

Building a Crystal Radio

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Broomfield, Colorado
January 27, 2011

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100 years ago families listened to the radio with their prized crystal radio sets.



[source: Wikipedia]

What is a crystal Radio?

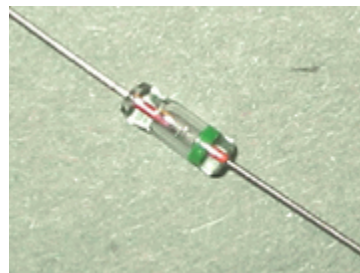
A crystal radio receiver, also called a crystal set or cat's whisker receiver, is a very simple radio receiver, popular in the early days of radio. It needs no battery or power source and runs on the power received from radio waves by a long wire antenna. It gets its name from its most important component, known as a crystal detector, originally made with a piece of crystalline mineral such as galena. This component is now called a diode.

[source: Wikipedia]

Cat's Whisker Detector

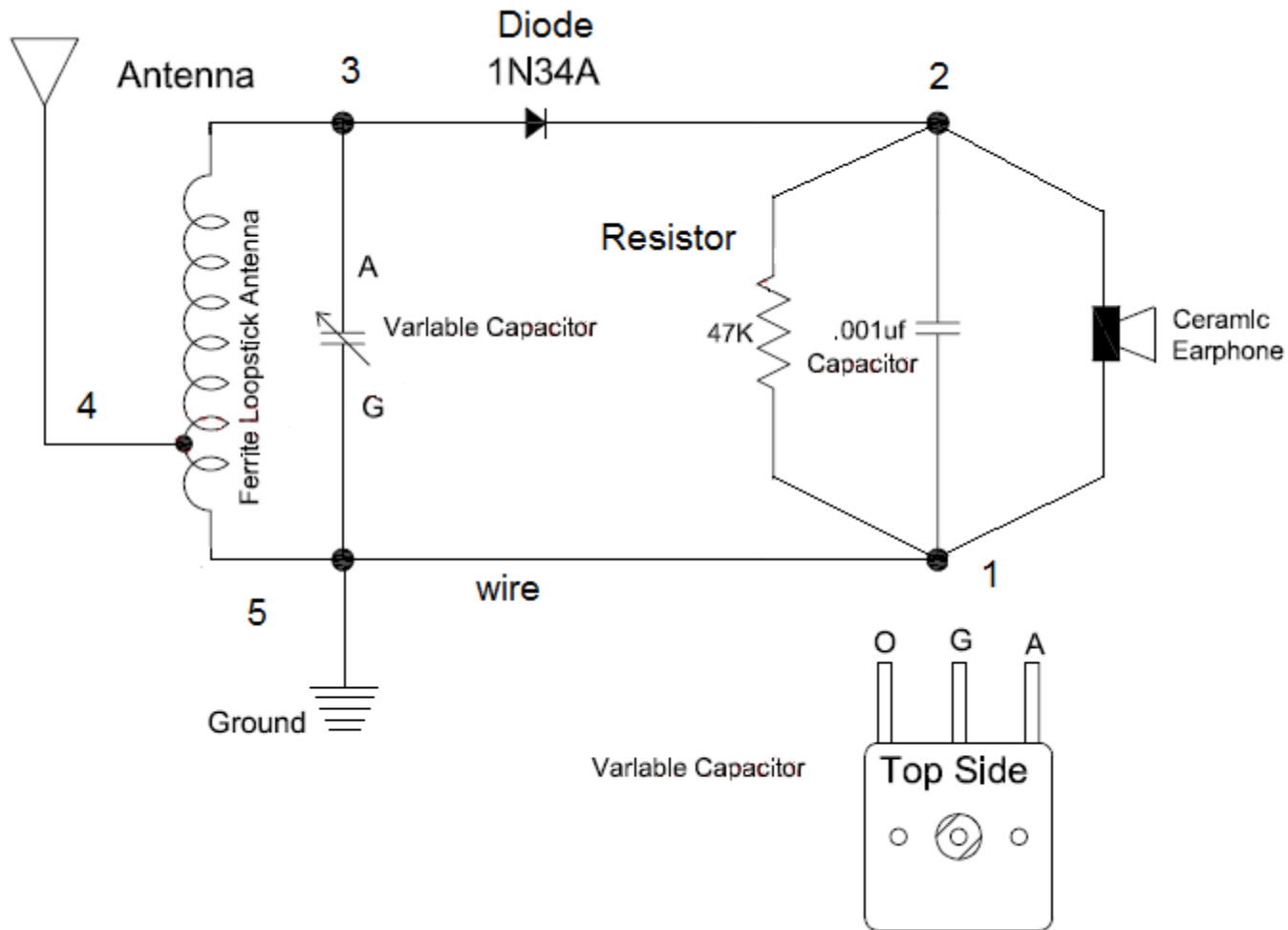


Diode



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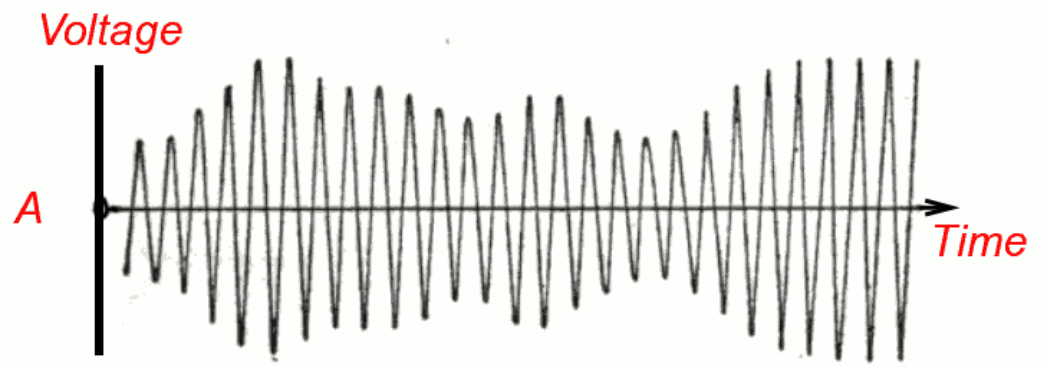
Schematic Diagram of the Radio



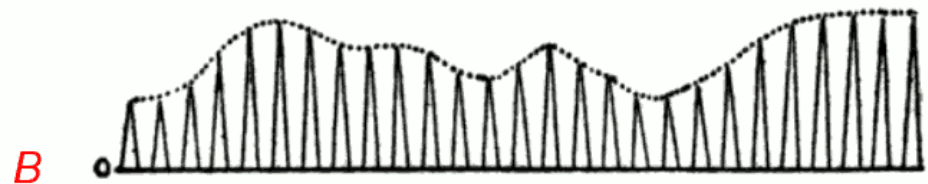
[Source: Scott Lowe]

AM radio signal demodulation

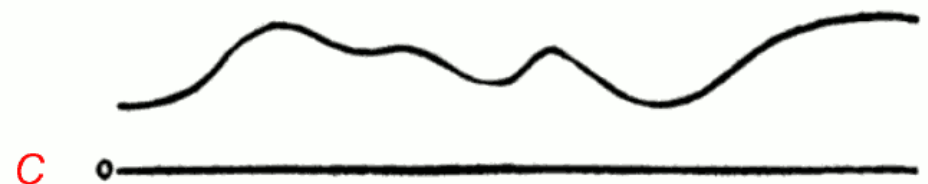
A. The Amplitude Modulated carrier is tuned in by the coil and variable capacitor.



