An Inexpensive Vertical

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THIS antenna was born of the lack of space and money and a desire for simplicity. It not only satisfied these requirements but proved to be one of the best DX getters that I have ever built in more than twenty-five years of hamming. It requires no radials and feeding and loading are accomplished at ground level. It can be mounted on the side of a house (Fig. 1) and is so designed that the top half is self-supporting. The majority of the materials are aircraft surplus and the total cost of the system is around fifteen dollars.

The radiator consists of three twelve foot sections of surplus aluminum aircraft tubing, three aircraft tubing clamps and a fifteen foot piece of ¾ inch diameter round cedar pole. In the original antenna, the bottom tube section measured one inch O.D., ⅞ inch I.D.; the mid section was ⅞ inch O.D. and ¾ inch I.D. The top section had an O.D. of ¾ inch. These diameters allow the sections to be telescoped together in the final assembly of the radiator.

Slot one end of the bottom and mid sections of tubing for a distance of one inch. This can be easily done with a hack saw.

Loosely install one of the tubing clamps on the slotted end of the mid section and insert one and one-half feet of the top section into it. Tighten the clamp until a good mechanical and electrical joint is produced. Care should be taken to remove any protective coating, such as anodize, from the area of the joint. This can be done by cleaning the contact point on the top section and an inch or two of the interior of the mid section with emery cloth.

Next, insert the cedar pole into the opposite end of the mid section and run it through the tubing until it butts against the end of the top section. Drive four small finishing nails through the wall of the mid section and into the pole near the lower end. This will hold the stiffener pole in its proper place.

Loosely install another tubing clamp on the slotted end of the bottom section of tubing. Insert the protruding end of the pole and the mid section tube into this end of the bottom section. Adjust this slip joint until the overall length of the radiator measures 33 feet, then tighten the clamp. Again, be sure to remove any anodize or protective coating from the tubing to insure a good electrical connection.

Clean an inch or two of the outside of the lower end of the bottom section, install the third clamp and tighten. This will later serve as a feed connection when the antenna is raised to a vertical position.

The next step is to install the ground pipe but before this can be done, the exact location of the antenna must be determined. As it was previously stated, the antenna was designed to mount on the side of a house. The peak of a roof is ideal for the top mounting insulator and another one should be located approximately three feet below it.

Assuming you are going to use the peak of the roof, install a standoff insulator at that point. Tie a length of string with a weight or plumb bob at the end of it to the insulator and mark

