

A "Mini-Wheel" Antenna for 432-Mc. Mobile

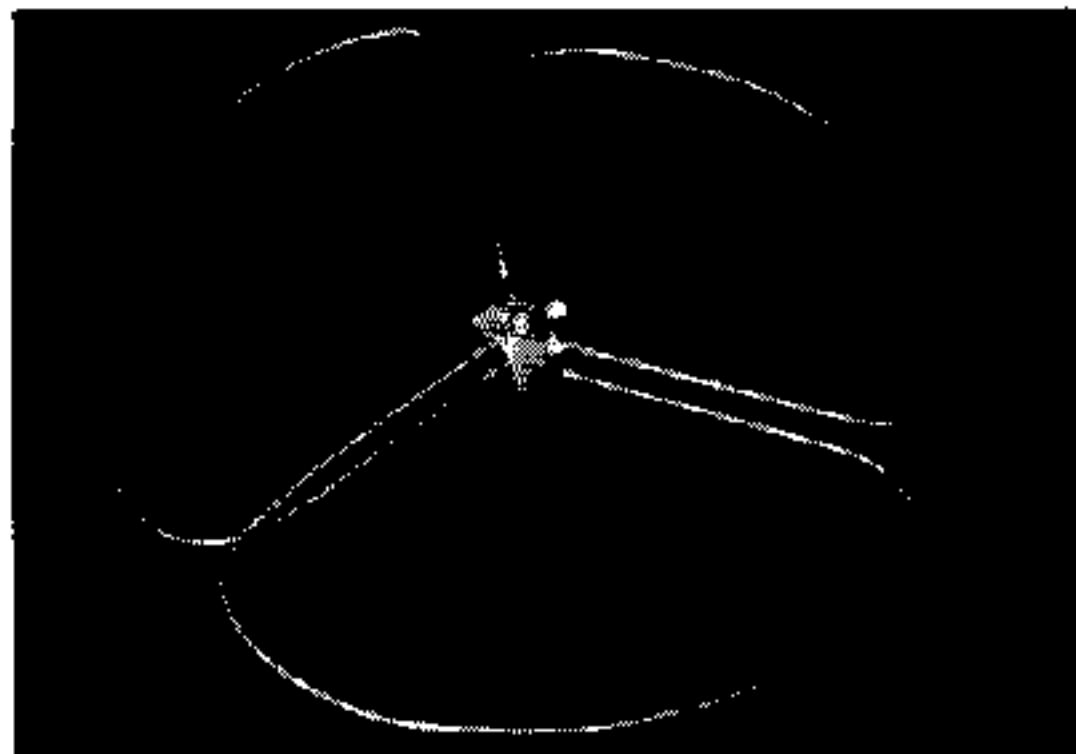
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THE "Mini-Wheel" antenna was created for mobile operation on 432.9 Mc. in the Detroit area, where there are about 35 stations active on this band. Since almost all 432-Mc. activity is horizontally polarized, the design was based on ("stolen" from, if you like) the 2-meter Big Wheel,¹ which is both horizontally polarized and omnidirectional. The antenna is only 15 inches in diameter, and can be constructed and tuned up in your workshop. No power gain is claimed for it, and it won't compete with a good beam, but it is a practical mobile antenna and will give an excellent account of itself.

As shown in Fig. 1, the three antenna elements are each $26\frac{3}{4}$ inches long, including $\frac{1}{4}$ inch for soldering at each end. The material used here was No. 10 bare copper wire. The center mounting block is made of half-inch thick fiber — other insulating materials would do — and is sandwiched between two plates made from $\frac{1}{16}$ -inch copper. Brass could be used instead. One end of each element is soldered to the top plate, with the element overlapping the plate by $\frac{1}{4}$ inch. The other ends of the elements are soldered to the

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¹ Mellen and Milner. "The Big Wheel on Two," QST, September, 1961.



The assembled Mini-Wheel viewed from the bottom. The matching stub is on the near corner of the block-and-plate assembly. In use, the antenna is mounted horizontally with the BNC fitting projecting downward.

bottom plate, as shown in the drawing and photograph. A large soldering gun will handle the soldering job with ease.

It is strongly advised that the elements be preshaped before attempting to mount and solder them. Final shaping can be done after assembly. Each element should fill a 120-degree

arc, so that when all three are assembled the rim will be approximately a complete circle. Working in a clockwise direction, the beginning radial portion of each element should be directly over the trailing radial portion of the preceding element.

