

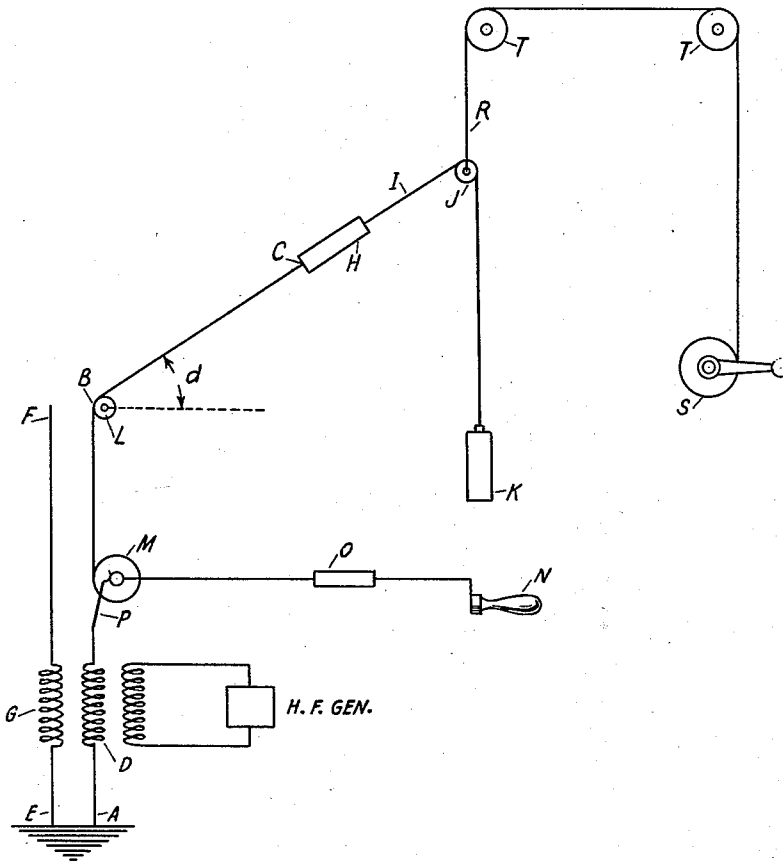
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ANTENNA CONSTRUCTION

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ANTENNA CONSTRUCTION

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An object of this invention is to provide a method for neutralizing the radiation from a portion of an antenna. A further object is to provide an antenna adapted for short wave lengths and one in which the length of the transmitted wave may be easily varied.

A still further object is to provide an antenna in which the effective radiation is confined to a portion only thereof. A further object is to provide a screen to neutralize the radiation from a desired portion of an antenna. A still further object of the invention is to provide novel means for varying the length of an antenna.

The invention will be better understood by reference to the accompanying drawing and the following specification covering one embodiment of the arrangement by way of example.

An antenna consists of a suitable conductor "A", "B" "C", connected with ground at "A". This antenna is excited by a high frequency generator in any desired and known manner, for instance by means of magnetic coupling with an inductance coil, marked "D", arranged in series with the antenna.

In parts "A—B" of the aerial located inside the station or in the immediate neighborhood thereof according to the invention there is provided a screen "E—F" which may consist of a simple conductor identical to the part "A—B" in question arranged parallel thereto but at sufficient proximity. For further similarity, screen "E—F" may comprise an inductance coil "G", inductances "G" and "D" being then made adjustable if desired. The screen "E—F" may be grounded at "E".

Inductances "G" and "D" are loosely coupled and so wound that they oppose each other or in other words the currents in the antenna and screen are of 180° difference in phase. The radiation from the screen "E—F" will then balance or oppose that from the antenna portion "A—B", leaving the portion "B—C" effective to radiate the transmitted wave.

