The Hinged Tower Base

BY SUMNER WEISMAN,* W1VIV

HERE are several popular ways to put up towers. One involves imbedding the bottom section in concrete, and then erecting one section at a time with a removable gin pole. Another is to assemble the tower on the ground, lash down the bottom end, and then walk or hoist it up. The guy wires are then tied down, and finally the bottom end is lifted on to a concrete base and bolted down. The first method is extremely time consuming, and a very strong gin pole, about the length of one tower section, must be fabricated. A method must be found to securely fasten it to the tower, without damaging the tower, yet it must be easily removable. The latter method, while faster, has been known to bend the bottom couple of feet of the tower beyond recognition.

After much thought on the subject, it was decided to fabricate a very rugged hinge, and to swing the tower up in one piece. The hinge had to be weather resistant, dependable, and very

*43 Agnes Drive, Framingham, Mass.



Fig. 2—Hinge framework. The angle irons are attached to 1¼ inch strap iron loops made from 3 foot lengths also embedded in the concrete for increased holding strength as shown in fig. 4.

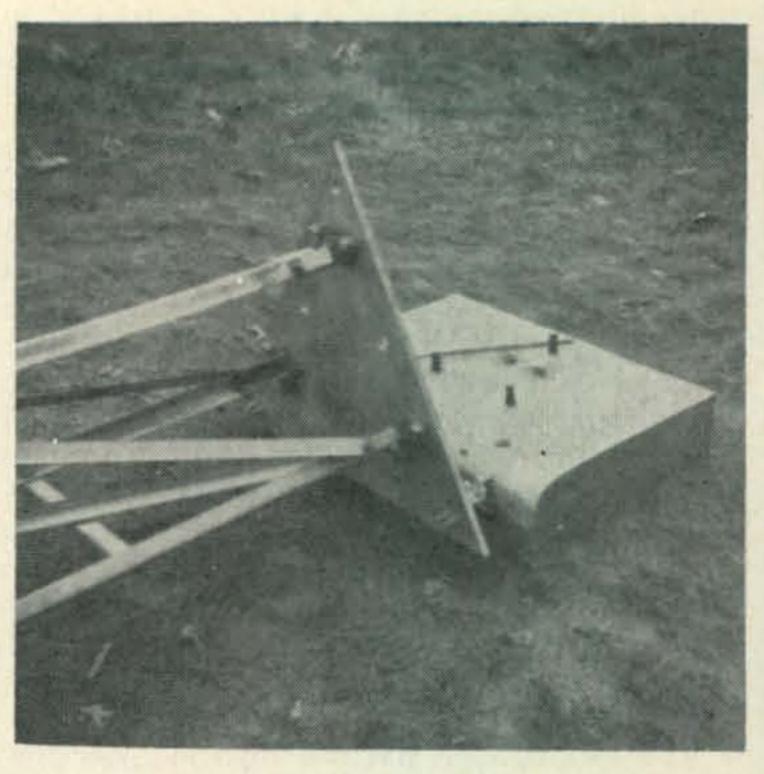


Fig. 1—Completed base with tower mounted and ready for raising.

strong. Several approaches were considered, and the end result described here has fulfilled all requirements.

Construction Details

The drawings and photos show details of construction. Not all dimensions are given, as these are somewhat arbitrary and depend upon materials available and the tower chosen. Except for cutting out the half-inch thick slab of aluminum, all work was done with only a hack saw, file, and electric hand drill. All iron and steel parts are coated with a rust resistant enamel, and galvanized material was used wherever possible.

