

Rabbit ears are for rabbits, not digital televisions. In this project, we'll show you how to build your own digital TV antenna from wire hangers, a piece of wood and some pipe.

Television antennas are comprised of a series of metal rods cut to exact lengths and positioned so they receive a particular television frequency.

This design was invented in the 1960s by an engineer named Doyt Hoverman. It is particularly sensitive in the UHF frequency range, the same range used for the majority of digital television transmissions.

Tools:

- Electric drill
- Screwdriver or screw shooter
- Screwdriver bits
- 1/16-inch drill bit
- 3/32-inch drill bit
- 1/4-inch drill bit
- Scrap wood



Materials:

- (6) wire hangers
- (1) wood board, approximately 3-inches X 20 inches X 3/4 inch
- (10) #6 round head wood screws, 3/4-inches long, and washers
- (2) U-bolts, 1/4-inch diameter, 2 1/2-inches long, nuts, washers
- (1) 3/4-inch diameter iron pipe, 24-inches long, one end threaded
- (1) 3/4-inch pipe floor flange
- (4) #10 wood screws, flat headed, 1 inch long
- (1) wood board, approximately 12-inches X 10-inches X 3/4 inch
- (1) 75 to 300 ohm matching transformer with spade clips on one end and female F connector on other

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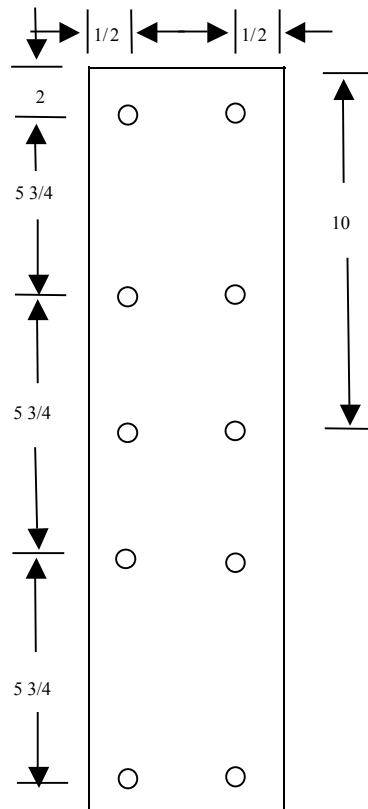
Before beginning, please note:

What follows are general guidelines, not step by step procedures. Nearly every project described on Make: television will require some improvisation and modification of the project according to the situation at hand, so don't be afraid to build your project your own way!

The estimated cost for this project is in the \$10 - \$30 range depending on the extent to which recycled parts are incorporated.

Step 1

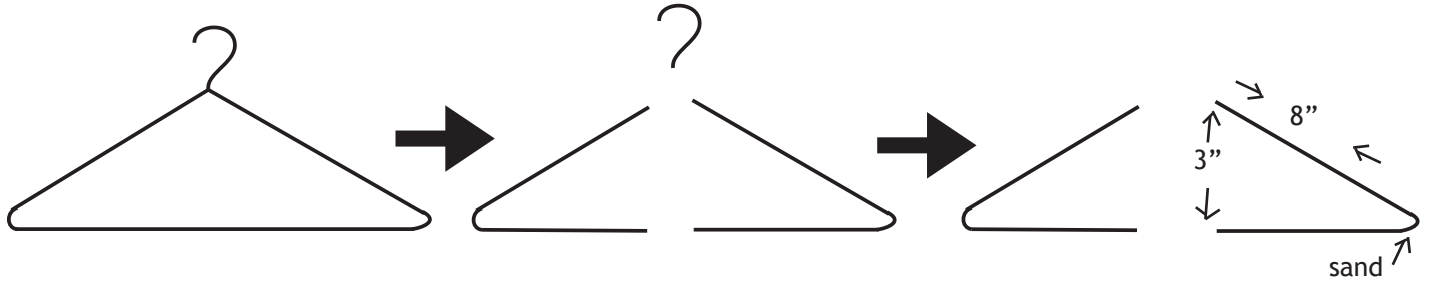
Begin construction of the antenna by marking a 3-inch X 20-inch board as shown in below. Note that these dimensions are important, to get a good signal with the finished antenna.



