Oct. 5, 1937. K. SCHLESINGER 2,094,676

METHOD OF AND ARRANGEMENT FOR CONNECTING BRAUN TUBES

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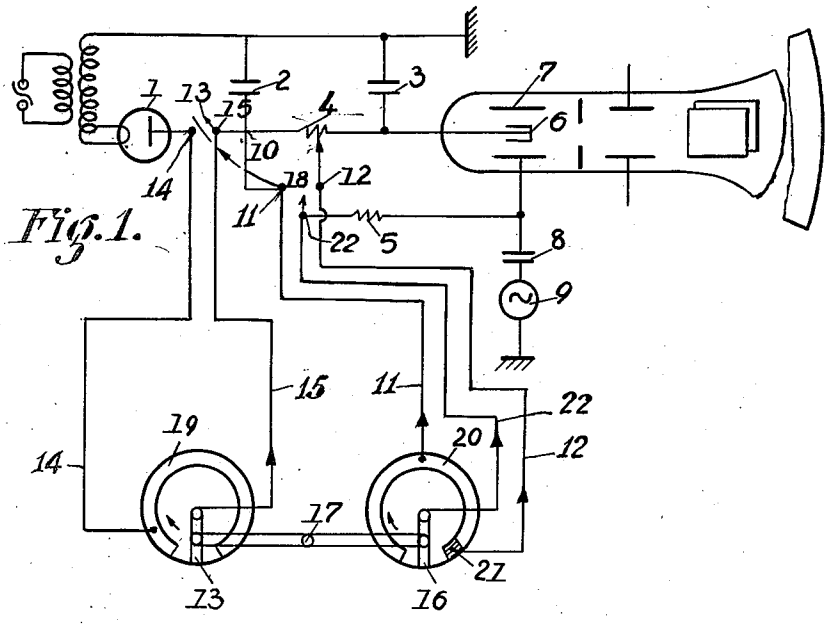


Fig. 1.

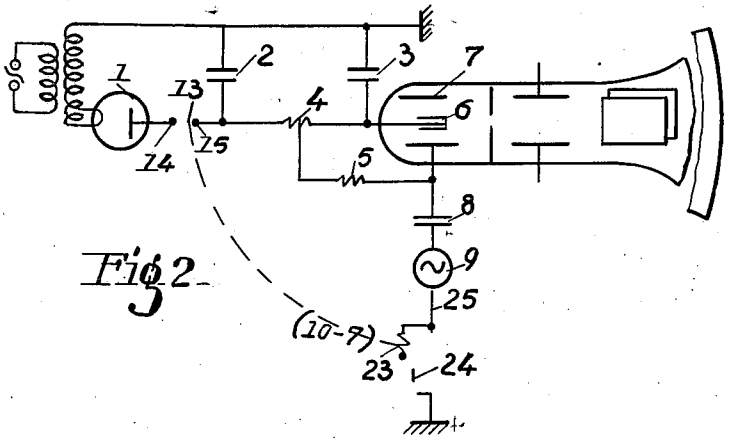


Fig 2.

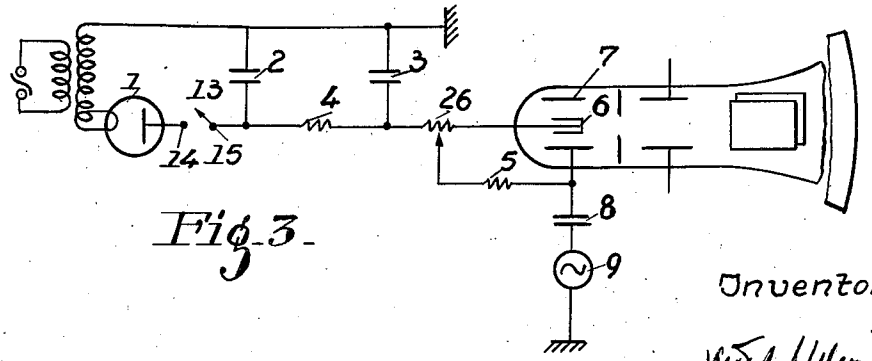


Fig 3.

