

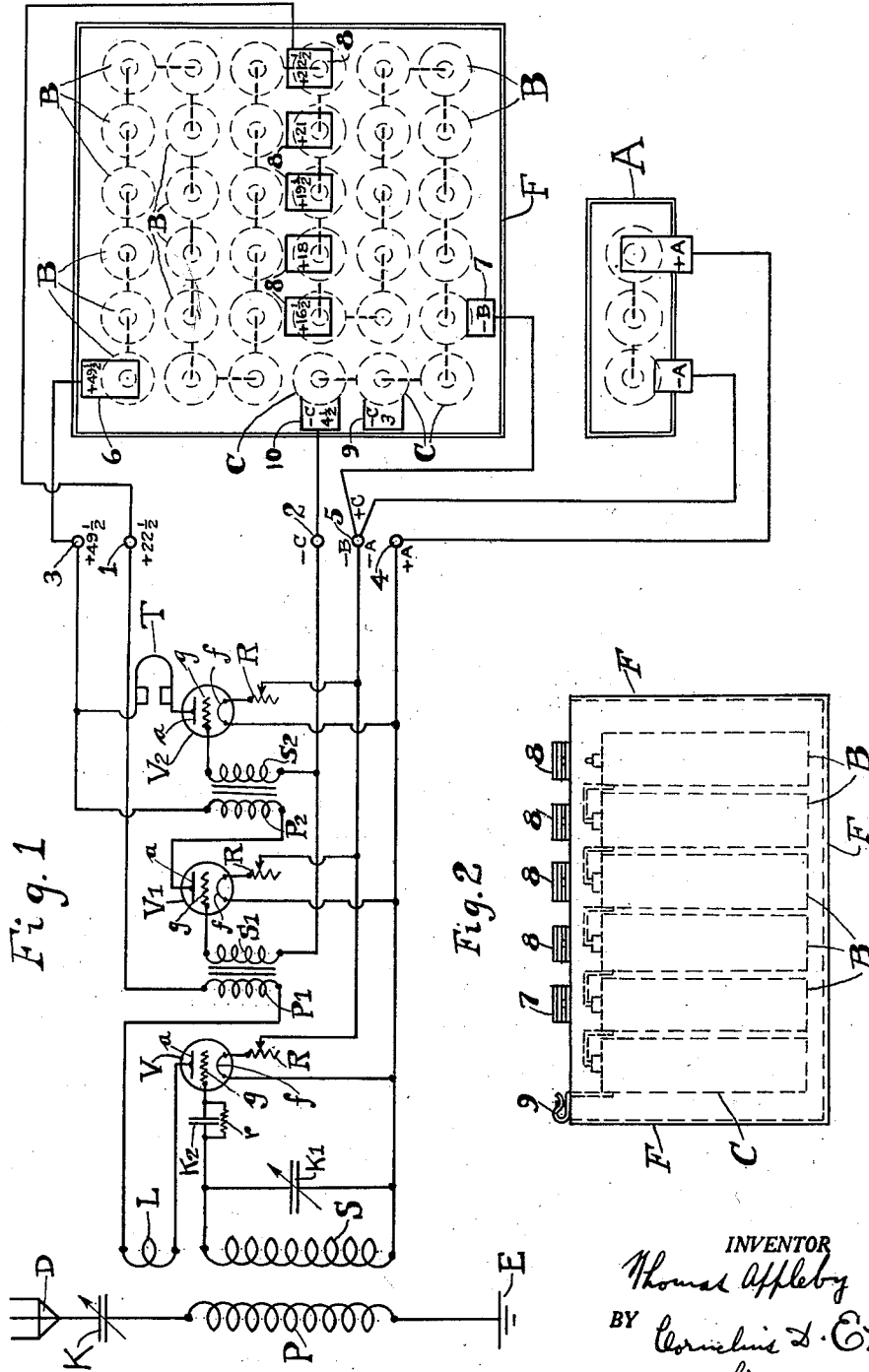
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BATTERY

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UNITED STATES PATENT OFFICE.

