

Before the 1950s, when factory-built guitars became affordable, many folk musicians built their own stringed instruments. Wooden cigar boxes became a popular choice for the sound board of the instrument. Thus, an American tradition was born, and today, the cigar box guitar is enjoying a folk revival.

This guitar is a simple, three-stringed design that requires only basic tools and common hardware to build. A kid can build it (and play it), and so can you.

This project is based on the article written by Ed Vogel in MAKE magazine, Volume 4.



Tools

Pen, pencil, or markers
 Scissors
 Drill and drill bits
 Phillips screwdriver
 Soldering iron, solder, and wire
 Saw

Materials:

Cigar box
 Mason twine, #15 and/or #18 (available at hardware stores)
 ¼" x 3" eyebolts, with nuts and washers (3)
 #12 x 1" Phillips wood screws (3)
 3' length of 1"x2" red oak
 ¼" square hardwood stock, at least 1½" long (3)
 Super glue
 90-second epoxy (or 5-minute epoxy, for a little more positioning time)
 ¼" washers (6)
 ¼" wing nuts (3)
 2" common nails
 3½" x 1" (size 33) rubber bands
 1500-3000Hz piezoelectric transducer (Radio Shack #273-073A)
 6' long, two conductor, shielded cable
 Cassette player

Estimated cost: \$15-30

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Before you begin:

You may find it necessary to modify these instructions, depending on what materials and tools you have at hand, and any improvements you might want to make in the design. Go ahead and customize the project and make it your own!

Step 1. Make the guitar neck

You'll need to make six holes at each end of the 1" x 2" piece of oak, which will become the neck of the guitar. The strings will go through the holes at one end and attach to tuning pegs, while the holes at the other end, where the cigar box will be placed, will anchor the strings below the bridge.

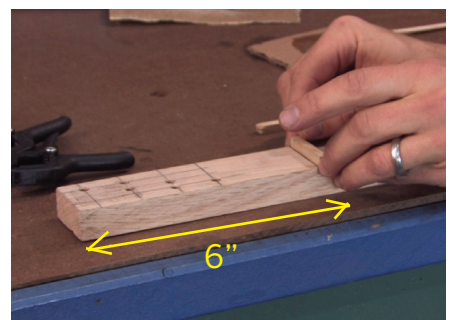
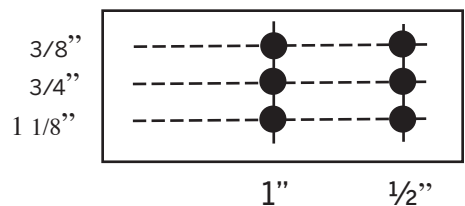
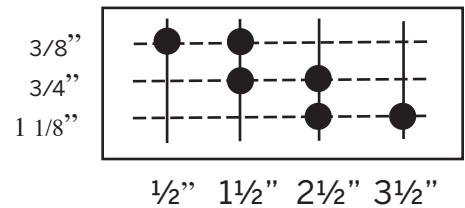
Laying out grid lines at both ends of the 1x2 will help you make precise markings for the holes. At each end, start by drawing a line perpendicular to the length of the board, $\frac{1}{2}$ " from the end. Then mark three more lines, each spaced an inch apart. For the horizontal gridlines, draw three lines, starting $\frac{3}{8}$ " from the edge, spaced $\frac{3}{8}$ " apart.

Next, make marks at the intersection of these lines, as in the diagrams. Then drill holes with a $\frac{1}{4}$ " bit.

At the other end, drill six $\frac{3}{32}$ " holes.

Step 2. Place the bridge and nut

The bridge and the nut hold the guitar strings up and off the neck so they can vibrate freely. Take one of the pieces of $\frac{1}{4}$ " x $\frac{1}{4}$ " hardwood stock and place it 6" down from the top of the tuning peg end of the neck (this will be what's called the nut). Secure in place with epoxy glue and allow to dry.



