THE $5 CRACKER BOX AMPLIFIER

By Ed Vogel & Blind Lightnin' Pete

BIG SOUNDS FROM A SMALL PACKAGE

In MAKE, Volume 04, I presented my version of the venerable cigar box guitar. The instructions for the project included adding an electric pickup so you could play the guitar through an amplifier.

People from around the world emailed me to tell me they'd built cigar box guitars based on my instructions. I struck up a conversation with one gentleman from Europe who goes by the moniker Blind Lightnin' Pete. He made a couple of beautiful cigar box guitars, including one he calls the Vintage Blues Texas Rattlesnake Special model. He then went one step further, and built a cracker box guitar amplifier. This outstanding little amp cost all of $5 to build (depending on where you get the parts). Pete kindly allowed me to modify his design and present it as a project for you to build. (See page 111 for a word from Pete about the origins of the cracker box amp.)

My amp differs a little from Pete's because I wanted to make a workable little practice amp with parts and tools that could be purchased "one-stop shop" at RadioShack and built in an hour.

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Ed Vogel lives in Minneapolis and believes that nothing may just be the next big thing.
Blind Lightnin' Pete is the online pseudonym of Howlin' Mississippi Slim.

Photograph by Sam Murphy

THIS BOX ROCKS

Hi-Carb Sound

The heart of this surprisingly loud, clear-sounding, battery-powered guitar amp is National Semiconductor's LM386 series low-voltage op-amp IC. Two potentiometers in the circuit control the gain and the volume. For the cleanest sound, turn down the gain knob all the way and turn up the volume knob to the maximum. Then slowly turn up the gain. For a raunchier, distorted sound, start with the volume knob all the way down, and the gain knob at maximum. Then crank up the volume. You can achieve lots of different sounds by playing with the knobs. Experiment!

