

# Cheap & Easy Portable HF Vertical

*Try this medium-weight, sturdy, neat, visually pleasing, fun to use ...*

*Antennas are the most important part of an amateur radio station. You don't believe it? Try getting on the air without one!*

Many portable antennas have been configured and described in the various amateur radio publications, throughout almost the entire history of amateur



*Photo A. The Cheap & Easy Portable HF Vertical securely mounted on a speaker stand.*

radio. This project is what I like to think of as a "better mouse trap." I've tried the various methods of winding wire on a bamboo pole (and similar wood dowel types) sitting upright in a Christmas tree stand for a base, an automobile wheel sans tire, or a patio table umbrella base. Well, they worked!

Sort of.

But, those "lash-ups" left much to be desired, in terms of being portable, sturdy, and easy to use! A "mobile whip antenna" mounted on a microphone stand, or a music stand, or a camera tripod — we've tried. All! Didn't work as well as the bamboo pole, wood dowel method, although they were a step in the right direction mechanically.

The idea to use a speaker stand came while I was browsing through a flyer I received one day from Parts Express. (They have a Web site.) Parts Express is an electronic component and parts supplier located in Springboro, Ohio (south of Dayton). At the top of the one page of the flyer was the word "SPECIAL." Below it: "TRIPOD SPEAKER STAND!!!" It didn't take long for the idea to sink in that this is what I've been searching for, searching,

every whiiiiich way! Lawd, I've been searching — just like the Northwest Mounted, you know (remember that tune??).

Hmmm ... back to the subject at hand, this impossible ideal (dream) antenna — there were times I thought of Don Quixote. Special Price! \$29.50, it said (with a carry bag, too).

Well, to make a long story short, I got one (a speaker stand that is, **Photo A**). I happen to have a Radio Shack antenna mount that I bought when I was experimenting with the different "simple antenna" projects, and with some slight modification of the antenna mount, I put together the device shown in the pictures.

The good news?. This system works, and is no biggie to put up and take down! Also, it's cheap (in the "bang-for-the buck" meaning of course)!

I assume that just about any of the mobile whip antennas out there can be used. I happened to have Valor Pro-Am types of whip antennas for 80, 40, and 20 meters. They "tuned" after adding capacitance. The need for adding capacitance, I found, was that the Valor-type antennas are tuned for the phone part of the band. That's what

they are designed for, and the addition of a capacitive "hat" (or increasing whip length) is required if operation in the CW portion of the band is desired.

I found that increasing the length of the stainless steel whip part of the antenna would work, as well as the adding of capacitance for lowering the antenna resonance point. Adding a capacitive hat has advantages over just lengthening the stainless steel whip. Hy-Gain antennas (mobile whip-type), as far as I know, can be tuned across the entire band selected for operation, by adjusting the whip length, and they would probably be the better choice.

Anyway, some tuning will be necessary if you need to work in the CW portion of a given band, no matter what brand of antenna is used. It would be good to consult an antenna book that covers mobile antenna operation, for suggestions that could be used to optimize performance. The only "serious" problem I've had so far is that the 10-meter antenna I have, a no-tune type wound on fiberglass with no whip, would not resonate at all. I even tried a straight quarter wave whip; no soap. My gut feeling is that 15 meters is about the upper usable limit of this "lash-up!"

The capacitive hat was made using

#14 copper grounding wire, available at most hardware stores; see **Photo B**. The thought has occurred to me to use an aluminum throw-away pie pan cut to the appropriate size using experimental methods, although I haven't tried it yet. The one advantage a wire hat has is that it has a smaller wind-loading co-efficient. The dimensions of the wire hat in the picture are 12" x 12" corner to corner. A disc-shaped unit would work as well, about a foot and a quarter in diameter. Increasing the number of cross members of the capacitive hat increases the capacitance in small increments, and is a good way to fine tune the system. This

