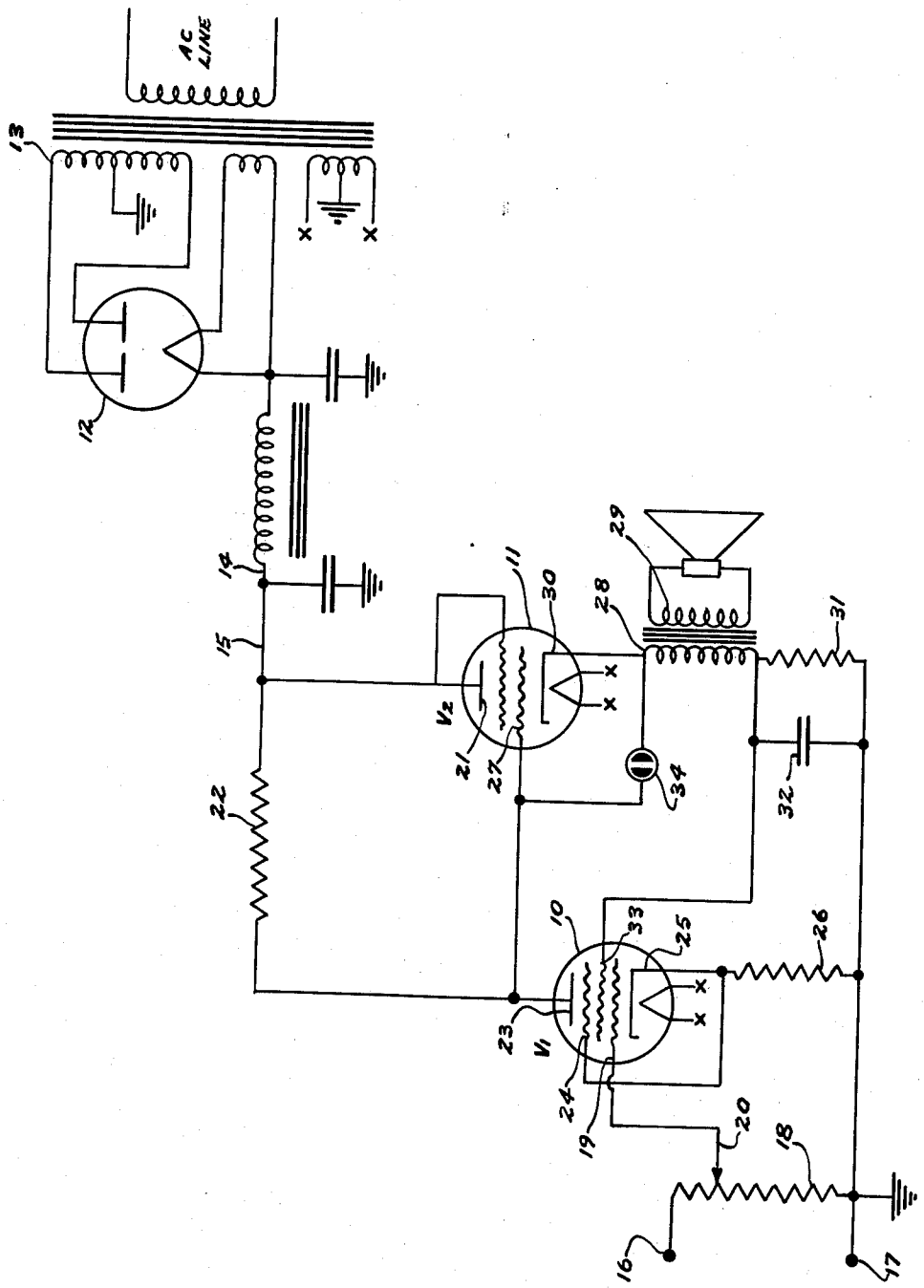
April 3, 1956 G. F. GENAUST 2,740,835

AUDIO AMPLIFIER

Filed March 9, 1955



INVENTOR.
GEORGE F. GENAUST
BY
Brocklock and Braddock
ATTORNEYS

United States Patent Office 2,740,835 Patented Apr. 3, 1956

2,740,835

AUDIO AMPLIFIER

George F. Genaust, Minneapolis, Minn.

