

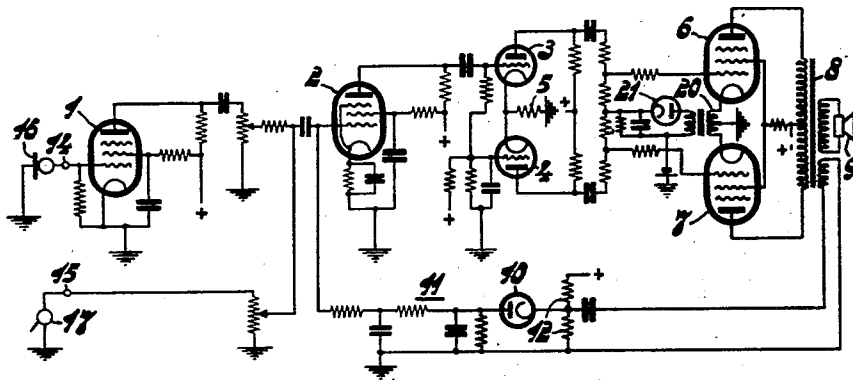
Sept. 3, 1957

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2,805,289

DOUBLE SIGNAL AMPLIFYING SYSTEM

Filed May 20, 1952



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DOUBLE SIGNAL AMPLIFYING SYSTEM

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Application May 20, 1952, Serial No. 288,808

Claims priority, application Germany June 15, 1951

2 Claims. (Cl. 179—171)

The invention relates to an amplifying circuit-arrangement for electrical oscillations, comprising a device for limiting the output.

According to the invention an amplifying circuit-arrangement comprising a device for limiting the output, is characterized by two input circuits, of which one, which, for example, may be connected to a microphone, has a considerably higher gain than the other, which, for example, may be connected to a phonograph pick-up. For the sake of technical clarity, one of these input circuits, e. g. the microphone input, will be called the dominant input circuit, and the other input circuit, e. g. the phonograph input, will be called the servient input circuit.

The combination of the measures in accordance with the invention renders it possible that, if during the reproduction of records the musical oscillations of the pick-up are amplified, the music reproduced is suppressed, owing to the limitation of the output, at that moment at which the microphone receives speech sounds.

In order that the invention may be more clearly understood and readily carried into effect, it will now be described more fully with reference by way of example to the accompanying drawing.

The circuit-arrangement shown comprises the cascade connection of a first amplifier tube 1, a second amplifier tube 2, phase-reversing tubes 3 and 4, in which the phase-reversing voltage of the directly controlled tube 4 is produced by means of a common cathode resistor 5 of the tubes 3 and 4, push-pull output tubes 6 and 7, an output transformer 8 and a loudspeaker 9. The amplifier comprises a device for the limitation of the output, which comprises a rectifier 10, having a smoothing filter 11, the output voltage of which is supplied to the grid of the discharge tube 2. If the output exceeds a threshold voltage produced by means of a potentiometer 12, a negative voltage is produced at the smoothing filter 11; this voltage causes a reduction of the amplification of the tube 2.

The amplifier is provided with two input terminals 14 and 15. The microphone 16 (the dominant input) is, for example, connected to the input terminals 14 and the phonograph pick-up 17 (the servient input) is, for example connected to the input circuit 15. Since the servient circuit 15 is connected directly to the input circuit of the discharge tube 2, whilst the dominant circuit 14 is connected to this input circuit through the discharge tube 1, the gain from terminal 15 to the output is considerably smaller than the gain from terminal 14 to the output.

The circuit-arrangement thus permits of considerably reducing or even suppressing the reproduction, if during the reproduction of music by means of the pick-up 17 speech sounds are received in the microphone, since the oscillations produced by the microphone 16, subsequent to amplification in the amplifying tube 1, exhibit such a high amplitude with respect to that of the electrical oscillations produced by the pick-up 17 that the oscillations supplied to the rectifier 10 correspond substantially

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completely with the dominant oscillations of the microphone; since, however, the output is kept constant by the limiting device 10, 11 the amplification of the servient oscillations of the pick-up are considerably reduced. Of course, as an alternative, for example the pick-up 17 may be replaced by a second microphone similar to 16, so that, if speech sounds are received in the first microphone, the second microphone is automatically put out of operation.

The class B-connected push-pull amplifying tubes 6, 7 are furthermore provided with a common cathode transformer 20, the output voltage of which, subsequent to rectification in the rectifier 21, adjusts the negative voltage of the tubes 6 and 7 in a manner such that the class B-connection of these tubes is maintained irrespective of voltage supply.

What I claim is:

1. A double signal amplifying system, comprising a constant signal source which provides a signal substantially constantly, an intermittent signal source which provides a signal intermittently, the average amplitude of said intermittent signal when it occurs being greater than the average amplitude of said constant signal, both of said signals having frequency ranges which substantially coincide and which lie in the audio frequency spectrum, a variable gain amplifier stage having an input circuit and an output circuit, means connecting both of said signal sources to said input circuit whereby both of said signals are amplified in said variable gain amplifier stage, gain control means connected to said output circuit to produce a gain control voltage having a value substantially proportional to the mean amplitude of the total amplified signals which appear at said output circuit, and means connected to apply said gain control voltage to said variable gain amplifier stage to cause the gain of said variable gain amplifier stage to be reduced when the mean amplitude of the total amplified signals tends to increase, the average amplitude of said intermittent signal when it occurs being sufficiently great so that said gain control means causes the gain of said amplifier to be reduced to an extent whereby said constant signal at said output circuit is substantially suppressed so that only said intermittent signal effectively exists at said output circuit.

2. A double signal amplifying system, comprising a music signal source which provides a music signal substantially constantly, a speech signal source which provides a speech signal intermittently, the average amplitude of said speech signal when it occurs being greater than the average amplitude of said music signal, both of said signals having frequency ranges which substantially coincide and which lie in the audio frequency spectrum, a variable gain amplifier stage having an input circuit and an output circuit, means connecting both of said signal sources to said input circuit whereby both of said signals are amplified in said variable gain amplifier stage, gain control means connected to said output circuit to produce a gain control voltage having a value substantially proportional to the mean amplitude of the total amplified signals which appear at said output circuit, and means connected to apply said gain control voltage to said variable gain amplifier stage to cause the gain of said variable gain amplifier stage to be reduced when the mean amplitude of the total amplified signals tends to increase, the average amplitude of said speech signal when it occurs being sufficiently great so that said gain control means causes the gain of said amplifier to be reduced to an extent whereby said music signal at said output circuit is substantially suppressed so that only said speech signal effectively exists at said output circuit.

(References on following page)

References Cited in the file of this patent

UNITED STATES PATENTS

1,859,565	Keith	May 24, 1932
2,008,082	Mueller	July 16, 1935
2,073,458	Silent	Mar. 9, 1937
2,075,861	Mueller	Apr. 6, 1937
2,144,995	Pulvari-Pulvermacher	Jan. 24, 1939

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2,173,222
2,245,340
2,248,783
2,256,512
2,296,626
2,333,081

Belar	Sept. 19, 1939
Harvey	June 10, 1941
Rinia et al.	July 8, 1941
Artzt	Sept. 23, 1941
Blumlein	Sept. 22, 1942
Beal	Nov. 2, 1942