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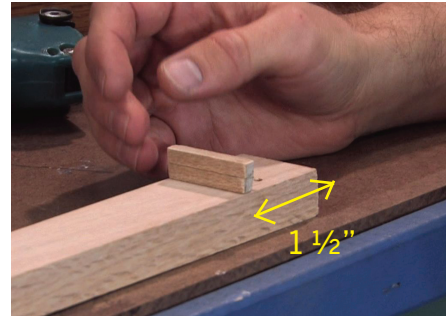
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The bridge needs to be twice as tall as the nut, so stack two lengths of wood trim on top of each other and glue them together. Then place the bridge $1\frac{1}{2}$ " from the other end of the neck. Secure with epoxy glue and allow to dry.

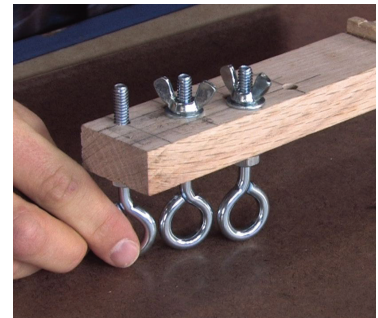


Next, make three shallow grooves for the strings in both the bridge and nut, starting $\frac{3}{8}$ " from the top of the edge and spacing them $\frac{3}{8}$ " apart. The grooves should line up with the gridlines drawn in Step 1.

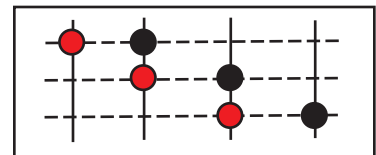


Step 3. String the guitar

First, thread a nut and a washer onto an eyebolt, and then insert the eyebolt into a tuner hole (at the guitar head). Thread another washer and then a wing nut on the eyebolt on the other side.



Repeat with the other two eyebolts. Lightly tighten all three eyebolts. The eyebolts should be placed in the holes corresponding to the red holes in the diagram at right. The string will pass through the holes marked in black, and attach to the bolts under the neck.



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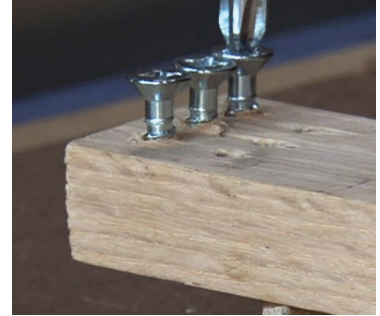
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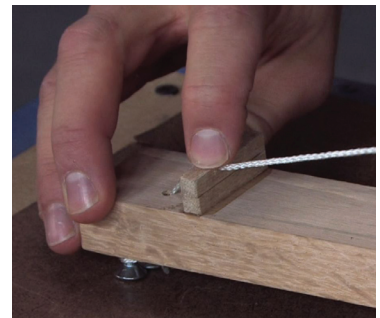
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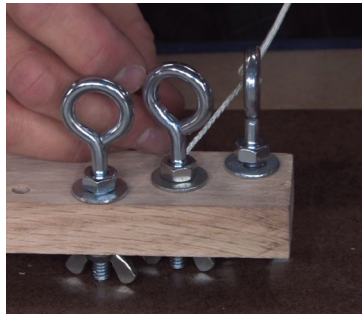
Next, at the other end insert wood screws into the 3/32" holes closest to the end of the neck. Screw down about halfway.



For each string, cut a piece of mason twine about 5 feet long. Tie the twine to the woodscrew. Thread the string through the empty hole next to the wood screw, over the groove on the bridge, along the neck, over the groove on the nut, and down through the corresponding hole next to the tuning peg. Then, double-knot the twine through the eyebolt.



To tighten the strings, hold the wing nut and turn the eyebolt clockwise, wrapping the string around the eyebolt. Make sure the string is sitting in the grooves on the nut and the bridge. When the string is taut, firmly tighten the wing nut.



There are a number of tuning schemes for a 3-string banjo. See the resources section at the end of the instructions, or make up your own tuning.

