



## ARRL Periodicals Archive – Search Results

### A membership benefit of ARRL and the ARRL Technical Information Service

**ARRL Members:** You may print a copy for personal use. Any other use of the information requires permission (see Copyright/Reprint Notice below).

**Need a higher quality reprint or scan?** Some of the scans contained within the periodical archive were produced with older imaging technology. If you require a higher quality reprint or scan, please contact the ARRL Technical Information Service for assistance. Photocopies are \$3 for ARRL members, \$5 for nonmembers. For members, TIS can send the photocopies immediately and include an invoice. Nonmembers must prepay. Details are available at [www.arrl.org/tis](http://www.arrl.org/tis) or email [photocopy@arrl.org](mailto:photocopy@arrl.org).

**QST on CD-ROM:** Annual CD-ROMs are available for recent publication years. For details and ordering information, visit [www.arrl.org/qst](http://www.arrl.org/qst).

**Non-Members:** Get access to the ARRL Periodicals Archive when you join ARRL today at [www.arrl.org/join](http://www.arrl.org/join). For a complete list of membership benefits, visit [www.arrl.org/benefits](http://www.arrl.org/benefits).

### Copyright/Reprint Notice

In general, all ARRL content is copyrighted. ARRL articles, pages, or documents--printed and online--are not in the public domain. Therefore, they may not be freely distributed or copied. Additionally, no part of this document may be copied, sold to third parties, or otherwise commercially exploited without the explicit prior written consent of ARRL. You cannot post this document to a Web site or otherwise distribute it to others through any electronic medium.

For permission to quote or reprint material from ARRL, send a request including the issue date, a description of the material requested, and a description of where you intend to use the reprinted material to the ARRL Editorial & Production Department: [permission@arrl.org](mailto:permission@arrl.org).

**QST Issue:** Apr 2005

**Title:** Getting Started with Spark

**Author:** John H. Dilks III, K2TQN

[Click Here to Report a Problem with this File](#)



## 2009 ARRL Periodicals on CD-ROM

ARRL's popular journals are available on a compact, fully-searchable CD-ROM. Every word and photo published throughout 2009 is included!

- **QST** The official membership journal of ARRL
- **NCJ** National Contest Journal
- **QEX** Forum for Communications Experimenters

**SEARCH** the full text of every article by entering titles, call signs, names—almost any word. **SEE** every word, photo (including color images), drawing and table in technical and general-interest features, columns and product reviews, plus all advertisements. **PRINT** what you see, or copy it into other applications.

**System Requirements:** Microsoft Windows™ and Macintosh systems, using the industry standard Adobe® Acrobat® Reader® software. The Acrobat Reader is a free download at [www.adobe.com](http://www.adobe.com).

### 2009 ARRL Periodicals on CD-ROM

ARRL Order No. 1486  
**Only \$24.95\***

\*plus shipping and handling

Additional sets available:

2008 Ed., ARRL Order No. 9406, \$24.95  
2007 Ed., ARRL Order No. 1204, \$19.95  
2006 Ed., ARRL Order No. 9841, \$19.95  
2005 Ed., ARRL Order No. 9574, \$19.95  
2004 Ed., ARRL Order No. 9396, \$19.95  
2003 Ed., ARRL Order No. 9124, \$19.95  
2002 Ed., ARRL Order No. 8802, \$19.95  
2001 Ed., ARRL Order No. 8632, \$19.95



**ARRL** The national association for **AMATEUR RADIO™**

SHOP DIRECT or call for a dealer near you.  
ONLINE [WWW.ARRL.ORG/SHOP](http://WWW.ARRL.ORG/SHOP)  
ORDER TOLL-FREE 888/277-5289 (US)

## OLD RADIO

# Getting Started with Spark

My father-in-law, Bud Cavileer now a SK, told me one day that he was a ham back in the late 1920s. I was surprised to hear this, because at the time I had been married to his daughter for over 10 years, and never had he mentioned it before.

He told me that he had a good friend when he was a teenager who was studying for his license and encouraged my father-in-law to get into ham radio. Together they built two transmitters out of old Ford Model T spark coils they found in his father's garage. They didn't need an antenna, as they only lived a couple of houses away from each other. Every night they would practice sending Morse code to each other using the old spark coils, and they listened with crystal-set receivers. In no time at all they had their code speed up and passed the test.

Bud became W3DAK. He built a two-tube push-pull transmitter with 210s, and eventually had a National SW-3 receiver. He ran everything on batteries in the early days because he didn't have commercial electricity. Later after he married he gave up ham radio, gave away his station and spent all of his time trying to make a living. This was during the Depression. He said he missed ham radio for a while, but then took up other family related hobbies.

Bud's story about using the Ford spark coil is one I have heard many times from old-timers. The early hams used what they could find that was cheap, or at least inexpensive, to get started. I'm told a Ford

spark coil would get you across town, and maybe a little farther if you had a good antenna. Many hams got started with a Ford coil, and then bought more powerful coils as they could afford them. They were available from 1/4 kW up to 1 kW for battery-powered spark coils, and for even higher power, ac powered coils could be purchased.

