Foxhole Radios

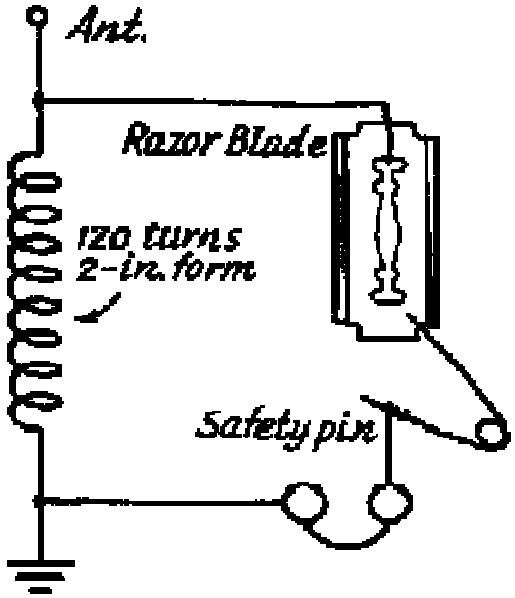
by Don Adamson

If you appreciate ingenuity, simplicity, and like instant gratification from your radio projects, then you ought to spend a few minutes building your own foxhole radio.

Foxhole radios were built by GIs in World War II from materials they had easy access to in the field. They usually consist of just a coil and a detector. They use a point detector, the chief component being an ordinary razor blade.

Justin Garton wrote a letter to the editor of QST, printed in the October 1944 issue:

Here is some more information on the foxhole radio sets used by the boys on the Anzio beachhead. In the daytime they could receive stations from Rome and at night Nazi propaganda "jive" programs from Berlin. Here is the diagram:



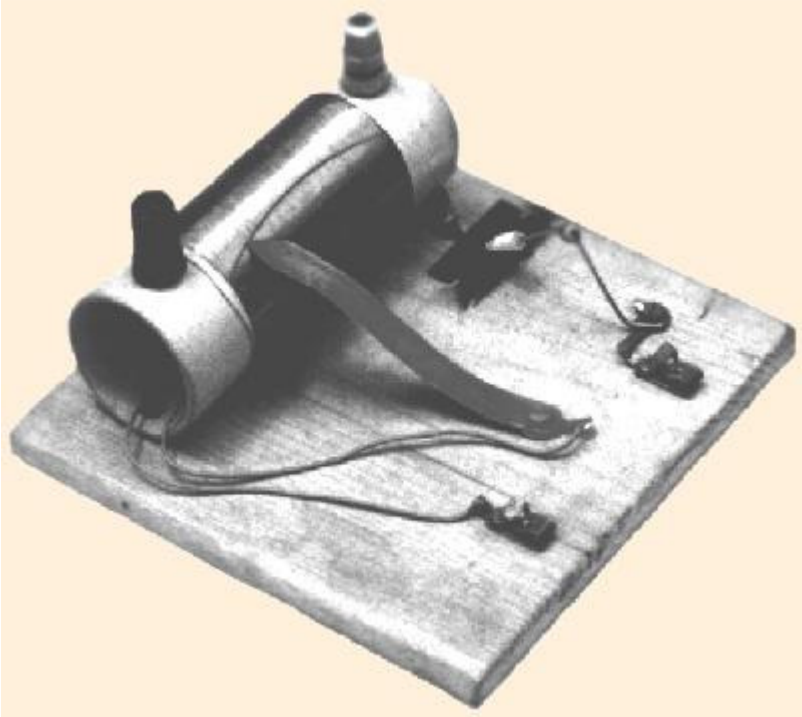
In the "Strays" section of QST for July, 1944, another mention is made of the razor blade foxhole radio:

According to Toivo Kujanpaa, a licensed ham op stationed on the Anzio Beachhead, several of the radio men there rigged up a field version of a "crystal" set using a razor blade for a detector. Their efforts were rewarded by the reception of a "jive" program (along with some German propaganda) aimed at the American forces from an Axis station in Rome.