A strap iron and angle iron platform was made to hold the hinge together, so that the concrete would have a large amount of surface to grip. It was designed to avoid motion in any direction. The 5/8 inch bolts that hold the hinge plate to the concrete base have 1/4 inch holes drilled through, just above the heads. A large washer is slid on, and then 1/4 inch threaded rod is fastened with

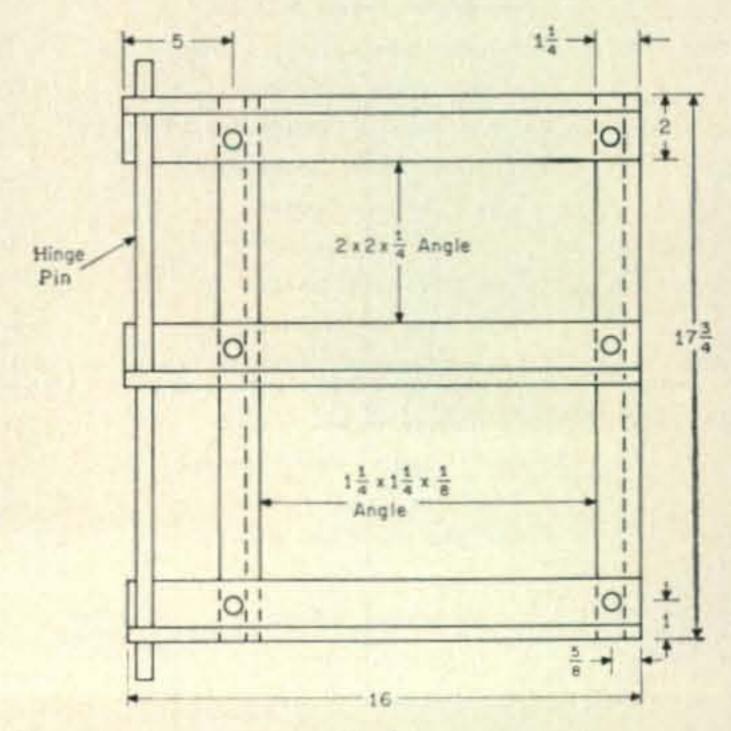


Fig. 3—Hinge framework dimensions. All parts are galvanized or painted with rust resistant enamel.

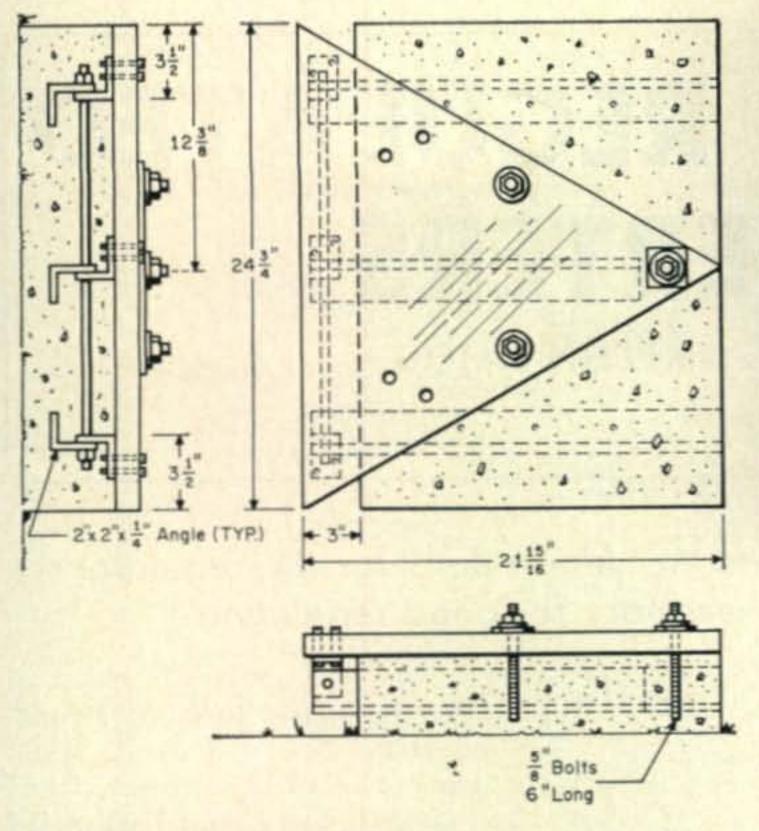
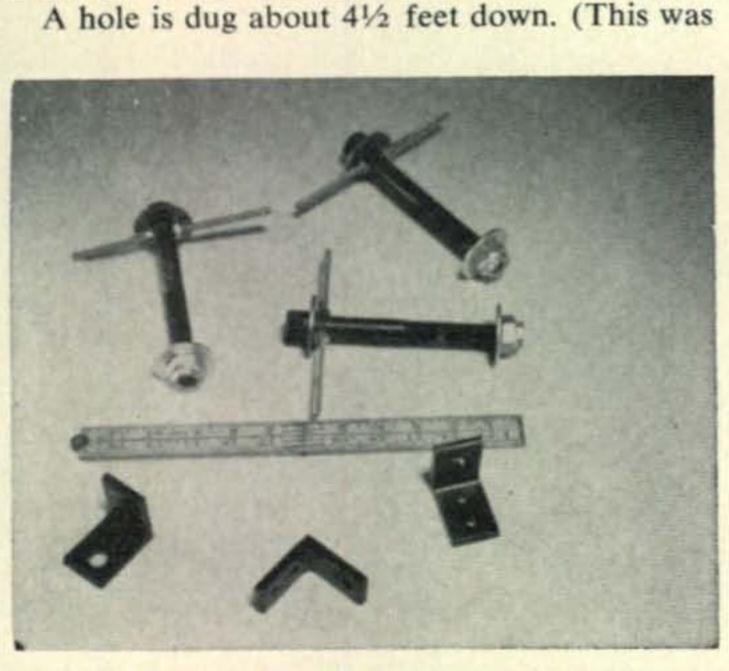


