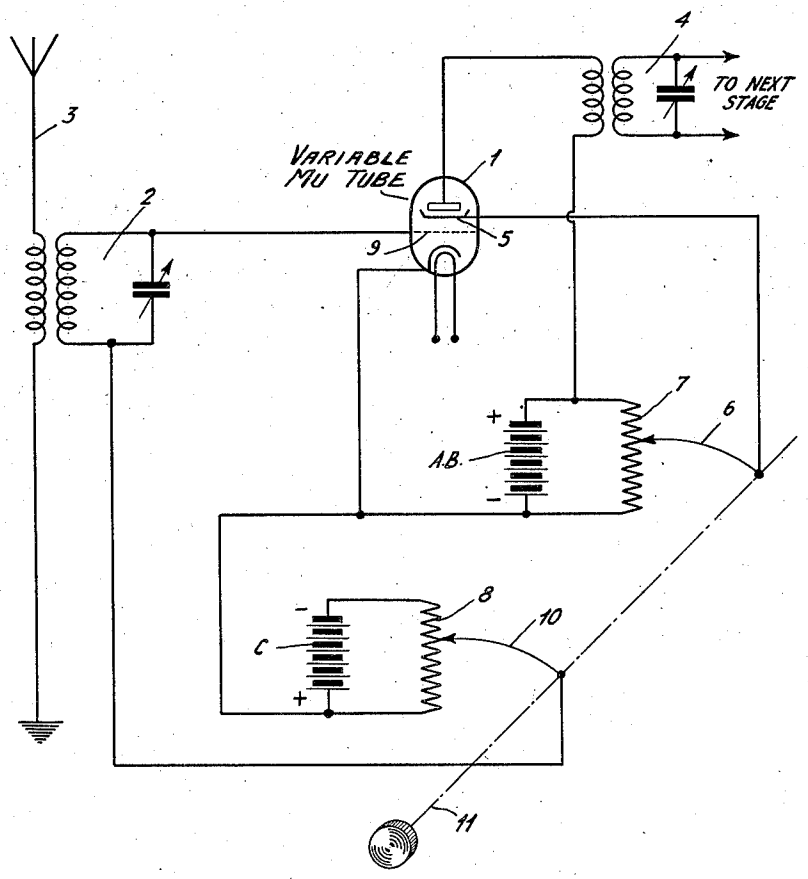
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AMPLIFIER GAIN CONTROL

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AMPLIFIER GAIN CONTROL

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2 Claims. (Cl. 179—171)

The present invention relates to a circuit arrangement comprising the use of screen-grid tubes with variable gain-reciprocal ($1:\mu$) for regulation of amplification.

Tubes have been disclosed in the prior art capable of a large range of modulation (variable-μ tubes) whose characteristic droops in a very gradual way with increase of the negative grid potential. Tubes of this kind are preferably designed in the form of screen-grid tubes, and they are used in radio frequency amplifiers in which, according to the grid biasing potential dependent on the magnitude of the incoming signal amplitude, the gain is capable of variation.

However, this entails one drawback in so far as according to the magnitude of the grid biasing potential the plate currents will turn out widely different. For instance, when receiving a powerful transmitter station, the grid biasing voltage will have to be chosen rather high because it will only be then that the characteristic will slope off and the amplification become smaller, and this is accompanied by the arising of small plate currents. If, on the contrary, in order to receive feeble transmitters requiring very marked amplification for proper reception, the tubes are operated at the steep portion of the characteristic, then as a result large plate currents will be involved.

In the single figure is shown an amplifier stage including a variable mu tube 1 having a tunable input circuit 2 coupled to a source of signals, as an antenna 3. The plate circuit of tube 1 is coupled to a succeeding tunable circuit 4 of a next stage of amplification, if desired. The source AB supplies the plate with positive potential. The screen 5 is connected through a variable tap 6 to a resistor 7 across the source AB. The source C supplies negative bias to the grid 9 of tube 1. The tap 10 connects the grid 9 to resistor 8 across source C. The uni-control device 11 controls taps 6, 10 so that with an increase of negative grid bias there is also secured an increase in screen grid voltage. The tube 1 may be designed in any one of the many ways shown by Ballantine and Snow in the I. R. E. for Dec. 1930. For instance, the screen grid 5 may be conical in shape. Also, the control 11 may be actuated by a galvanometer in the detector plate circuit to provide automatic volume control.

What is claimed is:—

1. A radio receiver including a screen grid amplifier tube of the variable mu type, means for impressing signals between the control grid and cathode of the tube, means for maintaining the control grid at a negative bias with respect to the cathode, means for applying a positive voltage to the screen grid of said tube, and means for simultaneously varying the potentials of said control grid and screen grid in increasingly negative and positive senses respectively.

2. In combination with a source of signal energy, a screen grid amplifier tube of the variable mu type, a tuned circuit connected between the control grid and cathode of the tube, means for varying the potential of said control grid over a relatively wide negative potential range, means for varying the potential of the screen grid of the tube over a positive potential range, and a common means for simultaneously adjusting both said varying means in increasingly negative and positive senses respectively.

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