

March 19, 1957

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2,786,200

ANTENNA

Filed June 27, 1955

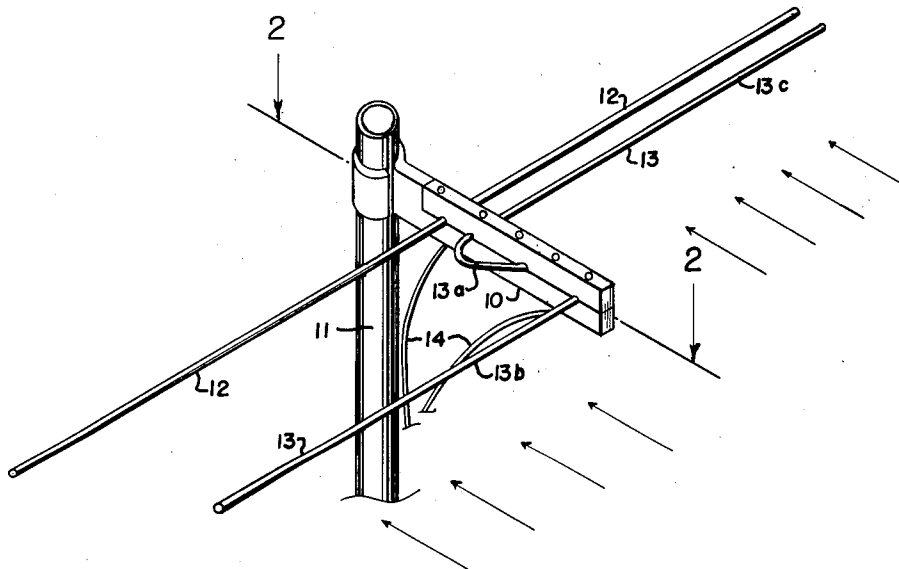


Fig. 1

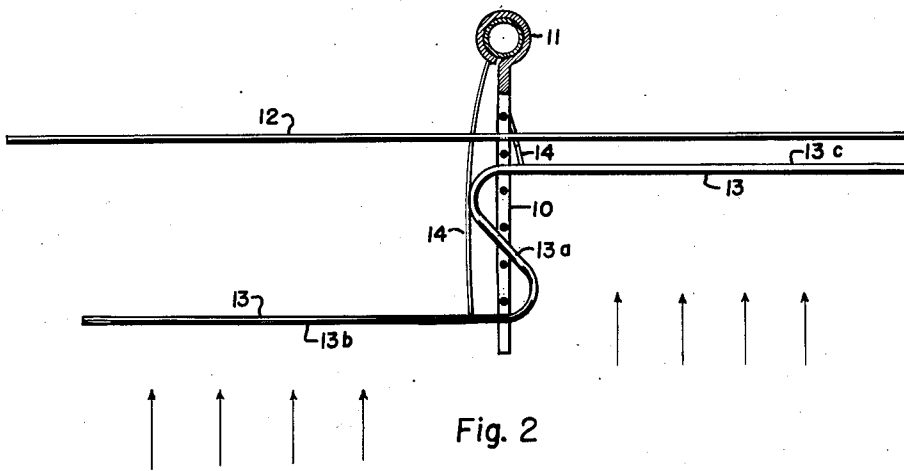


Fig. 2

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2,786,200

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Application June 27, 1955, Serial No. 518,297

14 Claims. (Cl. 343-908)

This invention relates to antennas of the general functional type extensively in use for radiating electromagnetic waves into space and for receiving such waves from space, and more particularly to such antennas applicable to use in and with the high frequency waves characteristic of television systems, and has as a principal object the provision of a novel and very simple antenna of enhanced effectiveness in the reception of television wave signals.

A further object of the invention is to provide a novel and improved antenna for television systems that is facile and inexpensive of production and installation.

A further object of the invention is to provide a novel and improved antenna for television systems that accommodates ready adjustment of correlated elements for optimum performance in locations and under conditions of diverse particularity.

A further object of the invention is to provide a novel and improved antenna for television systems that demonstrably extends receptive range and enhances the receptive quality of receivers therewith operatively associated well beyond the performance hitherto attainable by means of the usual antennas conventionally employed.

