

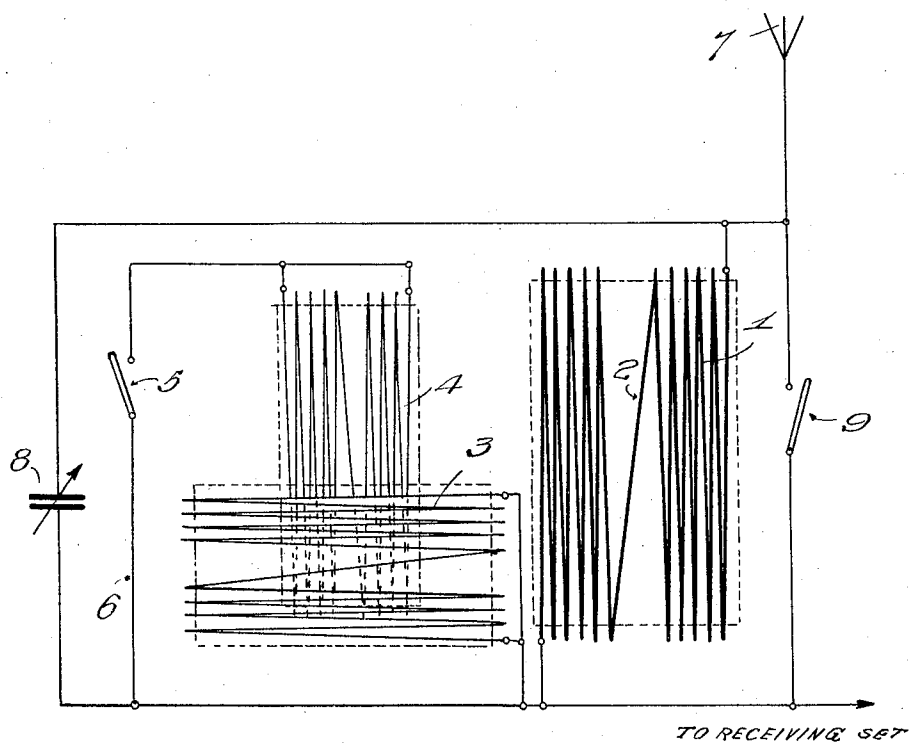
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RADIO WAVE TRAP

Filed June 9, 1927



Witness

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UNITED STATES PATENT OFFICE

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RADIO WAVE TRAP

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This invention relates to improvements in radio wave traps, and more particularly to a device utilizing a plurality of inductances, one of which is placed in series between the antenna and the radio receiving set and having a variable condenser shunted across the same, in conjunction with a second inductance inductively connected with said first mentioned inductance, and a third inductance capable of being connected with said first and second inductances in inductive relation therewith, whereby undesirable signals or waves emitted from any transmitting station may be successfully trapped, and desired signals received without overlapping interference from other signals.

An object of the invention is to provide an improved type of wave trap in which a plurality of inductances are inductively related and controlled by a single variable condenser for more efficiently trapping or cutting out radio signals from overlapping waves emitted from a transmitting station, or for trapping the waves from a nearby station, when it is desired to receive the waves from a more distant station, which are rendered inaudible or indistinct, due to the high power of the nearby station.

A further object of the invention is to provide a wave trap of the type mentioned, together with means for selectively connecting the trap in the antenna circuit of a radio receiving set, or for disconnecting the same therefrom.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of my application:—

The single figure is a diagrammatic showing of my improved wave trap showing the same connected in the antenna circuit of a radio receiving circuit.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

A primary inductance 1 is formed by winding the desired number of turns about a form in spaced relation, the said windings being electrically connected through the wire 2

and grouped at the opposite ends of the form. A second inductance 3 is wound upon a suitable form adjacent the first mentioned form and consists of two electrically connected and short circuited spaced groups of windings, inductively connected with the windings or inductance 1. A third winding 4 is wound upon a suitable form, preferably at right angles to the winding 3 and within the inductive field of the same, and also consists of two electrically connected spaced groups of windings which are short circuited, and is adapted to be selectively connected with the inductance winding 1, through the medium of the switch 5 and conductor 6.

An antenna 7, variable condenser 8 preferably of twenty-three plate type, and single pole, single throw switch 9, are connected with the inductances 1, 3 and 4, and comprise the essential parts of the wave trap.

The wiring diagram or hook-up illustrated in the single figure is as follows:—The antenna 7 is connected to one end of the inductance winding 1, while the other end of the said winding is connected to the radio receiving set. The variable condenser 8 is shunted across the inductance winding 1. The ends of the inductance winding 3 are short circuited and are connected to the wire connecting the variable condenser and the receiving set. The winding 3 is also electrically connected with the inductance winding 1. Hence, it will be seen that the short circuited inductance winding 3 is inductively positioned with respect to the inductance winding 1. Likewise the third inductance winding 4 is short circuited and may be electrically and inductively connected with the windings 1 and 3 when desired, by merely closing the switch 5. Since the coils 3 and 4 are placed in the magnetic field of coil 1, a decided inductive effect will be set up in coil 4. The coil 4 being connected to the rotor side of the condenser gives the coil 4 a variable inductance.

The method of operating the wave trap is similar to the method of operating a wave trap utilizing a single inductance winding and variable condenser shunted across it, in the antenna circuit. However, it will be

found that when the trap is in the antenna circuit, a very small change in dial setting will be required. The inductive effect between the inductance windings 1, 3 and 4, due to the closed or short circuited winding of the inductances 3 and 4 will cause a consequent increase in the efficiency of the trap. The desired waves will pass through the coil or inductance winding 1, while the windings 3 and 4 connected with one side of the variable condenser acts to trap the undesired or interfering waves or signals.

It is pointed out that the importance and efficiency of this type of wave trap depends on the manner in which the windings 3 and 4 are connected. The action of the windings 3 and 4 is entirely inductive as regards the winding 1. The third winding 4 may be connected with the windings 1 and 3, when it is desired to trap interfering waves from extremely high power stations in close proximity to the receiving set.

From the foregoing description, it will be understood that I do not intend to limit myself to the specific construction described, but rather by the terms of the appended claims.

I claim:—

1. A wave trap for radio circuits including an antenna connection, a primary winding in series therewith, a variable condenser shunted across said primary winding, a short circuited winding inductively connected with said primary winding, and a second short circuited winding selectively connected in inductive relation with said first mentioned short circuited winding.

2. A wave trap for radio circuits including an antenna connection, a primary winding in series therewith, a variable condenser shunted across said primary winding, a short circuited split winding inductively connected with said primary winding, and a second short circuited split winding selectively connected in inductive relation with said first mentioned short circuited split winding.

In testimony whereof I have hereunto affixed my signature.

JAMES J. McDONALD.