Sept. 3, 1940. E. GOSSEL 2,213,276

DIRECTIONAL ANTENNA SYSTEM

Filed May 17, 1939

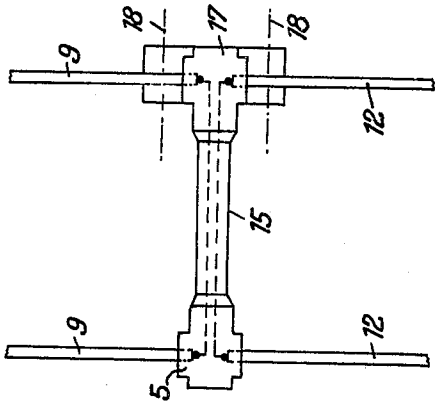


Fig. 3

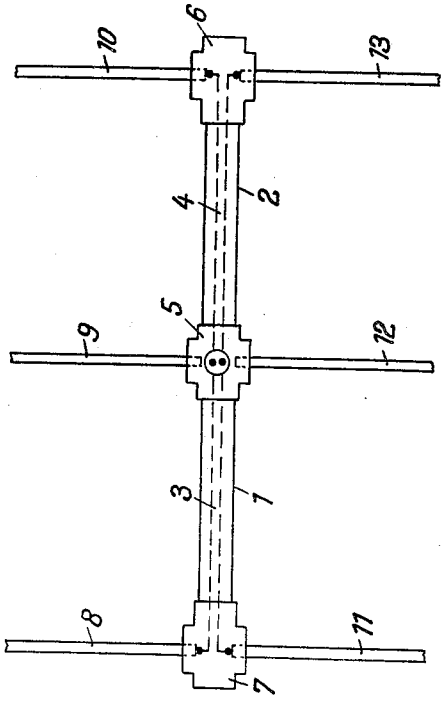


Fig. 1

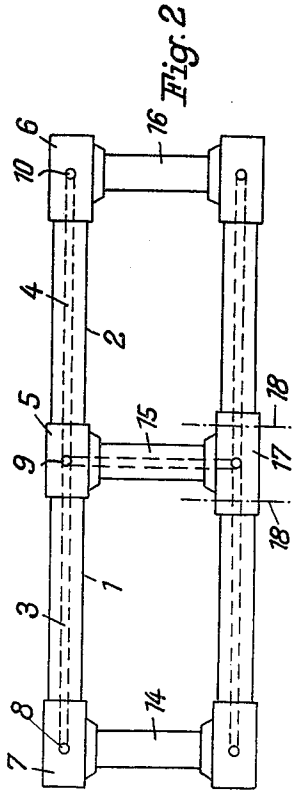


Fig. 2

Inventor:
Erich Gossel
by E. O. Kinney
Attorney.

Patented Sept. 3, 1940

2,213,276

UNITED STATES PATENT OFFICE

2,213,276

DIRECTIONAL ANTENNA SYSTEM

Erich Gossel, Berlin, Germany, assignor to C. Lorenz Aktiengesellschaft, Berlin-Tempelhof, Lorenzweg, Germany, a company

Application May 17, 1939, Serial No. 274,143
In Germany May 25, 1938

3 Claims. (Cl. 250—11)

This invention relates to directional antenna systems, and more particularly to antenna systems adapted to operate in response to ultra short waves.

Directional antenna arrays for operation at ultra short oscillations having wavelengths equal to fractions of a meter generally consist of a number of individual radiating conductors arranged at a given space from each other and energized in a predetermined phase relation to one another.

It is an object of this invention to provide new and useful means for simplifying the structural assembly of directional antenna systems referred to above. The individual component antennas required for constituting an antenna system are according to the main feature of my invention adapted to be fixedly screwed into or otherwise mounted in moulded supporting members of insulation, while the individual conductors interconnecting the said component antennas to form such system are embedded in moulded tubular members of insulation likewise adapted to be fixedly mounted in the said moulding supporting means which in their interior carry the necessary electrically conductive means for establishing conductive connections between the individual conductors and the component antennas. This facility involves superior advantages in the fabrication of antenna systems since the supporting members of insulation, the tubular members with their embedded conductors and also the individual component antennas may be separately produced in simple manufacturing operations whereupon the said different means may arbitrarily be assembled to a self-supporting structure in accordance with the requirements prevailing, without employing specific supporting means.

My invention will be more readily understood from the following description taken in conjunction with the accompanying drawing, in which

Fig. 1 is a front elevation of an antenna structure embodying my invention, Fig. 2 is a top view of an antenna arrangement comprising two of the structures shown in Fig. 1, while Fig. 3 is a side elevation of the embodiment shown in Fig. 2.

Referring to Fig. 1, reference numerals 1 and 2 denote two similar tubular members of insulation each surrounding a pair of conductors 3 and 4, respectively, indicated by dash lines. The tubular members 1 and 2 are each associated with an intermediate member 5, preferably consisting of a moulded insulating material. Further intermediate members 6 and 7 of a shape and design similar to that of member 5 are arranged at the remote ends of the tubular members 1 and 2, respectively. The component antennas 8 to 13 are fixedly mounted, preferably by screwing, in the intermediate members 5, 6 and 7 which during their manufacturing have been provided with the necessary conductive means for establishing electrical connection between the conductor pairs 3 and 4 and the component antennas 8 to 13. The Fig. 2 shows a top view of an antenna array according to my invention employing two of the antenna structure as heretofore described in conjunction with Fig. 1. These two structures are placed parallel to one another and are interconnected by means of three equal spacing members 14, 15 and 16 of similar or different dimensions as compared with the tubular members 1 and 2. Dependent upon the specific requirements encountered, the spacing members 14, 15 and 16 may be provided with a conductor or conductors. In the embodiment shown in Fig. 2, the antennas of the one structure act as radiators, while the antennas of the other structure serve as reflectors. The size of the intermediate member 17 of insulation is enlarged in order to secure a stable physical connection of the antenna system to a wireless transmitter or receiver, or even to an antenna supporting mast by means of screws indicated at 18. The conductive means forming part of this intermediate member for establishing connections with the conductors embedded in the tubular members 1, 2 and 15 are suitable terminated in connector plug circuits or similar devices for being conductively connected to a cooperating transmitter or receiver.

The reference numerals shown in Fig. 3 exactly correspond to those of the Figs. 1 and 2, so that this showing will be readily understood from the items of information heretofore given with reference to the Figs. 1 and 2.

My invention is applicable to all antenna systems or antenna arrays of the above mentioned type irrelevant of the number or dimensions of the component antennas thereof or of the manner in which these antennas are interconnected or allotted with each other.

What is claimed is:

1. An antenna system comprising a plurality of component antennas, intermediate members of insulation each supporting a number of said antennas and means for assembling the desired number of such intermediate members to a rigid structure each comprising, a tubular member of insulation and conducting means embedded therein for electrically interconnecting the proper of said component antennas, said tubular mem-

ber being provided with openings to hold said antennas, and means provided in said intermediate members at each said opening to establish electrical connections between said antennas and said first mentioned conducting means upon mounting of said antenna elements into said opening.

2. An antenna system according to claim 1, in which the said intermediate members of insulation are adapted to interchangeably receive component antennas of any desired dimensions.

3. An antenna system according to claim 1, in which the said intermediate members of insulation are adapted to be interchangeably interconnected through tubular members of insulation of suitable length.

ERICH GOSSEL.