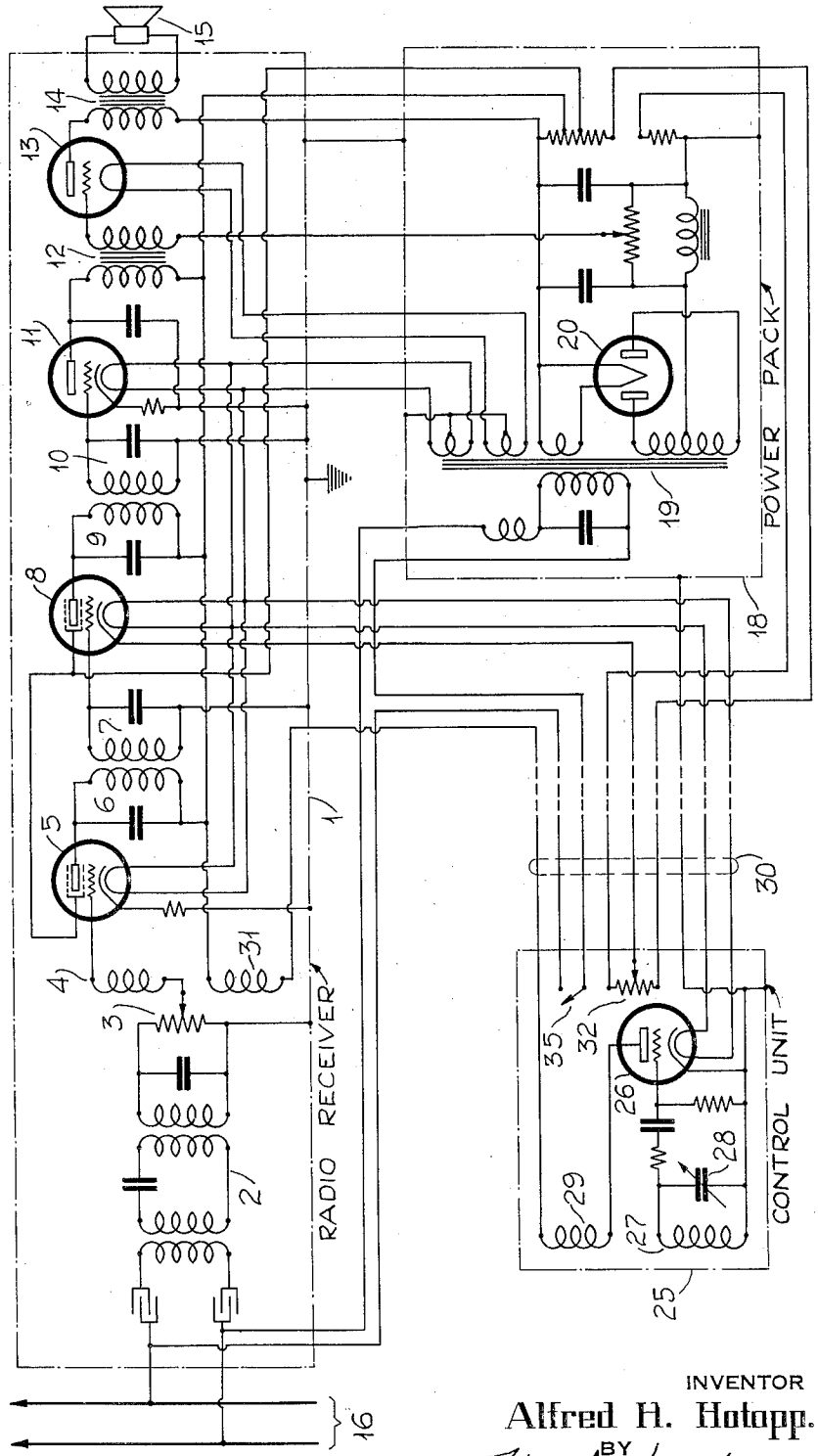
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WIRED RADIO RECEIVING SYSTEM

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WIRED RADIO RECEIVING SYSTEM

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2 Claims. (Cl. 250—20)

My invention pertains in general to wired radio receiving systems and specifically relates to such a system having remote control means.

One of the objects of my invention consists in providing a controlled wired radio receiving system for the selective reception of programs transmitted at carrier frequencies over power lines.

A further object consists in providing means for effecting the remote control of a radio receiving system by simple and efficient means.

A still further object comprises providing a radio receiving system of the heterodyne type in which all of the resonant elements are fixed with the exception of an adjustable oscillator.

I accomplish these and other desirable objects in a novel radio receiving system of the heterodyne type having a controlled oscillator removed from the geographic vicinity of the radio receiver proper for effecting the remote control thereof.

In the drawing I have diagrammatically represented the circuits comprising one embodiment of my radio receiving organization.

Referring to the drawing in detail, there is provided a radio receiver 1 of the heterodyne type including a broadly responsive resonant input circuit 2, capacitively coupled to power lines 16 which carry different programs transmitted at discrete carrier frequency bands. The input circuit 2 terminates in a potentiometer 3 having an adjustable connection with an inductance 4. Inductance 4 is included in the input circuit of an electron tube 5. The electron tube 5 forms the first detector stage of the radio receiver 1 and includes an output circuit 6 coupled with a resonant input selection circuit 7 connected with an electron tube 8 which comprises the intermediate frequency amplifier stage of the radio receiver 1. The selection circuit 7 is tuned to be responsive to a band of frequencies corresponding to a program channel but removed from the frequency range in which the program frequency bands, to which the circuit 2 is responsive, lie.