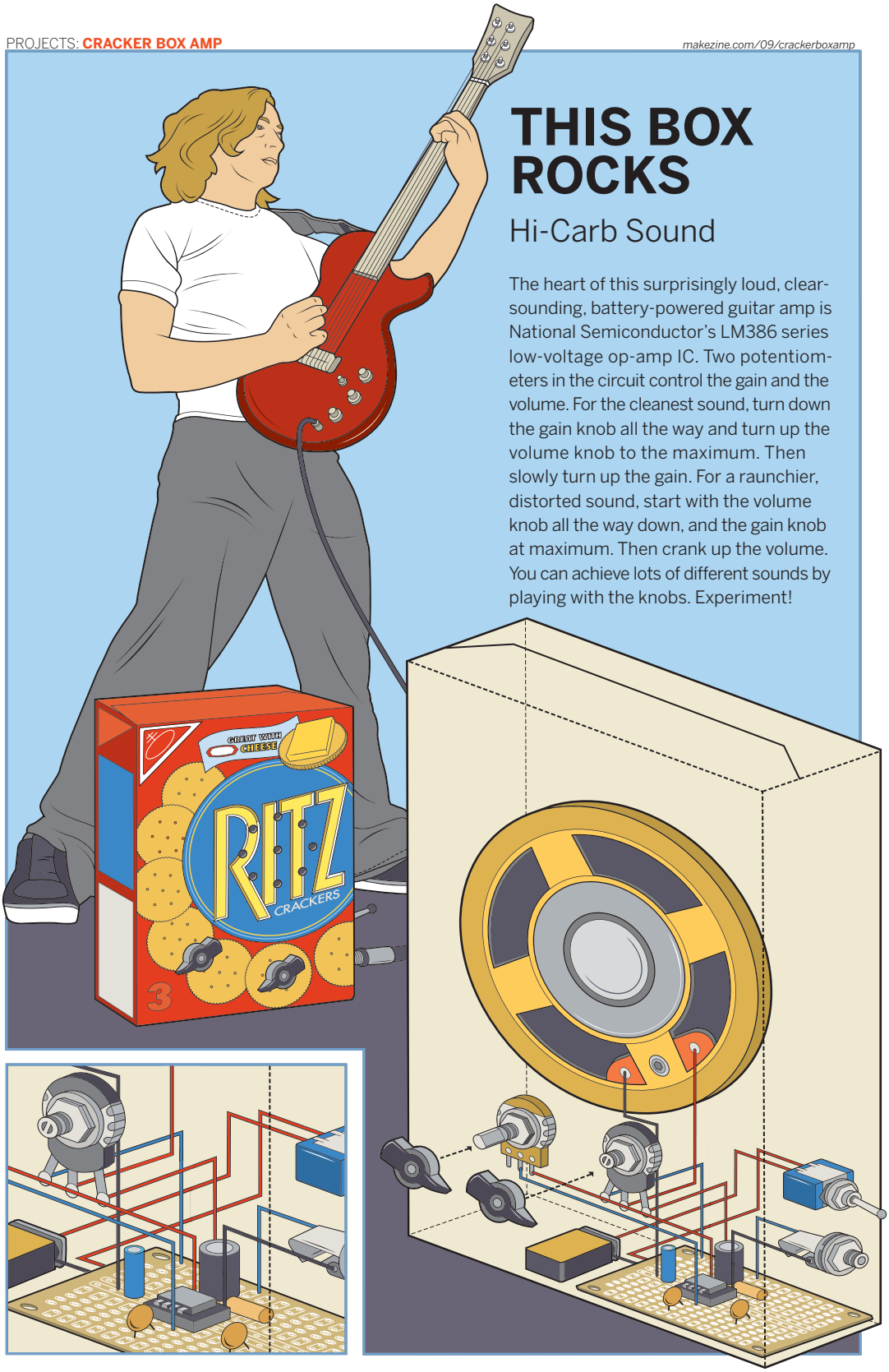


Illustration by Timmy Kucynda

SET UP.

MATERIALS

[A] A box of some sort or another (cracker box shown)

[B] Toggle switch, single pole single throw

[C] 9V battery

[D] Battery connector

[E] 0.047µF capacitor

[F] 220µF capacitor (biggest)

[G] 0.01µf capacitor

[H] 100µf capacitor

[I] Hookup wire, 20 or 22 gauge AWG solid core is best.

[J] 5KΩ potentiometer (audio or log taper)

[K] 25-ohm (25Ω) rheostat

[L] LM386N audio amplifier

[M] 8-pin DIP IC socket

[N] Chicken head knobs (2)

[O] Prototyping PC board

[P] Soldering iron

[Q] Solder

[R] Speaker, 8Ω impedance

[S] 10Ω resistor

[T] ¼" mono phone jack

[NOT SHOWN]
Speaker grill (optional)
Glue gun

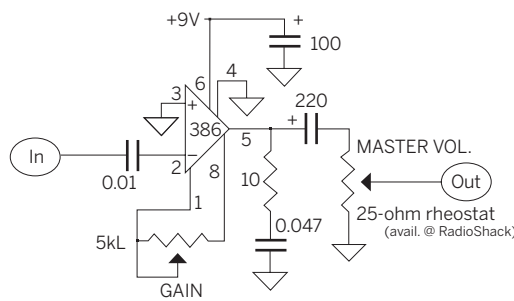
MAKE IT.

BUILDING THE CRACKER BOX AMP

START **Time: An Afternoon** **Complexity: Medium**

1. MAKE THE CIRCUIT

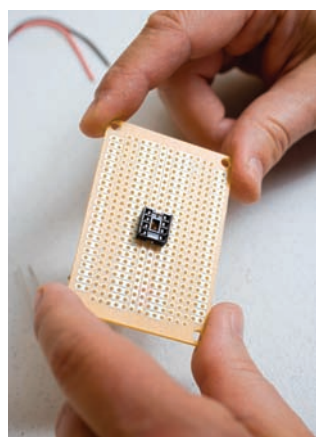
1a. Make a copy of this schematic, or download the PDF at makezine.com/09/crackerboxamp and print it out.

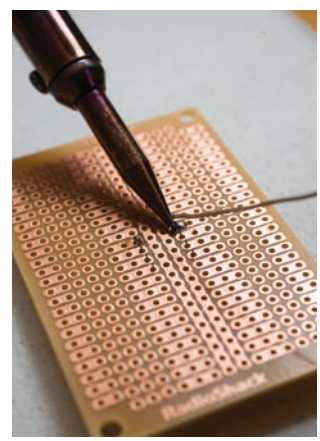


1b. Install the socket in the printed circuit board.

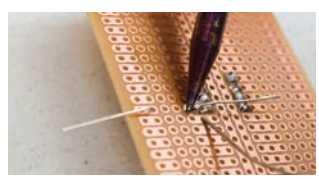
1c. Solder it down.

1d. Install the chip. I like having the chip in the printed circuit board while I build because there can be no doubt as to where pin 1 is. This is also why I install parts and make wire connections on the top of the printed circuit board.





1e. Install the 0.01µF capacitor so one leg connects to pin 2 of the chip and one leg is in a "proto row." Flip it over and solder it.



Photography by Ed Vogel