

It's simple, easy to make, and best of all it works. Here's a weekend project that will give a new lift to your old antenna.

How To Build A 30 Foot Tilt-Over Mast

BY JOSEPH M. PLESICH*, W8DYF

Since we were planning some extensive remodeling, I felt it was time to get my antennas off the house and onto some type of mast. The center of my double extended Zepp and my 2 meter fiberwhip were supported by a section of TV mast fastened to the house. With much needed windows and siding coming to our old home, I wanted a new support for these two antennas which now would be off the house.

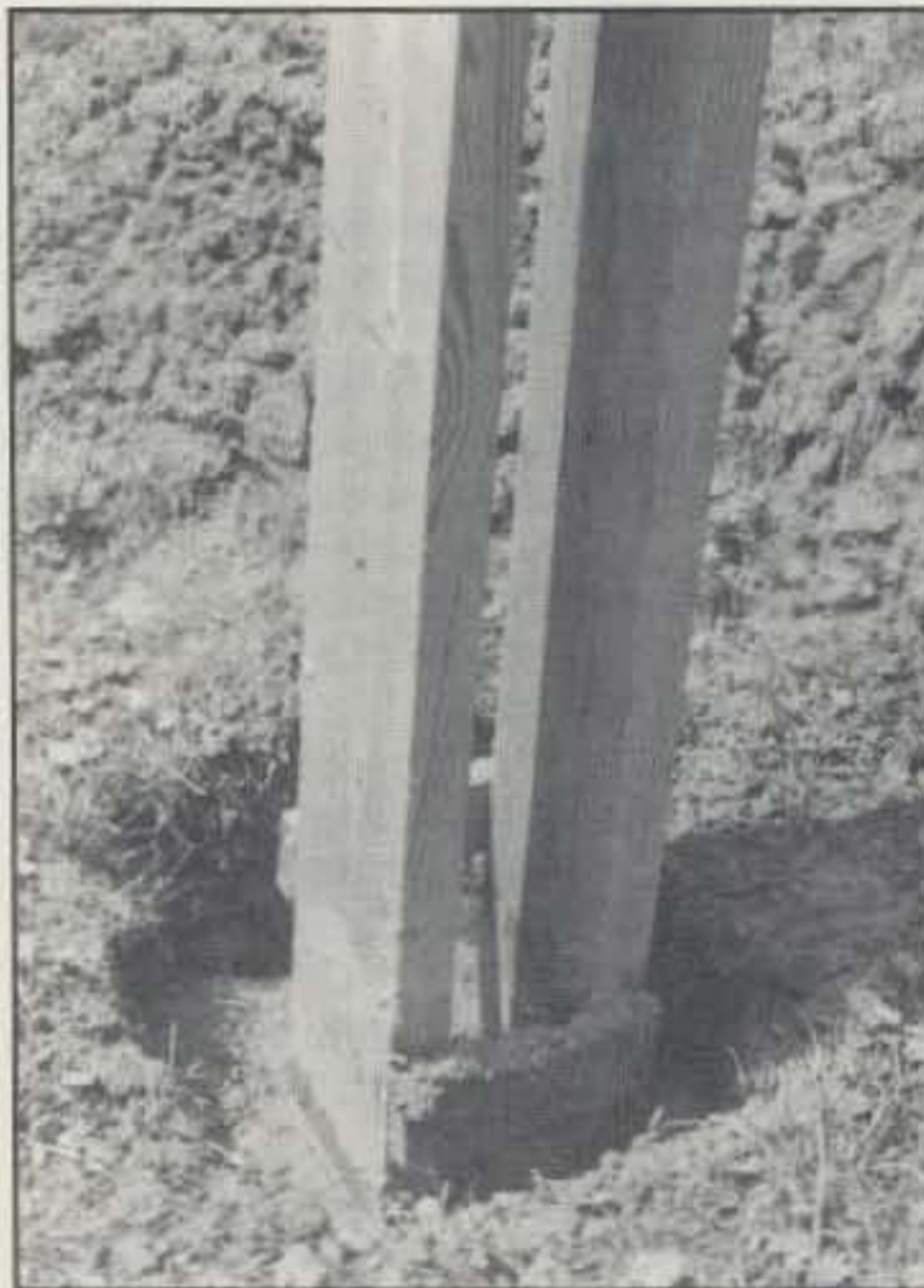
I did have some criteria for a new antenna support. Being retired now, it had to be inexpensive. It had to be at least 30 ft. high, tilt-over for adjustments, and most important, it had to be simple for me to construct.

