

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.

The following 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" drill bit
- 3/32" drill bit
- 1/4" drill bit
- Scrap wood

Materials

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

Estimated Cost:

\$20 or less.

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!

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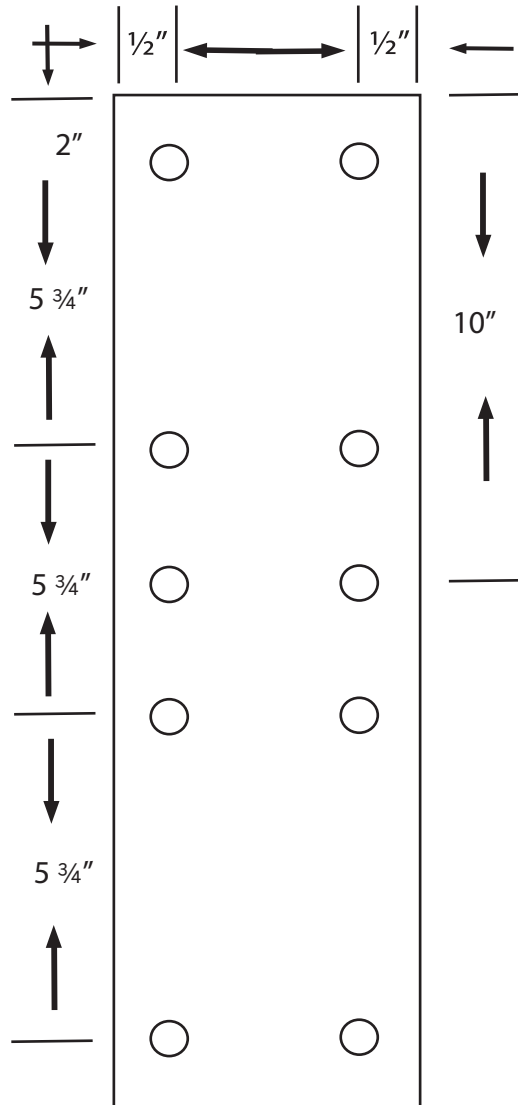


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Step 1. Mark the antenna frame

Begin construction of the antenna by marking a 3" x 20" board as shown below. Note that these dimensions are important to get a good signal with the finished antenna.



Step 2. Drill holes for mounting screws

Drill a $\frac{1}{16}$ " pilot hole for each screw location.

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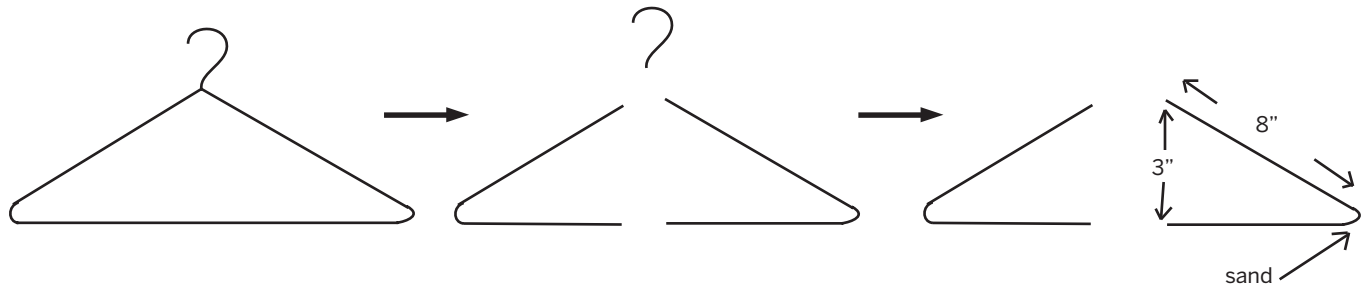


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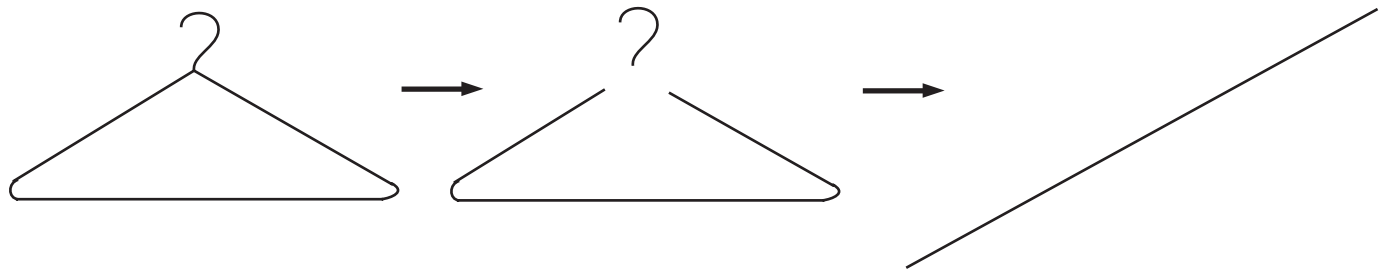
Step 3. Cut four coat hangers and remove finish

Cut apart four wire coat hangers as shown in the diagram below to obtain eight V-shaped pieces of wire, each side of the V being 8" long with a 3" opening. Remove any paint or varnish at the bottom of the V so they'll make good electrical contact.