Step 4. Place the frets

Before placing the frets, lightly sand the edges of the neck.

Use nails and rubber bands as frets. Round the ends of the nails with a file before attaching to the neck, so they don't poke your fingers. (See the link in our Resources section for more information on how to space the frets.)



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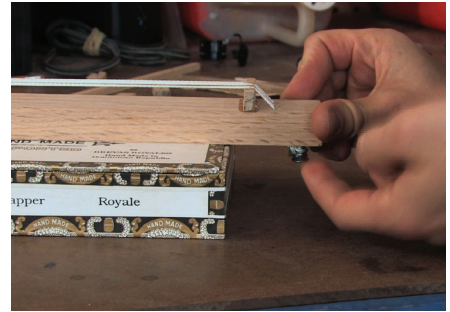


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Step 5. Attach the cigar box

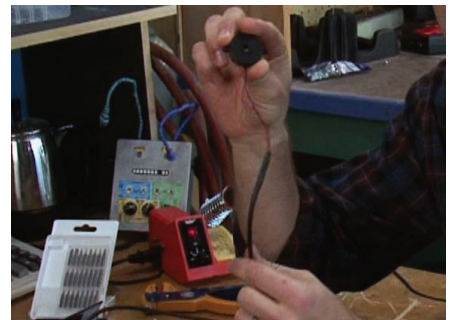
Glue the cigar box cover shut. Center the cigar box under the guitar neck, leaving 1½" of the neck hanging over the box. Epoxy the box in place.



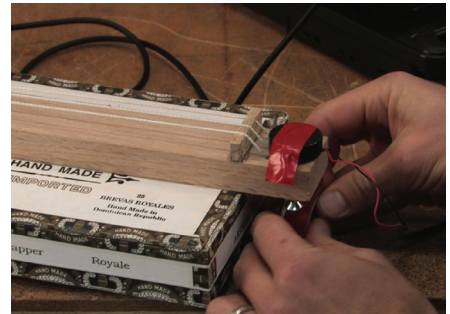
Step 6. Amplify the guitar

The simple amplifier uses a piezo transducer as a guitar pickup and an old cassette player as an amplifier and speaker.

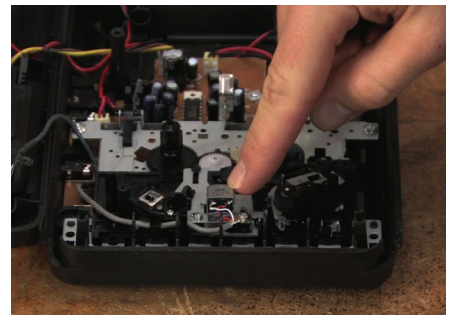
First, solder the leads of the shielded cable to the leads on the transducer.



Next, place the transducer on the end of the neck and fasten it with electrical tape.



To connect the piezo to the cassette player, first remove the cover of the player. Locate the playback head (see illustration).



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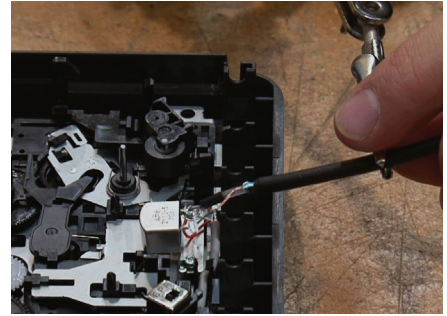


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Solder the other end of the shielded wire leads wires to the recording leads and replace the cover.

Now, the cassette circuit will amplify the signal coming from the transducer, producing a strong overdrive sound.



Step 7. Play that funky music!

Tune up your guitar, put batteries in the cassette player, and turn up the volume. You're ready to rock!



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Resources:

For additional information, check out this website:

<http://cigarboxguitars.com>

For a free Fret Slot Spacing Calculator visit:

http://www.manchesterguitartech.co.uk/fret_calculator.php

TELL US HOW YOUR CIGAR BOX GUITAR WORKS!

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