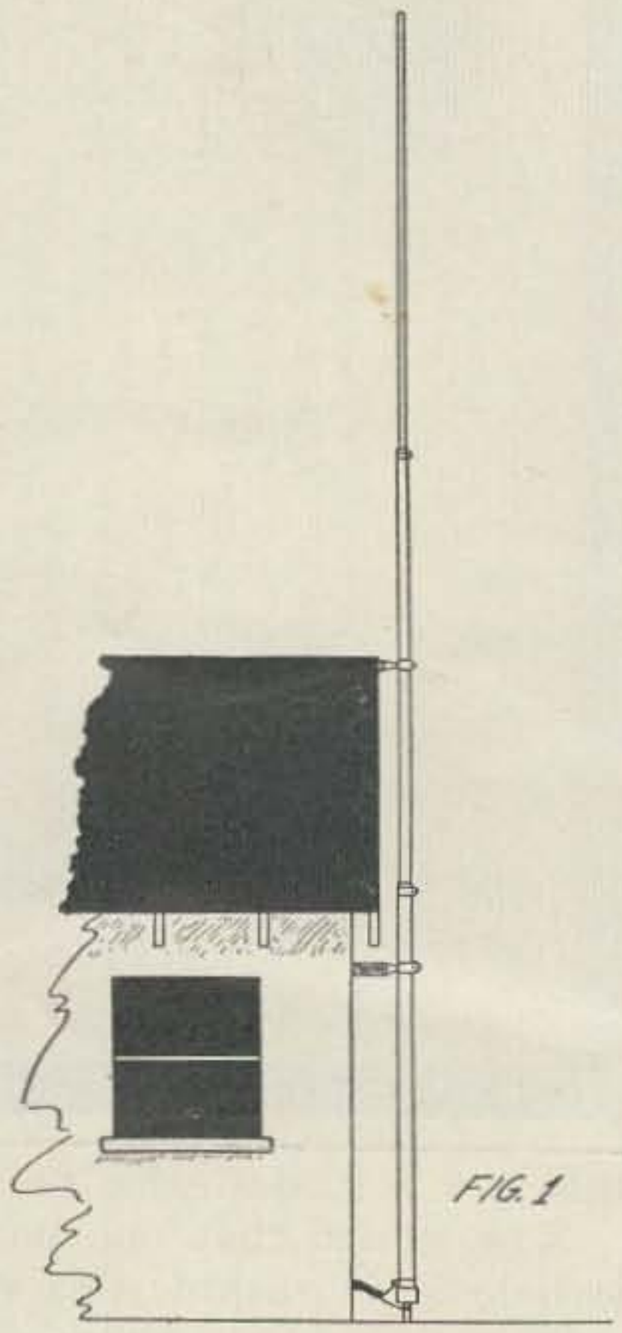


FIG. 1

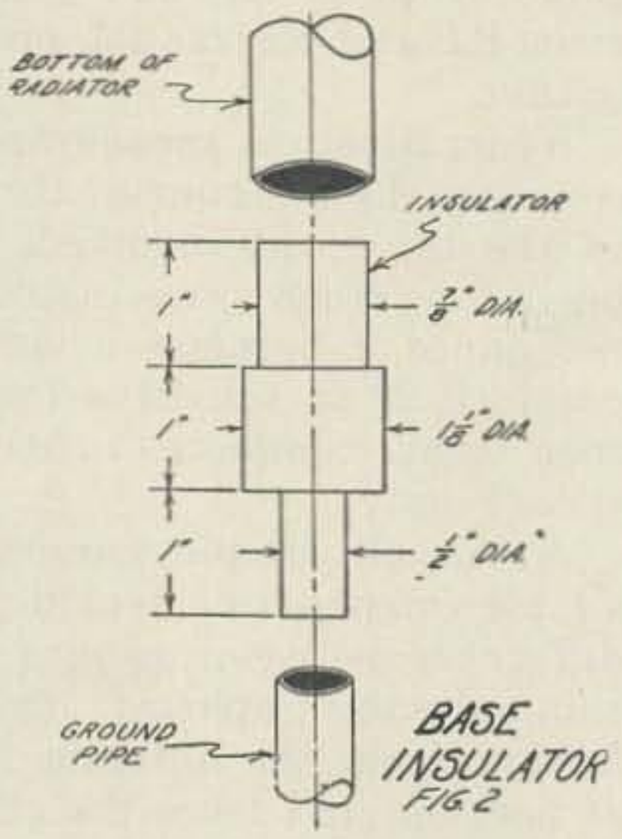
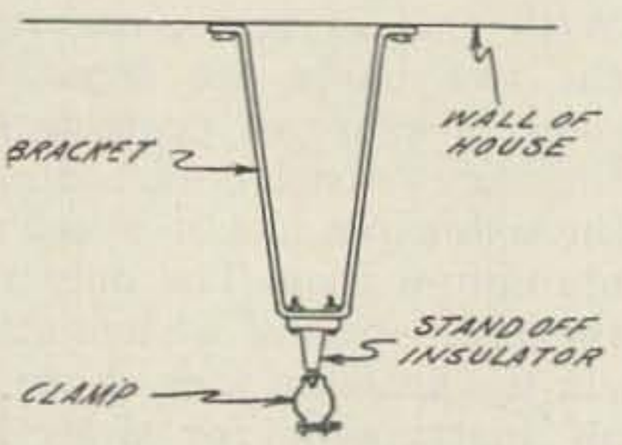


FIG. 2



WALL BRACKET
FIG. 3

the spot where the weight touches the ground. This is the spot for the installation of your ground pipe.

Thread one end of a piece of one-half inch galvanized pipe twelve feet long and install a pipe to garden hose adapter. File the opposite end of the pipe until it is somewhat sharp. Attach the garden hose and have a friend on top of a step ladder help you hold the pipe vertical with its sharpened end on the spot indicated by the plumb line.

At this point, a word of warning is appropriate. The first foot of the next operation is extremely wet and muddy, so be sure and wear your oldest clothes.

Have someone turn the water pressure on full. keep your mouth closed and wash the pipe down into the ground. If you should strike rocks, work the pipe gently up and down until enough earth is washed away to allow the rock to move and the pipe to pass. Continue this process until approximately eight inches of pipe are still above the ground.

The usual procedure at this point is to turn off the hose and head for the shower.

The next job is to fabricate some kind of separating insulator. The original one was a piece of micarta filed to a point on either end. The present one is machined from a piece of plastic round stock (Fig. 2).

With the plumb line still in place, measure the distance from the wall of the house to the line. From this dimension, figure the size of the wall mounting bracket necessary to compensate for the overhang of the roof as shown in Fig. 3. This bracket can be made of one-eighth inch by one-inch strap iron and can be bent to the proper shape in a vise.

Mount the bracket to the wall of the house with lag or toggle bolts approximately three feet below the top insulator at the peak of the roof.

Two large size fuse clamps were used to clamp the radiator to the standoff insulators. These can be purchased at any electrical supply house.

At this point, you are ready to erect the radiator. Install the base insulator on the ground pipe and raise the radiator to a vertical position. Snap it into the fuse clamps on the standoff insulators and place the bottom end over the top of the base insulator. Insert the screws through the ears of the fuse clamps and tighten them, locking your vertical in place.

This antenna is fed with 52 ohm, RG58U or RG8U coax cable. For operation on 40 and 15 meters, the center lead is connected to the radiator by installing an alligator clip to its end which, in turn, is snipped on to the clamp at its base. The coax shield is connected to the ground pipe by means of a ground clamp.

For operation on 80 meters, an air wound loading coil of 15 turns of #14 wire, three inches in diameter, is used. The top of this coil is connected to the base of the vertical with a small battery clamp. The alligator clip on the center lead of the coax is then snipped on to the coil at approximately the twelfth turn.

The SWR on the original antenna was below 2:1 on all three bands.

With 75 watts and this antenna, the writer worked Europe, Asia, Oceania and South America on 15 meter CW. Numerous other dx contacts were made on 40 and 80 meter CW.

With patience and favorable conditions, you, too, will find that this antenna will get the job done. When you get your General Class license, you will find that it will do well on the phone bands too. It's an all around good antenna for an all around good ham. . . . **W6NKE**