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BATTERY.

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To all whom it may concern:

Be it known that I, THOMAS APPLEBY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Batteries, of which the following is a specification.

My invention relates to batteries utilized in connection with thermionic devices or vacuum tubes, such as audions, as used in the radio art and in kindred relations.

In accordance with my invention, I provide in a single unit both B and C batteries, utilized, respectively, for furnishing the current for the plate or anode circuit and for biasing the grid or control electrode of a vacuum tube of the audion type.

In accordance with my invention, there is formed in a single unit a series of cells constituting the B battery, and in addition a suitable number of cells in series with each other, and in series with the B battery cells and serving as the C battery, suitable terminals being provided for properly connecting the batteries in circuit, and more particularly, for connecting them properly in circuit with a minimum of leads or connecting conductors from the battery unit to the vacuum tube apparatus.

My invention resides in a battery and apparatus of the character hereinafter described and claimed.

For an illustration of one of the forms my invention may take, reference may be had to the accompanying drawing, in which:

Fig. 1 is in part a diagrammatic view of a radio receiving system and in part a top plan view of a combined B and C battery unit.

Fig. 2 is a side elevational view of the battery unit shown in Fig. 1.

Referring to the drawing, D is an antenna or other suitable structure for absorbing the electro-radiant energy from the natural media. Between it and the earth or counterpoise capacity E are connected the variable condenser K and the primary P of an oscillation transformer. Inductively related to the primary P is the secondary S, shunt-

ed by the tuning condenser K¹, in the input or grid circuit of the vacuum tube V, serving as a detector, and comprising the anode a, grid g and filament or cathode f. In series with the grid is the usual grid condenser K², shunted by the leak resistance r.

In the anode circuit of the tube V is the primary P¹, of an audio frequency transformer, and the tickler or regenerative coil L, one terminal of the primary P¹ being connected to the binding post or terminal 1 of the instrument or set. The secondary S¹ of the audio frequency transformer is connected, on the one hand, to the grid g of the second vacuum tube V¹, utilized as an audio frequency amplifier, and, on the other hand, to the terminal or binding post 2 of the instrument or set. Similarly, in the anode circuit of the tube V¹ is the primary P² of an audio frequency transformer, whose terminal is connected to the binding post 3 of the instrument or set. The secondary S² is connected, on the one hand, to the grid g of the second audio frequency amplifier tube V², and, on the other hand, to the aforesaid binding post 2. In the anode circuit of the tube V² is the telephone or loud speaker T, whose one terminal is connected to the aforesaid binding post or terminal 3.

A is a storage battery or other suitable source of current for rendering the filaments or cathodes f incandescent. Its positive terminal is connected to the binding post 4 of the instrument or set, with which is connected one terminal of each of the filaments f, whose other terminals are connected through the filament rheostats R with the binding post 5 of the instrument or set connected with the negative terminal of the battery A.

In a suitable container F, of sheet metal or other suitable material, is disposed a series of dry cells B, in the example illustrated thirty-three in number, yielding about 49½ volts, the positive terminal of the B battery series indicated at 6 being connected to the aforesaid terminal 3 and thereby connected to the anode circuits of the audio frequency amplifiers V¹ and V².

The negative terminal of the B battery series is indicated at 7, and the same is connected to the aforesaid post 5, to which is also connected the negative terminal of the battery A. Intermediate the end cells of the battery B, several of the cells, five in the example illustrated, are provided with the terminals 8 serving for connection with the binding post 1 to impress upon the anode circuit of the detector tube V a lesser B battery voltage, as, for example, of the order of 22½ volts, the additional terminals 8 serving to procure suitable lesser voltages.