With the foregoing and other objects in view, my invention consists in the construction, arrangement, and operative combination of elements as hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawing, in which—

Fig. 1 is an isometric view of a typical embodiment of the invention as installed and oriented ready for practical use.

Figure 2 is a partial sectional view of the organization according to Figure 1 taken substantially on the indicated line 2-2 of the latter.

The objects and advantages of the instant invention are realized through a unique combination and operative correlation of structural elements susceptible of such explanation and description in terms of structure as will enable others to comprehend and to practice the invention. Such being the case, elaboration of the principles significant to attainment of the advantages realized by the invention and discussion of the operative theory characterizing the improvement are herein ignored as manifestly superfluous and as at best in some degree speculative.

Fixedly supported in any expedient or convenient manner, as by means of a separable, dielectric bracket 10 outstanding radially from a fixed, vertical mast 11, in an exposure and at an elevation appropriate for wave reception or radiation in accord with known principles and established practice, the antenna of the invention consists of but two rod or tube elements 12 and 13, of suitable conducting metal, in a unique particularity of conformation and operative correlation. The elements 12 and 13, whether solid or tubular, are preferably cylindrical in a like diametric size and of the same material; eminently satisfactory results having been obtained through the use of such elements constituted from alumi-

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num tubing three-eighths of an inch in outside diameter when formed and cooperatively associated as illustrated and hereinafter described.

Distinctively formed to accomplish the purposes of the invention, the element 13 is alone directly connected with the equipment served by the novel antenna. Constituted from a rigid, initially-straight rod or tube of conducting metal having a length somewhat exceeding the half-length of the wave with which the antenna is intended to react, the element 13 is formed by working and bending an intermediate portion of the stock material to develop therein a symmetrical, smoothly-reversed, curved portion 13a integrally interconnecting straight, laterally-offset, oppositely-directed arms 13b and 13c of unequal length. The portions 13a, 13b, and 13c of the element 13 lie in and determine a common plane, and the curved portion 13a of the element is proportioned and arranged to provide a projected length for the arm 13b substantially equal to one-fourth the length of the wave with which the antenna is intended to react, a projected length for the arm 13c somewhat less than that of the arm 13b, a spacedly parallel disposition of said arms 13b and 13c, and a lateral separation of said arms on the order of nine inches between the axes thereof. The element 13 is positioned for use, as by engagement of its curved portion 13a between separable portions of the bracket 10, with the plane common to the element portions 13a, 13b, and 13c horizontal, the arms 13b and 13c perpendicular to the travel path of the wave wherewith the antenna is intended to react, and with the arm 13b advanced toward an incoming wave, as indicated by arrows in the views of the drawing, relative to the arm 13c. As so positioned, conductors 14 leading to the equipment to be served by the antenna are connected, respectively, to the arms 13b and 13c outwardly adjacent the merge of each said arm with the adjacent arc of the curved portion 13a.

As a straight, rigid member in a length substantially one-half that of the wave wherewith the antenna is designed to react, the element 12 is fixed in the horizontal plane defined by the element 13 to spacedly parallel the arm 13c of the latter at the side thereof remote from the arm 13b. The element 12 apparently functions as a resonant loader for the element 13, in which relationship the correlation of the elements is of major operative significance. It has been established under varying operating conditions that the effectiveness of the antenna is set at a maximum when the spacing between the arm 13c and the adjacent parallel portion of the element 12 is one inch, thus clearly differentiating the element 12 from so-called reflector elements frequently utilized in a much greater spacing from associated antenna elements, and when the free end of the element 12 adjacent the free end of the arm 13c is substantially aligned with the latter in the direction of wave travel to dispose the other end of the element 12 in projection laterally of the path of wave travel outwardly beyond the free end of the arm 13b, all as is clearly represented by the views of the drawing. While the spacing of the element 12 relative to the arm 13c of the element 13 appears to be rather critical to effective performance of the novel antenna and hence susceptible of little, if any, variation, alignment of the element 12 and arm 13c ends in the path of wave travel is but an initial correlation assuring adequate functioning of the antenna and is susceptible of some variation, through longitudinal shift of the element 12, to establish optimum performance of the completed antenna installation.

The reversely-curved portion 13a interconnecting the arms 13b and 13c of the element 13 is a distinctive feature of the invention significantly contributing to the operative advantages of the antenna through an additive

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combination of the magnetic fluxes resulting from signal input to the arms 13b and 13c and the consequent probable generation of a strong, unidirectional magnetic field between the connections of the conductors 14 with said arms.

