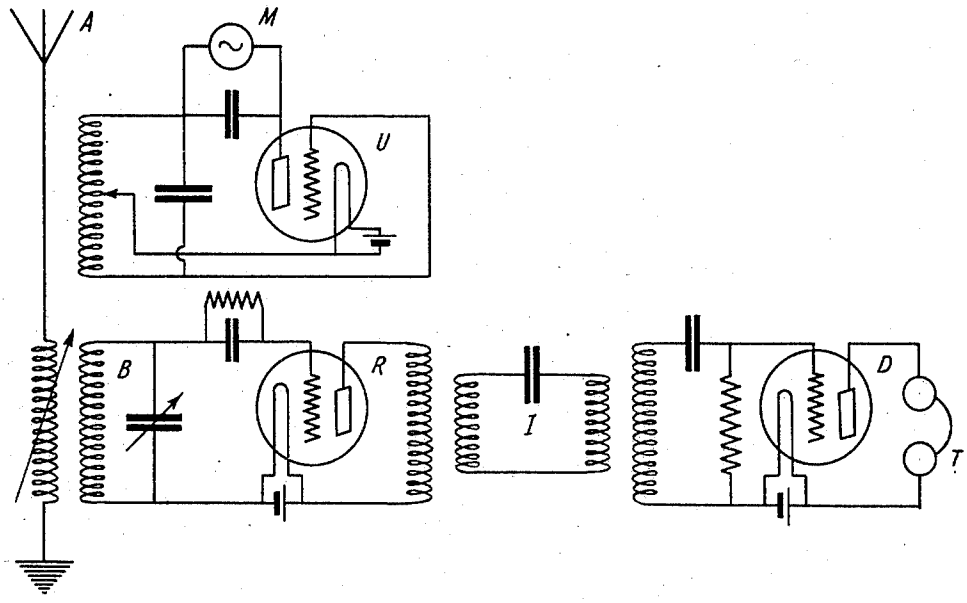
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RECEIVER FOR UNDAMPED OSCILLATIONS

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RECEIVER FOR UNDAMPED OSCILLATIONS

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The object of the present invention is to substitute a method which is far more suitable for a great number of purposes, for the heterodyne or beat reception heretofore mostly used for the reception of continuous waves. The new method is particularly suited for the reception of short waves, since in the known beat reception method every fluctuation, even when of minimum amount, occurring in the transmitter often causes such variation in the beat tone at the receiving end that it is impossible to read the signals. According to the present invention these small fluctuations in the transmitter which tend to render beat reception impossible, are rendered harmless.

The underlying idea of my invention will be best understood by reference to the accompanying drawing, wherein I have illustrated one form of the same although it is to be understood that other forms may equally well be used.

Referring to the drawing, A denotes the aerial which is tuned to any desired wave, say, 100 meters. Upon the circuit B is superposed a frequency which differs from the incoming wave in that, in the usual manner, due to the rectifier action of tube R, beat frequency is set up in circuit I. According to this invention the heterodyne U, unlike previous schemes, does not act undamped, but rather is modulated, that is to say, with an alternating current of say, from 500 to 2000 cycles. Modulation can be effected in any well-known manner in the plate circuit or at the grid, or in some other manner.

In the form of my invention which I have illustrated, this modulating means is shown at M in the circuit U and is in this instance in the plate circuit, but it is to be understood that the modulator M might equally as well be placed in the grid circuit or similarly arranged, as above stated.

The result is that in circuit I an intermediate modulated beat frequency is produced which, however, comes to act in the receiver in case signals are really coming in, since the signals from circuit I after rectification of the intermediate frequency by audion D are heard in the telephone at the modulated tone of the heterodyne. It will thus be noted that the received frequency is here entirely independent of the variations in the transmitter.

The invention, as will be understood, is applicable to the most diversified connections. In the various circuits, regenerative couplings and the self-heterodyne method could be resorted to. The beat-frequency circuit I may be adjusted both to a longer as well as to a shorter wave than the incoming wave. The method is adaptable also to long waves; for also in this case operation can be made independent of transmitter fluctuations.

The method offers the further advantage that in the presence of atmospherics, the disturbing energy comes to act in amplified form only during those times when impulses from the heterodyne are produced, while no such amplification takes place in the intervals.

Having described my invention, I claim:

In a heterodyne receiver the combination of a tuned antenna, a local oscillator comprising mutually coupled grid and plate circuits, said plate circuit including an inductance and a condenser connected in series therewith, and a generator of alternating potential connected to said plate circuit in parallel with said condenser, said generator acting to modulate the oscillations produced in said local oscillator, a beat producing circuit coupled to said antenna and to said local oscillator for combining the incoming signals with the modulated local oscillations, a circuit tuned to the beat frequency coupled to said beat producing circuit, and a circuit coupled to said last mentioned circuit for detecting said beats, said circuit tuned to the beat frequency operating to prevent the modulated local oscillations from reaching the detector circuit when they are not combined with an incoming signal.

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