Associated with the B battery cells in the container F are the C battery cells, indicated at C, of any suitable number. In the example illustrated, there are three connected in series with each other and forming with the B battery cells a rectangle completely filled with cells. The positive terminal of the series of C battery cells is at the aforesaid terminal 7, which is the negative terminal of the B battery series. The second and third C battery cells are provided, respectively, with terminals 9 and 10, either of which is connected to the aforesaid negative C battery binding post 2, whereby a negative voltage of about 3 or about 4½ volts is impressed upon the grids *g* of the two audio frequency amplifier tubes V¹ and V².

By the arrangement described, both the anode circuit battery cells B and the grid biasing battery cells C are assembled as a single unit, and, as indicated, and preferably, are all connected in series with each other and suitable terminals provided for effecting both different voltages for anode circuit purposes and for providing different voltages for grid biasing purposes. Furthermore, by the battery structure shown and described, there is employed a minimum of connecting wires or conductors for connecting with the set or instrument, which, as shown, requires but three binding posts, those numbered 2, 4 and 5, for the A and C battery connections, and the negative B battery connection.

The B and C battery cells are suitably spaced and insulated from each other within the container F, and filling or packing material is disposed between the cells and the container F for holding them rigidly with respect to each other in a unitary construction.

What I claim is:

1. A B and C battery unit for the purposes described, comprising a series of B battery cells and a C battery cell assembled in a single portable unit.

2. A B and C battery unit for the purposes described, comprising a series of B battery cells and a C battery cell assembled in a single portable unit, the C battery cell being connected in series with the B battery

cells, and a common terminal on the exterior of the unit connecting with one terminal of the C battery cell and one terminal of a B battery cell.

3. A B and C battery unit for the purposes described, comprising a series of B battery cells and a C battery cell assembled in a single portable unit, and a terminal on the exterior of the unit connected with the negative terminal of the B battery and with the positive terminal of said C battery cell.

4. A B and C battery unit for the purposes described, comprising a series of B battery cells and a series of C battery cells assembled in a single portable unit.

5. A B and C battery unit for the purposes described, comprising a series of B battery cells and a series of C battery cells assembled in a single portable unit, the number of B and C battery cells being such that they form in assembly a complete rectangle.

6. A B and C battery unit for the purposes described, comprising a series of B battery cells and a series of C battery cells assembled in a single portable unit, the B battery cells being disposed in rows having different numbers of cells, and the C battery cells completing the row or rows of B battery cells having the lesser number of B battery cells.

7. A B and C battery unit for the purposes described, comprising a series of B battery cells and a series of C battery cells assembled in a single portable unit, the B battery cells connected in series with each other and with the C battery cells, and a common terminal on the exterior of the unit connecting with a terminal of an end cell of the B battery series and with a terminal of an end cell of the C battery series.

8. A B and C battery unit for the purposes described, comprising a series of B battery cells and a series of C battery cells assembled in a single portable unit, the B battery cells connected in series with each other and with the C battery cells, and a common terminal on the exterior of the unit connecting with the negative terminal of the B battery series and the positive terminal of the C battery series.

9. A B and C battery unit for the purposes described, comprising a series of B battery cells and a series of C battery cells assembled in a single portable unit, the B battery cells connected in series with each other and with the C battery cells, a common terminal on the exterior of the unit connecting with the negative terminal of the B battery series and the positive terminal of the C battery series, and a terminal on the exterior of the unit connecting with the negative terminal of a different cell of the C battery series.

10. A B and C battery unit for the purposes described, comprising a series of B battery cells and a series of C battery cells assembled in a single portable unit, the B battery cells connected in series with each other and with the C battery cells, and a common terminal on the exterior of the unit connecting with a terminal of an end cell of the B battery series and with a terminal of an end cell of the C battery series.

poses described, comprising a series of B battery series and the positive terminal of battery cells and a series of C battery cells the C battery series, and a plurality of terminals on the exterior of said unit connecting, respectively, with the negative terminals of cells of the C battery series. 10

5 other and with the C battery cells, a common terminal on the exterior of the unit connecting with the negative terminal of the B

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