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AUDIO COMPRESSOR CIRCUIT

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This invention relates in general to compressor circuits and in particular to a new and novel audio compressor. In electronics it is oftentimes desirable to control an output signal so that its amplitude is substantially constant in order to prevent fluctuations in amplitude which cause fading and blinding of the signal in a receiver or which cause a varying percentage of modulation in a transmitter.

Thus, it is an object of this invention to provide an audio compressor circuit which maintains an output signal at a substantially constant maximum amplitude even though the amplitude of the incoming signal varies.

Another object of this invention is to provide an improved compressor circuit wherein the input signal is connected to the screen grid of a tube rather than the control grid.

Yet another object of this invention is to provide an improved compressor circuit which utilizes the screen grid as an input grid and the control grid as a feedback grid.

A feature of this invention is found in the provision for an electron tube which has its screen grid connected to an incoming signal and its control grid coupled to the output signal with a direct current bias supplied thereby.

Further features, objects and advantages of the invention will become apparent from the following description and claim, when read in view of the drawings, in which:

Figure 1 is a schematic view of the compressor of this invention; and

Figure 2 illustrates the tube characteristics of the tube shown in Figure 1.

Figure 1 illustrates an input terminal designated as 10 which is connected to a condenser C1. The opposite side of the condenser C1 is connected to the screen grid 11 of a tube V1 and the cathode 13 is connected to the ground. The plate 14 is connected to a resistor R1 which has its opposite side connected to a suitable B plus voltage.

A second resistor R2 is connected between the screen grid 11 and the B plus voltage. A resistor R3 is connected between the plate and ground and a condenser C2 is connected between the plate and an output terminal 16.

An amplifier 17 is connected to the output terminal 16 and a rectifier 18 changes the amplified alternating signal to a direct current potential. The output of the rectifier 18 is connected to the control grid 19 of the tube V1 and to the suppressor grid 21.

The circuit shown in Figure 1 is capable of retaining the output voltage substantially constant because of the tube characteristic of tube V1 which might be a type 6BA6. It is to be particularly noted that the input signal is connected to the screen grid rather than the control grid. Because of the tube characteristic if the output of the rectifier 18, which is proportional to the output voltage, is correctly chosen, then the output voltage can be held substantially constant. This is seen in Figure 2 wherein the family of screen voltage curves are shown as generally curved lines and the dotted line 20 represents a constant output plate current. The base line is calibrated in control grid volts.

Thus, from the characteristic of the particular tube shown, it is seen that a slight variation in the control grid voltage will maintain a constant output plate current. For example, by varying the control grid voltage from zero to —6 volts, the screen grid voltage may vary from 25 to 150 volts. This gives a tremendous compression range.

For example, the characteristic shown in Figure 2 is for a tube type 6BA6 and the following characteristics of the compressor were noted:

- Frequency response: Flat to 200 kc.
- Maximum input signal (no compression): 1 volt.
- Gain at zero compression: 9.
- D.C. level shift at plate (maximum): 2 volts
- D.C. bias change for 10:1 ratio: 0 to —6.5 volts.

Thus, it is seen that this invention utilizes the normal screen grid as a control grid and the normal control grid as a suppressor grid.

Although this invention has been described with respect to a preferred embodiment thereof, it is not to be so limited as changes and modifications may be made therein which are within the full intended scope of the invention, as defined by the appended claim.

What is claimed is:

A compressor circuit comprising an input terminal, a pentode electron tube, the screen grid of said electron tube connected to said input terminal, a first resistor connected to the plate of said electron tube and to a B plus voltage, a second resistor connected between the plate and ground, a third resistor connected between the plate of said electron tube and ground, an amplifier connected to the plate of said electron tube, a rectifier connected to said amplifier, and the control and suppressor grids of said electron tube connected to the output of said rectifier.

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