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1,659,542

H. C. THOMPSON

SHIELDING SYSTEM

Filed Feb. 9, 1927

Fig. 1.

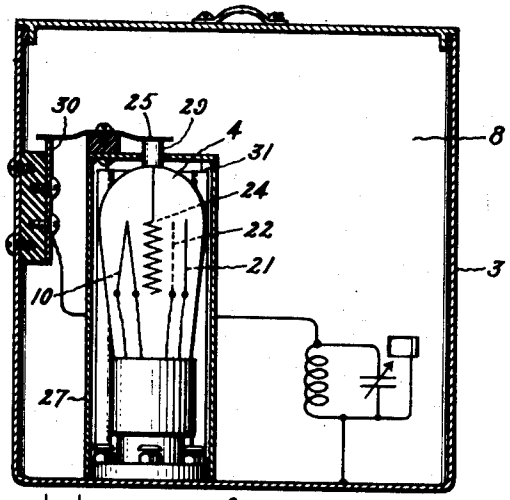


Fig. 2.

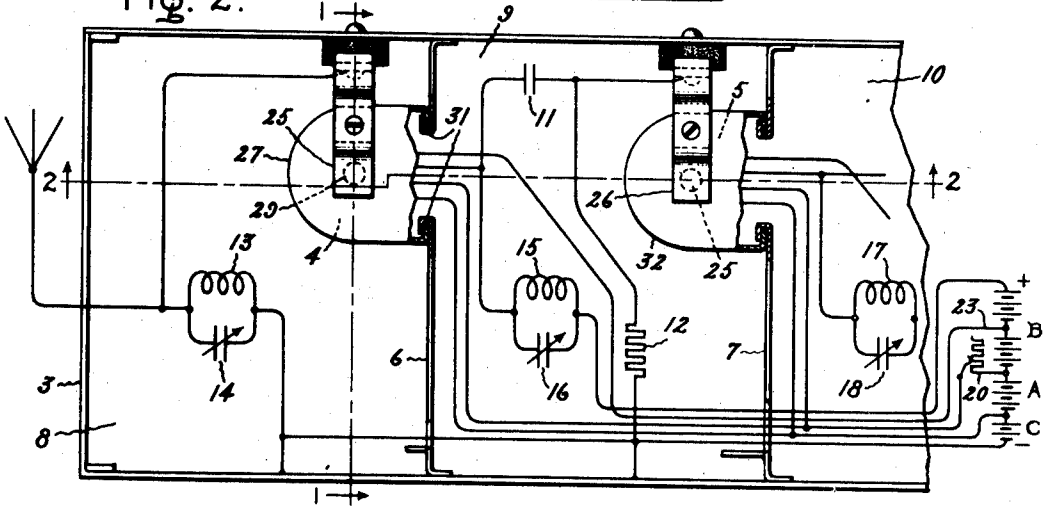
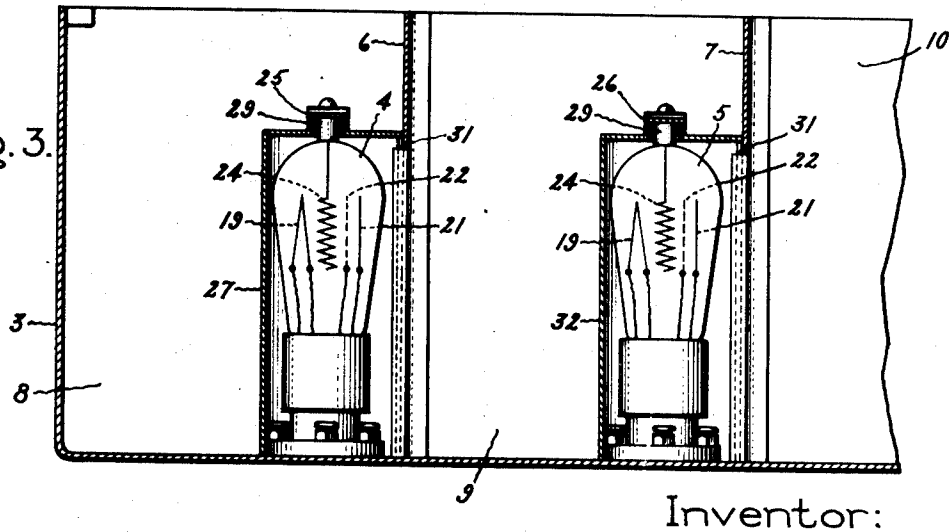


Fig. 3.



Inventor:
Harry C. Thompson,
by Alexander S. Lamb
His Attorney.

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UNITED STATES PATENT OFFICE.

HARRY C. THOMPSON, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SHIELDING SYSTEM.

Application filed February 9, 1927. Serial No. 167,020.

My invention relates to means for neutralizing the electrical coupling which tends to exist between the input and output circuits of a space discharge device, and has for its principal object the provision of an improved shielding apparatus whereby both internal and external feed-back between the input and output circuits of such a device are prevented. A further object is the provision of an improved arrangement for completing the connections of a space discharge device comprising a screen grid arranged to neutralize the capacity coupling between its anode and control grid.

It is known that internal feed-back between the input and output circuits of a space discharge device may be largely avoided by means of an extra grid which is commonly known as a screen grid, is maintained at a constant potential with respect to ground and is arranged to neutralize the capacity coupling between the anode and control grid of the device. This extra grid, however, is ineffective to neutralize the electrical coupling between the input and output circuit connections through which the currents of the device are transmitted. In order to reduce the coupling which tends to exist between these connections, the control grid lead is preferably taken out at one end of the device and the remaining leads are taken out at the other end of the device. With this structure, the problem of installing or replacing the space discharge device and making electrical connections thereto is somewhat more complicated than in the case of a device in which the leads are all taken out at one end.