Since I had built an 18 ft. PVC mast a few years ago and had read a couple of articles by other amateurs using PVC pipe, I thought that might be the way to go. My 18 footer was constructed with 2 inch and 1 1/2 inch pipe. This was not high enough and too flexible for what I needed. How about, I thought, trying 3 inch pipe and sandwiching it between two planks that would be set in concrete? Off to the drawing board I went.

Construction

I made a rough drawing of the mast and the planks that would support it (fig. 1). From this I came up with a list of materials that I could get from my local builder's supply house (see "Materials List").

After obtaining the materials, the first thing I did was to lay the two planks of 2" x 6"s down on the garage floor. Then I slid the 20 ft. pipe between them so I would have a snug but not tight fit. A couple of 1" x 2"s were fastened across the 2" x



The bottom 3 feet of the wooden supports are imbedded in cement.

6"s with screws to secure this width. I then drilled holes through the 2" x 6"s and the pipe for the hex bolts. I inserted the bolts to make sure they fit properly and then removed them. I was now ready to plant the 2" x 6"s.

I am fortunate to have a 22-year-old son, Andrew, who does some weight lifting. I was just delighted to give him the opportunity and fun of digging the hole for the 2" x 6"s. He seemed to enjoy it so much that I also let him mix the four bags of concrete. All this, of course, was done under my benevolent supervision.

We slid the 2" x 6"s into the hole, poured in the concrete, and using a post hole level, made sure they were straight.



Be sure the wooden supports are vertical and plumb.

The mast could now set for a couple of days while I finished the rest of the mast.

Now to join the 20 and 10 ft. lengths of pipe. To do this, I cut 2 ft. off the 5 ft. piece. Then, using an electric jig saw, I cut a slot a couple of inches wide the length of this piece (fig. 2). I recruited Andrew again. One of us spread the slot apart with a pry bar (something similar will do) while the other pushed the two pieces of pipe into the joiner pipe. (When you do this, remember to be careful and watch your fingers!)

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Materials for PVC Mast

two 2" x 2" x 10' pressure-treated boards @\$7.64.....	\$15.28
three lengths of 3" schedule 40 PVC pipe:	
one 20' long.....	\$10.54
one 10' long.....	\$5.19
one 5' long.....	\$3.95
two 1/4" x 3" eye bolts @ \$.50.....	\$1.00
four bags of concrete mix @ \$1.94.....	\$7.76
two 5/16" x 8" hex bolts, nuts, washers.....	\$1.90
four 4" steel hose clamps @ \$1.43.....	\$5.72
Total	\$51.34

The fit was quite tight. We then put the hose clamps around the joint. I also had some steel wire that I wrapped around the joint. I suppose I could have put some screws into it too, but I didn't bother. Since I was able to get 20 and 10 ft. lengths of pipe, I only had to make one joint. If you can only get 10 ft. lengths, then you will have to make two joints if you wish to get to 30 ft.

I drilled two holes at the top of the mast and inserted eye bolts. By running rope through these bolts, I would be able to pull up my antennas and also tilt the mast over if necessary. I also put tape across the top of the mast to keep water from running down inside. I just love to tape!

For my 2 meter ground plane whip, I wrapped a 2 ft. piece of 1 inch dowel with tape (easier and cleaner than painting). With "U" bolts, I fastened the 2 meter antenna to the dowel and the dowel to the mast with two hose clamps. I taped the feedline to the mast and put tape over the hose clamps to protect them. As I said, I just love to tape!