The part "B—C" of the aerial may form with the horizon any desired angle such as indicated at α in the drawing ranging between 0 and 90°, the position of pulley T at

the left being arbitrary, but also capable of assuming as its limiting position, one that will fall on the prolongation of the vertical portion "A—B". At "C" the antenna is secured to an insulator "H" which itself is in turn attached to a wire or strand "I". In order to insure radiation of the antenna at maximum efficiency, length "B—C" should preferably be chosen of a length equal to a whole number (integer or multiple) of half wave lengths. If the equipment is intended for working on various wave lengths, according to this invention, the length of portion "B—C" is made adjustable to the desired length of wave by the aid of any suitable means, for example, in the following manner:

The tensioning wire or strand wire "I" passes over a small roller or pulley "J" and supports at its free end a counterweight "K" which tends to keep it taut. At "B", the antenna conductor slips over another insulated pulley "L", whereas its lower end is reeled on a winch "M", operably by the agency of a crank "N" with the inter-position of an insulating sleeve "O" or by any other suitable means. The continuity of the electrical circuits of the antenna is insured by a mobile connection system, for instance, a brush or contact device "P" in frictional engagement with a ring carried on the drum, the said brush "P" being united with the inductance "D".

The inclination of portion "B—C" with respect to the horizontal may be varied by any convenient means. The means shown includes a cable or strand "R" in one end of which pulley "J" is pivoted the other end of the cable being attached to a winch "S" on which it may be wound, two intermediate pulleys "T" serving to guide and support the cable "R".

The present invention, as will be readily understood is capable of a great number of modifications in construction or in detail. For example, a plurality of antenna arrangements of the same kind conveniently orientated or directed with reference to one another, may be combined in the same station with the end in view of insuring directional

features or else to insure multiple operation. The antenna and the screen or shield may be united together at points "B" and "A" without these points being necessarily grounded. It will be noted that as the operator turns the crank that portion "A—B" of the antenna which lies adjacent to screen "E—F" remains of fixed length whereas the inclined portion "B—C" is varied in length so that the portion "A—B" of the antenna may be regarded as of fixed length while the portion "B—C" is of variable length. As the portion "B—C" is the portion of the antenna effective for radiation purposes, obviously by varying the length of "B—C" the wave length of the transmitted wave may be varied.

While I have herein shown the preferred form of the invention, I am aware that various changes in arrangement and details of construction may be made without departing from the spirit thereof and I do not limit myself to the form shown.

What I claim is:—

1. An antenna system comprising a vertical non-radiating portion, a radiating portion, means for adjusting the radiating portion as to length and means for adjusting the radiating portion as to angle of inclination.

2. An antenna system comprising a vertical portion of constant length, a second portion adjustable both as to length and to horizontal angular displacement, and means for neutralizing the radiation from the vertical portion.

3. An antenna system comprising a vertical portion of constant length and a second portion adjustable both as to length and to horizontal angular displacement, and means for neutralizing the radiation from the vertical portion, said means including a screening antenna adjacent to said vertical portion and equal in length thereto.

4. An antenna system comprising a vertical portion constant in length, a second adjustable radiating portion, an inductance coil in said vertical portion, a source of high frequency currents coupled to said inductance coil and a vertical conductor equal in length to said vertical portion and having an inductance coil loosely coupled to said first mentioned coil, the arrangement being such that the currents in said vertical conductor and said vertical antenna portion are opposite in phase whereby the radiation from the latter is effectively neutralized.

5. An antenna system comprising a vertical portion of constant length and a second adjustable portion, means for varying the length of said latter portion, and additional means for adjusting its angle of inclination.

6. An antenna system comprising an antenna having a vertical part and an inclined part, means for regulating the length of the said inclined part, means for regulating the inclination of the said inclined part, another

vertical antenna whose height is equal to that of the vertical part of the first antenna, and coupling means between the vertical parts of these antennæ for inducing in each one thereof currents respectively opposed in phase.

In witness whereof I hereunto affix my signature.

JOSEPH BETHENOD.