Step 2

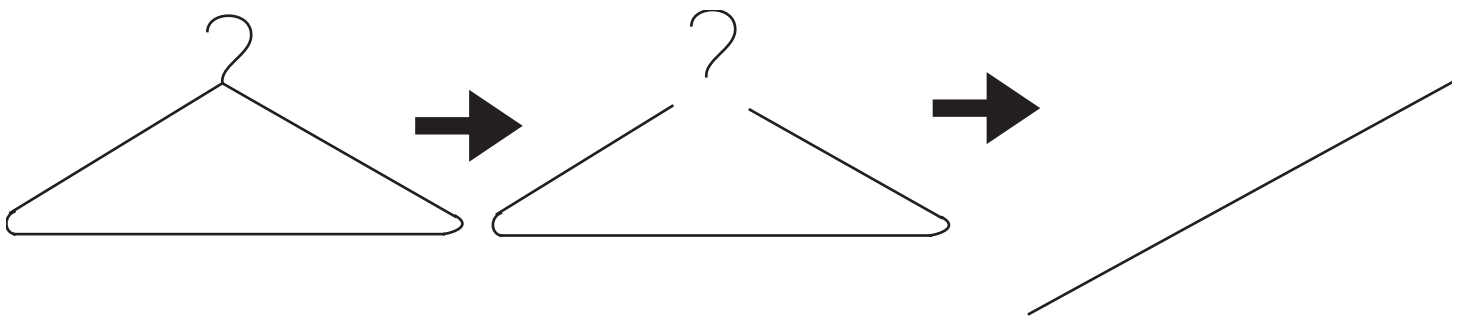
Drill a 1/16-inch pilot hole for each screw location.

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Step 3

Cut apart four wire coat hangers as shown in the diagram above to obtain eight V shaped pieces of wire, each side of the V being 8 inches long with a three inch opening. Remove any paint or varnish at the bottom of the V so they'll make good electrical contact.



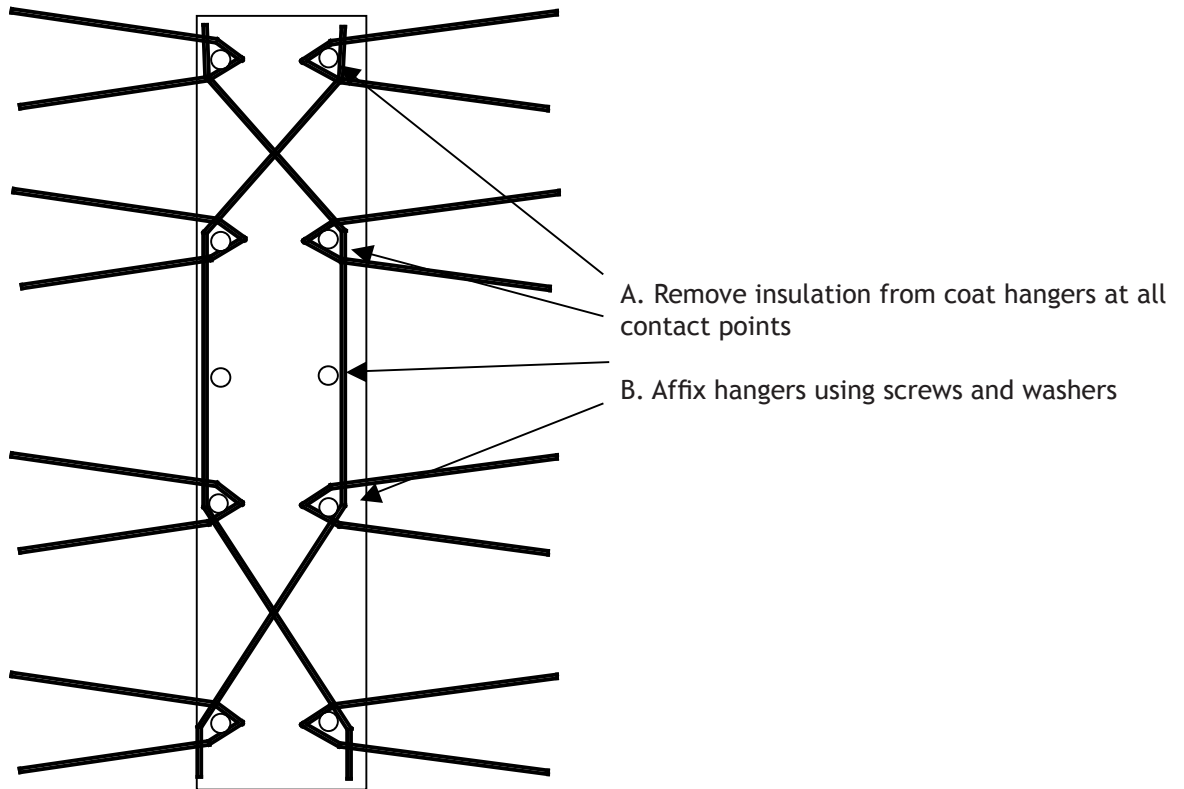
Step 4

Cut apart two coat hangers to obtain 2 wires, 22 inches long.