A matching stub made of $\frac{1}{4}$ -inch copper strap, 1 inch long, is soldered between the top and bottom plates, overlapping the plates $\frac{1}{4}$ inch at each end. About $\frac{1}{2}$ inch of stub is all

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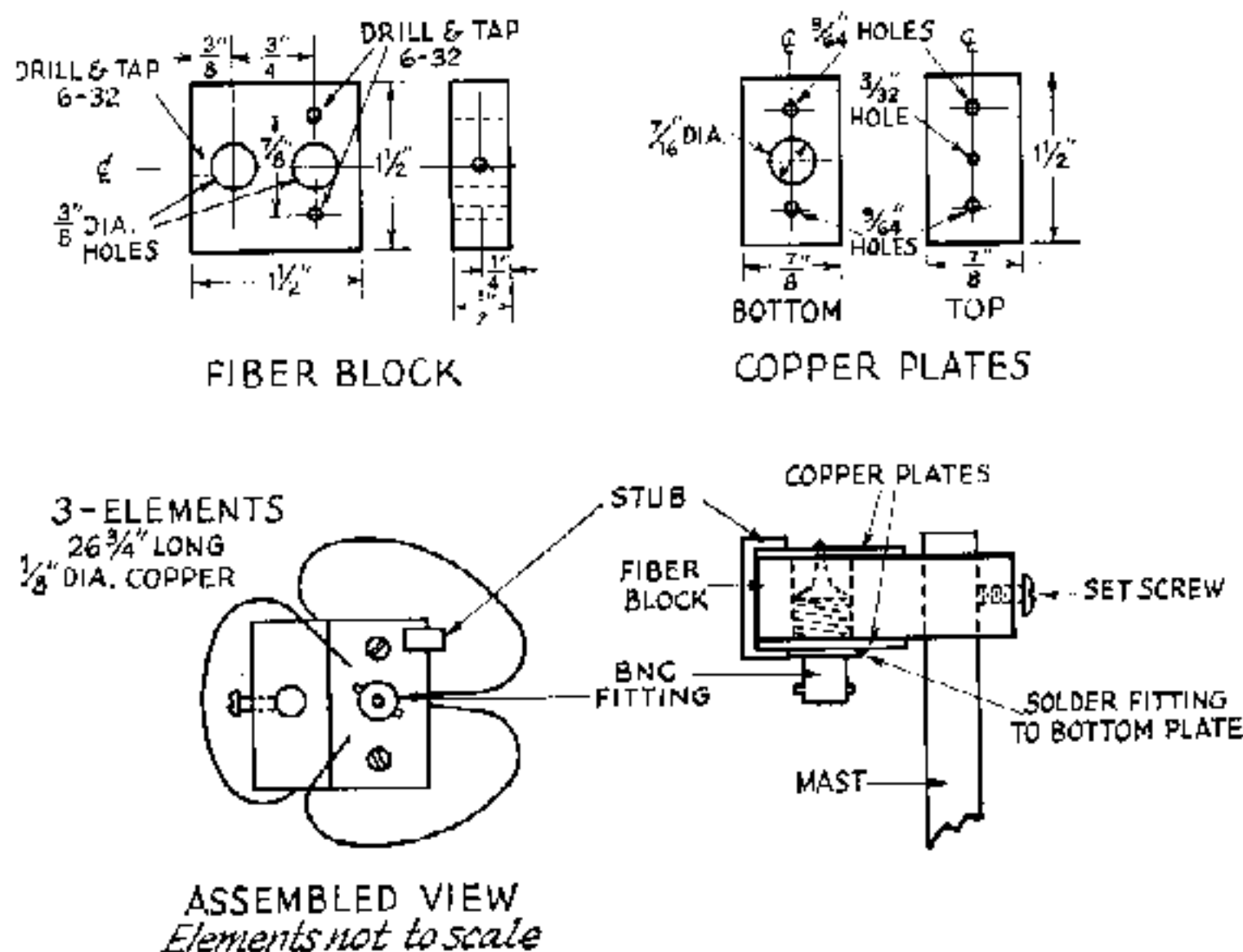


Fig. 1—Construction details of the Mini-Wheel 432-Mc. antenna.

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that is necessary for matching to a 50-ohm line. A slight adjustment of the length may be needed when making final tuneup.

The BNC fitting (other types can be used) is soldered to the bottom plate by making a fillet of solder around the shoulder on the fitting. The center terminal is connected to the top plate.

In the car installation the feed line can be a short (not over 5 or 6 feet) piece of RG-58/AU. RG-8/U is preferable, and an adapter (UG-255/U)

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