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RECEIVER FOR ELECTROMAGNETIC WAVES

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Fig. 1

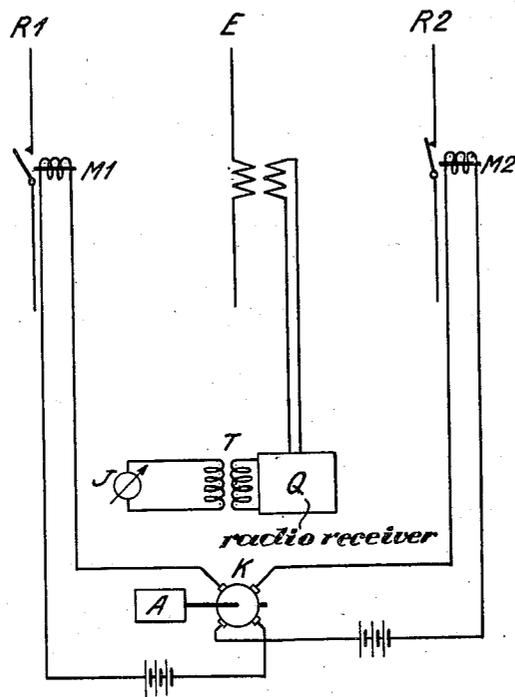
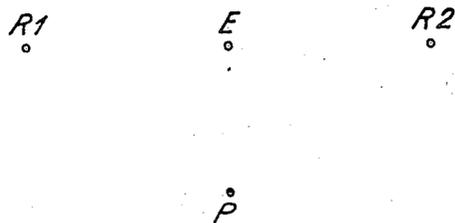


Fig. 2



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RECEIVER FOR ELECTROMAGNETIC WAVES

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5 Claims. (Cl. 250—11)

In Patent No. 2,028,510, dated January 21, 1936, for Transmitter for electro-magnetic waves, it is proposed to feed a dipole continuously from a high frequency generator and to key a reflecting antenna allotted to this dipole, or several such reflecting antennae alternately, in order to effect with the aid of the differently shaped field intensity curves thus produced a comparison of field intensities on an aircraft, vessel or other means of transportation.

The novel invention proposes to employ arrangements of this construction also on the receiving side and also discloses special means for carrying out the receiving method.

It is well known per se, in order to obtain bearings with respect to a transmitter, to employ also on the receiving side such methods of comparing field intensities as are known in their application to the transmitting side. Arrangements of the above-mentioned type are to a peculiar degree adapted for this purpose, since by merely providing a dipole not to be keyed and one dipole to be keyed, or a dipole not to be keyed and two dipoles to be keyed, a two-beam beacon is created, so that the direction is determined more exactly than with other beacons. There is no difficulty, however, in obtaining exact bearings by disposing a reflector dipole that acts to cause the energy to be efficient in one main direction.

The invention will be understood from the following description and be particularly pointed out in the appended claims, reference being had to the accompanying drawing in which

Fig. 1 is a diagrammatic elevation of an example of the receiving device intended to be stationed on an aircraft or other means of transportation, Fig. 2 is a plan showing a further development of this example.

As represented in Fig. 1, a dipole E is connected to the receiver Q. On both sides of the dipole or main antenna E and preferably in line therewith are arranged two dipoles R1, R2. These are interrupted in the middle and may be closed by relays M1, M2. Instead of interrupting the dipoles R1, R2, it is possible to provide for them to be detuned, for example. The relays M1, M2 are alternately energized and de-energized by a commutator K which is driven by a motor A. By this means the dipoles R1, R2 are opened and closed in a suitable dot-dash rhythm. It is assumed in the drawing that the dipole R1 is opened, that is inactive, and the dipole R2 closed, that is active. Connected to the output circuit of the receiver Q is the primary of a transformer T, with the secondary of which an instrument J

for giving a visual indication is in connection. This instrument is very sensitive in the normal position of its pointer and relatively insensitive in the range of the maximum deflection thereof. Instruments of this character are well known per se.

Such an instrument J in connection with the transformer T has the advantage that according to the direction of the first potential impulse conveyed over the transformer, and which is characteristic of whether a dot or a dash is given, the pointer is strongly moved to the right or left hand side of the scale and remains in such position because the next potential impulse will act on the pointer in a position thereof where the instrument is of a less sensitiveness. This device thus allows of distinguishing between dot and dash signals, so as to indicate whether the aircraft or the like is on or off the course to be followed. The application of this indicating method to an antenna arrangement comprising a continuously closed dipole and one or more dipoles to be keyed, has the advantage that the indicating device does no more require the provision of special switching means so as to avoid the disturbances which are due to such switching means.

If it is desired to provide for a unilateral directional characteristic a reflector dipole P, which is not to be keyed, is disposed, as shown in Fig. 2.

The whole antenna arrangement is rendered rotatable, if it is desired to obviate the necessity for turning the vehicle itself.

What is claimed is:

1. In a radio receiving arrangement for wireless direction finding, a main antenna, a radio receiver connected thereto, a reflecting arrangement in the vicinity of and cooperating with said main antenna, and means for keying said reflecting arrangement intermittently to obtain two different mutually displaced and intersecting directional characteristics.

2. In a radio receiving arrangement for wireless direction finding, a main antenna, a radio receiver connected thereto, a reflector on each side of and cooperating with said main antenna, and means for alternately keying said reflectors intermittently to obtain two different mutually displaced and intersecting directional characteristics.

3. A radio receiving arrangement according to claim 1 and in which an additional reflector produces a unilateral directional receiving characteristic, the plane including said additional reflector and the main antenna being substantially

at right angles to the plane including the main antenna and the keyed reflector.

4. A radio receiving arrangement according to claim 1, and means for comparing the intensities of the received fields of the alternately produced directional characteristics for the purpose of indicating the line of equal signal intensity.

5. A radio receiving arrangement for wireless direction finding, a main antenna, a radio receiver connected thereto, a reflecting arrangement in the vicinity of and cooperating with said main antenna, means for keying said re-

flecting arrangement intermittently to obtain two different mutually displaced and intersecting directional characteristics, means for comparing the intensities of the received fields of the alternately produced directional characteristics, said means including an indicating instrument having a pointer and highly sensitive in the mean position of the pointer and relatively insensitive at the maximum position of the pointer, and a transformer coupling said indicating instrument with said receiving device.

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