It was now time to see if this thing would really stand up straight or flop over like a

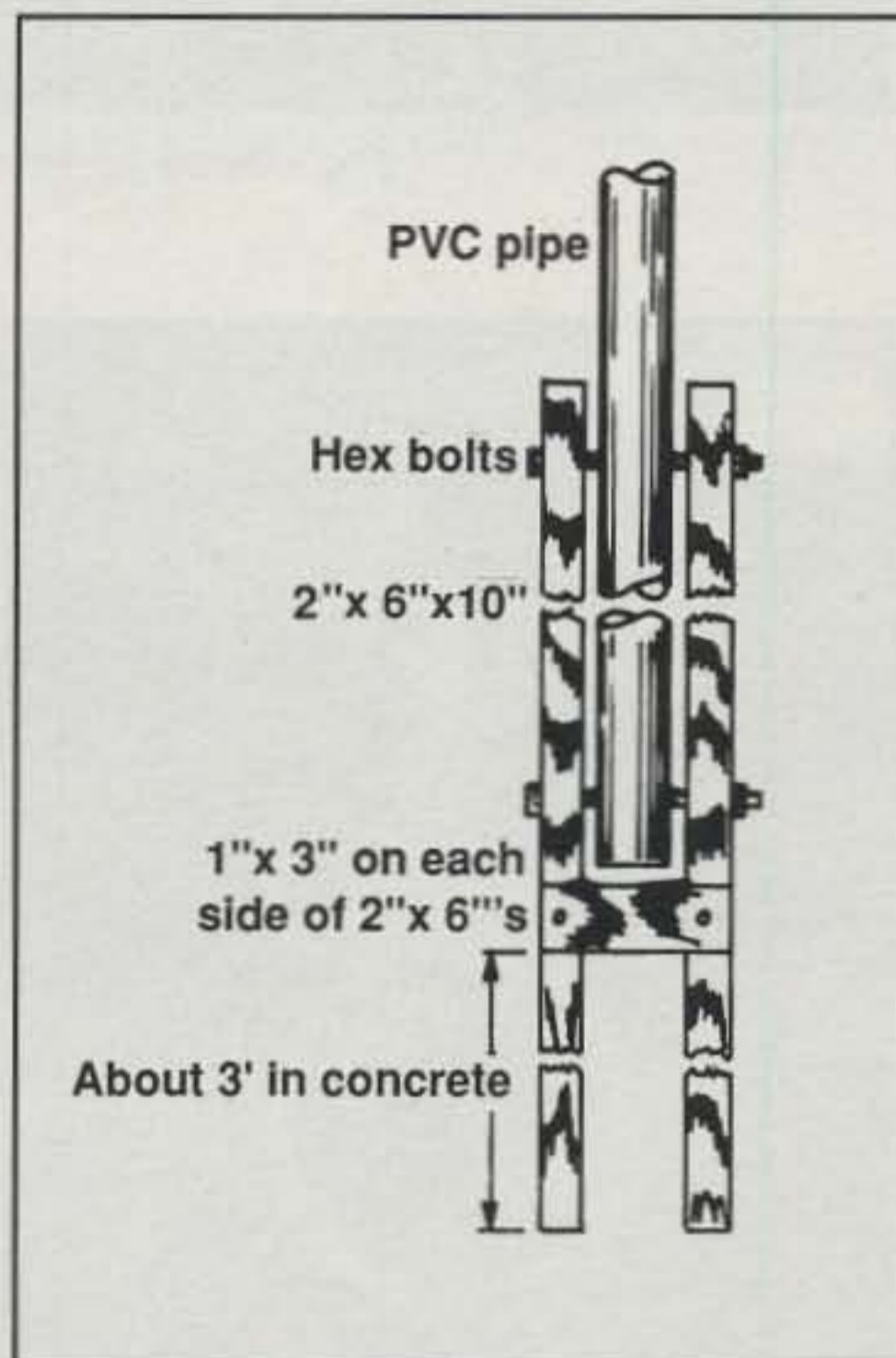


Fig. 1— Overall view of the mast support system.

