ANTENNA CONSTRUCTION

ELEMENTS OF ANTENNA TECHNIQUE WHICH THE BEGINNER SHOULD KNOW—AND WHICH THE OLD TIMER OFTEN FORGETS

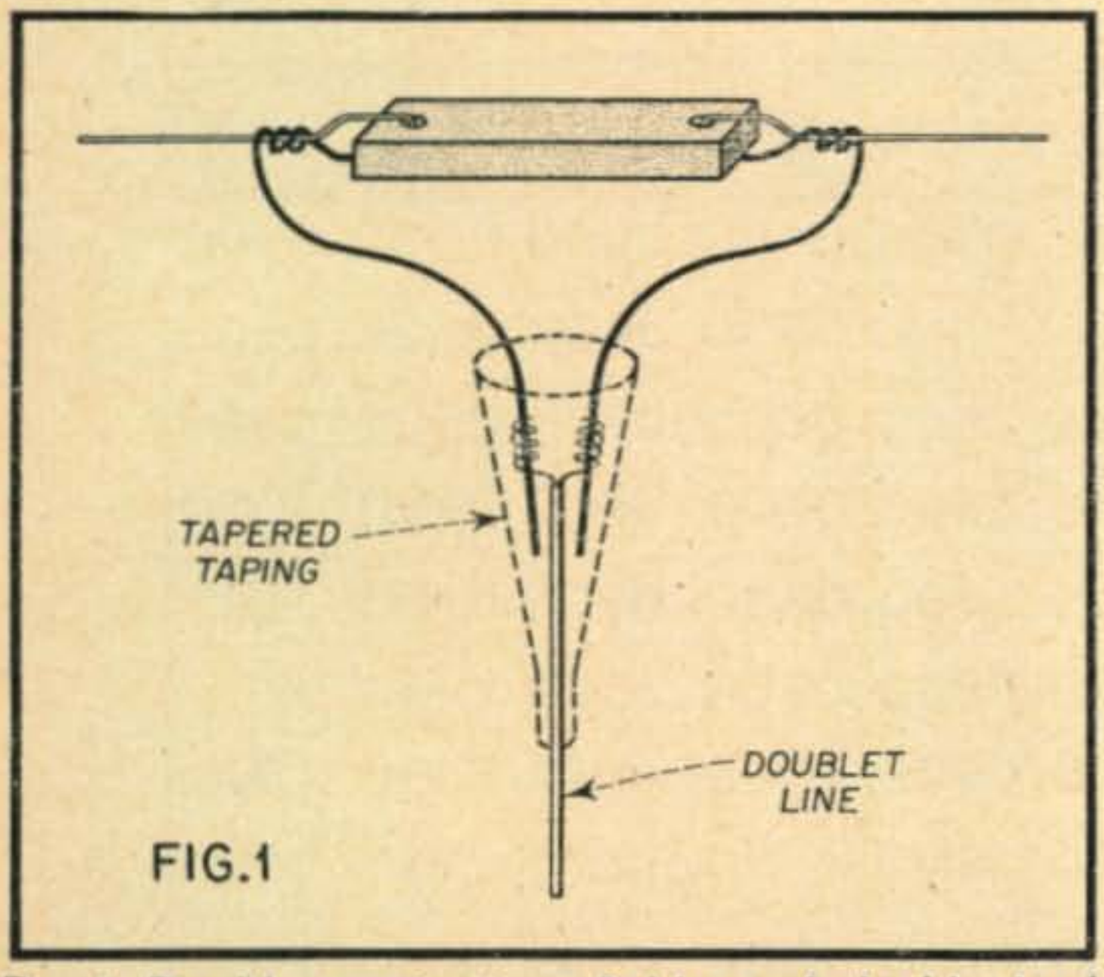

Fig. 1. Doublet termination. Solder each doublet lead to the surplus antenna ends. Tape individually, and then together in a long taper

A SOUNDLY CONSTRUCTED antenna will pay dividends in efficiency as well as present a respectable appearance to the passing world. Controversies have raged concerning skin effects, etc., as determining the choice of wire for a transmitting or receiving antenna. But from a strictly mechanical viewpoint, stranded wire is undoubtedly superior. Make a nick in any fairly hard solid conductor, flex it a few times and it is sure to break. A stranded wire therefore provides a greater margin of safety as the likelihood of accidental damage in handling to all the strands is very small. This difficulty with solid wire could be reduced somewhat by using softer material, but such wire will eventually stretch and sag, which is undesirable from both constructional and electrical viewpoints.