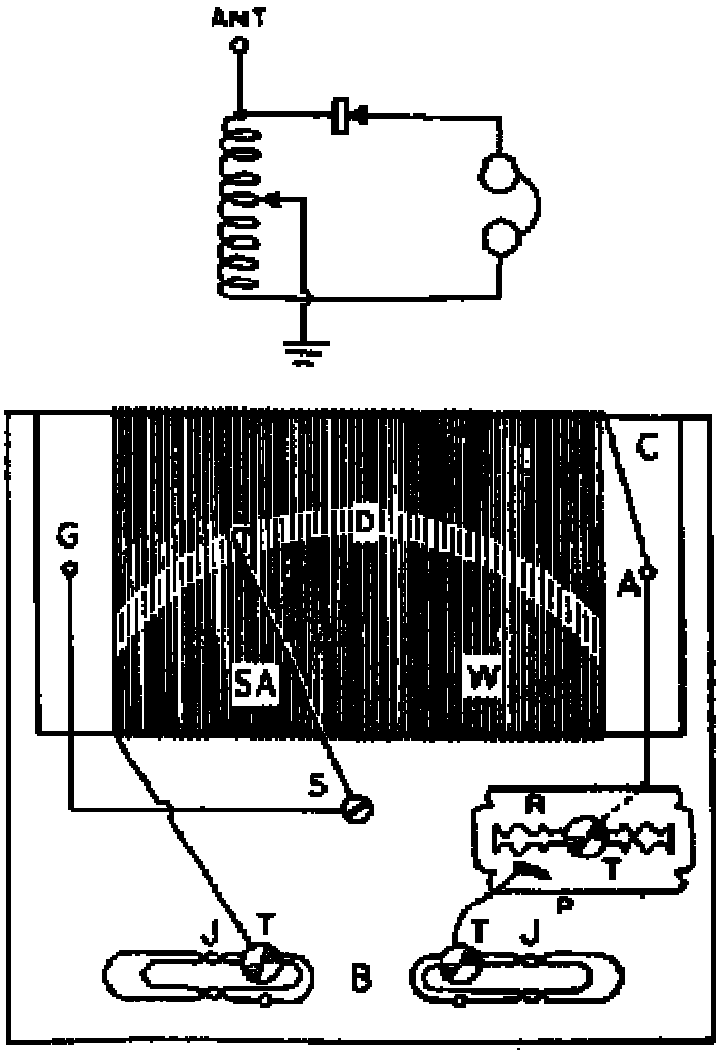
Note the simplicity of the design. Parts were assembled on a piece of wood, usually held in place with thumbtacks. The safety pin is anchored at one end and placed so the point may be moved around on the surface of the razor blade. According to an article in Popular Mechanics of October, 1944, the blued steel surface of the blade gives the rectifying action needed for detection without crystals.

Someone soon figured out a better way to use the razor blade detector: use a pencil lead point on the razor blade (Mr. Garton attributes this innovation to a ham in New York).

I built a foxhole radio in a few minutes using the previous diagram, but I used a pencil point. I fashioned a safety pin shape out of stiff wire, then tied about an inch of pencil lead to it with finer wire. The radio worked the first time I tried it. Of course, with a fixed coil I received only one station.



The design below came from a submission by Lt. Paul M. Cornell in the September, 1945 issue of QST; he used it in the South Pacific. The photograph shows a similar radio built by Don Menning; he simply stuck the whole tip of a pencil on the end of the safety pin.



Here is the parts list for the schematic based on Lt. Cornell's submission:

(A) Antenna connection. This nail also fastens the coil form to the baseboard.

(B) Baseboard. 4 inches square, ¼ inch thick.

(C) Coil form. Wood block, 3¾ inches long, 2 inches wide and ¼ inch thick.

(D) Area of coil scraped clean along arc of switch arm.

(G) Ground connection. This nail also fastens coil form to baseboard.

(J) Jacks for 'phones. Paper clips held down by tacks.

(P) Detector. Pencil lead wrapped with copper wire and resting lightly on razor blade. Some adjustment of the location and pressure of the lead on the blade may be required.

(R) Razor blade held down and connected to wire by tack.

(S) Screw or nail for pivot of switch arm.

(SA) Switch arm made from paper clip.

(T) Thumbtack, or any kind of tack.

(W) Coil winding, approximately 175 turns No. 26 insulated wire.

In October of 1962, Popular Mechanics ran a construction article by Joe Tartas which was almost identical to the above design. Mr. Tartas noted that GIs used their bayonets buried to the hilt in moist earth for a ground connection. You probably do not want to use your vintage WWII bayonet in this manner unless you're a stickler for authenticity!

As with any radio of this type, a good ground and a long antenna (50 to 100 feet) will give you best results. Don't expect room-filling sound, but do expect a lot of fun from very little effort!

The only part of a foxhole radio you don't build from scratch is the 'phone. However, if you're really looking for a radio project built entirely from scratch, you could try your hand at building one.

If you take apart a 'phone, you'll notice they're very simple in construction. Basically, there's a coil with a small iron core. Electrical variations in this coil generate a magnetic field used to attract and repel a metal plate. This vibrating plate produces the (faint) sound you hear.

The March 1, 1994 issue of The Xtal Set Society Newsletter carried an article by Nyle Steiner describing how to build your own home-brew 'phone. Nyle used a coil made from 7000 turns of 0.004 inch wire around a ¼ inch rod. For more information, check out this article, or experiment on your own!

Disclaimer: Working with antennas and electrical devices (especially old ones) can be dangerous, and mistakes can be fatal. If you decide to work with such things, it is solely your responsibility to work safely and to know what you're doing. -DJA