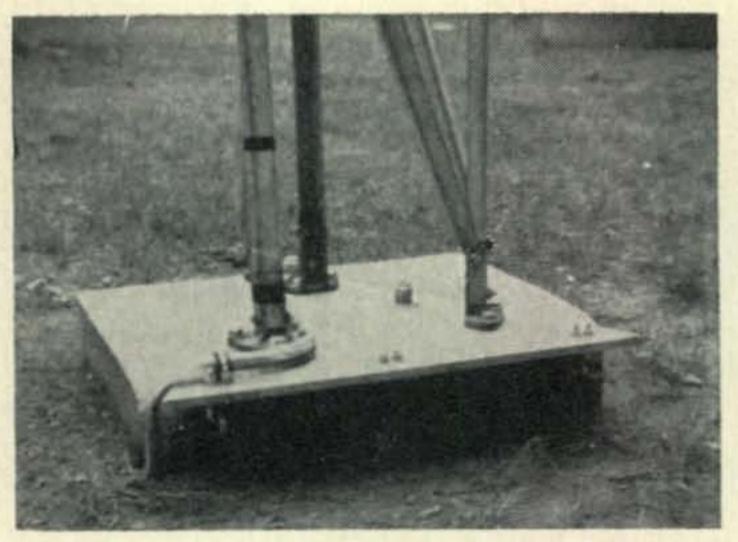
Fig. 4—Construction and mounting detail of the hinge and base plate. The hold-down bolts embedded in the concrete are shown in fig. 5.

nuts to the bolt. This prevents rotary as well as vertical motion once set in the concrete, so that 5/8 inch nuts can be installed after the tower is raised. The holes for these bolts in the hinge plate are made somewhat oversize to avoid binding. A 1/2 inch diameter galvanized rod is used as a hinge pin. The ends are clamped with U-shaped 1/2 inch cable clamps to secure the pin.

Installation Details

A spot is very carefully chosen so that the tower, when assembled on the ground and attached to the hinge, will not overlap on a neighbor's lot. Also, the axis of the hinge should be exactly perpendicular with an imaginary line between the tower base and a large, nearby tree, if possible. This allows a block and tackle, attached to the tree, to do most of the work.





View of the completed base and tower. Note the radial connection in the left corner.

done not only for strength, but because of the frost line in New England. In some parts of the country 2 feet would suffice.) The width of the hole should exceed that of the hinge by several inches.