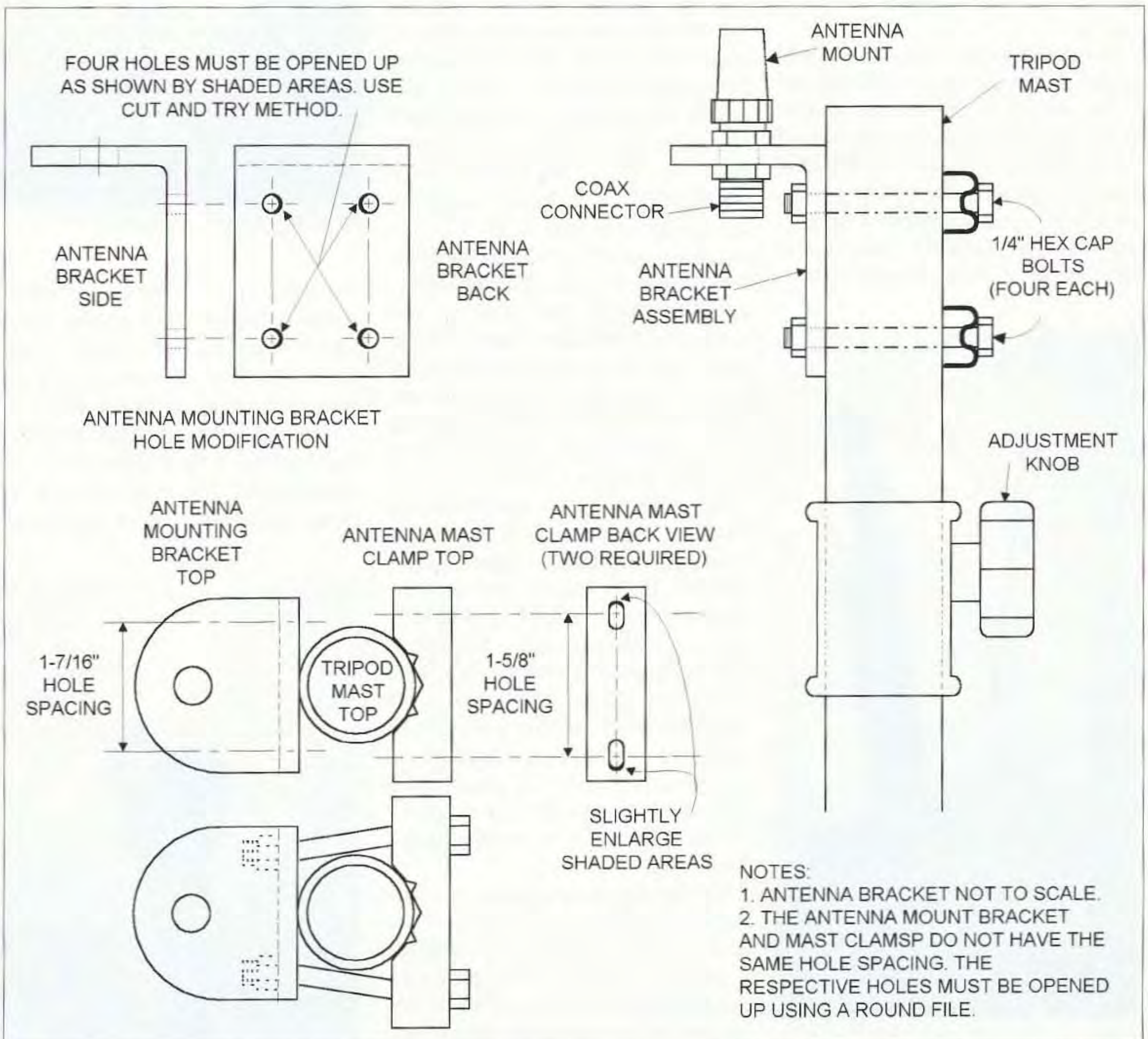
