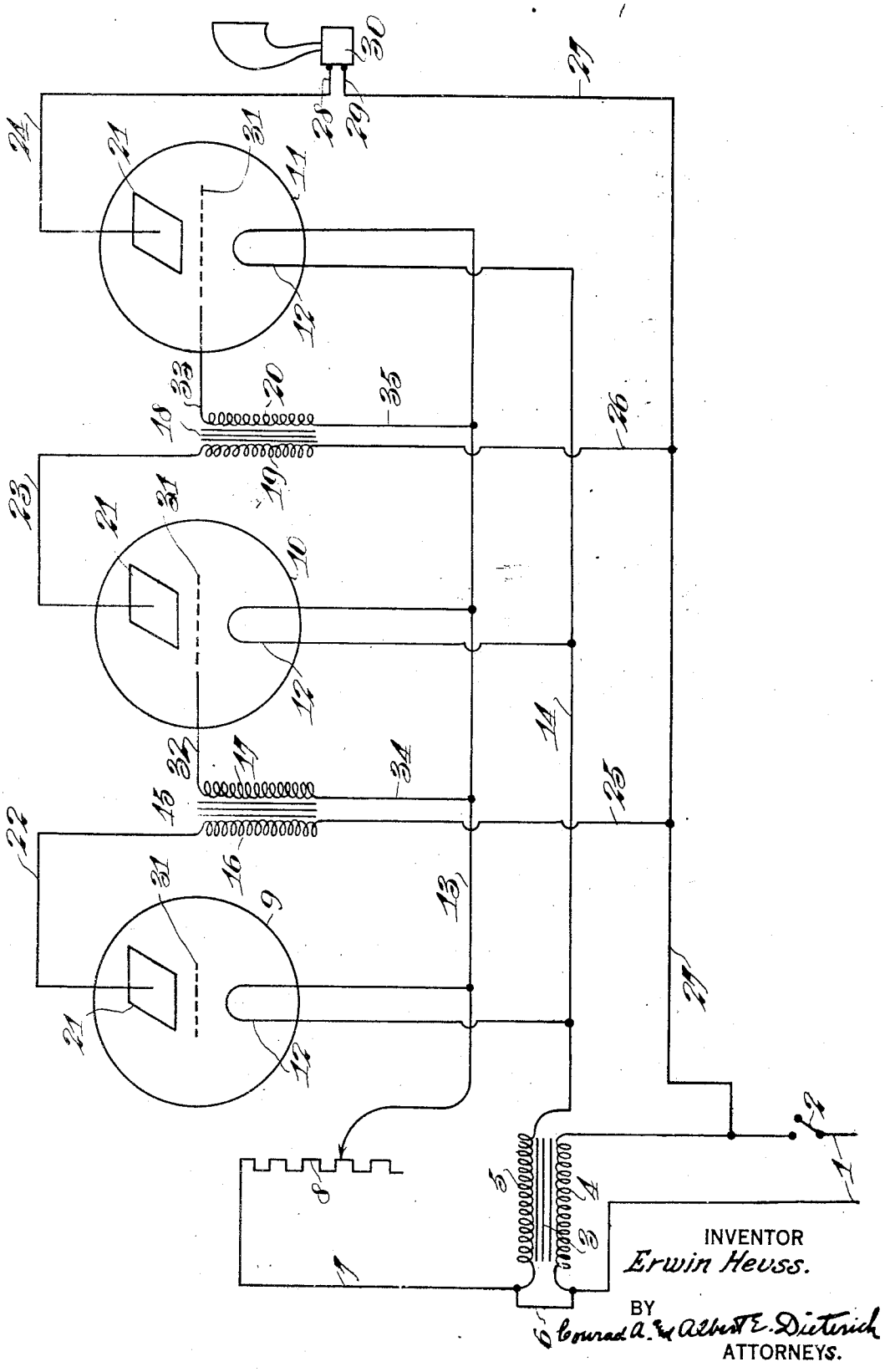
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THEATRICAL APPLIANCE

Filed July 18, 1927



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UNITED STATES PATENT OFFICE.

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THEATRICAL APPLIANCE.

Application filed July 18, 1927. Serial No. 206,730.

