount with mounting screws
- Six thumb tacks/Nails
- Coping Saw
• Fan  
  To create the wind artificially if there is not enough during testing and presentation.

• Trestles/Bridges  
  For other variations to lift the strings on the harp at a higher angle.

Now for someone who did not know much about string instruments, I found all of the necessary items needed online, and/or at some local stores. For example,

• The Classical Guitar Tuning Pegs can range in price from $7.51 for 6 online at [www.tmart.com](http://www.tmart.com) or going to a local music store such as Guitar Emporium or the Guitar Center.
Now the strings are a different matter. The harp calls for six strings but it does not say which type to purchase. String types range from Folk to Bluegrass to Heavy Metal to Acoustic to Heavy Electric. Price range from $0.89 to $39.99. So, I will choose the most basic musical string for my project harp and some other type for my other one. The first set I chose are electric guitar strings. For the next one, I will use banjo strings.

The wood can be found around the house or at the hardware or local hobby store such as Ben Franklin Craft’s or Michael’s.

- DRILLED 6 SEPARATE HOLES FOR PEGS.
- PERFORMED COPING SAW TEST ON SPARE PIECES OF WOOD TO GET USE TO.
- DRILLED 1 HOLE IN WOOD TO MAKE FRENCH OPENING.
- SAW HARD TO MANUEVER TO GET OPENING CUT.
- USE NAILS INTEAD OF THUMB TACKS FOR HARP #1.
- LINE UP WITH 6 HOLES AND INSERT INTO WOOD.

For measuring the sound output generated, I have found a few smartphone applications I plan on using.

- Decibel Reader
- Simple FFT Graph
- Spectrum Analyzer

But first, I would begin by prepping the Wood by cutting the French opening that the wind will pass through with the Coping Saw. All designs that I researched, I found that the majority of the openings were cut vertically. For the project harp number one, the cut will be made vertically and on number two, I will a larger, thicker piece of wood. However, I was wondering if the direction of the opening makes a difference in the sound the harp makes.

To use the Coping Saw (see attached photo), I will need to detach the blade on one end. With a hole, pre-drilled, into my wood template, I would insert the unattached end through the wood, re-attach to the saw, and cut out my opening, using the template or drawn lines the guide. In Chapter 11, *Strings and String Instruments*, there are four pictures of guitars that show that various acoustic measurements differ by the position, number, and types of French cuts that create different levels of sound.
Now that I have prepped my wood with the cut, I need to drill 6 evenly spaced holes to attach the Guitar Tuning Pegs. Take one of the pieces of wood and position it with back surface facing you. Position the frame with the short lengths at the top and bottom. Place the guitar tuner's metal mounts left to right across the top of the rectangle on the flat surface in the holes pre-drilled, facing you. Mark the center of each tuner on the wood. Drill holes through the frame at each of the six marks. Place the tuners through the holes. Screw the mounts onto the back of the frame.

Next, we want to thread the string though the mounts and attached to other end.

Turn the frame around so that it now front faces you. Take one of the six guitar strings and knot each one approximately 3 inches from one end. Place the other end of each string through a tuner. Grasp the string on the left. Hold it taut. Pull the string down past the bottom edge of the frame. Push a thumb tack partially into the wood directly next to the string. Tie the string tightly around the thumb tack post. Push the tack as far into the wood until the tack base rests on the string knot. Repeat with the other five strings.

Place the harp in the wind. Now if everything works correctly, I should be able to hear and measure the sounds coming from the harp. I honestly don’t believe that I can recreate the necessary amount of wind needed to create enough force/power to create viable sounds. My first attempt does not look that spectacular, but it resembles the instructions given by e-how, How to
make an Aeolian Wind Harp. My second attempt, see below, resembles the illustration from the Knights American Mechanical Dictionary.

Insert Second Finished Harp Photo

This illustration is adapted from “Knights American Mechanical Dictionary: by Edward H. Knight, published by Hurd and Houghton, New York, in 1877

After completing both of the harps design and testing, my worst fears came true. Trying to generate the wind necessary to generate tones, I used a variety of items that produce air or wind. I tried a desk fan, hair dryer, large floor fan, leaf blower, and even flapping a personal fan towards the harp strings. By trying to attempt these multiple pieces of equipment to generate air or wind, the mechanical sounds were far greater in intensity than the sound emitted from the harp. Also, upon further research, the use of catgut strings in these early century version may also be a cause of why I cannot get any tones out of the harp. In the early 1900’s, the best string
instruments were made with catgut strings, which is a type of cord made from the natural fibers found in the walls of animal intestines. The best at that time were produced in Rome and other Italian cities. Today, the best catgut can still come from Italy but also from Germany, India, Morocco and the United States but can be very expensive. When researching, I found that one string could cost as much as $62.95 each. Unfortunately, I theorize that the only true way to see if the harp works, it to have a nice study natural wind breeze, as all examples seem to call for. Since the Professor liked my second design, I am going to forward to him so that he can use in future Sound Seminar’s in the hopes that he will actually be able to see the harp in action and use as a prop, reference or example. I will ask for it to be returned once it’s used is no longer needed.

REFERENCES/GUIDES

Read more:

www.ehow.com/how_8611098_make-wind-aolian-harp.html#ixzz2jG6IDJa0

www.instructables.com/id/build-a-wind-harp/?allsteps