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Fig. 1

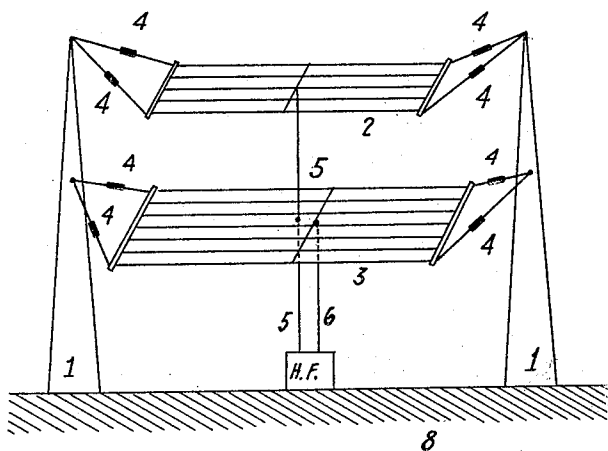
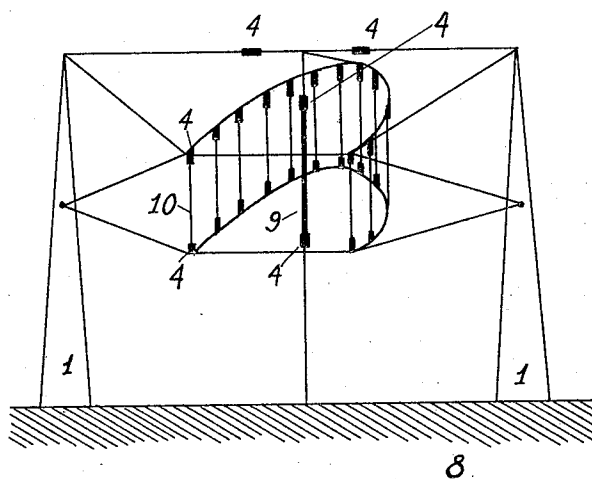


Fig. 2



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An object of the invention is to provide an antenna particularly adapted to the transmission or reception of short wave lengths.

Another object of the invention is to provide an antenna particularly adapted to the transmission or reception of short wave lengths which has all the antenna structure supported at an appreciable height above the ground.

Still another object of the invention is to provide an antenna for short wave lengths having a counterpoise supported at an appreciable distance above the ground.

Still another object of the invention is to provide a short wave length antenna which will be directional in its effects and which will be supported at an appreciable distance above the ground.

It is well known that a very good antenna adapted to the sending out of waves of mean and great length can be built by means of a horizontal "sheet" of wires suspended from towers of as great a height as possible and constituting the aerial properly so called, a lead being conveniently brought down to one pole of a high frequency source mounted on the ground. The other pole of the source is in communication with a second horizontal sheet of wires situated below the former, and at a slight distance above the ground, this latter part of the system forming what is known as the counterpoise or screen. As a general rule, the fundamental natural wave of this system as hereinbefore outlined falls below the wave length of the transmission wave.

Now, for the sending of short waves a similar arrangement may be preserved, and the antenna thus built may be worked on a higher harmonic. However, if the operation with the fundamental wave shall be preserved, it is also desirable to preserve the high towers conformably with the devices and means disclosed in the present invention. As a matter of fact, in accordance with calculation and experience, the rôle of the counterpoise or screen becomes of so much greater advantage in the presence of short wave lengths, the greater the distance of the said counterpoise above the ground.

The invention is illustrated by way of example in the accompanying drawing in which:

Fig. 1 shows an antenna conforming to the invention, and,

Fig. 2 shows a directional antenna conforming to the invention.

Referring to Fig. 1, the towers 1, 1, support the horizontal layer or sheet of wires 2, at as great a distance above ground as feasible; below said wires there is arranged at 3 a counterpoise, insulators 4 being inserted upon the various suspension cables. In accordance with one of the features of the present invention, the height of 3 above the ground 8 may become greater than the vertical distance between 2 and 3. It is to be noted that the screen 3 may cover a larger area than the area covered by the superposed sheet of wires. On the other hand, the down-lead 5 of the said sheet of wires can be disposed in various ways; more particularly speaking, it may comprise either a single wire, or else a certain number of parallel wires. Moreover, the part of the down-lead 5 which is located below the counterpoise 3 can be constituted in a different way from the other part. More particularly speaking, together with the conductor 6 connecting the counterpoise with the hf source, it could constitute a real double energy-transmission line possessing convenient characteristics, etc.

Fig. 2 likewise shows by way of example, another solution comprising likewise the use of towers 1 of relatively great height. The oscillator properly so called is here constituted by a wire (or system of wires) 9 excited in any desired manner by a high frequency source (not shown), and with the end in view of realizing a directive action, there is arranged in well-known manner along a parabolic base a series of vertical wires 10 forming a reflector. These wires constitute as many oscillators excited inductively, and they are preferably tuned to the local oscillator 9. The latter, as is well known also, could be dispensed with provided that the oscillators 10 are respectively fed by currents having relatively convenient phase relations, etc.

It goes without saying that a great number of modifications are conceivable. For instance, the two layers of wire 2 and 3 of Fig. 1 could be disposed vertically or else inclined not only with reference to the ground, but also with reference to one another so as to realize directional effects either in a horizontal plane or else in the vertical plane, or else again in both. Furthermore, the aerial may in all cases be excited by a harmonic if necessary, in well-known manner.

Finally, the source of high frequency current may itself be mounted at a great height above the ground, for instance, upon an intermediate platform of a tower. This arrangement may be of advantage in the case of a triode generator plant, the feeding source for these triodes being then placed on the ground and being connected with the high frequency apparatus through convenient cables.

Having described my invention, I claim:

1. An antenna system for the emission of short waves comprising a sheet antenna supported, on towers fixed to the ground, at a relatively great distance above ground, and a counterpoise, supported similar to said antenna, for said antenna likewise supported at a relatively great distance above ground, the distance between said antenna and counterpoise being equal to or less than the distance between said counterpoise and ground.

2. An antenna system for the emission of short waves comprising a sheet antenna supported at a relatively great distance above ground, on towers fixed to the ground, and a counterpoise, insulated from the ground, for said antenna likewise supported at a relatively great distance above ground on towers fixed to the ground, the distance between said antenna and counterpoise being equal to or less than the distance between said counterpoise and ground, a lead-in wire from the antenna connected to one pole of a high frequency source, and a second lead-in wire from the counterpoise connected to the other pole of said source, both of said lead-in wires constituting a double energy-transmission line.

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