A good ground system is important. Three radial holes are made with a ½ inch steel rod, 5 feet long, starting about 2 feet down the sides of the hole. The rod is removed, and 3 lengths of ¼ inch copper tubing are inserted in the holes, meeting in the center. Using a torch, they are soldered together with copper strap, which is then brought up to the surface. The free end is fastened by means of a bolt to the base of the hinge.

Cover the bottom of the hole with gravel, for drainage. Before pouring concrete, wet down the sides of the hole. Rocks can be mixed with the concrete while pouring. When the hole is nearly full, insert the hinge frame, using a level to keep it straight, and making sure the direction of the hinge axis is correct. A wood frame is used to form the concrete above ground, and is later removed. With the concrete all poured, insert the hinge pin and plate. This will show where to insert the hold-down bolts into the con-

[Continued on page 100]

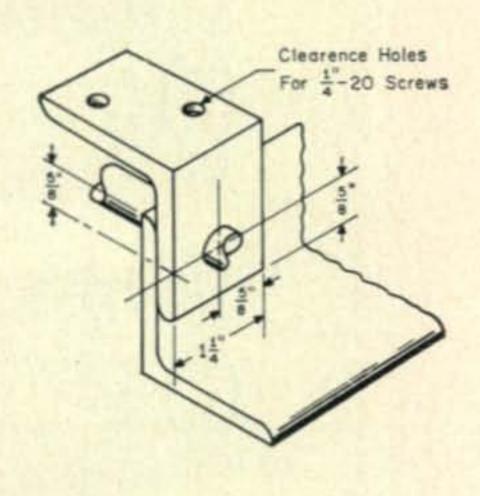


Fig. 5—The %" × 6" hold down bolts are prepared as described in the text. The ¼" threaded rod running through the bolt, just under the head, prevents rotary movement of the bolt after the concrete sets. The drawing on the right shows the hinge parts mounted on the base slots. They are made from angle iron.

TV CAMERA and CONTROL FAIRBANKS MORSE M

While they last \$495.00. One and only chance to get broadcast quality at such low prices.

CAMERA BC 600A: Band width over 8 megacycles, 650 lines minimum. Fully interlaced. Vidicon focused by mechanical control at rear of camera.

CONTROL UNT CC 600A: Sync generator, scanning generator, video amp, and power supply. Plug in modules, waveform and adjusting points behind drop front panel.

Vidicons for above \$35.00. Lens prices on request.

TELEVISION UTILITIES CORPORATION

10-11 50th AVENUE, LONG ISLAND CITY, N.Y. 11101 AREA CODE 212 EXETER 2-8395

For further information, check number 34, on page 110

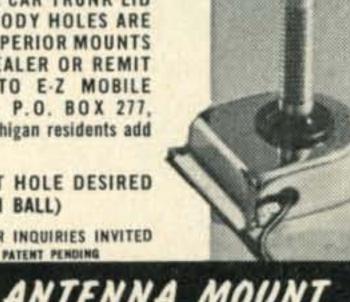
LOOK ... NO HOLES!

FITS ANY C.B. OR HAM ANTENNA

THIS RIGID CHROMED STEEL ANTENNA MOUNT FASTENS TO YOUR CAR TRUNK LID IN MINUTES . . . AND NO BODY HOLES ARE NECESSARY, SEE THESE SUPERIOR MOUNTS AT YOUR DISTRIBUTOR-DEALER OR REMIT S8.95 (CHECK OR M.O.) TO E-Z MOBILE ANTENNA MOUNT INC., P.O. BOX 277, ALGONAC, MICHIGAN. (Michigan residents add 4% sales tax)

SPECIFY ANTENNA MOUNT HOLE DESIRED (%"-%"-SMALL OR MEDIUM BALL)

DEALER INQUIRIES INVITED



E-Z MOBILE ANTENNA MOUNT

For further information, check number 35, on page 110

DX - - DX - - DX SHORT PATH QSL-ing

DON'T

WASTE MONEY WASTE STAMPS WASTE COUPONS

SAVE TIME BEAT THE COMPETITION DO 1 RAISE YOUR SCORE QUICKER

90% of active DX stations have STATE-SIDE QSL managers. Our copywrited "QSL MANAGER'S DIRECTORY" lists over 1200 of these managers. Only \$2.00 per year, U.S. and Canada (\$3.00 elsewhere—airmail). And don't forget you receive FREE changes and additions every three months. Send order to:

European Agent DX NEWS-SHEET GEOFF WATTS 62 Belmore Road Norwich, Nor72t, England

BOOKBINDER PUBLISHING CO.

