

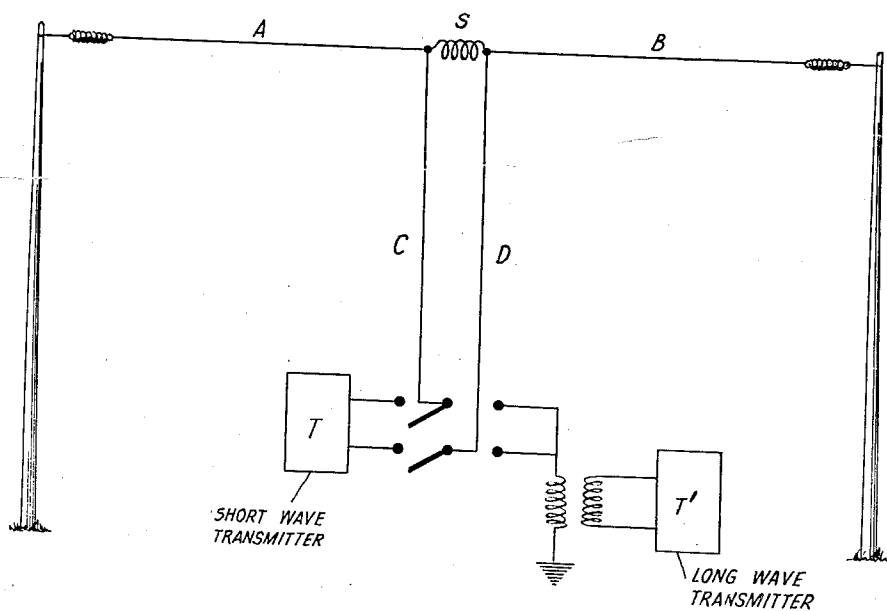
March 10, 1931.

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1,795,689

ANTENNA

Filed Feb. 5, 1927



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ANTENNA

Application filed February 5, 1927, Serial No. 166,075, and in Germany February 5, 1926.

This invention relates to antennæ, and more particularly to an antenna which is convertible at will to either of two types.

An object of our invention is to provide a single antenna structure which is readily convertible to either an antenna especially adapted for space radiation, or one especially adapted for surface radiation. The frequencies may differ, if desired.

Our invention is a transmitter aerial for the purposes of radio telegraphy and telephony which makes it possible to work both with space radiation as well as with ground (surface) radiation, with the result that the antenna, according to the particular purpose it is to be put to, can be employed especially for long-range work with space radiation, and for short-range work with surface radiation. This is attained by that the leads which serve for feeding the space radiation antenna, by simple parallel connection, are built as leads of the surface radiation antenna, so that, by a simple change of connections, either of the two forms of radiation can be utilized.

One embodiment of the basic idea of the invention is illustrated by way of example in the accompanying drawing. AB is a space radiation antenna being mounted about one-quarter wave-length away from the surface of the ground. In the middle of the antenna there is inserted a coil S coupled directly to the two leads C and D from the transmitters T+T', which are mounted on the ground. When working with space radiation, the two halves of the antenna AB oscillate dipole-fashion with relation to each other. In this case the leads CD serve only for feeding energy from the transmitter T, and they do not take part in the radiation process proper. But when surface radiation is to be worked with, the switch is thrown to the right and the upper aerial structure or system AB oscillates cophasially. The leads CD are then simply connected in parallel, and the entire system comprising elements ABCD operates like an ordinary antenna from the transmitter T'.

The advantage of the invention resides in that the same antenna system can be excited

at will either for space radiation work or for ground or surface radiation work.

The arrangement can advantageously be used for the purpose of producing energy radiation preferably in a desired direction. Such an arrangement is particularly important for broadcasting work in such cases where certain districts do not receive sufficient energy for detector reception. In such a case, one or several suitably directed additional aerials spaced one wave-length apart from the main antenna, are mounted, and a definite fraction of the oscillation energy of the generator is fed to the said supplementary or auxiliary antennæ. What is essential in this connection is that this feeding should be effected in a way free from radiation and under identical phase conditions.

We claim:

1. In combination, an antenna an electrical half wave in length, a pair of leads coupled thereto, communication apparatus, and switching means for coupling said leads to said apparatus either in series so that the antenna oscillates in dipole fashion, or in parallel and to ground so that the antenna oscillates like an ordinary grounded antenna.

2. In combination, a horizontal antenna an electrical half wave in length, a pair of vertical leads coupled thereto, communication apparatus, and switching means for coupling said leads to said apparatus either in series so that the antenna oscillates in dipole fashion, or in parallel and to ground so that the antenna oscillates like an ordinary grounded antenna.

3. In combination, a horizontal antenna an electrical half wave in length, a pair of vertical leads coupled thereto, transmission apparatus, and switching means for coupling said leads to said apparatus either in series so that the antenna oscillates in dipole fashion, for space radiation, or in parallel and to ground so that the antenna oscillates like an ordinary grounded antenna, for surface radiation.

4. In combination, an antenna an electrical half wave in length for a first frequency, a pair of leads coupled thereto, first and second transmitters respectively tuned to the

first and a second frequency, and switching means for coupling the leads to the first transmitter in series so that the antenna oscillates in dipole fashion at the first frequency, or for coupling the leads to the second transmitter in parallel and to ground so that the antenna oscillates like an ordinary grounded antenna at the second frequency.

5. In combination, a horizontal antenna an electrical half wave in length for a first frequency, a pair of vertical leads coupled thereto, first and second transmitters respectively tuned to the first and a second frequency, and switching means for coupling the leads to the first transmitter in series so that the antenna oscillates in dipole fashion at the first frequency, for space radiation, or for coupling the leads to the second transmitter in parallel and to ground so that the antenna oscillates like an ordinary grounded antenna at the second frequency, for surface radiation.

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