The electron tube 8 is provided with an output circuit 9 coupled with a resonant input circuit 10 connected with an electron tube 11 which comprises the second detector stage of the radio receiver 1. The output circuit of the electron tube 11 is connected through an audio frequency transformer 12 to an audio frequency amplifier tube 13 having an output through audio frequency transformer 14 to loud speaker 15. The tubes 5 and 8 are the screen grid indirectly heated cathode type, the tube 11 is of the four-element indirectly heated cathode type, and the tube 13 is of the three-element directly heated filament type. Tubes 5, 8, 11, and 13 derive their operating voltages from a power pack 18 which includes a transformer 19 and full wave rectifier tube 20.

In accordance with my invention, there is provided a control unit in the form of an oscillator 25 including an electron tube 26. The resonant input circuit to tube 26 includes an inductance 27 and variable condenser 28. The output circuit of the tube 26 includes an inductance 29, coupled with inductance 27 for producing oscillations. The output circuit of tube 26, from inductance 29, is completed through a cable 30 to an inductance 31 contained within the radio receiver 1 and coupled with the inductance 4. The operating voltages for the electron tube 26 are derived from power pack 18 through connections provided in the cable 30.

A potentiometer 32 is provided within the control unit and includes connections through the cable 30 from the power pack 18 to the indirectly heated cathode of the intermediate frequency amplifier tube 8 for applying control potentials thereto to effect the program volume control of the radio receiver 1. The input circuit to the power pack 18 from power lines 16 is completed through the cable 30 and includes a switch 35 situated in the control unit. Other circuit elements and connections shown but not described will be readily understood by those skilled in the art to which my invention appertains.

In the operation of my radio receiving system for the reception of a desired program, the switch 35 is closed thereby energizing power pack 18 for providing suitable operating voltages to all of the tubes in the radio receiver 1 and to tube 26 in the control unit. The condenser 28 in the oscillator 25 can then be adjusted to produce oscillations of a desired frequency which, acting through inductance 31, will "beat" with the plurality of program frequency bands received from power lines 16 over the broadly responsive circuit 2.

In the present embodiment of my invention, the oscillations produced by oscillator 25 are additive in their effect upon the incoming signals to raise the incoming program frequency bands to within the range to which the circuit 7 is responsive. The signals received over lines 16 and by circuit 2 are in the nature of several different programs being simultaneously transmitted at discrete carrier frequencies. It will be evident, then, that the circuit 2 is broadly responsive to receive all of the discrete carrier frequencies. The circuit 7, however, is responsive only to frequencies lying within a predetermined

band corresponding to one of the program frequency bands received over circuit 2 but at a higher frequency. The action of the oscillator 25 is to raise the frequencies of the discrete program frequency bands received over circuit 2 so that a desired one of these bands will fall within the frequency range to which circuit 7 is responsive. When it is desired to select a different program, the condenser 28 is adjusted to change the frequency of oscillations produced by the oscillator 25 to move the several program frequency bands, received by circuit 2, along the frequency spectrum so that a different desired program frequency band will fall within the range to which the circuit 7 is responsive.

The desired program, after selection by the intermediate frequency amplifier stage, will be detected by tube 11 and amplified by tube 13 for subsequent reproduction by loud speaker 15. The reproduced volume of the program is controlled from the remotely situated potentiometer 32 which governs the potential applied to the cathode of tube 8. It will be understood that the control unit 25 is remotely situated from radio receiver 1, the connections being made through cable 30, thereby accomplishing the complete control of the radio receiver from a distant point.

Although I have shown a preferred embodiment of my radio receiving system it will be understood that changes can be made therein without departing from the intended scope of my invention. I do not therefore desire to limit myself to the foregoing except insofar as may be pointed out in the appended claims.

What I claim as new and original and desire to secure by Letters Patent of the United States is:

1. A radio receiving system comprising, an input circuit having fixed constants and broadly responsive to a plurality of discrete program frequency bands, an electron tube for amplifying said frequency bands and having a control circuit including an inductance coupled with said input circuit, a selection circuit having fixed constants and responsive to a single program frequency band and coupled with the output circuit of said electron tube, a remotely situated oscillator including a variable condenser for producing controlled frequencies, a second inductance coupled with said first mentioned inductance, connections for feeding said oscillations to said second inductance whereby said oscillations are combined with said program frequency bands for causing a selected one of said frequency bands to fall within the range of frequencies to which said selection circuit is responsive under control of said variable condenser in said remotely situated oscillator, another electron tube having an input circuit including said selection circuit, a power pack in the vicinity of said electron tubes for supplying operating voltages thereto, a cable from said radio receiving system to said oscillator for carrying said connections, a potentiometer in the vicinity of said oscillator, connections from said power pack through said cable to said potentiometer and from said potentiometer through said cable to said second mentioned electron tube for applying control potentials thereto to govern the amplification of said selected program frequency band, connections from said power pack through said cable for causing the energization of said oscillator, and a switch in the vicinity of said oscillator for controlling the operation of said power pack.

2. A radio receiving system comprising, an input circuit having fixed constants and broadly responsive to a plurality of discrete program frequency bands, electron tube apparatus including a selection circuit having constants responsive to a single program frequency band, oscillator means removed from said electron tube apparatus including an electron tube and also a variable means for locally producing controlled oscillations for shifting said plurality of discrete program frequency bands along the frequency spectrum whereby a desired program falls within the range of frequencies to which said selection circuit is responsive, cable connections for feeding said oscillations to said electron tube apparatus, a common power circuit for supplying operating energy to all of said electron tubes and including cable connections between said electron tube apparatus and said oscillator means, a switch in the vicinity of said oscillator means for controlling said power circuit whereby operating voltages applied to all of said electron tubes are controlled from the vicinity of said oscillator means, a potentiometer in the vicinity of said oscillator and having cable connections to said electron tube apparatus whereby the energy level of said desired program frequencies is subject to control from the vicinity of said oscillator means.

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