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TWO-FOLD ANTENNA

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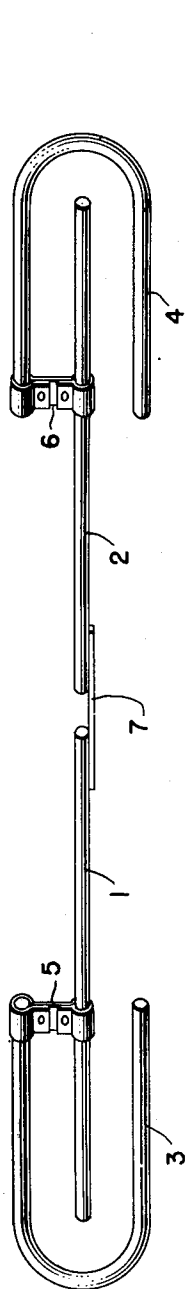


FIG. 1.

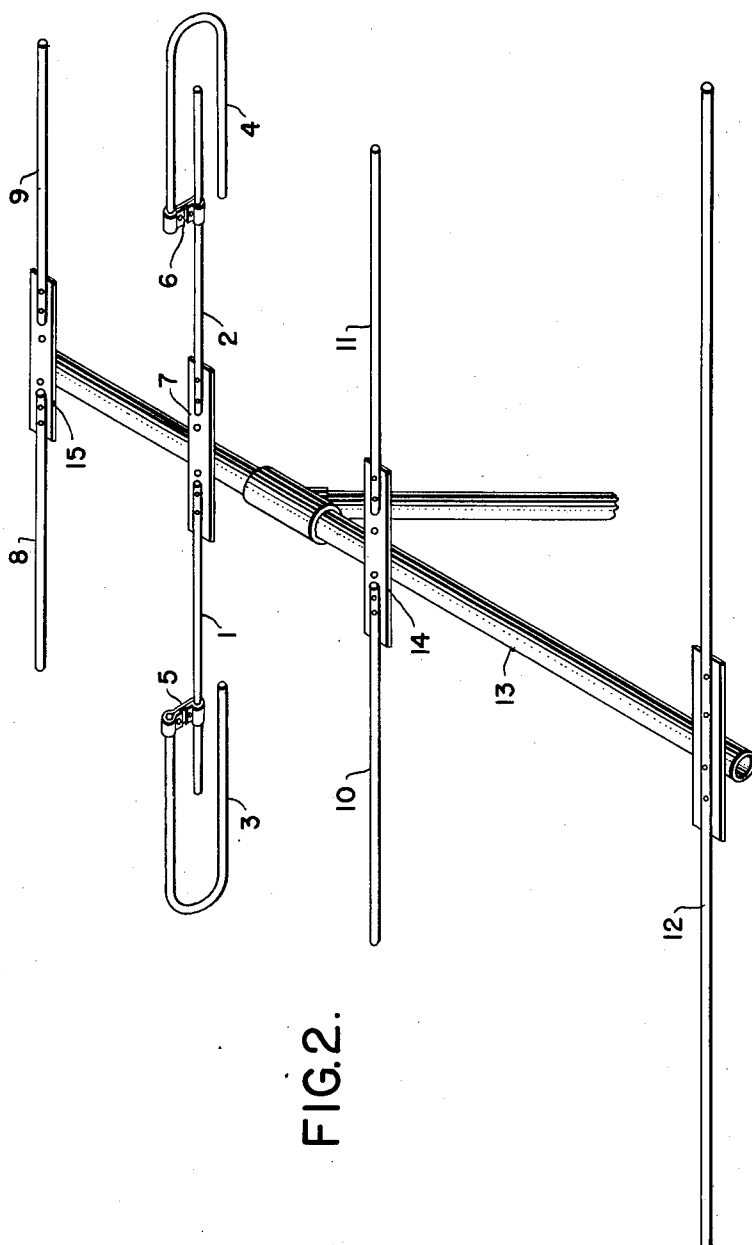


FIG. 2.

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TWO-FOLD ANTENNA

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1 Claim. (Cl. 250—33)

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The object of my invention is the production of a television receiving antenna which operates efficiently and has broadside directivity throughout the presently assigned low and high frequency television channels and is without minor or side lobes. These features are advantageous in minimizing adjacent channel interference, co-channel interference, noise interference and reflections.