Since changes, variations, and modifications in the form, construction, and arrangement of the elements shown and described may be had without departing from the spirit of my invention, I wish to be understood as being limited solely by the scope of the appended claims, rather than by any details of the illustrative showing and foregoing description.

I claim as my invention:

1. An antenna of the character described comprising a horizontally-disposed conductive element formed with straight, parallel, oppositely-directed terminal arms laterally offset in the same horizontal plane and a reversely-curved intermediate portion coplanar with and interlinking adjacent ends of said arms, a straight, second conductive element coplanar with and parallel to the terminal arms of said first element at one side and in a relatively close spacing from the adjacent arm of the latter, and conductors connected to the terminal arms of said first element adjacent their mergeance with the reversely-curved intermediate portion thereof.

2. An antenna of the character described comprising a horizontally-disposed conductive element formed with straight, parallel, oppositely-directed terminal arms laterally offset in the same horizontal plane and a reversely-curved intermediate portion coplanar with and interlinking adjacent ends of said arms, a straight, second conductive element coplanar with and parallel to the terminal arms of said first element at one side and in a relatively close spacing from the adjacent arm of the latter, said second element having a length exceeding that of the first element and being substantially end-registered, transversely of the assembly, with the adjacent first element arm, and conductors connected to the terminal arms of said first element adjacent their mergeance with the reversely-curved intermediate portion thereof.

3. An antenna of the character described comprising a horizontally-disposed conductive element formed with straight parallel, oppositely-directed terminal arms of unequal length laterally offset in the same horizontal plane and a reversely-curved intermediate portion coplanar with and interlinking adjacent ends of said arms, a straight, second conductive element coplanar with and parallel to the terminal arms of said first element at one side and in a relatively close spacing from the adjacent shorter arm of the latter, and conductors connected to the terminal arms of said first element adjacent their mergeance with the reversely-curved intermediate portion thereof.

4. An antenna of the character described comprising a horizontally-disposed conductive element formed with straight, parallel, oppositely-directed terminal arms of unequal length laterally offset in the same horizontal plane and a reversely-curved intermediate portion coplanar with and interlinking adjacent ends of said arms, a straight, second conductive element having a length

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exceeding that of said first element coplanar with and parallel to the terminal arms of the latter at one side of, in a relatively close spacing from, and in substantial end-registration laterally of the assembly with the shorter arm of said first element, and conductors connected to the terminal arms of said first element adjacent their mergeance with the reversely-curved intermediate portion thereof.

5. The organization according to claim 4, wherein said first and second elements are cylindrical members of like cross-sectional areas.

6. The organization according to claim 4, wherein said first and second elements are tubular members of like cross-sectional areas.

7. The organization according to claim 4, wherein said first and second elements are oriented substantially perpendicular to the travel path of the wave wherewith they are designed to react.

8. The organization according to claim 4, wherein said first and second elements are oriented substantially perpendicular to the travel path of the wave wherewith they are designed to react and said first element is advanced relative to said second element toward a wave to be received.

9. The organization according to claim 4, wherein the terminal arms of said first element are laterally offset a distance approximating nine inches.

10. The organization according to claim 4, wherein said second element is spaced from the adjacent arm of the first element a distance approximating one inch.

11. The organization according to claim 4, wherein said first and second elements are cylindrical members of like cross-sectional areas, the terminal arms of the first element are laterally offset a distance approximating nine inches, and said second element is spaced from the adjacent arm of the first element a distance approximating one inch.

12. The organization according to claim 4, wherein said second element has a length substantially one-half that of the wave with which the assembly is designed to react and the longer arm of the first element has a length substantially one-half that of said second element.

13. The organization according to claim 4, wherein said second element has a length substantially one-half that of the wave with which the assembly is designed to react, the longer arm of the first element has a length substantially one-half that of said second element, and said longer arm is advanced relative to said second element toward a wave to be received.

14. The organization according to claim 4, wherein said first and second elements are oriented substantially perpendicular to the travel path of the wave wherewith they are designed to react, said second element has a length substantially one-half that of such wave, the longer arm of the first element has a length substantially one-half that of said second element, and said longer arm is advanced relative to said second element toward a wave to be received.

No references cited.