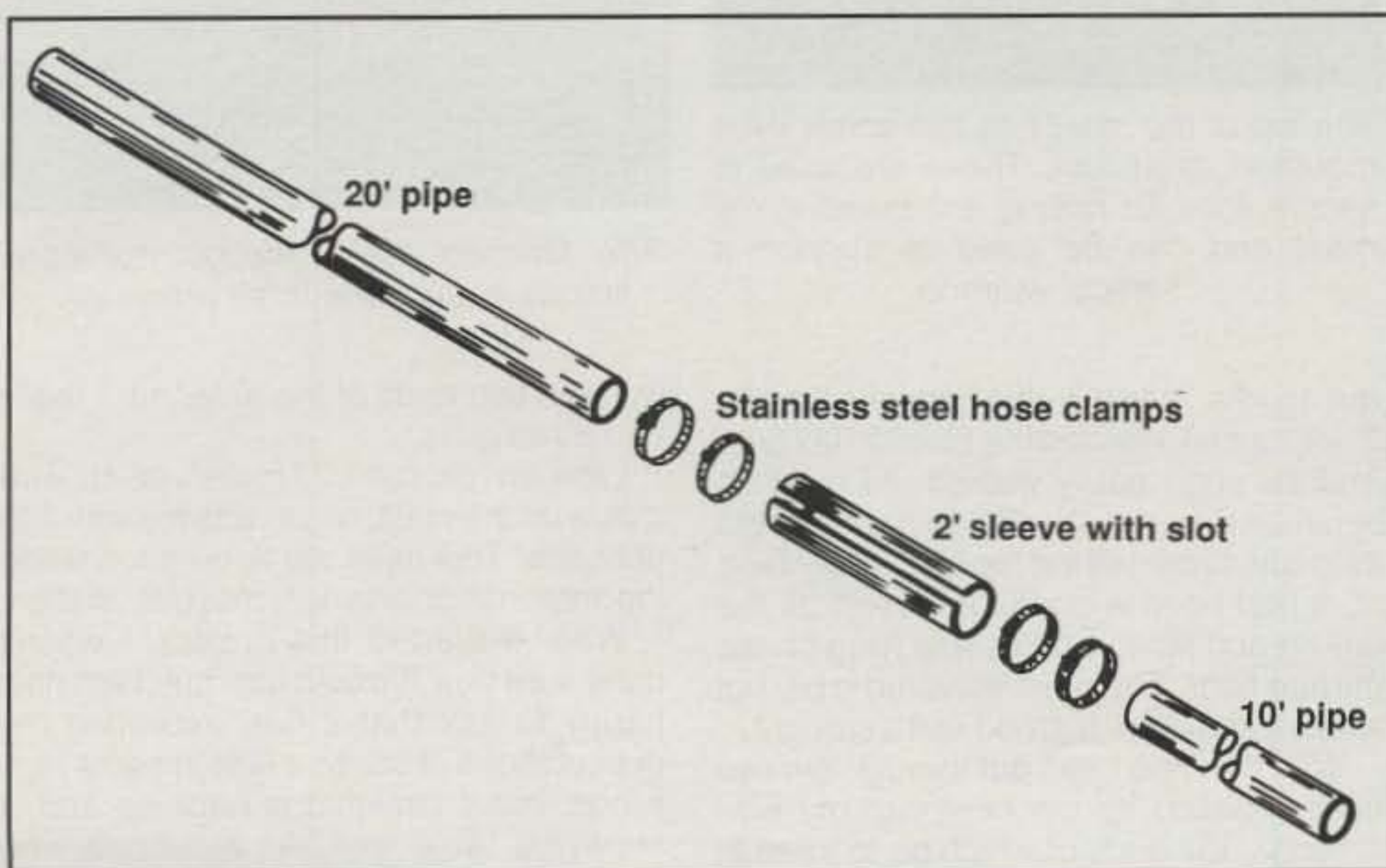


Fig. 2— The two sections of PVC are held together by a small section of PVC slotted to make a sleeve section. Stainless-steel hose clamps are used to make a compression fit.