My invention relates to a means for use in the theatre to imitate sounds, and the same particularly has for its object to provide a simple, effective and reliable means for imitating the sound of an aeroplane in flight.

Further, said invention has for an object to provide, what I term, an aeroplane buzzer, to operate on alternating current circuits of from 40 to 200 volts potential.

Further, it is an object of my invention to provide an electrically operated apparatus using radio tubes, transformers, and circuit arrangements, which eliminates the necessity for batteries either for filament energization or plate and grid voltages.

Further, it is an object of said invention to provide a means utilizing a loud speaker or loud speakers to distribute the sound where most effective for the purpose of my invention, and to provide a simple rheostat control of filament current to vary the intensity of the sound produced.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends, my invention consists in the novel details of construction and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawing the figure is a diagrammatic view illustrating my invention.

In the drawing in which like numerals of reference indicate like parts in all the figures, 1 represents the feed wires of an ordinary alternating current circuit such as is usually found in the equipment of theatres. Connection to the wires 1 may be made through the usual socket and plug connections (not shown in the drawing). Connected across the terminals of the circuit 1 is a step-down transformer 3 designed to reduce the output voltage to six volts, and in at least one of the feed wires 1 there is placed a cutout switch 2.

The step-down transformer 3 has its primary coil 4 in circuit with the wires 1 and its secondary coil 5 in circuit with the filaments of the several radio tubes and the controlling rheostat therefor.

One end of each of the coils 4 and 5 is connected together as indicated at 6.

From the connected end of the coil 5 a wire 7 leads to a rheostat 8, and from the other end of the coil 5 a wire 14 leads to one end of each of the filaments 12 of the respective radio tubes 9, 10 and 11, the other ends of each of the filaments connect by wire 13 to the rheostat 8.

15 and 18 indicate audio transformers, the primary coil 16 of the transformer 15 being connected, as at 22, with the plate 21 of the radio tube 9 and also being connected, as at 25, to the wire 27 which has one end connected to the circuit wire 1 between the switch 2 and the coil 4, and which has its other end connected to the terminal 29 to which one of the terminals of the loud speaker 30 is connected.

The transformer 18 has its primary coil 19 connected at 23 with the plate 21 of the radio tube 10 and also at 26 with the wire 27.

The plate 21 of the radio tube 11 is connected at 24 to the terminal 28 to which the loud speaker is also connected.

The secondary coil 17 of the transformer 15 is connected at 32 with the grid 31 of the radio tube 10 and at 34 with the wire 13.

Likewise the secondary coil 20 of the transformer 18 is connected at 33 to the grid 31 of the radio tube 11 and at 35 to the wire 13. The grid 31 of the first tube 9 is not used, said tube 9 constituting in effect a two electrode rectifier or detector.

In operation, current flowing through the circuit 1 at relatively high voltage, upon closing the switch 2, will produce a low voltage current in the secondary coil 5 and cause the filament circuit to heat up the several filaments 12. From the first tube 9 on, the circuits are similar to the ordinary amplifying circuits. Assume that the current in the circuit 1 is of sixty cycles, the potential of the plates alternates sixty times positive and negative. Every time the plate potential becomes positive (in this illustration thirty times per second) the tubes start to work. The electrons passing in the usual way between filament and plate results in an impulse of current in the first tube 9 which is in turn amplified through tubes 10 and 11 and transmitted to the loud speaker 30. It should be understood that as many loud speakers 30 may be employed as desired, and they may be located at different places in the auditorium as found desirable so as to carry the sound to all points in the auditorium.

By manipulating the rheostat 8 to regulate the generated current the circuit is thereby controlled. The operator soon acquires

sufficient skill in the manipulation of the rheostat to simulate the sound of a flying aeroplane approaching and retreating as may be desired.

Having thus described my said invention, what I claim and desire to secure by Letters Patent is:

1. In theatrical appliances for producing sound, the combination with a high voltage alternating current circuit, a step-down transformer whose primary coil is located in said circuit, of a detector tube, amplifying tubes, audio transformers and a loud speaker, the filaments of said tubes being connected in circuit with the secondary coil of said step-down transformer, and means for energizing the plate circuits from the alternating current circuit plate and grid circuits, the secondaries of said audio transformers being connected in the grid circuits and said loud speaker being connected in the plate circuit of the last tube, the primaries of the audio transformers being connected in the plate circuits of the preceding tubes.