Dept. C, P.O. Box 54222, Terminal Annex Los Angeles, Calif. 90054 (FOUNDER W6GSV)

For further information, check number 36, on page 110

ALL BAND TRAP ANTENNA!



Reduces interference and Noise on All Makes Short Wave Receivers. Makes World Wide Reception Stronger. Clearer on All

For ALL Amateur Transmitters. Guaranteed for 1000 Watts AM 2000SSB Pi-Net or Link Feed. Light. Neat. Weatherproof.

Complete total length 102 ft. with 96 ft. of 720hmbalanced twinline. Hi-impact molded resonant traps. You just tune to desired band for beamlike results. Excellent for ALL receivers and amateur transmitters. For NOVICE AND ALL CLASS AMATEURS! NO EXTRA TUNERS OR GADGETS NEEDED! Eliminates 5 separate antennas with excellent performance guaranteed. Inconspicuous for Fussy Neighborhoods! EASY INSTALLATION! Complete Instructions.

75-40-20-15-10 meter bands. Complete\$17.95 40-20-15-10 meter. 54-ft. (best for swl's. Complete 16.95 SEND ONLY \$3.00 (cash, ck., mo) and pay postman balance COD plus postage on arrival or send full price for postpaid delivery. MIDWAY ANTENNA AC-6 Kearney, Nebraska

MARS net for a couple of days. The wire was about ten feet off the rain soaked ground. Just recently I operated from the Naval Hospital in Jacksonville, Fla. and was able to meet state traffic nets.

I believe that if you try this system on several bands you will find that the advantages do outweigh the disadvantages. Particularly the ability to grab up a small package and go anywhere and set up a station at any time. See you portable 3 layers under the big signals from most anywhere.

Hinged Tower Base [from page 69]

crete. With the bolts in place and everything together, trim the concrete surface until the plate is perfectly horizontal.

Tower Raising

The tower base is mounted to the hinge, as shown in the photos, and the entire tower is assembled on the ground. (Because of a yard full of trees, the beam was not attached until the tower was raised, but this can be done if room is available.) Rotator cable and transmission line is installed, and guy wires are attached. Guy anchors are placed in the ground, at three points about 120 degrees apart.

If a block and tackle is to be used, the tie point should be directly in line with the tower, to avoid undue strain on the hinge. Four or five willing assistants should be on hand. Two men on the block and tackle, and two or three walking up the tower from underneath is ideal. The type of block and tackle that has a locking brake is much preferred.

When the tower is at a 45 degree angle, two men from underneath should be transferred to the side guy wires, to keep the tower from swinging to the sides. Extremely light pressure should be used on the guys, as the hinge and the block and tackle will keep the tower very nicely in line. When the tower is nearly upright, the rear guy wire is loosely attached to its anchor to controi the tower and keep it from swinging too far. All guys are then permanently attached, and the hinge plate is securely bolted down.

If a place to tie a block and tackle is not available, a couple of additional strong backs under the tower will suffice. Once the tower is partially raised, a few men on each of the side guys can pull it the rest of the way up.

The writer used two sets of guys on a 60 foot steel tower, supporting a full size three-element 20 meter beam. The installation has withstood severe wind and ice conditions, and shows distinct signs of being around for quite a while longer.

Rtty A-Z [from page 67]

one revolution, which causes the printing of that character or the operation of that function.

Any character or function may be selected while the printing of the previous selection is taking place.

The operations of the selector unit, locking