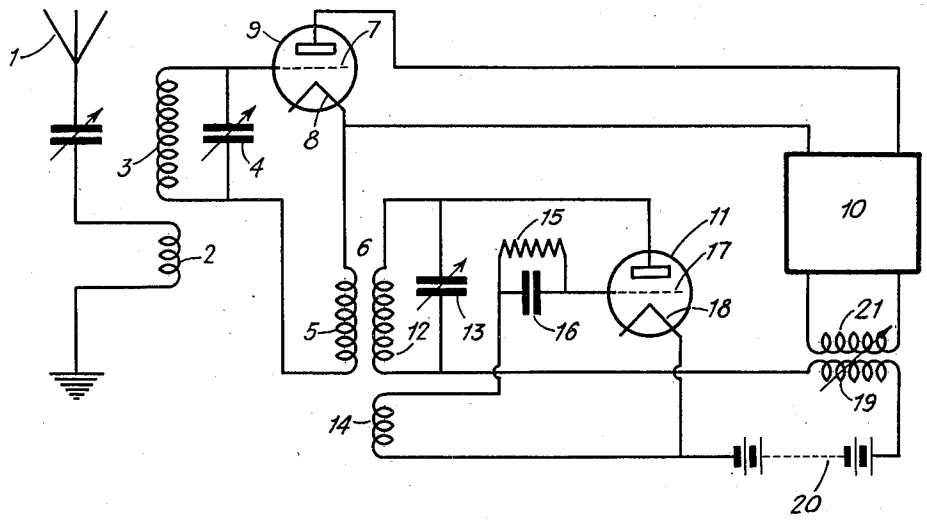
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RADIO RECEIVER

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## RADIO RECEIVER

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4 Claims. (Cl. 250—20)

This invention relates to radio receiver apparatus and more specifically to apparatus of the so-called homodyne type, i. e., of the type wherein a modulated carrier is caused to beat with a locally generated oscillation of the same frequency as said carrier.

In homodyne radio receivers and in similar apparatus it is often desired to be able to change the depth or degree of modulation to some value other than that existing in the modulated carrier wave actually received or even to remove the modulation altogether:—for example, to allow of a carrier component being amplified independently and the amplified carrier applied at some later point in the receiver to produce a desired result, such as the "locking" into step of a local oscillator. The object of the present invention is to provide a simple and satisfactory apparatus whereby the degree of modulation may be varied or altered in a desired way.

According to this invention the oscillations generated by a homodyne oscillator employed in a radio or like modulated carrier wave receiver are themselves modulated in dependence upon the modulating potentials obtained from a demodulator in the receiver; in other words, according to this invention a homodyne oscillator is caused to provide, instead of simple unmodulated oscillations as hitherto, oscillations which are modulated to a desired degree and in dependence upon modulating potentials obtained by demodulation at the receiver.

The invention is illustrated in the accompanying drawing which shows diagrammatically one way of carrying it into effect.

Referring to the drawing a receiving aerial 1 or the like energy pick up means is coupled, for example, inductively as by a coil 2 to the coil 3 of a tuned circuit 3, 4, which is connected, in series with a secondary 5 of a transformer 6 between grid 7 and cathode 8 of a triode 9 the said secondary 5 being between the cathode 8 and the adjacent end of the tuned circuit 3, 4. The triode 9 which constitutes a homodyne detector feeds into the remainder 10 of the receiving apparatus which may be of any known form and construction usual in homodyne receivers and which, of course, gives a modulating potential output. The local homodyne oscillator consists of a back coupled triode 11 having a tuned circuit 12, 13, connected in its anode circuit, and a grid coil 14 in series with a leaky grid condenser combination 15, 16, connected between its grid 17 and its cathode 18 the leaky condenser combination being at the grid end of the grid cathode circuit. The coil 12 in the anode circuit of the local oscillator is back coupled to the grid coil 14 and is also coupled to the secondary 5 of the transformer 6, forming the primary of this transformer. The anode circuit of the local oscillator includes, besides the tuned circuit 12, 13, a transformer secondary 19 which is in series with said tuned circuit and between said tuned circuit and the source 20 of anode potential for the oscillator valve 11. The transformer secondary 19 is coupled, and preferably variably coupled, to a transformer primary 21 to which are fed currents varying in dependence upon the demodulated output from the apparatus at 10. The coupling between the windings 21, 19, is preferably variable both as to value and sense, and by suitably regulating the circuit the modulation produced in the homodyne oscillations may be made to aid or oppose to a desired extent, the modulation in the received carrier. In this way the relation between carrier and modulation intensities in a circuit following the homodyne detector may be controlled as desired.

The invention is not limited to the particular arrangement just described, for many variations are possible. For example, the control may be applied at any desired suitable point in a receiver where a homodyne oscillation is introduced. Of course, in carrying out this invention the usual and obvious precautions as regards screening and so forth should be resorted to in order to avoid undesired inter-action between various parts of the circuit.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:

1. A radio or other modulated carrier wave receiver of the homodyne type and comprising a homodyne detector, means for applying incoming modulated carrier wave energy to said detector, a local homodyne oscillator, means for modulating the local homodyne oscillations generated by said oscillator in dependence upon potentials obtained by demodulation in said receiver, and means for also applying the modulated local oscillations to said detector.

2. A receiver as claimed in claim 1 and comprising means for varying the degree of modulation of the homodyne oscillations effected by the potentials obtained by demodulation.

3. A radio modulated carrier wave receiver of the homodyne type, comprising a homodyne detector, means for applying incoming modulated carrier wave energy to said detector, a local

homodyne oscillator, means for modulating the local homodyne oscillations generated by said oscillator in dependence upon potentials obtained by demodulation in said receiver, means for applying the modulated local oscillations to said detector and means for varying the sense of modulation of said homodyne oscillations effected by the potentials obtained by demodulation.

4. A receiver as claimed in claim 3 wherein the potentials obtained by demodulation in the receiver are superimposed upon an anode circuit of a back coupled thermionic valve oscillation generator constituting the homodyne local oscillator.

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