Receiving Antennas

The conventional receiving aerial generally consists of a bare wire either center or end-fed by an insulated conductor. The trick in an ordinary doublet antenna is to join the line to the flat top. One method of accomplishing this, which largely eliminates the situation in which the feeder is supported by its soldered connection, and at the same time protects the doublet

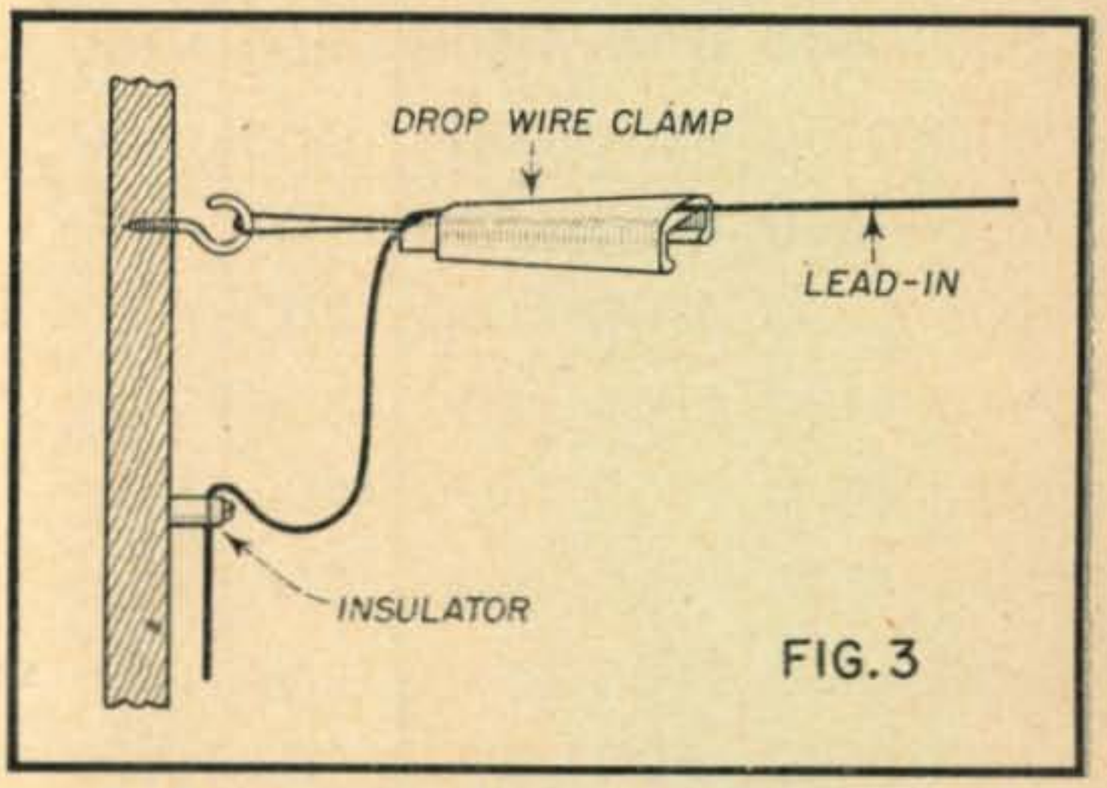

Fig. 3. A drop-wire clamp will relieve most of the swinging strain on the leadin end

