

Elmers Corner: A Broomstick Antenna

Hi Folks!

I thought I would share an easy antenna project this month that can be used for reception (an transmitting with some modifications) that can be built in an evening.

The Broomstick antenna is a very simple, yet very effective antenna which can be built with materials readily available in any hardware store. I am indebted to Professor Arnie Coro for his kind permission in allowing me to highlight his antenna design, and for his gracious emails giving me some of the background to its design. You might recognize Prof. Coro as the voice of **DXer's Unlimited**, a radio show from Cuba devoted to the radio hobby, featuring technical advice, propagation forecasts, and much more. Here is a step-by-step guide to building this antenna provided by Arnie himself:

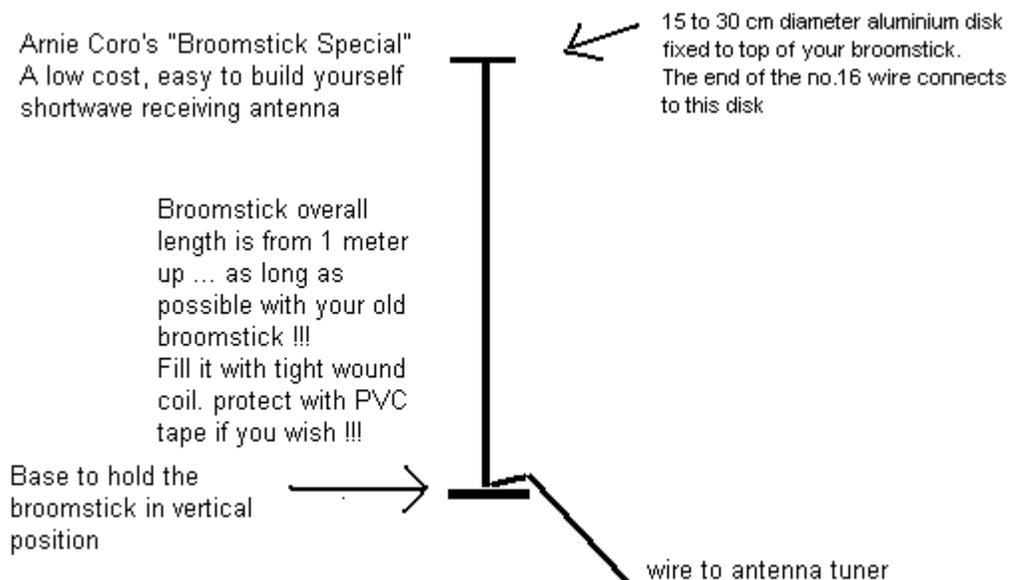
"Yes, this is a "helically wound" wire antenna. It can be built in a few hours... it will take longer if you really want to make it look pretty... UGLY versions can be assembled in minutes. It MAY be used without an antenna tuner, BUT... it works best when you do USE a TUNER.

Here are the easy-to-follow, step-by-step building instructions for Arnie Coro's "Broomstick Special:"

1. Obtain a nice broomstick.... you can use a "classic" wooden dowel broomstick, or substitute heavy walled PVC plumber's plastic tubing
2. Diameter of broomstick is not critical; anything from about 1.5 centimeters or better will work (this means that PVC tubing of about 19mm or 3/4 inch is ideal)
3. Prepare a base to hold the broomstick or PVC pipe vertical... Use a wide base, with enough counterweight attached to keep the broomstick vertical (I use mine next to the bedside radio, have convinced the wife that it is "modern art"!)
4. Obtain an aluminum disc of no less than 15 cm (6 inches) diameter. I prefer using a disc of around 30 centimeters (12 inches) but this is not critical. DO USE THE DISC... as it provides a capacity hat termination and helps reduce NOISE PICK UP
5. Obtain enough No.16 PVC plastic covered household wire; this is the ideal choice, but if you can't find it, then you may use No.16 or No.18 enamel covered copper wire (the one used for winding motors and transformers). If you can't find No.16 PVC covered wire, then your second best choice is No.18 "speaker wire"

6. Connect one end of the wire to the aluminum disk, and start winding a uniform coil using the "broomstick" as the coil form. YOU WANT A NEAT JOB! Turns should fit tightly one next to the other... the "broomstick" will be filled with the wire forming the coil... When you arrive at the bottom end, make a termination—I use a long bolt with nuts and washers to which I tie the end of the wire, and another wire that goes to the antenna tuner. This wire that goes to the tuner can be from 1 meter to 3 meters long (from 3 to 10 feet) but DO KEEP IT AS SHORT AS POSSIBLE.

7. After the antenna is built, you may want to protect it with tightly wound PVC plastic tape over the wire. For EXTRA protection, you can paint the whole antenna with several coats of SPRAY ENAMEL...



8. The antenna works best near a WINDOW!!! Or better yet, you can install it in your balcony or garden... BUT DO KEEP THE CONNECTIONS TO THE TUNER SHORT

9. The antenna is RESONATED with your antenna tuner.... YOU MAY USE IT WITHOUT A TUNER but results are not going to be as good as when the antenna is connected to the receiver via a well-designed antenna tuner

10. YES... YOU MAY USE IT FOR TRANSMITTING.... BUT... according to recent medical research information, keep it as far away as possible from your body!!!

11. The helically wound "broomstick" is a lot of fun to experiment with... It works best when you provide a ground connection to the antenna tuner - receiver combination. One way of providing an "artificial ground" is to connect a length of wire of no less than 5 meters as a "counterpoise," meaning that you can let the wire hang

along the floor or garden. Using the "broomstick" with resonant radials turns it into an excellent amateur radio antenna for a specific band... For example with 4 radials cut for the 15 meter amateur band and a 4 feet high broomstick, (about 1.5 meters)

I can work a lot of stations on 21 MHz, something I do often to demonstrate to visitors what can be achieved with simple homebrew antennas, even when you don't have a lot of space."

I have built one of these antennas and they do work!! Give it a try, and just be patient with the winding – your hands may very well get a little tired! Build it with a friend—three hands are better than two!

73, Robert AK3Q