

From Diddley Bow to Bo Diddly: Making Cigar Box Guitars

Prepared by Scott Ainslie,
<http://CattailMusic.com>, scott@cattailmusic.com

In the mid-1980's, I started to visit elderly black musicians in eastern North Carolina. Mostly blues and gospel guitarists and singers, all these men (and a few women) played electric guitars when I met them. When I asked, these elders (born between 1900 and 1930) what their first instruments were, 9 out of 10 of them responded, "A cigar box guitar."

Often strung with a piece of broom wire, or one strand of wire fished out of the screen door, these elementary, home-made contraptions were gateway instruments for many fine traditional blues and gospel musicians who grew up in rural, sharecropping settings where, if you wanted to make music, you flat out had to make the thing you were going to make the music on.



Over the years, I have learned that there are prototypes for these instruments all over sub-Saharan central West Africa, where the vast majority of America's slaves were kidnapped, stolen, or purchased for removal to the New World.

Instruments like these, sometimes built on the sides of outbuildings or slave cabins were likely the first stringed instruments built and played by African people in this hemisphere.

The musical roots of jazz, blues, funk, even hip hop and rap begin here with this unassuming little instrument.

Pitches on these instruments are changed by pressing a 'slide' against the string. A piece of metal or glass, smooth stone, bottleneck, folded up pocket knife, piece of silverware, or even a dried and cured ham bone can be used for shortening the working/vibrating length of the string. Just as with resonators, mass and hardness are key to how much sound and sustain you will get from a slide.

Cigar Box Guitar Materials and Dimensions

I have seen and heard of these instruments being nailed to the sides of sheds and shacks or assembled out of hollow-core doors, with a great long stretch of fence wire, yielding the low notes and rhythms that laid the foundation for the Blues, Bo Diddly's dance grooves, and James Brown's funk. But the instruments I have made have all been cigar box guitar-sized, rather than house-sized.

A vibrating string length of around 24" to 26" will allow you to use a standard guitar string on the instrument and is a length that will be familiar to the hands of people who play guitar.

Rather than having everyone assemble basically the same instrument, it is infinitely more interesting and instructive to have people scavenge for materials, build, measure out and decorate instruments that

are unique. Once a little experimenting has been done, these are science projects waiting to happen and will teach a great deal about the math, science, physics, and tradition behind these instruments.

There are many on-line resources to be found with the search term “cigar box guitar” (Listed below).

Materials you will need:

A Neck: a broom stick, mop handle, a length of 1” x 2”... The neck runs the length of the instrument, going right through or applied to the top of the body. It provides the structural integrity of the instrument, holding the tension of the string and helping to communicate vibrations to the body.

A Resonating Body: this could be a wooden (or even a heavy cardboard) cigar box, a Christmas Cookie tin, a small box or tray of almost any kind, a cast off Tupperware container, a food tin, or paint can... One needs something that is light and hard enough to vibrate well and just strong enough to hold up to contact with the string.

A string: I use guitar strings of different gauges (\$0.95 - \$1.35/each), according to the pitch that I use to tune the instrument, but wire off an old discarded broom will work and is the traditional choice – the best string on the farm.

A way to anchor the string : For a tuning peg, I use mismatched, cast-off guitar tuning pegs from the junk box in a guitar shop (around \$3 apiece), but I’ve seen these made more cheaply with friction-fit piano tuning pegs (familiar to hammer dulcimer and autoharp players).

For anchoring the non-tuning end, almost anything will do: a screw or nail, a small tab of metal or wood.

A Bridge: This is the term used for whatever is trapped between the tightened string and the resonating body of the instrument: a pencil, a small piece of wood or metal, piece of threaded rod, a small can...almost anything will do. The bridge is generally not glued in place, but merely trapped between the tightened string and the body of the instrument like banjo bridges. It communicates the vibrations of the string mechanically to the front of the instrument.

Tools?

It is helpful to have access to a drill of some kind, a saw to cut your broomstick down to size, a screwdriver and a few screws, depending on your raw materials and how you’ll get it together.

Assembling Your Cigar Box Guitar: Methods

There are at least two fine methods for building these little instruments, which we’ll conveniently call Method #1 and Method #2.

Method #1, my preferred method, involves drilling or cutting a hole in the body of the instrument and inserting the neck through the instrument. This generally requires more fiddling with power tools. Power tools can be dangerous and this method may create obstacles you don’t want to face. Hence, Method #2.

Method #2 involves rigging up the string, tuning peg, bridge, and anchor point for the string on a simple length of 1 x 2” (or its equivalent) and applying this to the resonator/box. It can be screwed, glued, or even tied in place. These will be satisfying, if slightly quieter instruments. And with the

vibrating string/neck assembly being structurally independent of the body, one can try various potential amplifiers before final assembly.

Assembling Your Cigar Box Guitar: Method #1

First: Measure your neck against the resonator/box/body material and get a sense of how long you want the neck to be. Figure a vibrating length from the peg to the bridge of 25-26" (with the bridge set somewhere near the middle of the surface of your resonator) and determine where and how to cut the neck.

Second: If you have secured a tuning peg of some kind, you'll mount this on the end of the neck furthest away from the body of the instrument. This usually involves drilling a hole for it and may require some shaping of the end of the neck to accommodate the peg.