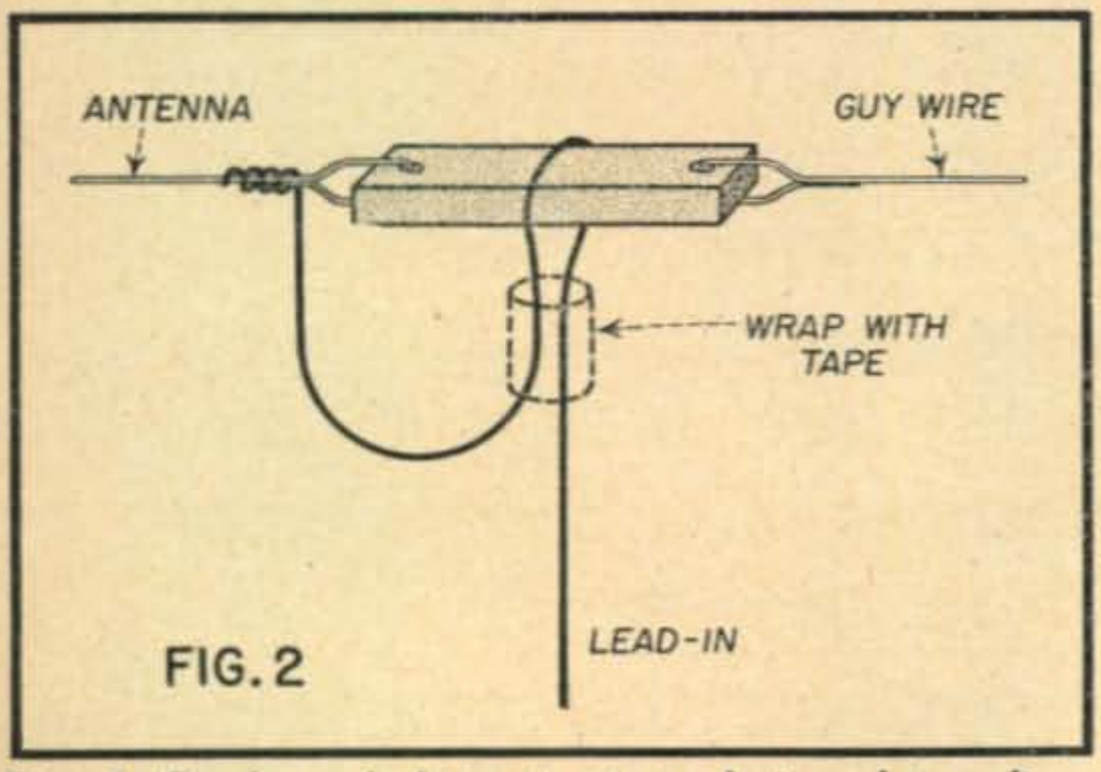

Fig. 2. Single-ended termination, designed to relieve strain on the soldered joint and the loop

line from moisture, is shown in *Fig. 1.* The antenna wire is brought down through the centre insulator and the feeder connected above the ends. Each connection and its associated stub wire is then taped individually. Ordinary electrician's friction tape is often too wide for easy manipulation and under such circumstances should be torn down the middle into narrow strips which are easier to handle. The entire "throat" is then wrapped with rubber tape, followed by an application of friction tape—making as smooth a job as possible. The splice should then be coated with coil dope or some other

HINTS

W. H. ANDERSON, VE3AA2

moisture-repellent. The thickness of the tape covering should be tapered off down along the transmission line so as to prevent concentrating "whipping" of the feeder at the point where it emerges from the tape. In the case of the single-ended antenna, the feeder may be looped over the insulator as in *Fig. 2*, to relieve the soldered joint of the leadin weight.

When attaching an insulated leadin to its first rigid support, it is advisable to use a "drop-wire" clamp as in *Fig. 3*. This spreads the lead-in "swing" along a considerable length rather than concentrating it at one point.

Splicing and Dead-Ending

The accepted method of dead-ending a stranded wire is shown in *Fig. 4*. This consists of bringing the two wires together then separating one strand only of the loose ends and wrapping it around both wires, keeping the turns close together. Then separate each strand successively and wrap in the same manner. About four inches free end should be allowed to give adequate length for wrapping.