Application March 9, 1955, Serial No. 493,131

2 Claims. (Cl. 179—171)

This invention has relation to audio amplifiers and concerns audio amplifiers capable of amplifying all frequencies and their harmonics encountered in speech, sounds and music without any apparent distortion.

In an amplifier made according to the present invention, the output is taken from a transformer, the primary of which is in the cathode circuit of the final stage of an amplifier. A screen grid of a vacuum tube of the previous stage is connected through this primary winding to the cathode of said final stage, a control grid of the final stage is tied directly to a plate of the preceding stage and a neon glow tube is connected between the cathode and the control grid in the final stage.

The figure of the drawing is a diagrammatic representation of an audio amplifier made according to the present invention.

Referring to the drawing and the numerals of reference thereon, an audio amplifier made according to the present invention includes a pentode **10**, such, for example, as the vacuum tube designated 6SU6; a tube **11** connected to operate as a triode such, for example, as the tube designated 6V6; and a duo-diode **12** such, for example, as the tube designated 5Y3. The duo-diode **12**, a power transformer **13**, and a filter **14** constitute the power supply and supply the B-plus voltage to the amplifier along a wire **15**. This part of the circuit forms no part of the present invention.

Audio input is fed to the circuit at terminals **16** and **17** from any suitable source (not shown). Terminal **17** is grounded and the two terminals **16** and **17** are connected across resistor **18**. A control grid **19** of the pentode **10** is connected through an adjustable slider **20** to the resistor **18**. Wire **15** is connected directly to a plate **21** of the triode **11** and through a resistor **22** to a plate **23** of the pentode **10**.

A suppressor grid **24** and a cathode **25** of the pentode **10** are connected to each other and through a resistor **26** to ground. A control grid **27** of the triode **11** is directly connected to the plate **23** of the pentode **10**. A primary winding **28** of an output transformer **29** is connected at one end to a cathode **30** of the triode **11** and at the other end to a resistor **31**. The other end of this resistor **31** is connected to ground and a condenser **32** is connected across this resistor. A screen grid **33** of the pentode **10** is connected to said primary winding **28** of said output transformer **29** at the point where the transformer winding is connected to the resistor **31**.

A neon glow tube **34** is connected between the control grid **27** of the triode **11** and the cathode **30** of said triode.

In operation, the first or input stage including the pentode **10** is used as a Class A voltage amplifier with plate and screen voltages equal. The second or output stage including the triode **12** operates as a Class A power amplifier. This stage offers a very high impedance to the input from the first stage and, therefore, has negligible loading effect on that stage. In this way, practically the entire voltage gain of the input stage is effectively utilized. The output transformer **29**, in the cathode circuit of the triode **11** has a very low impedance and therefore there is practically no loss in power transfer in said transformer.

Screen grid **33** of the pentode **10**, through its connection to primary winding **28** of output transformer **29**, through the cathode **30** and the plate **21** of the triode **11** is maintained at the same voltage as is the plate **23** of the pentode. Any variations in the supply voltage from the power supply are reflected back through the triode **11** and the primary winding **28** of the output transformer **29** to the screen grid **33** to keep this grid at the same potential as that of the plate **23** of the same tube. The amplified signal is also fed back to the screen grid **33** of the pentode. This results in an output to the output transformer which has no audible hum or ripple from the power supply to mix with or modulate the amplified speech or music.

The neon glow tube **34**, connected between the control grid **27** and the cathode **30** of the triode **11** serves to prevent arcing between said cathode and control grid until the triode warms up sufficiently to start conducting.

What is claimed is:

1. An audio amplifier including a power supply, a first electronic tube having a first plate, a first cathode, a first control grid and a screen grid, a second electronic tube having a second plate, a second cathode and a second control grid, first, second and third resistors, an electrical connection between said power supply and said second plate, an electrical connection including said first resistor between said power supply and said first plate, an electrical cconnection between said first plate and said second control grid, first and second input terminals, an electrical connection between said first input terminal and said first control grid, an output transformer, an electrical connection between said second cathode and a first end of one coil of said output transformer, an electrical connection between a second end of said coil of said transformer and the first end of said second resistor and said screen grid, an electrical connection between said first cathode and a first end of said third resistor, a capacitor connected across said second resistor, and a common electrical connection between said power supply, said second input terminal, a second end of said second resistor and a second end of said third resistor.

2. The combination as specified in claim 1 and a glow discharge tube connected between said second control grid and said second cathode.

No references cited.