The invention relates to a device for the reception of wireless signals as set forth in patent specification Serial No. 595,644, filed February 27, 1932, in which the influence of sources of disturbances located in the neighborhood of the receiver is removed.

The said prior specification describes a device which comprises an aerial system consisting of two or more aerials of different lengths which are inductively coupled to one or more receiving sets, and in which the primary side of the inductive coupling comprises one or more coils which are in series between the aerials and the earthed electrical midpoint and which may be adjusted with the aid of one or more variable condensers.

The length of at least one of the aerials is chosen in such a case that a considerable portion of this aerial is located outside the region of the sources of disturbances whereas the second aerial extends about to the end of the disturbing field. For the disturbances the length of the aerial is consequently substantially the same whereas for the wireless signals to be received it is very different.

The working of the device is based thereon that the aerials are inductively coupled to the input circuit of a receiver in such manner that the disturbing oscillations received by the aerials neutralize each other, that is to say that in the secondary side of the inductive coupling no electro-motive forces of the disturbances are induced whereas the difference of the wireless signals received by the aerials is made operative in the receiver.

The present invention concerns an improved mode-of-realization of a device as set forth in the above-mentioned patent specification.

According to the invention, use is made of an inductive coupling in which the primary side comprises two or more coils which are connected in series between the aerials and the connecting point which is earthed while a variable condenser is arranged in parallel to these coils connected in series.

The invention will be more clearly understood by referring to the accompanying drawing in which Figure 1 represents a device similar to that described in patent specification No. 595,644, supra;

Figure 2 represents an embodiment of a device according to the invention, which is a simpler form of execution of the circuit arrangement according to Figure 1.

The device represented in Figure 1 is provided with two aerials 1 and 2 which are inductively coupled to a receiving set 3 and which have such different lengths that a portion of the aerial 1 is located outside the region of the sources of disturbances. The primary side of the inductive coupling comprises two coils 4 and 5 which are connected in series between the aerials 1 and 2 and the connecting point 6 of which is earthed.

The aerial 1 comprises, in addition, a variable condenser 7 adjusted in such manner that for the receiving disturbing oscillations the electrical length of the aerials 1 and 2 is equal, that is to say that the electro-motive forces of the disturbances induced by the coils 4 and 5 in the secondary side of the inductive coupling, i.e., in the coil 5, neutralize each other whereas the differences of the wireless signals received by the aerials is made operative in the receiver 3.

Variable condensers 16 and 17 are connected in parallel to the coils 4 and 5 in order to be able to tune the aerials 1 and 2 to the wave length to be received.

In the embodiment of the invention shown in Figure 2 an improvement has been obtained by substituting a single condenser 18 for the condensers 7, 16 and 17. This condenser 18 serves both for the tuning of the aerials 1 and 2 to the wave length received and for the adjustment of the electrical midpoint of the aerial system for the disturbing oscillations.

Each aerial comprises, in addition, a coupling condenser 19 and 20 respectively, owing to which the receiving set is made independent from the aerial capacity relatively to earth. If the aerials 1 and 2 are arranged so close to one another that the capacity 21 between the two aerials is large relatively to the capacity of the condenser 18, the coupling condensers 19 and 20 are absolutely necessary.

Likewise shown in the patent specification No. 595,644, the coils 4, 5 and 8 and the condenser 18 are preferably arranged within an earthed metallic screening box 9. In order to avoid a capacitive coupling, a screen 10 is arranged between the coils 4, 8 and 5, 8 respectively, said screen being electrically connected to the screening box 9. If desired, the supply conductor leading from the coil 8 to the receiver 3 is provided with an earthed lead sheath 11.

I claim:

1. Signaling apparatus comprising a first antenna and a second antenna having a length different from said first antenna, a plurality of coils serially connected together and associated with said antennas, condensers intermediate said an-
tennae and said coils, a variable condenser connected in multiple with said serially connected coils, signal translating apparatus inductively coupled to said coils, and shielding means surrounding all of said coils and condensers.

2. Wireless receiving apparatus comprising two antennae of unequal length, a parallel tuned circuit comprising a variable condenser in multiple with two serially connected coils connecting said two antennae together, condensers individual to each of said antennae and intermediate said parallel tuned circuit and said antenna, and signal utilization means coupled to said two coils.

3. Signaling apparatus comprising a first antenna, and a second antenna having a length different from said first antenna, a plurality of inductance coils connected in series between said antenna and the grounded electrical midpoint of said coils, condensers intermediate said antenna and said coils, a variable condenser connected in multiple with said inductance coils, and signal translating apparatus inductively coupled to said coils and shielding means surrounding all of said coils and condensers.

4. Signaling apparatus comprising a first antenna, and a second antenna having a length different from said first antenna, a plurality of inductance coils connected in series between said antenna and the grounded electrical midpoint of said coils, condensers intermediate said antenna and said coils, a variable condenser connected in multiple with said inductance coils, and shielding means surrounding all of said coils and condensers.

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