

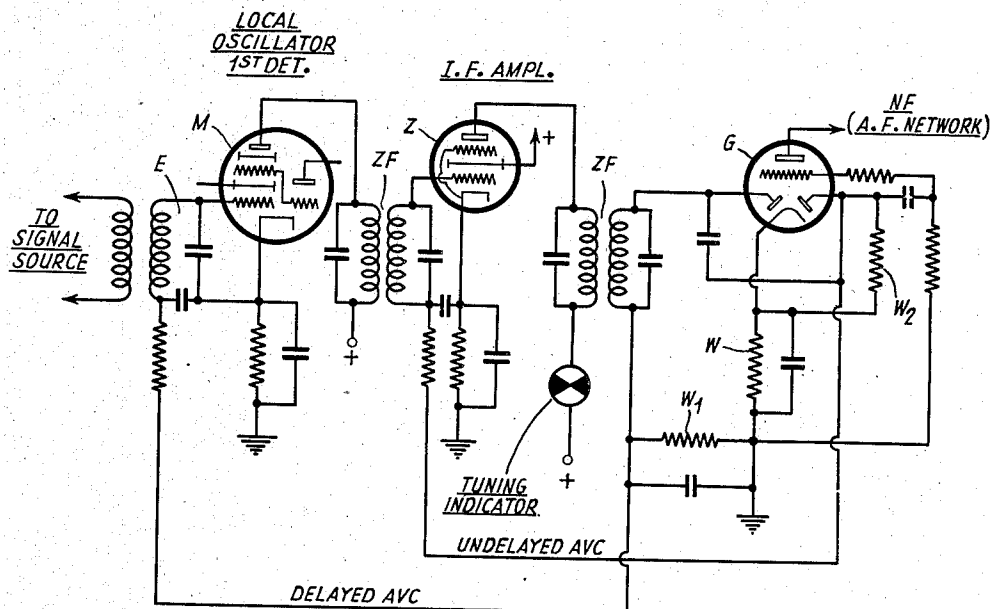
May 23, 1939.

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2,159,803

AUTOMATIC VOLUME CONTROL RECEIVER

Filed March 10, 1937



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2,159,803

AUTOMATIC VOLUME CONTROL RECEIVER

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Application March 10, 1937, Serial No. 130,082
In Germany March 12, 1936

1 Claim. (Cl. 250—20)

The use of means insuring a lag in the operation of volume control means offers the advantage that the maximum amplification of the receiver is not diminished. However, it involves the drawback that the tuning indicator is rendered operative only when the regulation, or compensation, of the fading, i. e., automatic volume control, becomes operative or is initiated. In other words, when feeble stations are received the tuning indicator, as a matter of fact, would not be necessary at all in that case seeing that the volume control means is inoperative, so that adjustment by ear is possible. However, it is highly desirable for the user, or operator, of the set to be in a position, also in the reception of feeble stations, to tell from the tuning indicator whether a desired station is being received or not, and to be enabled to adjust the tuning by reading the indicator to the proper value. In case silent tuning is desired the tuning indicator is absolutely necessary. In other words, there exists a certain conflicting situation which is to be eliminated by the ways and means disclosed in the present invention.

According to the invention, the tuning indicator is included in the plate circuit of a tube which is not subject to delayed gain regulation, and whose gain is less changed by the regulation than that of the other tubes in which a lag of regulation is occasioned.

The invention shall be explained in more detail by reference to the drawing wherein there is shown a superheterodyne receiver. In the mixer, or combined oscillator-first detector, tube M, the incoming, or signal, oscillation fed to the oscillation circuit E is changed into the intermediate frequency, and by way of the band-pass filters ZF and the I. F. amplifier tube Z the I. F. energy is fed to the second detector stage G. The left diode of tube G is negatively biased by the potential arising across resistance W so that across diode load resistance W₁, with small incoming amplitudes, no regulation will as yet be initiated. The right-hand diode sets up across the resistance W₂ a regulator potential even when the I. F. carrier amplitudes are small, and this gain regulation voltage is impressed upon the I. F. tube Z. The plate circuit of the latter contains

the tuning indicator, which, as will be noticed, is rendered operative also when feeble stations are coming in. The voltage across resistor W₁ is used to control the gain of the first detector tube.

The tube which is subject to undelayed regulation should be regulated but little in its gain in order that, when signals from feeble stations are collected by the set, the amplification of the receiver may be but inappreciably reduced. Otherwise, the lag in volume control provided in the other tubes would be illusory. In the instance here shown and discussed, weak regulation of the I. F. tube Z would be required because it is located directly ahead of the diode so that, in case a powerful transmitter is received, distortions due to overload will be avoided, an action that would not happen if the regulation is unduly great. Weak regulation may be insured either by the use of a tube whose characteristic rises slowly, or else by tapping only part of the gain regulation potential.

It would, also, be conceivable to include the tuning indicator in a weak input tube which is not subject to lag in regulation. However, this scheme is less favorable for the reason that it is desirable that a powerful regulator action should be brought upon the first tube. It would, also, be unfavorable to include the tuning indicator in the plate circuit of the mixer tube for the reason that the plate current of the same is a function of the amplitude of the oscillator wave which is subject to slight changes inside the wave band.

What is claimed is:

In a superheterodyne receiver of the type including a first detector tube, an intermediate frequency amplifier and an audio network, a rectifier coupled to the amplifier and providing direct current voltage, a gain control circuit impressing the direct voltage on the amplifier to reduce its gain as soon as signals are received, a second rectifier coupled to the amplifier to provide a second direct current voltage, means for delaying the rectification of the second rectifier, means for controlling the first detector gain with the second voltage, and a tuning indicator in the amplifier space current path.

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