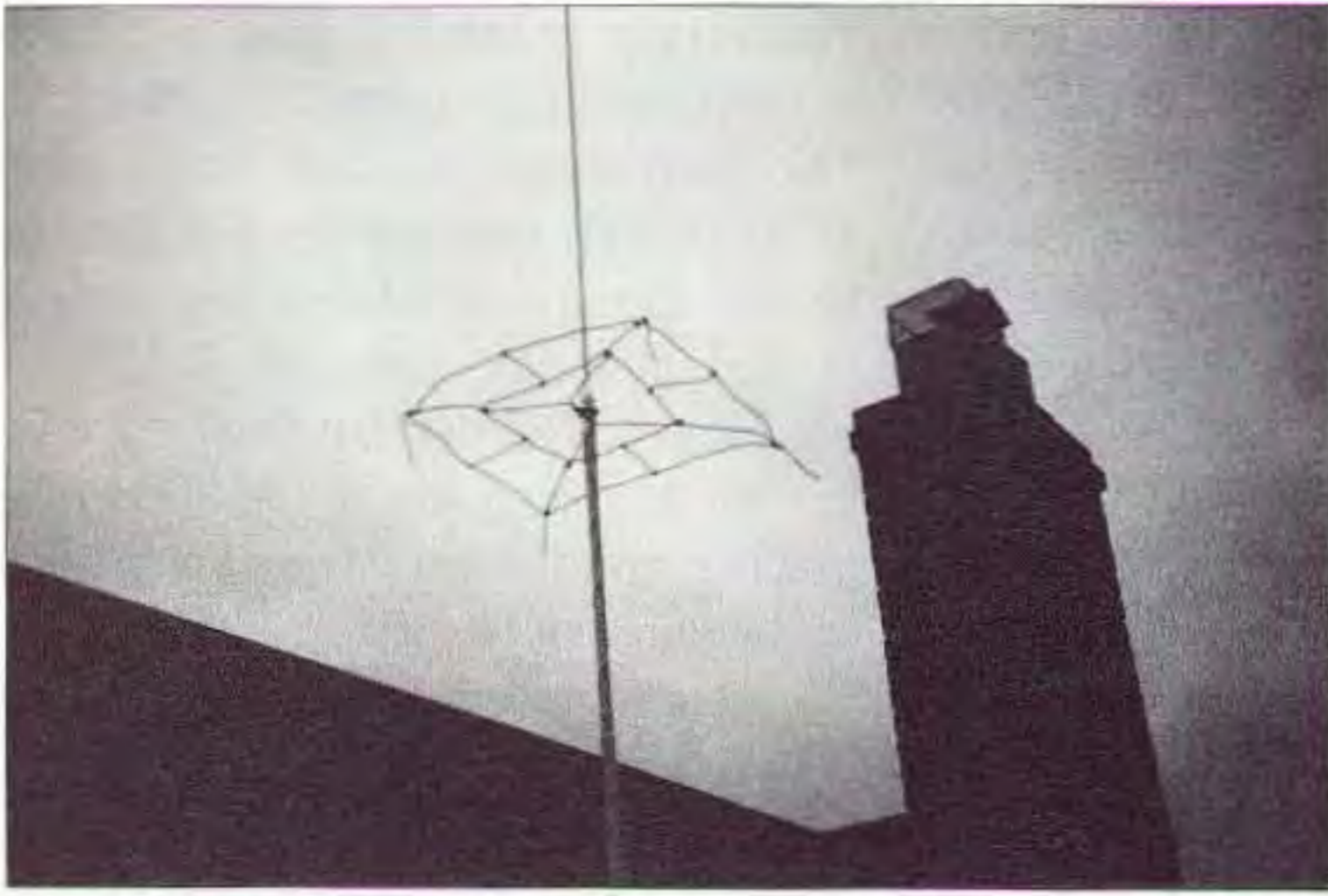


