

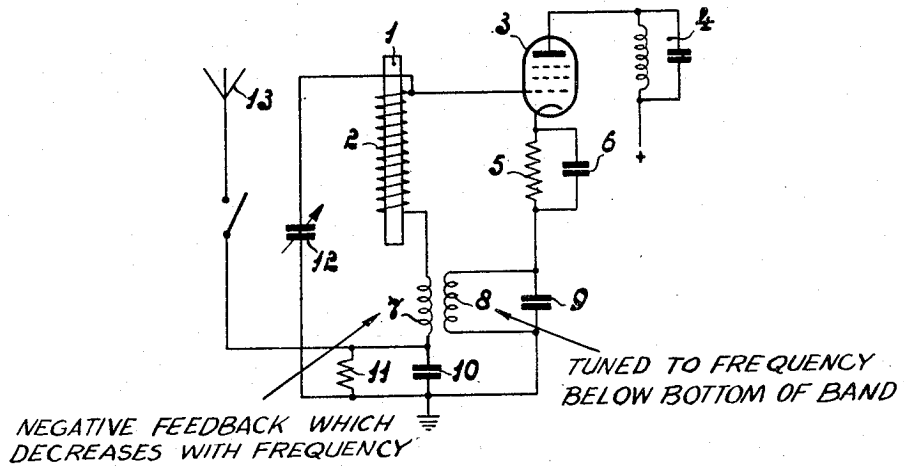
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CONSTANT BAND-WIDTH INPUT STAGE WITH HIGH Q ANTENNA

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## CONSTANT BAND-WIDTH INPUT STAGE WITH HIGH Q ANTENNA

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2 Claims. (Cl. 250—20)

The invention relates to a receiving apparatus comprising a rod aerial, in which the winding of the rod aerial is included in an input circuit of a high-frequency amplifier tuned to the signal to be received. The term "rod aerial" is to be understood to mean an aerial comprising a usually rotatable rod of ferromagnetic material, on which a winding is provided. The ferromagnetic material may, in this case, be in general a known ferrite having a high permeability and a low specific resistance.

When using such a rod aerial for the reception of stations in the range of the large wavelengths, more particularly between 1000 and 2000 meters, the disagreeable effect is produced that owing to the high-Q of the input circuit including the winding of the rod aerial, the circuit band-width is so narrow that the high sidebands are attenuated to a greater extent, so that the sound reproduction becomes inadmissibly dull. A means to remedy this effect consists in that the damping of the circuit is increased, for example by including a resistor. This, however, has the disadvantage that the capturing power of the rod is too strongly reduced and the signal-noise ratio is diminished.

The invention has for its object to obviate the said disadvantage of the input circuits including a rod aerial, without an additional reduction of the capturing power of the rod and of the signal-noise ratio. The invention consists in that in an apparatus of the kind described above provision is made of means to provide a negative feedback which decreases at an increase in signal frequency between the output circuit of the amplifier and the input circuit.

Owing to this negative feedback the band-width of the circuit is increased to a value commensurate with the full band-width of the signal. Since the negative feedback is operative both for the band-width of the signal and for the noise, the signal-noise ratio associated with a high circuit quality is maintained. The band-width of the circuit, however, is increased and is comparable to that of a circuit of low-Q.

It should be noted that it is known to increase the range of passage of a circuit by means of a particular negative feedback, whilst a favourable signal-noise ratio is maintained. This principle is also applied to receiving apparatus comprising a frame aerial. With the known devices, however, no use is made of rod aerials and it is not desirable for the negative feedback to vary with the signal frequency.

In a preferred embodiment of a receiving apparatus according to the invention a winding is provided in series with the aerial winding included in the input circuit, this winding being coupled with a third winding, which is connected in parallel with a capacitor, the parallel combination being tuned to a frequency which is lower than the lowest frequency to be received, this combination forming part of the output circuit of a high-frequency amplifying tube. The said parallel combination is preferably connected between the cathode of the tube and earth,

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since in this case the parasitic capacities are less troublesome.

The invention will now be described more fully with reference to the drawing. The drawing shows the circuit arrangement of the input section of a receiving apparatus according to the invention as far as it is required for a good understanding of the invention.

Referring to the drawing, reference numeral 1 designates the ferrite rod of the aerial, to which the aerial winding 2 is applied. The high-frequency oscillations captured by the rod with the winding are amplified in a pentode 3, the amplified oscillations being obtained from the output impedance 4. The parallel combination of the resistor 5 and the capacitor 6 in the lead from cathode to earth serves to obtain a particular bias voltage at the control-grid. Between the end of the aerial winding not connected to the control-grid and earth there is included, in accordance with the invention, the series combination of a coil 7 and a capacitor 10, to the common point of which an external aerial 13 can be connected. The winding 7 is coupled, in accordance with the invention, with a winding 8, in parallel with which a capacitor 9 is connected. This parallel combination is also included in the lead from the cathode of the tube 3 to earth. The tuning of the input circuit is carried out by means of the capacitor 12. A grid resistor 11 is connected in parallel with the coupling capacitor 10.

The windings 7 and 8 produce a negative feedback. Owing to the capacitor 9 it is ensured that this negative feedback decreases at an increase in frequency. The parallel combination 8, 9 is tuned to this end to a frequency lower than the lowest signal frequency to be received, for example to a frequency of 100 kc./s.

The anode current of the tube 3 flows from the positive terminal of the supply, through the impedance 4, the tube 3, the parallel combination 5, 6 and the parallel combination 8, 9 to the negative terminal of the supply connected to earth. If the signal frequency increases, a smaller part of the alternating anode current will flow through the coil 8, so that the negative feedback decreases. At comparatively high frequencies the effect of the negative feedback is substantially equal to zero.

What is claimed is:

1. A receiving apparatus comprising a high-frequency amplifier having an input circuit tuned to a signal to be received and having a signal output circuit, a rod aerial composed of a core of ferromagnetic material and a winding positioned on said core, said winding being connected electrically in said input circuit, a negative feedback circuit connected between said output circuit and said input circuit, and frequency-discriminating means connected in said feedback circuit to provide a relatively decreased amount of feedback for a relative increase in the frequency of said signal.

2. A receiving apparatus as claimed in claim 1, in which said input circuit includes a second winding connected in series with said first-named winding, and in which said output circuit includes a parallel combination of a third winding and a capacitor, said third winding being electrically coupled with said second winding, and said parallel combination being tuned to a frequency which is lower than the lowest signal frequency to be received.

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