B. The signal is rectified (detected) by the diode.



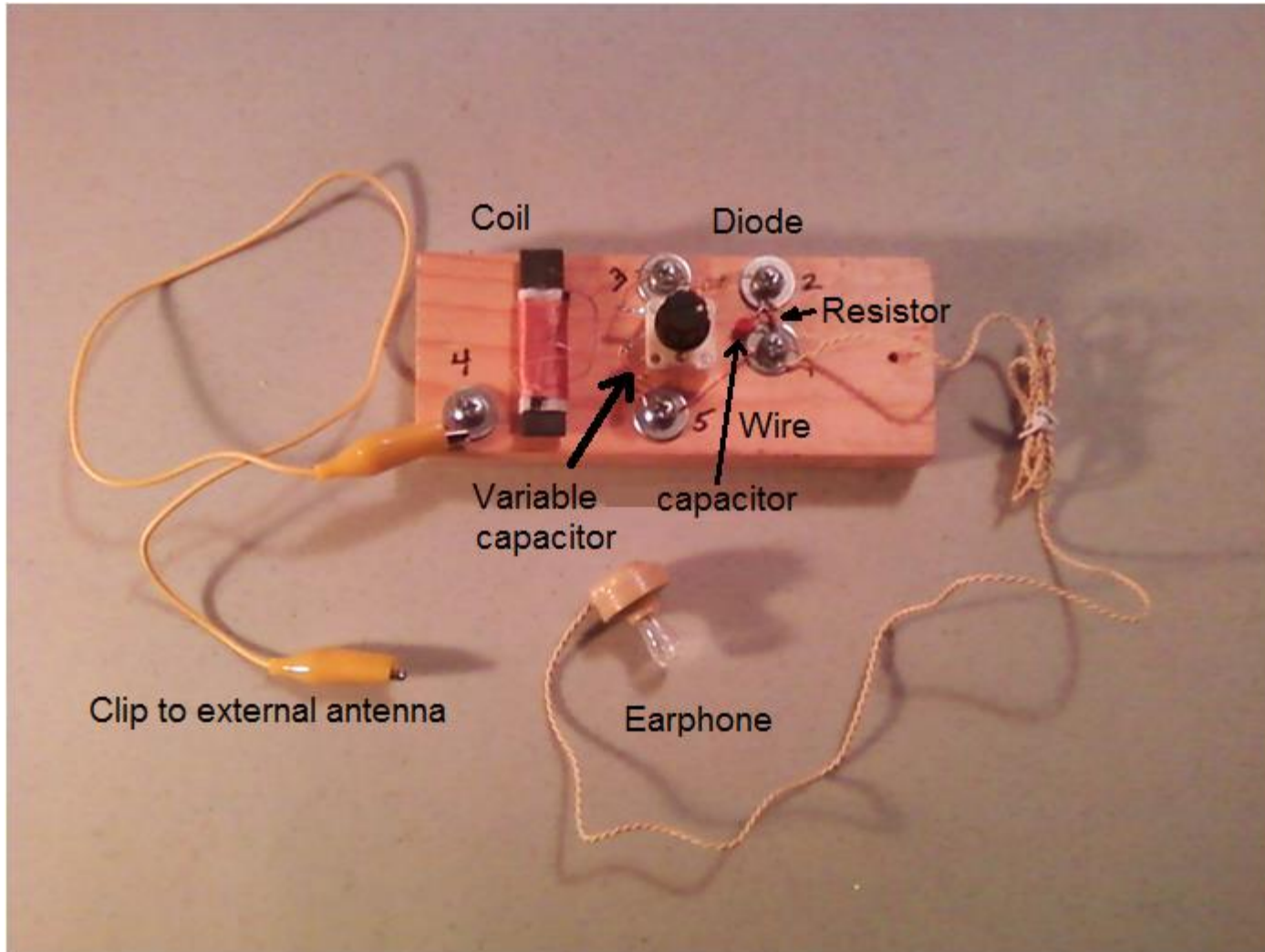
C. The carrier is filtered out and removed by the other capacitor leaving the audio signal.



What can be used as an antenna?

- Long wire
- Wire fence
- Large metal object, like a bike rack
- Water pipe
- Furnace duct
- Use your imagination...
- Never use an outlet, battery or other power source as an antenna
- Never use this radio during an electrical storm

The radio components



Steps

1. Wrap the bottom coil wire on screw 5
2. Wrap the middle coil wire on screw 4
3. Wrap the top coil wire on screw 3
4. Wrap the top variable capacitor wire on screw 3
5. Wrap the middle variable capacitor wire on screw 5
6. Wrap the band side of the diode on screw 2
7. Wrap the other side of the diode on screw 3
8. Wrap the copper wire from screw 5 to screw 1
9. Wrap the capacitor leads between screws 1 and 2
10. Wrap the resistor leads between screws 1 and 2
11. Wrap one earphone lead on screw 1 and the other on 2

Using the radio

- Connect an alligator clip to the bare wire on screw 4
- Connect the other end of the alligator clip to the antenna and listen with the earphone
- Adjust the variable capacitor to improve the reception
- Optional- use a clip to connect a ground to the copper wire (screw 5)

Thank you and have fun listening!



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