Fig. 1. Cheap & Easy details.



**Photo B.** The capacitive hat is made of #14 copper grounding wire.

system stood up to 30-mile-per-hour wind gusts, and only mildly swayed to and fro.

The tripod itself is easy to open and close, and can be easily tightened securely. The specs say that this speaker stand can safely support a 100 lb. load six feet above the floor. I should think that that's sturdy enough to handle any mobile whip antenna available. So if you're interested, the speaker stand catalog number is #245-010.



**Photo C.** This collapsed unit is easy to grab and go.

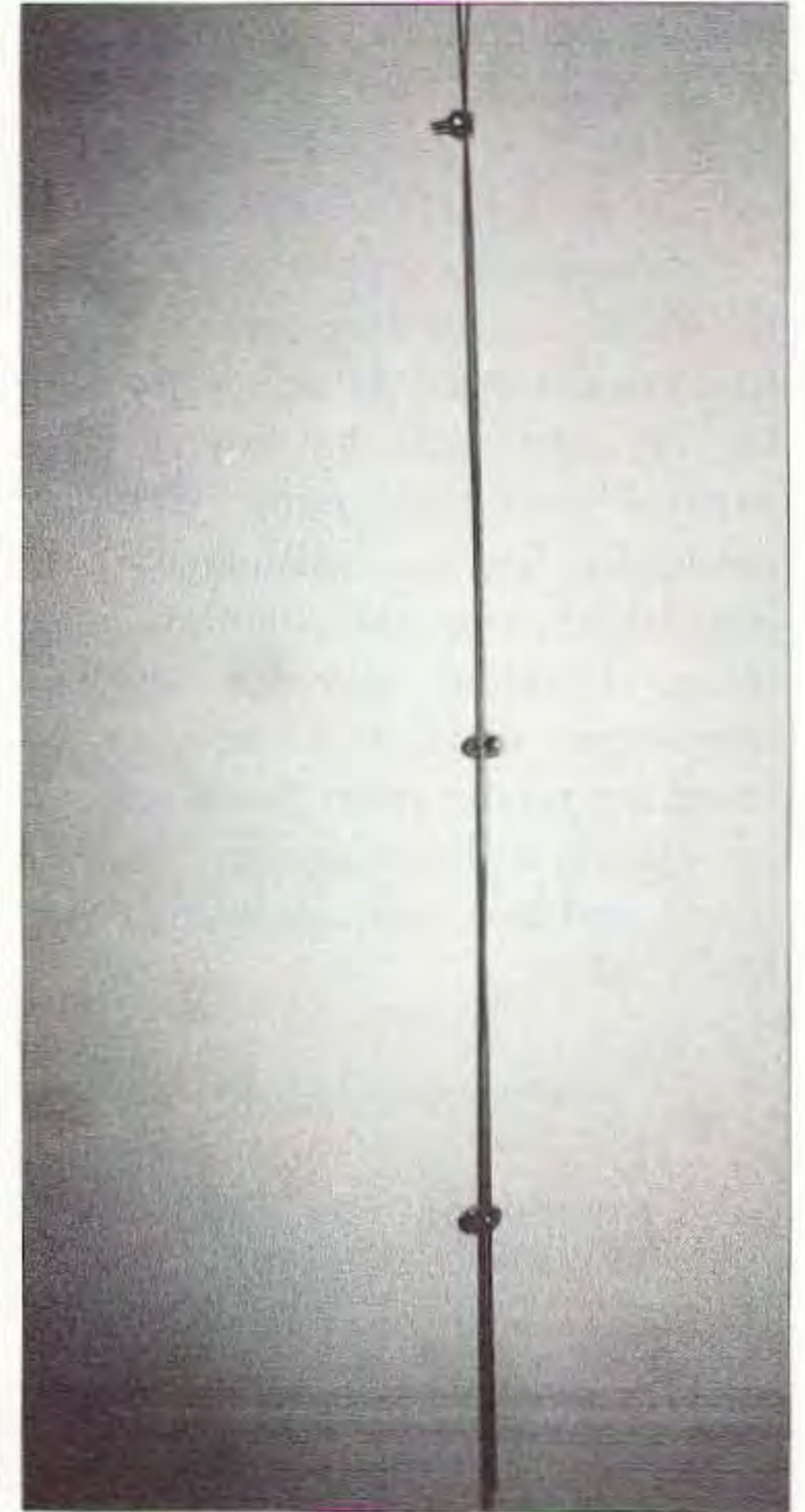
The on-special price was \$29.80, down from \$44.95; list price, \$109.95. It weighs 6-1/4 lbs., is easy to store, easy to transport (the ad says that). When collapsed it measures three feet tall — that is also the antenna operating support height (**Photo C**).