Dead-ending a solid wire should be effected as in *Fig. 5*. In fact, this policy of making a two-turn loop before dead-ending is a good idea

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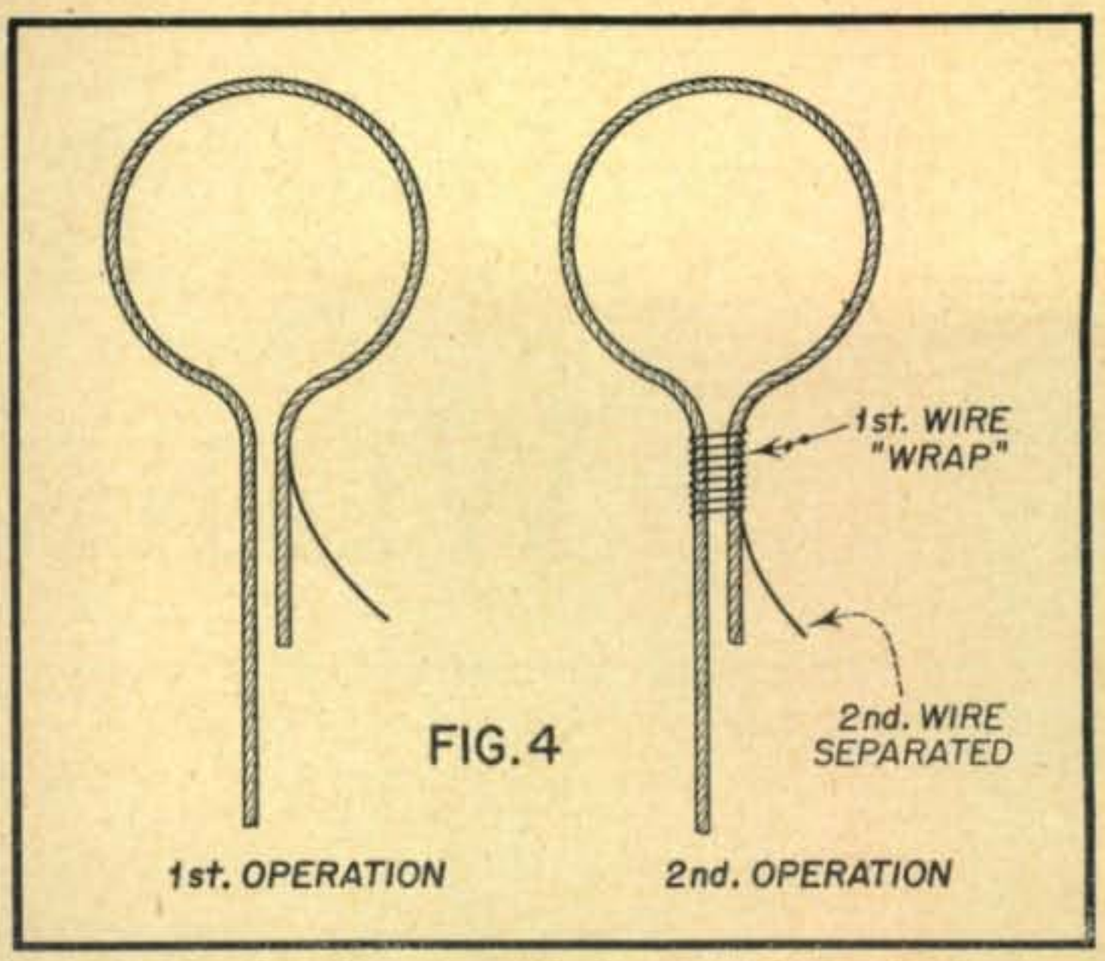

FIG. 4

Fig. 4. Dead-ending stranded wire. Individual wrappings of each strand are placed close together

Fig. 5. The double loop is a "must" in dead-ending solid wire

Fig. 6. The "thimble," familiar to every line-man, is a stranger to many radio amateurs

Fig. 8. Good antenna construction technique dictates strengthening the tapped splice

Fig. 9. Each side of a running splice should be strand-wrapped as shown in Fig. 4

Fig. 7. Right and wrong ways of splicing to a thimble