Claims

1. A grounding structure of a vacuum tube audio amplifier, the vacuum tube audio amplifier being used for providing an output signal according to an input signal and comprising a power circuit to supply power to a vacuum tube amplifying circuit and an audio output transforming circuit, the vacuum tube amplifying circuit amplifying the input signal and transmitting it to the audio output transforming circuit, the audio output transforming circuit providing the output signal to a loudspeaker, the grounding structure for the vacuum tube audio amplifier being characterized in that:

the vacuum tube audio amplifier uses a negative output terminal of the audio output transforming circuit or a negative terminal of a filter capacitor in the power circuit as a single ground terminal, wherein all grounding junctions in the vacuum tube audio amplifier are coupled to the single ground terminal;

the single ground terminal is coupled to a ground terminal of a circuit board and not coupled to a grounding metal bottom plate; and

through a filament voltage regulator circuit, supplying power to a filament of a vacuum tube in the vacuum tube amplifying circuit.

2. The grounding structure of the vacuum tube audio amplifier of Claim 1, wherein the power circuit does not have a choke and is utilized to supply power to the vacuum tube amplifying circuit through an anti-coupling circuit.

3. The grounding structure of the vacuum tube audio amplifier of Claim 2, wherein a positive terminal of the filter capacitor is coupled to a positive

terminal of an output voltage of the power circuit, and an inductance value of the filter capacitor is greater than 100 uF.

4. The grounding structure of the vacuum tube audio amplifier of Claim 3, wherein the power circuit includes: a terminal of a first resistor, a terminal of a second resistor, and a terminal of a first capacitor being coupled to a positive output terminal of a first rectifier; the other terminal of the second resistor, the positive terminal of the filter capacitor, and a terminal of a third resistor being coupled to the positive terminal of the output voltage; the other terminal of the third resistor being coupled to a terminal of a second capacitor and a terminal of a fourth resistor; and the other terminal of the first resistor, the fourth resistor, the first capacitor, and the second capacitor, the negative terminal of the filter capacitor, and a negative output terminal of the first rectifier being coupled to the single ground terminal.

5. The grounding structure of the vacuum tube audio amplifier of Claim 2, wherein the power circuit supplies power to a first vacuum tube of a first amplifier stage in the vacuum tube amplifying circuit through the anti-coupling circuit.

6. The grounding structure of the vacuum tube audio amplifier of Claim 5, wherein the anti-coupling circuit includes: an output terminal of the power circuit being coupled to a terminal of a fifth resistor; the other terminal of the fifth resistor being coupled to a terminal of a third capacitor; the other terminal of the third capacitor being coupled to the single ground terminal; and a terminal of the fifth resistor being coupled to a plate of the first vacuum tube through at least one resistor.

7. The grounding structure of the vacuum tube audio amplifier of Claim 2, wherein the filament voltage regulator circuit includes: a positive terminal of a second rectifier being coupled to a terminal of a fourth capacitor, a terminal of a fifth capacitor and an input terminal of a voltage regulator circuit; an output terminal of the voltage regulator circuit being coupled to a terminal of a sixth capacitor and a terminal of a seventh capacitor; and the other terminals of the fourth, sixth, fifth and seventh capacitors, and a ground terminal of the voltage regulator circuit being coupled to the single ground terminal.

8. The grounding structure of the vacuum tube audio amplifier of Claim 7, wherein the voltage regulator circuit may be an LM7806 voltage regulator integrated circuit.

9. The grounding structure of the vacuum tube audio amplifier of Claim 7, wherein the voltage regulator circuit may be a low dropout regulator (LDO).

10. A grounding method of a vacuum tube audio amplifier, the vacuum tube audio amplifier being used to provide an output signal according to an input signal and comprising a power circuit for supplying power to a vacuum tube amplifying circuit and an audio output transforming circuit, the vacuum tube amplifying circuit amplifying the input signal and transmitting it to the audio output transforming circuit, the audio output transforming circuit providing the output signal to a loudspeaker, the grounding method including:

using a negative output terminal of the audio output transforming circuit or a negative terminal of a filter capacitor in the power circuit as a single ground terminal of the vacuum tube audio amplifier; and wherein all

ground junctions of the vacuum tube audio amplifier are coupled to the single ground terminal;

coupling the single ground terminal to a ground terminal of a circuit board and not coupling the single ground terminal to a grounding metal bottom plate; and

configuring a filament voltage regulator circuit for supplying power to a filament of a vacuum tube in the vacuum tube amplifying circuit.

11. The grounding method of the vacuum tube audio amplifier of Claim 10, wherein the power circuit does not have a choke and is used to supply power to the vacuum tube amplifying circuit through an anti-coupling circuit.

12. The grounding method of the vacuum tube audio amplifier of Claim 11, wherein a positive terminal of the filter capacitor is coupled to a positive terminal of an output voltage of the power circuit, and an inductance value thereof is greater than 100 uF.

13. The grounding method of the vacuum tube audio amplifier of Claim 12, comprising configuring the power circuit to include: a terminal of a first resistor, a terminal of a second resistor, and a terminal of a first capacitor being coupled to a positive output terminal of a first rectifier; the other terminal of the second resistor, the positive terminal of the filter capacitor and a terminal of a third resistor being coupled to the positive terminal of the output voltage; the other terminal of the third resistor being coupled to a terminal of a second capacitor and a terminal of a fourth resistor; and the other terminals of the first resistor, the fourth resistor, the first capacitor, and the second capacitor, the negative terminal of the filter capacitor, and

a negative output terminal of the first rectifier being coupled to the single ground terminal.

14. The grounding method of the vacuum tube audio amplifier of Claim 11, comprising configuring the power circuit to supply power through the anti-coupling circuit to a first vacuum tube in a first amplifier stage of the vacuum tube amplifying circuit.

15. The grounding method of the vacuum tube audio amplifier of Claim 14, comprising configuring the anti-coupling circuit to include: an output terminal of the power circuit being coupled to a terminal of a fifth resistor; the other terminal of the fifth resistor being coupled to a terminal of a third capacitor; the other terminal of the third capacitor being coupled to the single ground terminal; and a terminal of the fifth resistor being coupled to a plate of the first vacuum tube through at least one resistor.

16. The grounding method of the vacuum tube audio amplifier of Claim 11, comprising configuring the filament voltage regulator circuit to include: a positive terminal of a second rectifier being coupled to a terminal of a fourth capacitor, a terminal of a fifth capacitor, and an input terminal of a voltage regulator circuit; an output terminal of the voltage regulator circuit being coupled to a terminal of a sixth capacitor and a terminal of a seventh capacitor; and the other terminals of the fourth, sixth, fifth and seventh capacitors, and a ground terminal of the voltage regulator circuit being coupled to the single ground terminal.