Third: Drill or cut a hole in the body of the instrument for inserting the neck into the body of the instrument. You will cut one hole, run the neck through the instrument and anchor it from the opposite side of the instrument body with a screw. [With a wooden box, I also secure the front of the instrument to the neck with a screw through the face of the instrument that pulls the neck up tight against the body where the neck enters the instrument. Tightening this joint prevents rattles.]

Fourth: Decide on a way to anchor the non-playing end of the string at the bottom of the instrument, securing it to the box/neck end so the neck is holding the tension of the string and the box is left free to vibrate and amplify the sound.

Fifth: Choose something to function as a bridge (pencil stub, small piece of wood or plastic trim, a small can...etc.

Sixth: String it up and tighten the string to hold the bridge in place somewhere around the middle of the face of the body. Place the bridge between the tightened string and the instrument body. It can be useful to measure out the place for the bridge to establish a vibrating string length (the distance from the tuning peg to the bridge). This will help in establishing where the octave, fourth and fifth notes of the scale are.

Seventh: Tune the pitch to a note you like to sing to. I use D, but anything that suits you will do.

Assembling Your Cigar Box Guitar: Method #2

First: Measure your neck against the resonator/box/body material and get a sense of how long you want the neck to be. Figure a vibrating length from the peg to the bridge of 25-26". It is good to have the neck extend a little beyond the body of the instrument at the resonator end: this provides space for a way to attach the lower end of the string and for the bridge, and possibly a way to tie the instrument onto the resonator, if that's the method chosen. Make some decisions and then determine where and how to cut the neck.

Second: If you have secured a tuning peg of some kind, you'll mount this on the end of the neck furthest away from the body of the instrument. This usually involves drilling a hole for it and may require some shaping of the end of the neck to accommodate the peg.

Third: Attaching the string at the other end of the neck: If the neck is planned to extend past the body of the resonator/box, drill a small hole in the neck that will permit the string to be threaded through the neck. (Steel guitar strings have a small metal ball caught in the lower end for anchoring the

string inside the body of the guitar. The hole you drill for the string should be small enough to prevent the ball end from passing through it.) If this hole is angled a bit, it will prevent the string from having a sharp crook in it, once it clears the surface of the neck and heads toward the bridge (You can eyeball this angle and drill at 45-60 degrees, rather than straight down 90 degrees from the surface of the neck).

At this point, with the tuning peg mounted on the neck and a way of anchoring the other end, you can attach the string to the neck and tighten it up a bit. You can either glue a bridge in place and use the tension of the string to clamp it, or simply place whatever you're using for a bridge under the string near where it emerges from the anchor point and trap it there with the tension of the string.

[The vibrating length of the string will be from the tuning peg to the bridge. You can measure and mark the bridge placement. The overall vibrating length will be your guide for marking off the octave (1/2 of the overall length); the fifth note of the scale (1/3); and the fourth note (1/4).]

Fourth: Take your vibration generating string/tuning peg/bridge/neck assembly and simply hold it against your resonator of choice and pluck the string. Lay it on a table. Hold it against a door. Play it in the air, out of contact with anything else. You can experiment with it just the way we used our other vibration generator, the tuning fork.

Fifth: When you've settled on a body/resonator, decide how to attach the neck to it. It can be glued, lashed, screwed, bolted... You could even try doublestick tape or a couple of Velcro dots, if you'd like to take it apart later. Keep in mind that anything soft will absorb mechanical energy and interfere with the transfer of vibrations and volume of the instrument.

Sixth: Tune the pitch to a note you like to sing to. [I use D, but anything that suits you will be fine.]

Seventh: You can mark the neck at the octave, fourth, and fifth scale tones. Having established those, using a slide to shorten the string length, I also mark the flatted-third and flatted-seventh notes of the African/minor pentatonic scale by ear.

Resources

On line, there are a variety of videos on YouTube.com where I am playing my cigar box guitar and a series where I am teaching scientific concepts using strings with high school physics teacher Thomas Altman.

Scott Ainslie plays Parchman Farm Blues:

http://youtu.be/qm8jmaa9_N4

Scott Ainslie plays Cigar Box Guitar at the Ships of the Sea Museum

<http://youtu.be/XwxBoZmbBk8>

Scott Ainslie teaches Resonance with Physics Teacher Thomas Altman

<http://youtu.be/7SXZ-LGu594>

Scott Ainslie teaches String Tension with Physics Teacher Thomas Altman

<http://youtu.be/WZV32ovppm4>

Scott Ainslie teaches Wave Length with Physics Teacher Thomas Altman
http://youtu.be/3JEM_v7QiNw

You may also find lots of YouTube.com videos of people playing these instruments. For a traditional player, see the late Lonnie Pitchford - African Roots of the Blues - Part 4
<http://youtu.be/eiOxn4Y9cJc>

Other resources on line:

If you will put “Cigar Box Guitar” or “Diddley Bow” into a search engine you will find all manner of websites, some with plans and videos on building the instruments, with one, two, three, or even four strings. These instruments have experienced a resurgence in recent years among amateur makers and players. There are even hopeful souls selling kits and finished instruments on line.