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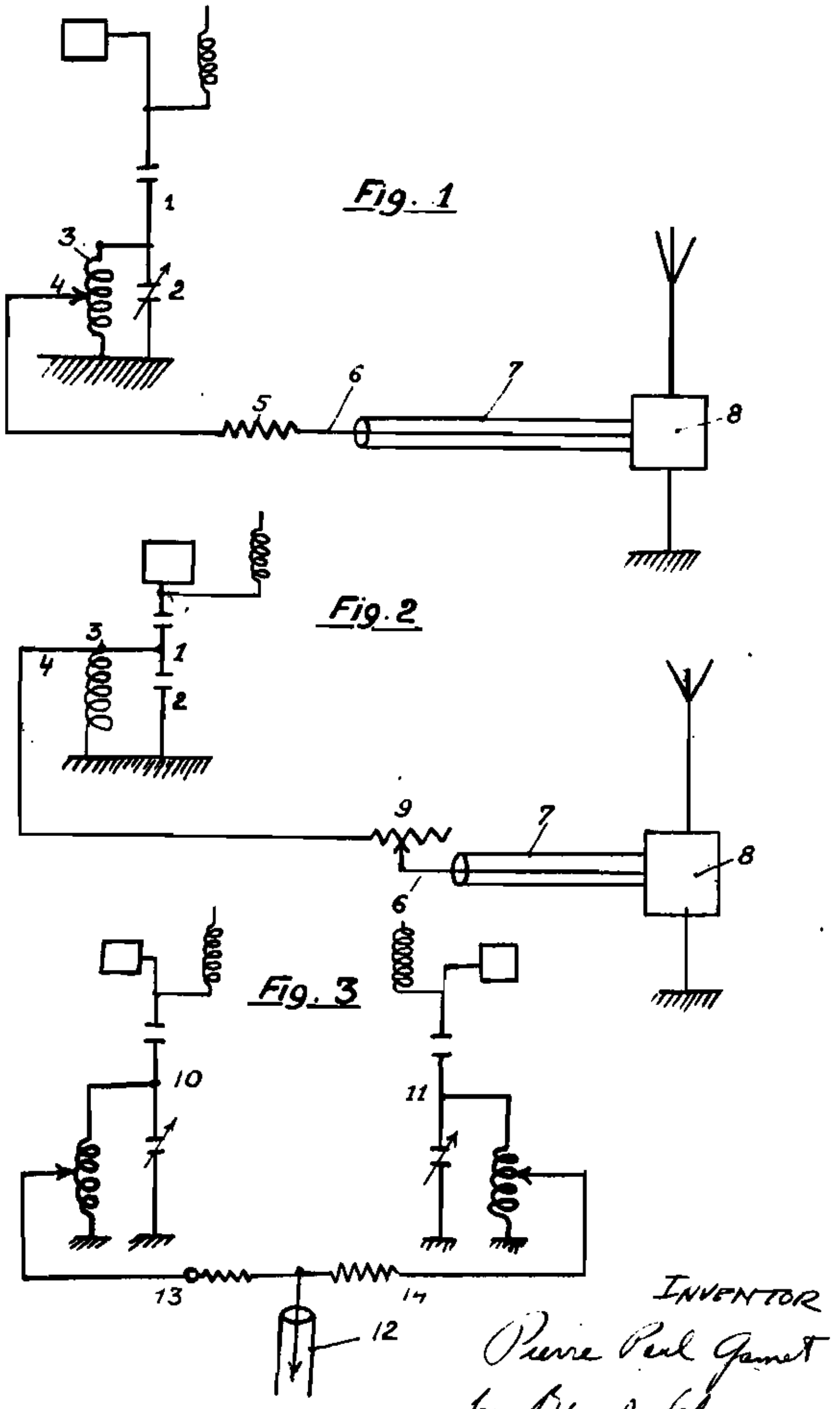

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COUPLING SYSTEMS FOR LOADING DEVICES SUCH AS AERIALS

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This invention has for its subject matter improvements in and relating to coupling systems for loading devices such as aerials.

The adaptation on a wide range of wave lengths of a feeder through a coupling box connected between the said feeder and the loading device or through adjustable self-induction coils connected in series on one of the strands of the said feeder obliges the operator to make a regulation for the different working wave lengths. This regulation is generally obtained by varying the electric constants of the coupling boxes or the self-induction coil connected in series in the feeder.

These adaptation circuits are expensive and require a large space.