Step 4. Cut and straighten two coat hangers

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



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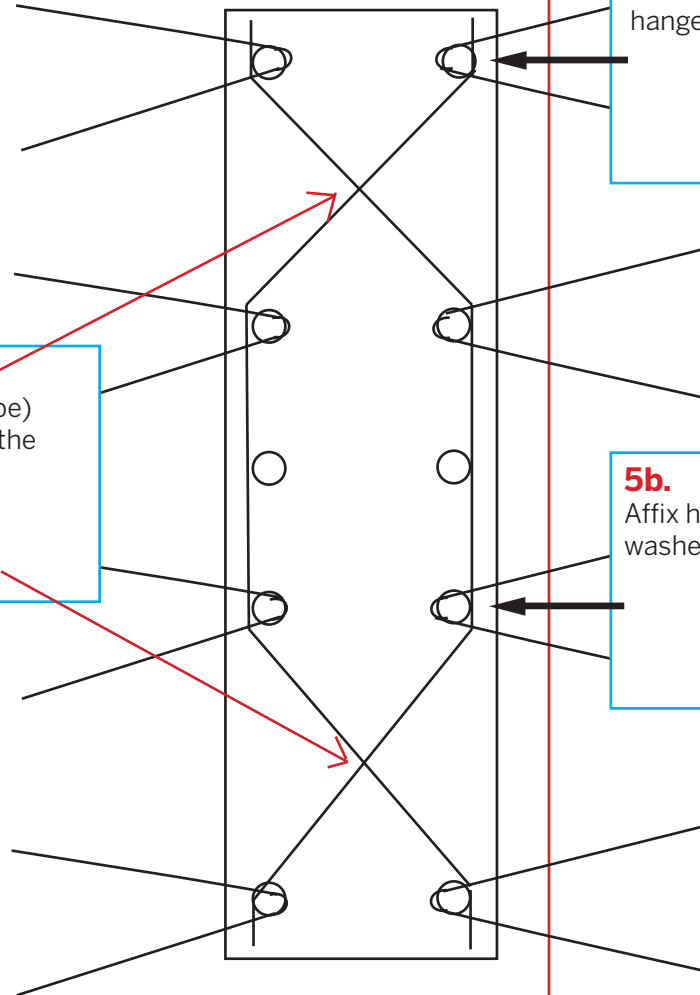


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Step 5. Attach wires to board

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.*



5a.
Remove insulation from coat hangers at all contact points.

5c.
Insulate wires (w/electrical tape) at points where they cross on the board.

5b.
Affix hangers using screws and washers.

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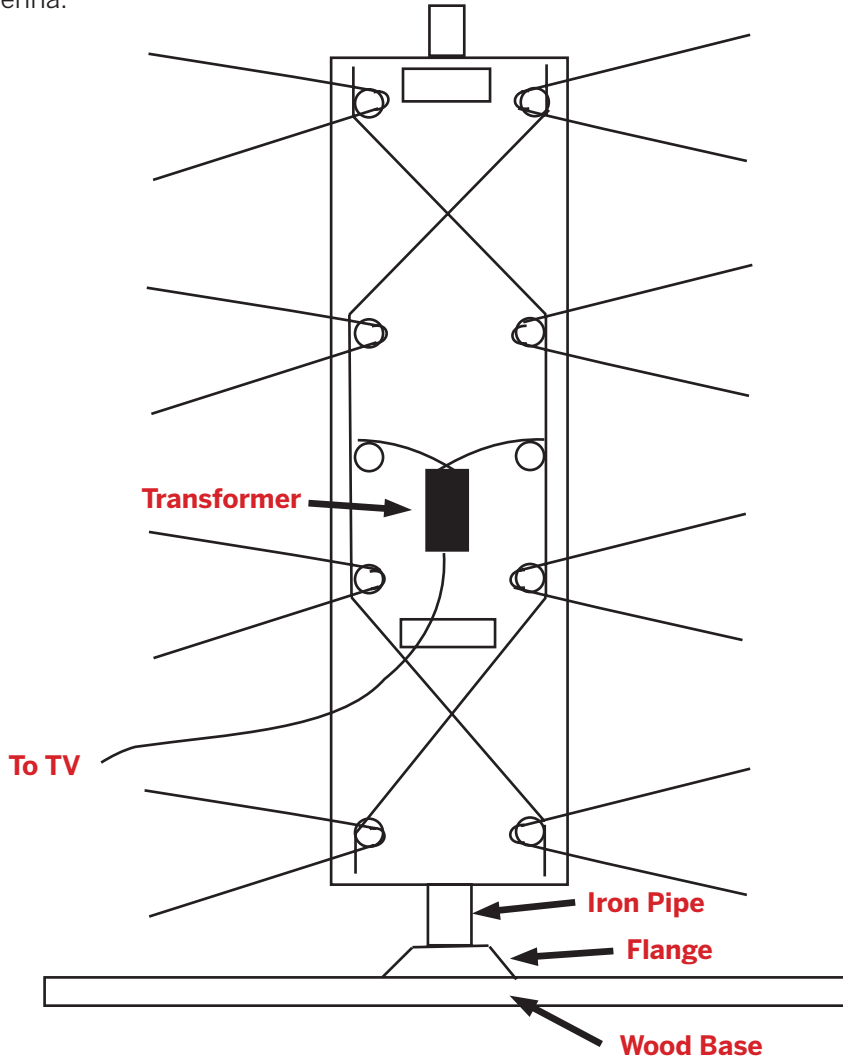


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Step 6. Attach TV transformer

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



Step 7. Attach antenna to pipe

Attach wood to pipe with U-bolts.

Step 8. Attach antenna to base

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

Connect the antenna to your TV and try it out!

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Note:

Digital television signals are strongest when the path from the transmitter to your antenna is not obstructed by buildings or trees. So putting your antenna in an upper story or an attic will improve your reception.

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>

TELL US HOW YOUR ANTENNA WORKS!

LEAVE A COMMENT UNDER THE VIDEO FOR THIS PROJECT AT <http://www.makezine.tv>

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