In accordance with my invention, external feed-back between the input and output circuits of the device is avoided by the provision of an improved apparatus for shielding the device circuits from one another, and the making of the connections to the device is simplified by the provision of a contact member attached to a movable part of the shielding apparatus.

My invention will be better understood from the following description when considered in connection with the accompanying drawing and its scope will be pointed out in the appended claims.

Referring to the drawings, Fig. 2 illustrates an apparatus wherein my invention has been embodied, the cover of this apparatus being removed to expose its interior; Fig. 1 shows a transverse section taken on the line 1—1 of Fig. 2; and Fig. 3 shows a longitudinal section taken on the line 2—2 of Fig. 2.

This apparatus comprises a receptacle 3 which encloses a plurality of space discharge devices 4 and 5 and is provided with partitions 6 and 7 whereby the input circuit connections and output circuit connections of each device are separated and screened from one another. Thus the input circuit connections of the device 4 are enclosed in a compartment 8; the output circuit connections of the device 4 and the input circuit connections of the device 5 are enclosed in a compartment 9; and the output circuit connections of the device 5 are enclosed in a compartment 10. It will be observed that the output circuit of the device 4 is coupled to the input circuit of the device 5 through means shown as a condenser 11, and that a resistor 12 is provided for maintaining the control grid potential of the device 5 at an average value required for satisfactory operation. Tuning of the input circuit of the device 4 is effected by means comprising a reactor 13 and a condenser 14. Tuning of the output circuits of the devices 4 and 5 is likewise effected respectively by a reactor 15 and condenser 16 and by a reactor 17 and a condenser 18.

The devices 4 and 5 each comprise a cathode 19 supplied with heating current from a source A through a resistor 20, an anode 21 arranged to be connected to the cathode 19 through a source B, a screen grid 22 connected to an intermediate terminal 23 of the source B, and a control grid 24. The connections to the control grid 24 of device 4 are completed through a contact member 25 and the connections to the control grid 24 of device 5 are completed through a contact member 26.

The contact member 25 is mounted on and electrically insulated from a movable shield member 27, and is arranged to contact with the control grid terminal 29 and a terminal 30 when the member 27 is in its illustrated position. It should be noted that the partition 6 between the compartments 8 and 9 is slotted and that the edges of the slot are turned back to form grooves 31 adapted to receive inturned flanges formed on the edges of the shield member 27. A similar joint is

made between the edges of the partition 7 and a movable shield member 32 which surrounds the space discharge device 5.

This arrangement has the marked advantages that the members 27 and 32 are readily removed to permit installation or replacement of the space discharge devices, and that the circuits of the control grids 24 are always completed when these members are moved into their normal operating positions. As previously indicated, internal feed-back due to the capacity coupling between the control grid 24 and the anode 21 is substantially neutralized by the screen grid 22 which is maintained by the upper section of the source B at a potential which is constant with respect to earth. External feed-back, due to the electrical coupling which tends to exist between the input and output circuit connections of each space discharge device, is prevented for the reason that these circuits are enclosed in separate compartments made of conductive material, such as tinned sheet iron, copper or the like.

The embodiment of the invention illustrated and described herein has been selected for the purpose of clearly setting forth the principles involved. It will be apparent, however, that the invention is susceptible of being modified to meet the different conditions encountered in its use and I therefore aim to cover by the appended claims all modifications within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. The combination of a conductive member provided with an opening, a movable member arranged to cover said opening, and a space discharge device mounted within said cover member and provided with output circuit connections and input circuit connections extending respectively through said opening and through said cover member.

2. The combination of a receptacle, a partition arranged to divide said receptacle into compartments and provided with an opening, a movable cover member for said opening, and a space discharge device mounted within said cover member and provided with output circuit connections enclosed in one of said compartments and with input circuit connections enclosed in the other of said compartments.

3. The combination of a conductive member provided with an opening, a movable member arranged to cover said opening, a space discharge device mounted within said cover member and provided with input and output circuit connections, and a contact member mounted on said cover member and arranged to complete one of said connections when said opening is closed by said cover member.

4. The combination of a receptacle, a partition arranged to divide said receptacle into compartments and provided with an opening, a movable cover for said opening, and a space discharge device mounted within said cover member and provided with output circuit connections enclosed in one of said compartments and with input circuit connections enclosed in the other of said compartments, and means arranged to complete one of said connections when said opening is closed by said cover member.

5. The combination of a receptacle, a partition arranged to divide said receptacle into compartments and provided with an opening, a movable cover member for said opening, and a space discharge device mounted within said cover member and provided with output circuit connections enclosed in one of said compartments and with input circuit connections enclosed in the other of said compartments, and a contact member insulated from said cover member and arranged to complete one of said connections only when said opening is closed by said cover member.

6. The combination of a receptacle, a partition arranged to divide said receptacle into compartments and provided with an opening, a movable cover member for said opening, and a space discharge device mounted within said cover member and provided with output circuit connections enclosed in one of said compartments and with input circuit connections enclosed in the other of said compartments, and a contact member mounted on said cover member and arranged to complete said input circuit connections only when said opening is closed by said cover member.

7. The combination of a conductive member provided with an opening, a movable cover member for said opening, and a space discharge device mounted within said cover member and provided with input circuit connections extending through said cover and insulated therefrom and with output and screen grid circuit connections extending through said opening.

8. The combination of a receptacle, a partition arranged to divide said receptacle into compartments and provided with an opening, a removable cover member for said opening, and a space discharged device mounted within said cover member and provided with input circuit connections extending into one of said compartments and with output and screen grid circuit connections extending into the other of said compartments.

In witness whereof, I have hereunto set my hand this 8th day of February, 1927.

HARRY C. THOMPSON.