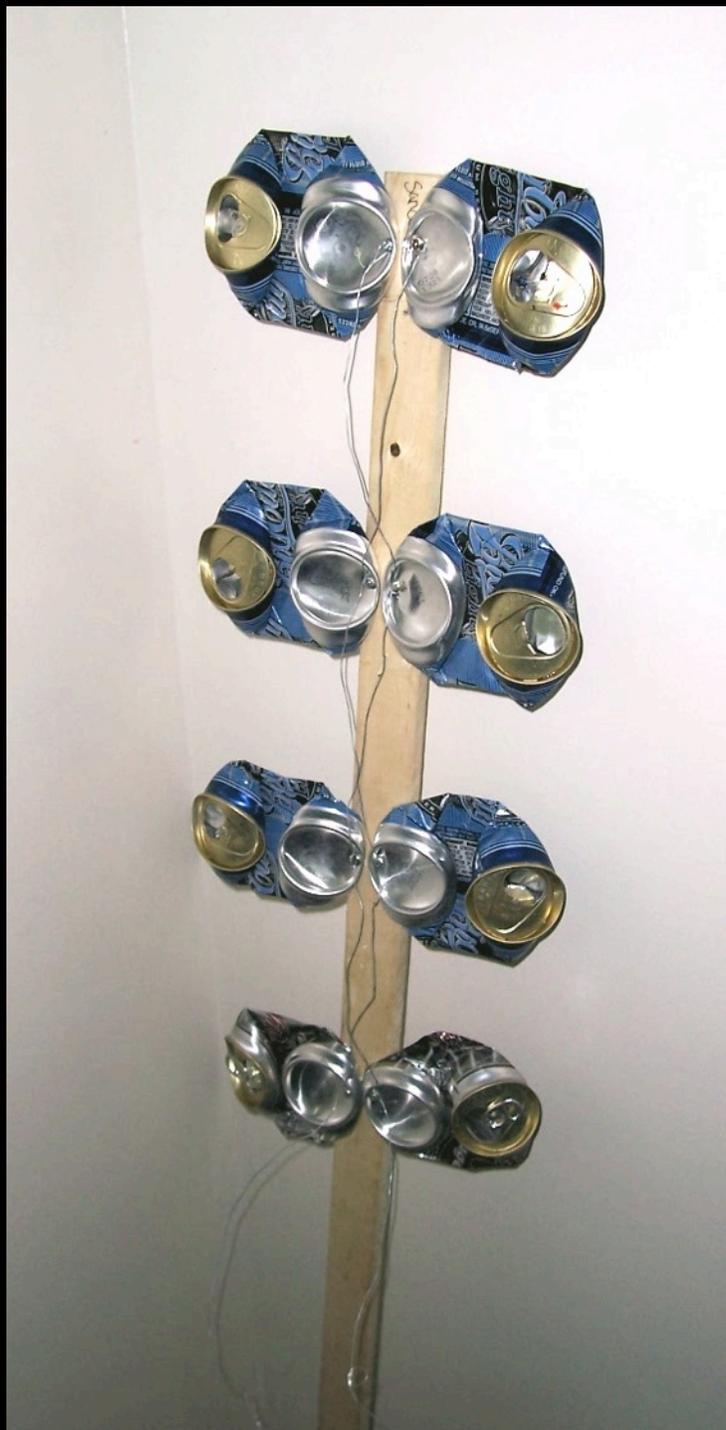


2008 Lecture Series

HDTV Can Antenna DIY



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Since I don't use cable or satellite services and the February 9, 2009 switch over to digital TV is coming, I made the switch a few months ago. I found that the rabbit ears type of antenna wasn't all that great.

So, I made one out of beer cans - and you can too (or use soda cans), and out of scrap parts I had laying around the house.

Parts needed: cans, stiff wire, wood stick, screws. Tools: screw driver, wire cutter, drill.

1. Drink the beer/soda and make sure the cans are dry, otherwise you will have a malty smell.
2. Any wood stick is good, but I used a 2x1/2 by 4 feet. Whatever you use is must be of non-conductive material.
3. Smash the beer cans flat.
4. Drill a hole at the bottoms of the cans with appropriate sizing for the screws.
5. Place the beer cans next to each other but not touching each other as in the photo. Screw the cans down but not tightly - use a stiff wire (I used some old chicken wire) to wrap around the screw, then screw down tightly.
6. Continue on for every element - spacing them 3 inches apart, making sure the wires criss-cross over and not touching each other! You can have as many as you like.
7. Finally connect the end wires to your TV. You don't have to have a balun (or "transformer" as some call them)!
8. Set it in the corner. Note: although technically bi-directional, the antenna tends to tune best by pointing the antenna to the signal with the crossed connecting wires to the front.

The next page is all the techie-geek info for how this works.

Digital Television Antenna

The antenna is bi-directional, horizontally polarized, and made up of 4, $\frac{1}{2}$ wavelength dipoles, stacked approximately $\frac{1}{3}$ rd wavelength apart.

Since the cans measured end-to-end 9.25 inches, as a dipole the $\frac{1}{2}$ wavelength is suited for the mid UHF frequency range for most digital television stations. That is $468 \div .77$ (the 9.25 inches \div by 12 inches) = 608 MHz. The cans are approximately 3.5 inches wide flattened, they also have broad bandwidth properties. Since the center of the $\frac{1}{2}$ wavelength dipole is 75 ohms, a balun is not needed - the impedance of most television sets is set at 75 ohms.



A balun or transformer connector



Legal Stuff.

No guarantees are made for this antenna. Each home has it's own peculiarities. Keep other metal objects away from the antenna. Your reception depends on a lot of things: how far away is the station and how much power it is transmitting and how tall is its tower, trees and building in the way, etc.

Do not operate this antenna other than described here. DO NOT use it as an outside antenna - it won't last long!

DO NOT use it as a transmitting antenna.

Connect it only to receiving devices. (It will work for radios as well.)