Several years ago I found a Ford spark coil at an estate sale. It had "Fahnestock" clips soldered on all the electrical contacts and had a pair of pointed wires pushed onto the high voltage connections to make a spark gap. I have seen others like this in friends' collections.

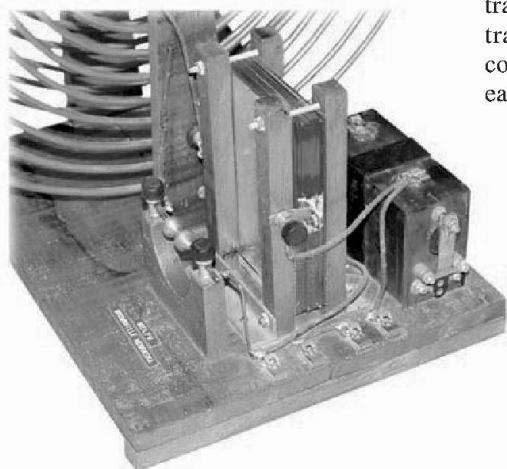
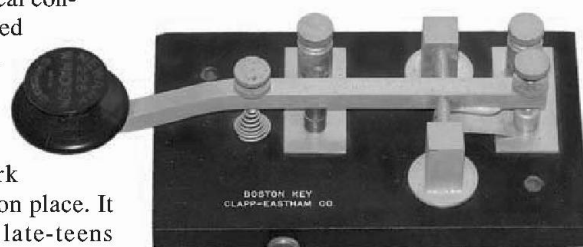
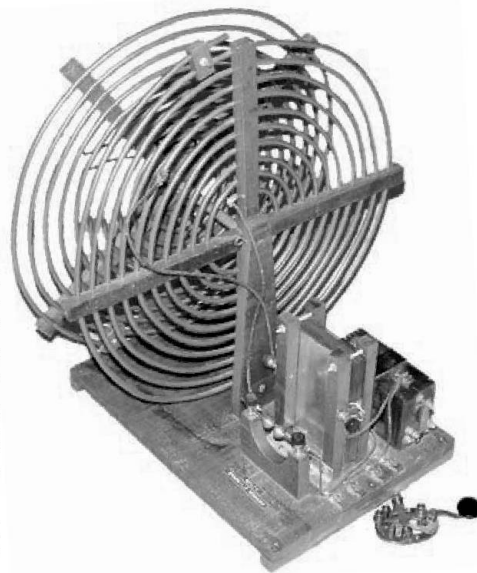
Recently I found a spark transmitter at the on-line auction place. It appeared to be an original late-teens homebrew with a Ford spark coil. I always wanted a spark transmitter like this, so I bid on it and won.

### Built by WØLPU

It was built by (SK) Melvin Andrew, WØLPU (ex-W9LPU), of Brownville, Nebraska. Melvin was a very active ham who enjoyed ham radio. After close inspection I estimate that he built this transmitter some time in the late 1940s out of old parts. It is very well made and true to what one would have looked like in 1920. Melvin enjoyed showing this at club meetings and hamfests. Eventually he donated it to Leo Myerson, WØGFQ, for his Omaha Radio Museum.

The most noticeable thing about this transmitter is the "Pancake" oscillation transformer with its two huge 18 inch coils. Its function is best described in an early advertisement that says:

An important and exclusive feature of this Oscillation Transformer lies in the fact that it permits either direct or inductive coupling in such a degree that a pure, well-maintained wave, which can be closely tuned at the receiving station, is easily secured. It will work wonders in decreasing the damping and raising the efficiency of a station. Every portion of both windings is accessible to the clips so that the variation of inductance is gradual, thus insuring absolute resonance between the two circuits and permitting the radiation of a greater amount of energy from the aerial, instead of wasting it in heat at the spark gap. The range of a station using one of these oscillation transformers is not only greatly increased, but the wave made pure so that interference is largely eliminated. The primary and secondary windings are heavy 1/4 inch copper tubing wound spirally in specially notched wooden frames. The coupling is variable by a sliding movement of the secondary coil.





If you study the photo closely, you can see all of the components of a spark transmitter. Aside from the coil, just described, you will see two brass spark gaps mounted left front. Next is the high voltage condenser made from photographic plate glass with foil pressed in-between each glass plate. To the right is the Ford spark coil shown with Fahnestock clips soldered to the contacts. The pancake coil to the rear slides on the wooden dowel for coupling. The standard-size key placed in my photos are to help scale the size of the components.

In time most hams would have purchased a larger spark coil and replaced the Ford coil. I have included a photo with three of them for you to compare. From the left they are  $\frac{1}{4}$  kW,  $\frac{1}{2}$  kW and  $\frac{3}{4}$  kW in size. The one on the left is an automotive type but was also used with radio, and the other two were made just for spark transmitters by MESCO, Manhattan Electric Supply Company, of New York. There were numerous other manufacturers of spark coils and most of them look similar to these shown.