In the accompanying drawing, Figure 1 illustrates the two-fold antenna and Figure 2 shows a practical application of the antenna in conjunction with parasitic elements to form an all channel, unidirectional television receiving antenna array.

The antenna is comprised of straight center sections 1, 2, folded sections 3, 4, clamps 5, 6 and an insulated center support 7.

The straight sections 1, 2 are each of one half wavelength long at a frequency approximately midway between the upper and lower limits of the high frequency television channels. The folded sections 3, 4 each have a length equal to each of the center sections 1, 2 but folded back at the center in a $1\frac{1}{2}$ to $2\frac{1}{2}$ inch radius to form the shape of an elongated letter U.

In order to obtain a favorable feed-point impedance the antenna sections 1, 2, 3, 4 are constructed of rod or tubing having a length to diameter ratio of not more than 50 to 1.

The clamps 5, 6 are made of such size that when they are utilized to fasten the folded back sections 3, 4 to the straight sections 1, 2 it will be possible to position the folded back sections 3, 4 so that the legs or sides of the U are parallel to and equidistant from the straight sections 1, 2. The clamps 5, 6 are attached to one end of each of the folded sections 3, 4 and fastened to the straight center sections 1, 2 at a distance of approximately one quarter wavelength, at the highest frequency television channel to be received, from the outside ends. The inside ends of the straight center sections 1, 2 are secured to the insulating support 7 by machine screws and these are the feedpoints to which a standard 300 ohm television feedline or phasing bars would be attached.

The antenna operates as two elements in phase on the higher frequency television channels and as a broad-band dipole on the lower frequency television channels.

The antenna array shown in Figure 2 is comprised of the two-fold antenna 1, 2, 3, 4, 5, 6, 7 attached to the supporting boom 13; high frequency directors 8, 9 designed for the highest

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frequency television channel to be received mounted on the supporting boom 13 approximately 15 inches in front of the antenna on insulating block 15; high frequency reflectors 10, 11 each designed for the lowest of the high frequency television channels to be received, mounted on the insulating block 14 and attached to the supporting boom 13 approximately 15 inches behind the antenna; the low frequency reflector 12 is designed for the lowest frequency television channel to be received and is attached to the supporting boom 13 approximately 30 inches behind the high frequency reflectors 10, 11. It is not necessary to insulate this reflector 12 from the supporting boom 13.

The main features of this new television antenna are that it maintains the same general broadside directivity throughout the presently assigned low and high frequency television channels without appreciable minor lobes of response, that no adjustments are required for effective reception of either the low or high frequency television channels, that it is simple, durable and economical in construction, that two or more of these antennae can be combined to form a directional array and that the antenna or antennae can be utilized in conjunction with various types of reflective or directive devices known to those skilled in the art.

While the preferred embodiment of my invention has been illustrated and described, it will be apparent that various changes and modifications may be made by those skilled in the art without departing from my invention and I, therefore, do not limit myself to the exact construction herein disclosed and the right is reserved to all changes and modifications that may fall within the scope of my invention as defined in the appended claim.

I claim:

A television antenna comprising a combination of elements or conductors, of such dimensions and relationships to each other as to preserve the same general broadside bi-directive characteristics throughout the television channels designated 2 to 13, consisting of two straight elements, each, approximately one half wavelength long at a frequency midway between the upper and lower limits of the higher frequency television channels, 7 to 13, and having such a length to diameter ratio as to obtain a favorable feed-point impedance and band width, such straight elements to be mounted end to end in a colinear manner, with the adjacent ends separated and attached to an insulating block, with a lug or

binding post provided at each of these inner ends of the straight elements for attachment of the feedline, two folded sections in the form of an elongated U, each, with an overall length of approximately one half wavelength at a frequency midway between the upper and lower limits of the high frequency television channels 7 to 13, and having such a length to diameter ratio as to preserve a favorable feed-point impedance and band width, with an open end of each of these U sections being attached by the end of one leg to one of the straight elements at a point approximately one quarter wavelength, at a frequency of the higher television channel, from the outer ends of the straight elements and being positioned

so that the legs or sides of the U sections are equidistant and parallel to the straight elements and that the closed ends of the U sections encompass but do not come in contact with the ends of the straight elements.

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REFERENCES CITED

The following references are of record in the file of this patent:

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