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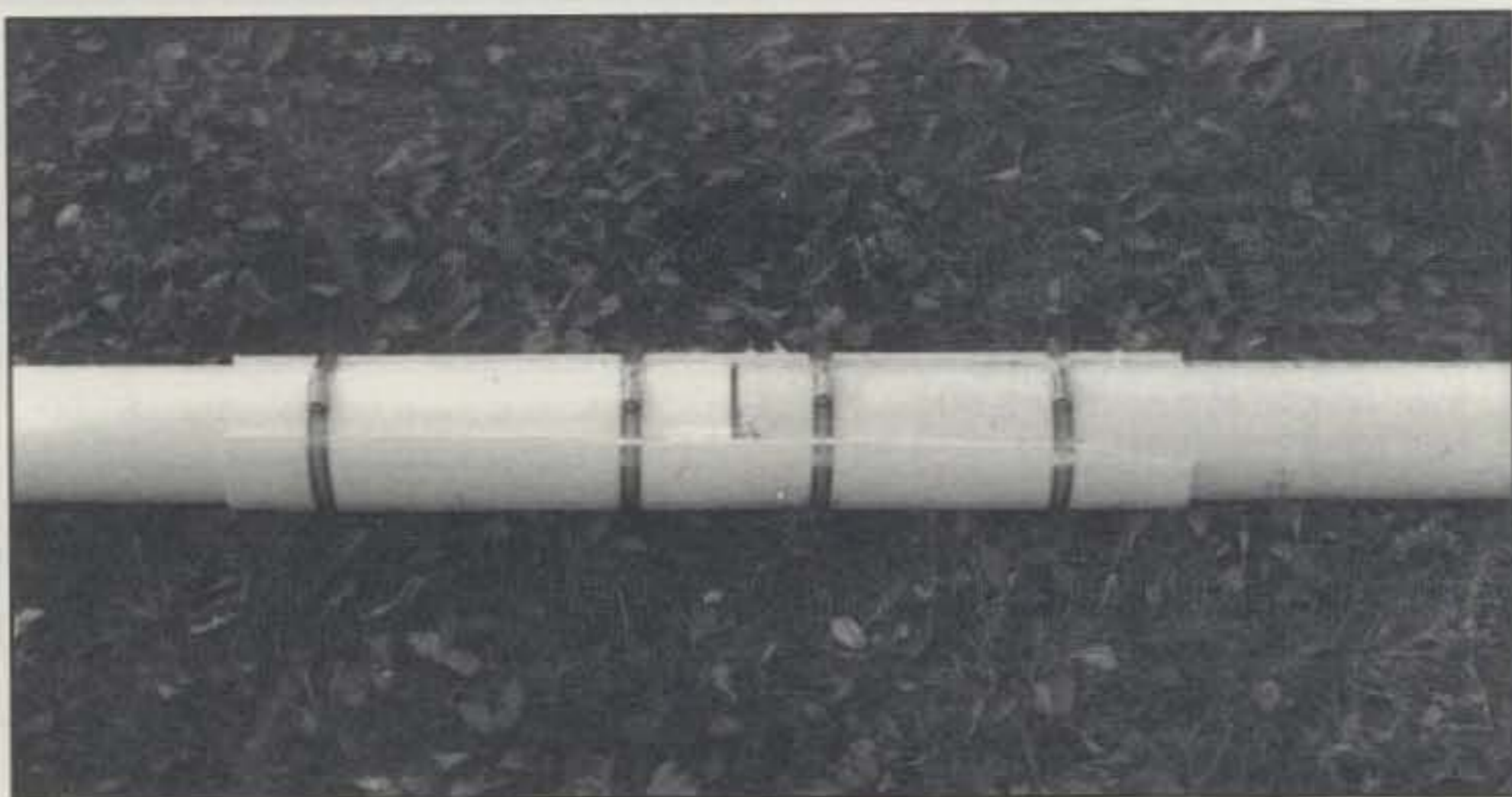
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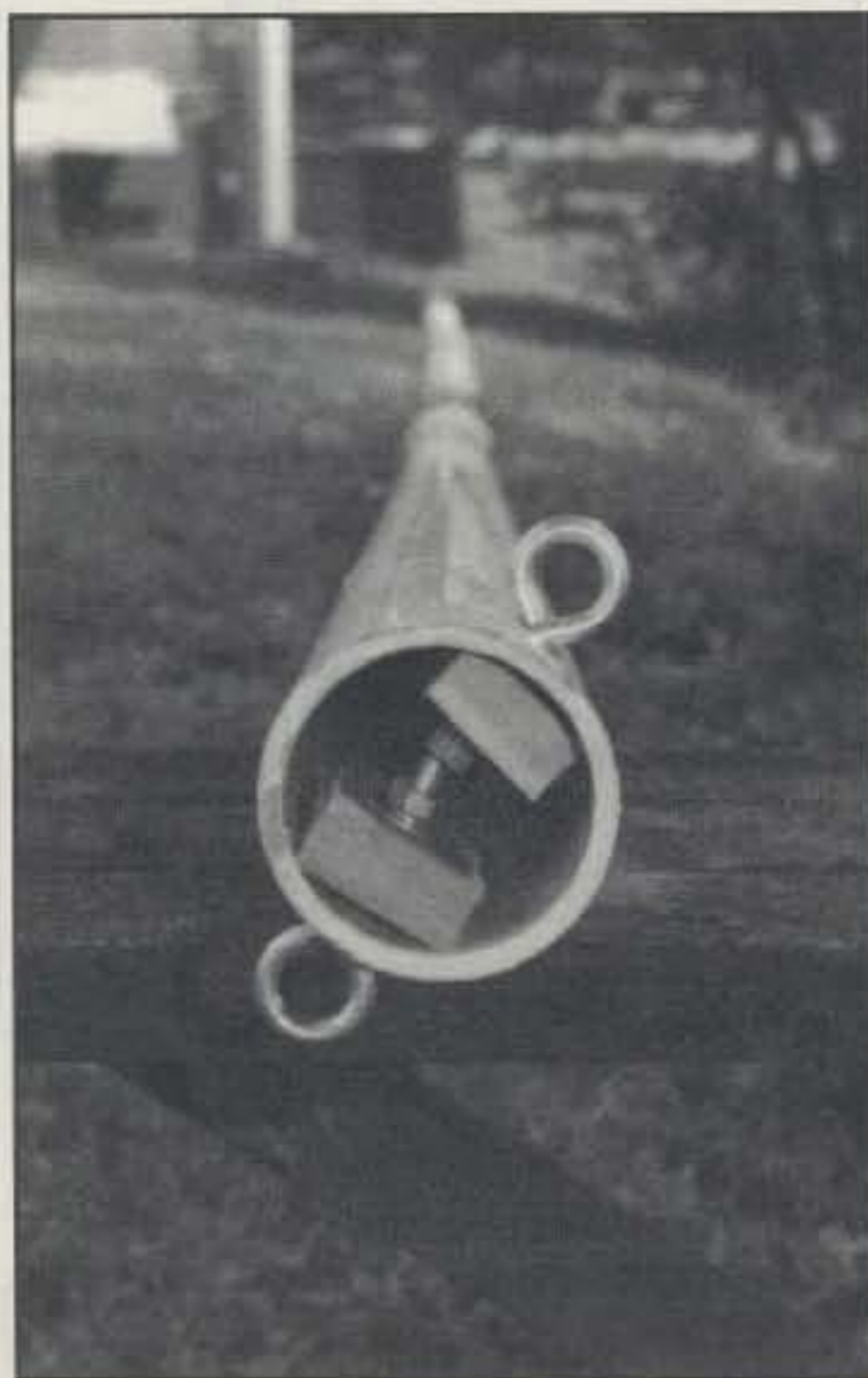
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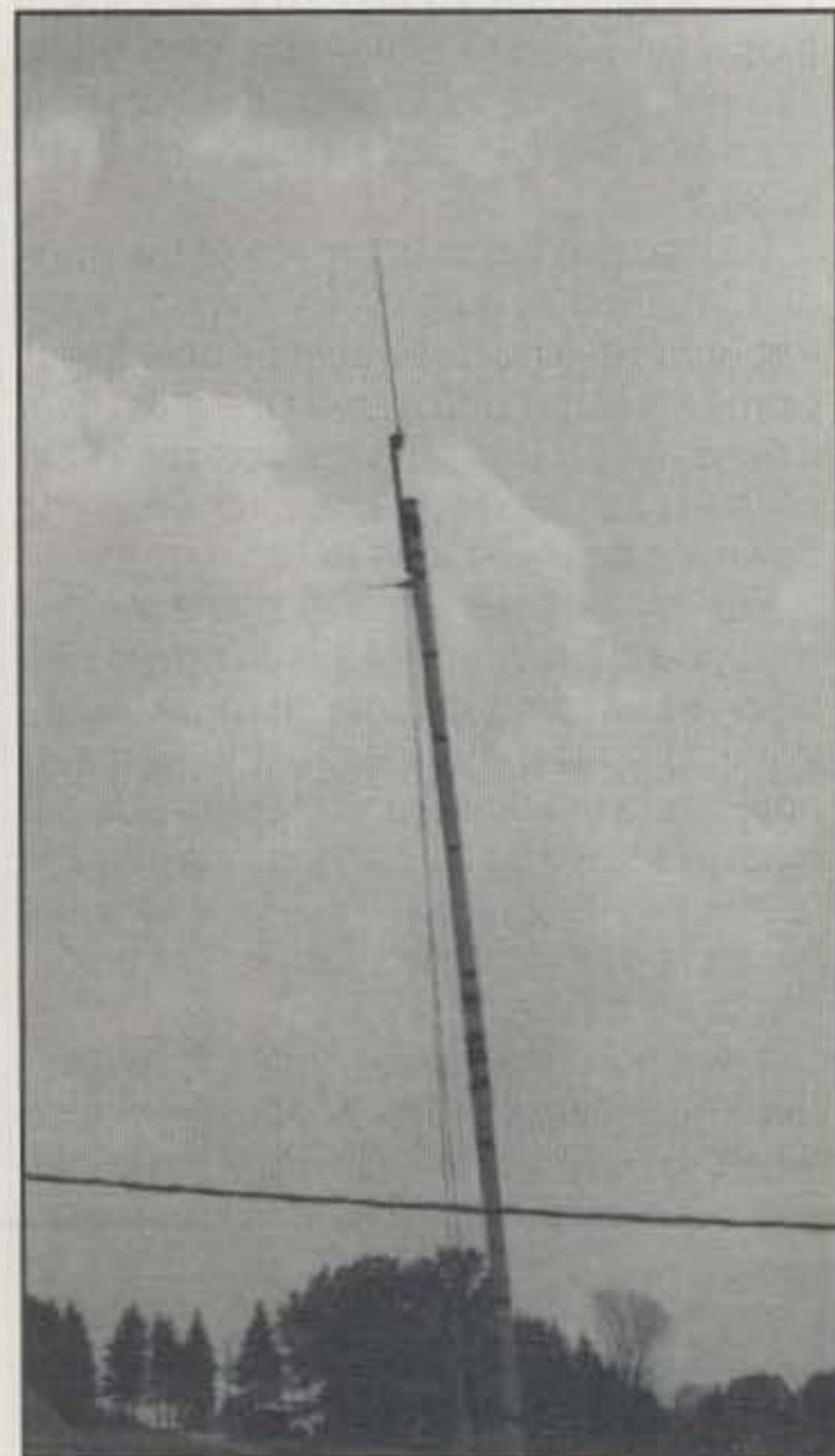
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The sleeve section as depicted in fig. 2.



The top of the mast has two screw-eyes mounted as shown. These are used to secure lines for raising and lowering the mast and can be used to support a vertical antenna.



The finished mast, though not conspicuous, supports three antennas.

wet noodle. I slid the pipe between the two 2" x 6"'s and inserted the bottom hex bolt. Andrew and I easily walked the mast up between the 2" x 6"'s. While Andrew held it steady, I inserted the top bolt. Everything fit. It had been a good idea to do all the drilling and fitting while it was lying on the garage floor. The mast wavered a bit, but when it steadied, it stood quite straight.

With the rope I had put through the eye bolts, I pulled up the center of my wire antenna, the ends of which go to trees at opposite ends of my lot. Since I didn't have immediate use for the other rope, I tied it off at another tree. Therefore, together

with the two ends of the antenna, I really had three guys.

Later on I did run a 20 meter vertical wire dipole up the mast, which was fed with 300 ohm line. This gave me three good working antennas on one neat mast installation.

When I started this project, I wasn't quite sure how it would turn out. I am now happy to say that it has exceeded my expectations. It bends a little in some high winds, but it straightens back up and is surviving quite well. All amateurs who have seen it approve. It was a great, fun, and very useful project. I don't think you can beat it for about \$1.75 a foot! ■