I've also included a photo of a Western Electric (WE) spark coil of the  $\frac{1}{4}$  kW size. I have not found any information on a WE spark coil and would like to learn what WE equipment it might have been used with.

The key you would use with spark needs to have heavy contacts. The contact size should be at least  $\frac{1}{4}$  inch to carry the current. Sometimes a ham would take two silver dimes and file them flat, then mount them on an old telegraph-type key. The two keys shown in the photo were made for spark. The large key is known as the "Boston Key" and was made by the Clapp-Eastham Company of Boston. The smaller key was made by the J. H. Bunnell Company of New York. In another photo you can see Bunnell's  $\frac{1}{4}$  inch silver contacts.

You would also need an antenna changeover switch. The one shown was made by the Wm J. Murdock Company of Chelsea, Massachusetts. Aside from being a double-pole double-throw for the antenna, there is an extra, large, single-pole contact to turn on the motor of your rotary spark gap, if you had one. (I'll show one of those to you in a future column.)

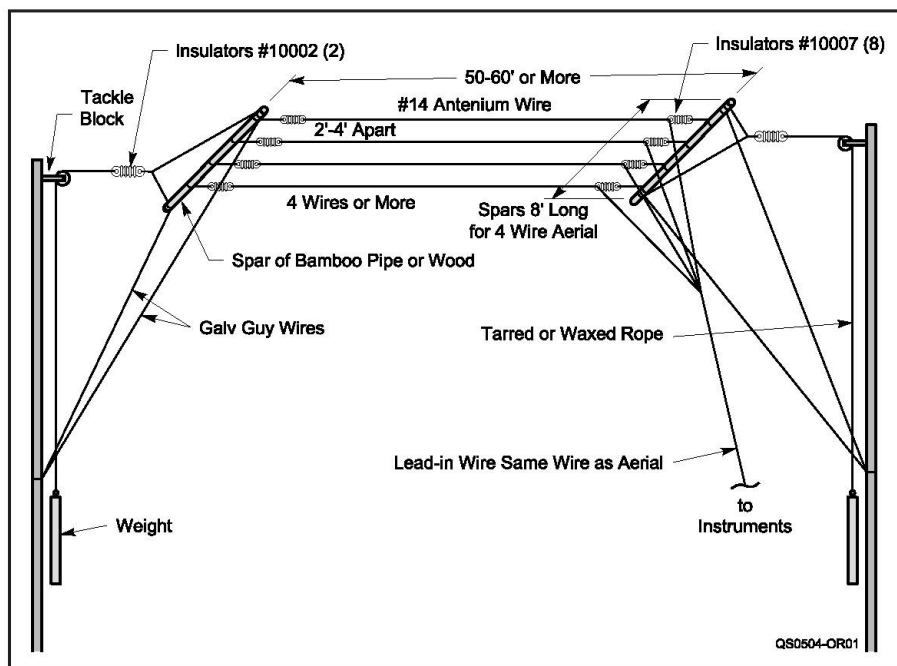
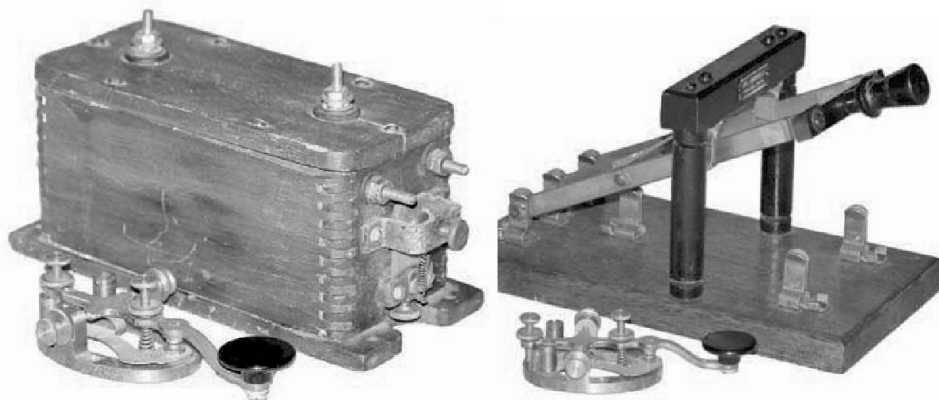


Figure 1—A well-made spark station had an antenna like this one. It was originally designed in the 1910-1915 time frame.



## Future Plans for the Spark Transmitter

This spring I plan to add the spark transmitter to my mobile, "K2TQN Old Radio Museum." I hope you will be able to visit it at a future hamfest. To find my hamfest exhibit schedule, please visit my Web page: [www.eht.com/oldradio/arrl/index.html](http://www.eht.com/oldradio/arrl/index.html).

It's hamfest season. Look for the call letters on my hat and say hello.  
—K2TQN