It is not necessary, nor desirable, to extend

the center support for HF band operation. The system resonates very well; a 1.2:1 VSWR was obtained as indicated on an MFJ -259B. That's not saying the system is perfect — someone with a good background in antennas could probably come up with improvements. If you do, let me know. However, it works good enough that it is worth giving it a try, especially if you live in a condo, or somewhere with smotheringly constrictive antenna covenant restrictions. You might want to keep a unit handy for portable/emergency operation as well, even if you have the good luck of being able to have an antenna farm! The speaker stand, extended, could double as a short mast for VHF and UHF antennas as well.

As of this writing, I understand that Valor Pro-Am antennas are no longer available. "Ain't that a shame?" (Fats Domino, 1955). Ummm, they were the easiest antenna to put up and take down as well as to add a "capacitive hat" to (maybe Ham Stick will pick up where they left off, just a thought). I suppose a fixture of some sort could be fashioned out of brass, which would hold a capacitive hat in place on the Ham Stick. I don't have the machines or machining skills to make a proper fixture.

The thought occurred to me, and it's only a thought so far: I wonder if two or more of the antenna set ups could be connected, "phased," so as to alter the radiation pattern. In past years I've seen a four-antenna setup at the Hazel Park, Michigan, Amateur Radio Club Field



**Photo D.** Thimble clip placement.

Day site. There were four antennas ground-mounted, in a phased array, fed with a coaxial cable system, which was switched at the operator's position. The phasing of the antenna array was varied, which changed the directional pattern of the antenna array's radiated wave. This resulted in more energy being concentrated in a desired



**Photo E.** Close-up of mounting brackets.

direction during transmitting, as well as a reduction in QRM as a result of the improved antenna pattern while receiving.

In general, the mobile whip type antennas are designed to be used in the phone portion of the respective amateur bands. The problem becomes, "How do you make a stainless steel whip longer if it is too short?" The solution is simple! Another stainless steel whip! Attached to the too-short whip, with thimble clips (#4418638 1/8" Wire Rope Thimble & Clip Set by the Peerless Chain Co., Winona, MN 55987). These guys (thimble clips) look like miniature muffler clamps. See Photo D.

It takes a little "fumbling" to attach these clamps because they are small and hard to hold. You'll use three of them. When you get to working with them you will see what I mean. The antenna can be made to resonate at a lower frequency by using this method to lengthen the whip — long enough to resonate well below the phone portion of the band. I guess this is a physical realization of what in music is called theme and variation, in that a clamp-together whip is a variation on the theme of a pull-out whip. Thimble clips, a/k/a guy wire clamps, are used to fasten braided guy wires; you can get them at most hardware stores. A socket type screwdriver is the best tool to use for tightening the double-whip assembly. This idea works, both mechanically and electrically!

The capacitive hat idea goes back to WWII. Capacitive hats were first used on the whip antennas of PT boats, to increase signal range. Later, CBers used a version called a "Zing Ring." They found it boosted performance, so it's worth it if you can install one on the particular brand of antenna that you settle on. It does take some experimenting, of course.

The other parts used in this project are off-the-shelf items from Radio Shack, a #21-937 antenna mount bracket and #15-826 mast clamps. The mount bracket has to be drilled oval (Photo E) in order to accommodate the mast clamps, due to the large diameter of the speaker stand center support. I

used long shank bolts and wing nuts, in order to facilitate antenna bracket removal, without need for tools — in case I wanted to remove the whip-mount bracket, and mount a 2-meter antenna on the fully extended speaker stand. Now, how's that for an inexpensive (OK, cheap), easy-to-get-parts-for, medium-weight, sturdy, neat, fun to use, visually pleasing, professional (in an amateur sense, of course), spiffy, useful project? **73**

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