2. In theatrical appliances for producing sound, the combination with a high voltage alternating current circuit, a step-down transformer whose primary coil is located in said circuit, of a detector tube, amplifying tubes, audio transformers and a loud speaker, the filaments of said tubes being connected in circuit with the secondary coil of said step-down transformer, the plates of said tubes being connected with one of the wires of said alternating current circuit, the plate of the last tube also being connected in circuit with said loud speaker.

3. In theatrical appliances for producing sound, the combination with an alternating current circuit, a step-down transformer whose primary coil is located in the said circuit, a detector tube whose filament is connected in circuit with the secondary coil of said transformer, audio amplifying circuits including radio tubes and amplifying audio transformers, the filament circuits of all said amplifying tubes including the secondary coil of said step-down transformer, a rheostat in circuit with said secondary coil of said step-down transformer for controlling the filament current, the plate circuits of said tubes being connected to one side of the primary coil of said step-down transformer, the other side of said primary coil being connected to one side of the secondary coil of said step-down transformer, and a loud speaker unit connected in the plate circuit of the last tube.

4. In theatrical appliances for producing sound, the combination with an alternating current circuit, a step-down transformer whose primary coil is located in the said circuit, a detector tube whose filament is connected in circuit with the secondary coil of said transformer, audio amplifying circuits includng radio tubes and amplifying audio transformers, the filament circuits of all said amplifying tubes including the secondary coil of said step-down transformer, a rheostat in circuit with said secondary coil of said step-down transformer for controlling the filament current, the plate circuits of said tubes being connected to one side of the primary coil of said step-down transformer, the other side of said primary coil being connected to one side of the secondary coil of said step-down transformer, a loud speaker unit connected in the plate circuit of the last tube, and a switch in said alternating current circuit for the purposes specified.

5. A theatrical appliance for producing sound simulating that of an aeroplane in flight, which appliance comprises in combination with an alternating current circuit of relatively high voltage, a step-down transformer whose primary coil is in said circuit, a radio tube whose filament is connected in circuit with the secondary coil of said step-down transformer, a controlled rheostat in the filament circuit, a connection between the plate of said tube and one side of said alternating current circuit, a connection between the other side of said alternating current circuit and said secondary coil, and means for rendering audible the waves generated in the plate circuit of said tube.

6. A theatrical appliance for producing sound simulating that of an aeroplane in flight, which appliance comprises in combination with an alternating current circuit of relatively high voltage, a step-down transformer whose primary coil is in said circuit, a radio tube whose filament is connected in circuit with the secondary coil of said step-down transformer, a controlled rheostat in the filament circuit, a connection between the plate of said tube and one side of said alternating current circuit, a connection between the other side of said alternating current circuit and said secondary coil, and means for amplifying and rendering audible the waves generated in the plate circuit of said tube.

7. A theatrical appliance for producing sound simulating that of an aeroplane in flight, which appliance comprises in combination with an alternating current circuit of relatively high voltage, a step-down transformer whose primary coil is in said circuit, a radio tube whose filament is connected in circuit with the secondary coil of said step-down transformer, a controlled rheostat in the filament circuit, a connection between the plate of said tube and one side of said alternating current circuit, a connection between the other side of said alternating current circuit and said secondary coil, means for rendering audible the waves generated in the plate circuit of said tube, said means

comprising amplifying circuits including audio transformers and amplifying tubes, the filaments of which tubes are connected in circuit with the secondary coil of said step-down transformer and with said rheostat, and the plates of said amplifying tubes being connected to one side of said alternating current circuit, and the grids of said amplifying tubes being connected via the secondary coils of said audio transformers with one of the connections between the filaments of said amplifying tubes and the secondary coil of said step-down transformer, and a loud speaker in circuit with the last tube's plate.

Signed at the city of New York, borough of Manhattan, in the county and State of New York, this eleventh day of July, one thousand nine hundred and twenty-seven.

ERWIN HEUSS.