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Step 5

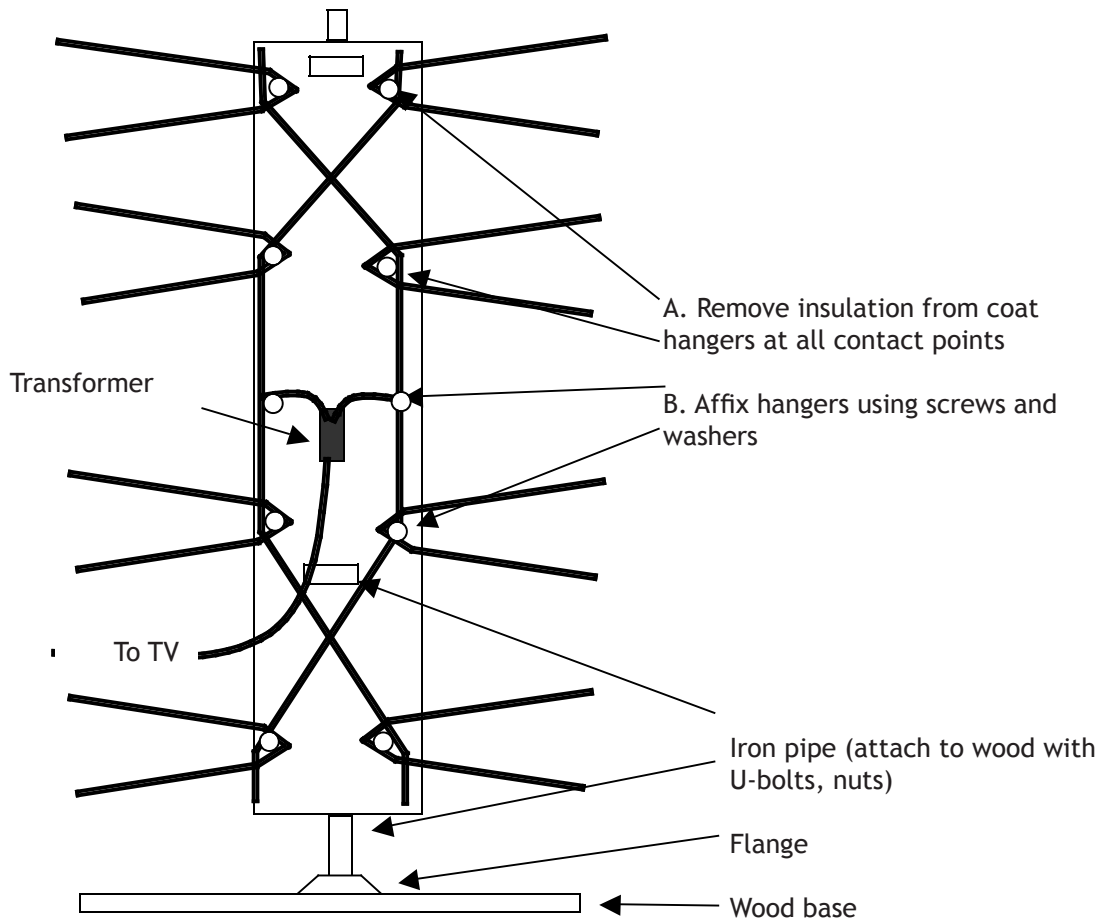
Attach the wire pieces as shown, bending the wire to make good electrical contact with the screw heads. *Note how the straight wires cross back and forth between the screws.*



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Step 6

Attach the matching transformer to the center two connections to the antenna.



Step 7

Attach wood to pipe with U-bolts.

Step 8

Attach flange to wood base and screw pipe into pipe flange.

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Note:

Television signals are strongest when a station's tower can transmit its signal in a straight line to your antenna, unobscured by buildings or trees. Also, signals from close stations are stronger than those from distant stations because signals grow weaker as they travel farther.

There's little you can do about the placement of your house in regard to the location of the television transmitter. But you can use an antenna with better "gain." Gain is a measure of an antenna's ability to pick up signals.

Let us know how your antenna works!

Leave a comment under the video for this project at <http://www.makezine.tv>

More:

Need to understand more about the transition to digital television?

Visit: <http://www.dtv.gov/>

Want general information on how antennas work?

See: <http://www.electronics-tutorials.com/antennas/antenna-basics.htm>

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Your safety is your own responsibility and that includes the proper use of equipment and safety gear and determination of whether you have the requisite skills to successfully and safely undertake the project. These projects are not intended for children.

It is mandatory that you understand that technology, laws, and limitations imposed by manufacturers' and content owners are constantly changing. Thus, all *Make: Television* projects may not work, may be inconsistent with current laws or user agreements, or may damage or adversely affect some equipment.

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