The present invention has for its object to do away with these disadvantages and to permit of obtaining without different regulations a convenient adaptation of the feeder from the point of view of the voltage on a wide range of wave lengths.

On the other hand it is often necessary to vary the voltage of the high frequency generator which is transmitted by the feeder to any loading device. This variation is generally obtained by a modification of the connection of the high frequency generator with the feeder as, for instance, by means of variable taps on the self-induction coil of the oscillatory circuit. Such variable taps are of a difficult and delicate construction and do not permit an accurate regulation.

Another object of the invention is to remedy to this inconvenience and to provide a device permitting to control the coupling values in certain limits.

The same difficulties are encountered in the coupling systems for coupling two radio-electric wave generators connected in parallel when they are not well equilibrated.

Still another object of the present invention is to remedy to these inconveniences and to provide a device which compensates in a certain measure the differences in the energy produced by one of the radio-electric wave generators, these differences being due, for instance, to an accidental variation of the potential of the bias grid.

Improved coupling systems which permit to attain the above mentioned objects offer the characteristic features which result from the following description.

Coupling systems according to the invention are shown in the appended drawings, in which:

Figure 1 is a diagram of the coupling of a high frequency generator with a feeder with stationary waves through a fixed resistance.

Figure 2 is a diagram of the coupling of a high frequency generator with a feeder with stationary waves through a variable resistance.

Figure 3 is a diagram of the coupling of a feeder for stationary waves with two high-frequency generators connected in parallel.

The diagram shown in Figure 1 comprises a transmitter station 1 shown by an oscillatory circuit formed of a variable capacity 2 and of a self-induction coil 3; a tap 4 provided on the coil 3 is connected with a resistance 5 in series with the strand 6 of a co-axial feeder 7; the other extremity of this feeder is connected with the loading device 8 (an aerial, for instance).

The operation of this coupling system is as follows:

The resonance circuit transmits the high frequency oscillations which it produces to the loading device 8 through the medium of the resistance 5 and of the co-axial feeder 7. The input impedance of the unit formed of the co-axial feeder 7 and the loading device 8 varies in function of the wave lengths which are transmitted by the generator 1.

Owing to these variations of the impedance of the feeder 7 and of the loading device 8 in function of the wave lengths which are transmitted, the high frequency excitation voltage varies.

For a small input impedance, the high frequency excitation voltage is moderate and if the tap on the self-induction coil 3 corresponds to an excitation voltage which is higher than the voltage which had been foreseen, a voltage drop is produced on the terminals of the resistance 5.

Thus, the impedance between the tap 4 and the body seen from the transmitter side is increased owing to the resistance.

For a strong input impedance the high frequency excitation voltage is entirely transmitted; indeed, the value of the resistance 5 is negligible with respect to the input impedance of the feeder.

Thus, the resistance 5 tends to bring the loading impedance seen from the transmitter side to such a value that the fixed coupling is possible on the self-induction coil 3.

The transmitter plant shown on Figure 2 is similar to that shown on Figure 1, but the fixed resistance 5 is replaced by a variable resistance 9. The latter permits of varying in certain limits the high frequency voltage transmitted by the generator 1 to the loading device 8 owing to the voltage drop RI caused by the current flowing through the said resistance. When a weak coupling is desired, the resistance is adjusted to the maximum of its value. On the contrary, when a strong coupling is desired, the resistance is adjusted to the minimum of its value. The coupling can take all the intermediary values which are permitted by the variation of the resistance 9 from its minimum to its maximum.

In Figures 1 and 2 the resistances 5 and 9 have been shown at the entrance of the co-axial feeder, but they can be located at any point of the feeder.

The transmitter plant shown on Figure 3 comprises two transmitter stations 10 and 11 connected with a common feeder through the medium of resistances 13 and 14, the resistance 13 connecting the transmitter 10 with the feeder 12 while the resistance 14 connects the transmitter 11 with the feeder 12.

The operation of the device is as follows:

The current issuing from the transmitters 10 and 11 flows through each of the resistances 13 and 14; if, for any reason, for instance owing to an accidental variation of the grid excitation, one of the transmitters transmits a larger output, a stronger current flows through the corresponding resistance which dissipates more energy, thus tending to bring to its normal value the energy received by the loading device.

The invention has an absolutely general scope, and can be applied to all kinds of loading devices; it is more particularly advantageous for transmitters with a wide traffic range or for transmitting devices which use large passing bands such as the transmission of images in television.

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