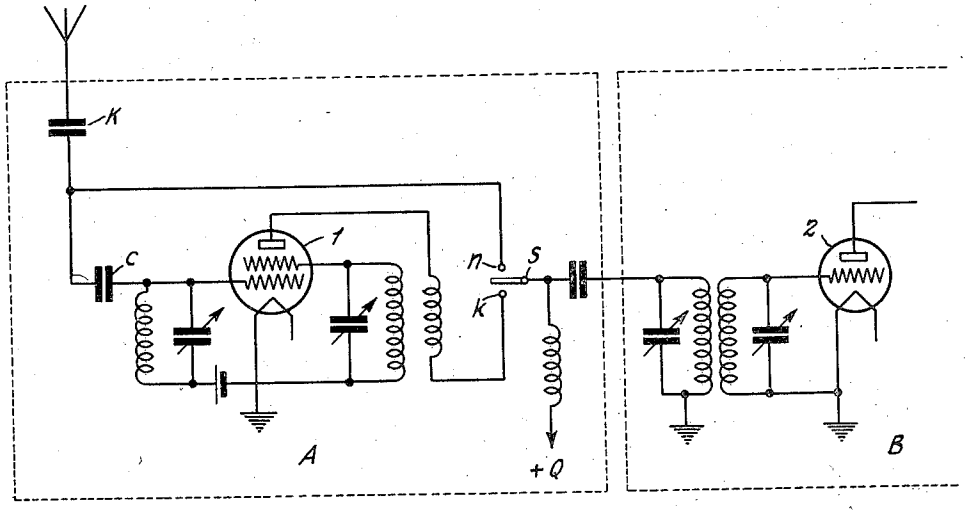
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SHORT WAVE-LONG WAVE RECEIVER

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SHORT WAVE-LONG WAVE RECEIVER

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3 Claims. (Cl. 250—20)

The present invention relates to a heterodyne receiver for the reception at will of short-waves, ultra-short and normal broadcast waves.

As a result of the increasingly more extensive use of short and ultra-short waves in broadcasting, side by side with the wave-length band heretofore mostly customary between 200 and 2000 meters, the demand has arisen to render standard broadcast receiver sets useful also for short-wave work. This end is attainable by the use of auxiliary means consisting of a short-wave heterodyne receiver stage. The normal broadcast receiver, then, constitutes the amplifier and rectifier for the ensuing intermediate frequency.

Now, in what follows certain circuit schemes shall be disclosed which are adapted to insure the change, with the combination receiver (auxiliary stage and standard receiver) in a particularly simple and practical manner from the reception of short waves to the reception of standard broadcast bands.

One embodiment is shown, by way of example, in the figure where A designates the short-wave accessory (adapter) device comprising an oscillator and mixing tube 1, the latter being a double grid tube. B denotes the intermediate frequency amplifier, including tube 2, which is a standard broadcast receiver set. Whenever short waves shall be received, switch S is shifted over into contact *k*. In that case, the twin-grid tube 1 receives direct current energy from the plate-potential source Q and operates as an oscillator. The aerial is then connected by way of the small condenser *c* with the other grid of the twin-grid tube so that it works as a radio frequency amplifier and modulator, the ensuing intermediate frequency being thereupon further amplified in the customary way in the intermediate frequency amplifier B.

If broadcasting stations sending on the usual wave bands are to be received, all that is necessary is to position switch S on the contact *n*. In this case the aerial is connected directly with the broadcast amplifier tube 2, while the oscillator at the same time ceases to oscillate since its plate direct current circuit is broken. While the coupling between the aerial and the short-wave accessory device (adapter) remains in existence, the condenser *c* represents a very high impedance for standard broadcast waves. Condenser K blocks the antenna for direct current, while for radio frequency energies it constitutes a short-circuit.

While I have indicated and described one system for carrying my invention into effect, it will be apparent to one skilled in the art that my invention is by no means limited to the particular organization shown and described, but that many modifications may be made without departing from the scope of my invention as set forth in the appended claims.

What is claimed is:

1. In combination with a radio receiver having a resonant input circuit adapted to be tuned to a desired radio frequency of the broadcast band and a signal collector, a short wave adapter unit comprising a tube having a resonant circuit connected between its cathode and a grid electrode, the resonant circuit being tunable over a desired short wave range, means coupling the signal collector to said resonant circuit, a second resonant circuit connected between the cathode and a grid electrode of said tube, a source of direct current potential for the output electrode of said adapter tube, means for regeneratively coupling the output electrode to the said second resonant circuit, and means connected to said source and receiver input circuit, arranged for selective connection to said adapter tube output electrode or said signal collector.

2. In combination with a radio receiver having a resonant input circuit adapted to be tuned to a desired radio frequency and a signal collector, a short wave adapter unit comprising a tube having a resonant circuit connected between its input electrodes, the resonant circuit being tunable over a desired short wave range, condenser means having a high impedance to frequencies to which said receiver input circuit is tuned coupling the signal collector to the short wave tunable circuit, a source of direct current potential for the output electrode of said adapter tube, means comprising a local oscillator, connections for impressing oscillations from said oscillator on said tube, said means and said connections being independent of said resonant circuit, and means, connected to said source and receiver input circuit, arranged for selective connection to said adapter tube output electrode or said signal collector.

3. In combination with a radio receiver having a resonant input circuit adapted to be tuned to a desired radio frequency and a signal collector, a short wave adapter unit comprising a multi-grid tube having a resonant circuit connected between its cathode and one of its grid electrodes, the resonant circuit being tunable over a desired short wave range, means coupling the signal collector to the short wave tunable circuit, a source of direct current potential for the output electrode of said adapter tube, a second resonant circuit connected between the cathode of said tube and another of its grids, means for regeneratively coupling the output electrode to the said second resonant circuit to form a local oscillator, means connected to said source and receiver input circuit, arranged for selective connection to said adapter tube output electrode or said signal collector, and a direct current blocking condenser connected between the signal collector and said direct current potential source.

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