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METHOD OF AND ARRANGEMENT FOR CONNECTING BRAUN TUBES

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5 Claims. (Cl. 250—27)

In the hitherto known and more particularly mains-operated arrangements with Braun tubes, in which the negative bias of the Wehnelt cylinder is taken from the steadying resistance of the main supply filter connection consisting of two condensers across the positive and the negative line, and between said condensers the named resistance in the negative line, there usually occurs the case that the negative potential at the Wehnelt cylinder takes effect considerably more slowly than the negative potential at the cathode, so that for a brief space of time the Wehnelt cylinder possesses a strong positive potential in relation to the cathode.

If now the Braun tube is connected after quite a brief period of disconnection, in such fashion that the cathode is still warm when connection takes place, an extremely high momentary emission occurs, which leads to destruction of the tube.

The subject matter of the invention is a method and also different arrangements which enable this fault to be safely avoided.

According to the invention means are provided, which safely ensure that the negative bias at the Wehnelt cylinder takes effect at least equally as quickly as and preferably more quickly than the cathode potential, in such a manner that the Wehnelt cylinder at no time is able to become more positive than the cathode.

The invention will be best understood by reference to the accompanying drawing 1–3, which certain forms of embodiment of the invention illustrate by way of example:

In Fig. 1, 1 is the rectifier tube, 2 and 3 are the steadying condensers, 4 is the steadying resistance, from which the negative bias for the Wehnelt cylinder 7 is derived through the medium of a resistance 5, 6 the cathode, and 8 a condenser, through the medium of which the control potential, which is represented symbolically as generator 9, is conducted to the Wehnelt cylinder. 13 is the switch-on arrangement.

According to the invention, there is provided a switch 18, which enables the Wehnelt cylinder to be linked up with the line 10 in direct fashion during the switching-on operation, in order in this manner to accomplish that the negative bias at the same takes effect more quickly than the cathode potential.

A form of embodiment of a switching arrangement necessary for this purpose is illustrated by way of example in Fig. 1, in which 13 and 16 are two wipers, which are positively coupled with each other by the lever 17. 19, 20 and 21 are metallic coatings. The arm 13 is conductively connected with the point 15 in Fig. 1 and the arm 16 with the point 22. The coating 19 is connected with the point 14, and the coatings 20 and 21 with the points 11 and 12.

If now the switch is actuated, the wiper 16 at first enters into contact with the metallic coating 20, so that the Wehnelt cylinder is applied to the point 10.

It is not until the wiper 13 has practically completed its entire switch-on movement that the wiper 16 passes from the coating 20 to the coating 21, so that the Wehnelt cylinder is linked up with the steadying resistance 4. In this manner it is accomplished that the negative bias of the Wehnelt cylinder takes effect more quickly than that of the cathode.

The two switches may naturally be arranged on the same shaft. It is also possible in place of the second switch to provide a simple change-over switch, which is actuated by the switch-on device when the final position is reached.

As shown by Fig. 2, it is also possible during the switching-on operation to connect in the earth line 25 a highly ohmic resistance 23 by means of the switch 24, and in this manner to accelerate the charging of the Wehnelt cylinder.

The resistance 23 may be selected, for example, at 10^7 ohms, and the switch 24 may be positively coupled with the switch 13, as described in conjunction with Fig. 2.

As shown in Fig. 3, it is also possible to take the bias for the Wehnelt cylinder not from the steadying resistance 4, but from a special resistance 26 situated between the steadying block 3 and the cathode 6. In this case no further precautions are required.

The corresponding parts in Figs. 2 and 3 are designated in agreement with Fig. 1.

The method according to the invention enables the Braun tube to be switched on even after a short period of disconnection without endangering the cathode.

I claim:

1. A television arrangement comprising a Braun tube having a cathode, anode and control electrode, means energized from a commercial power source for supplying direct current potential to the electrodes of said Braun tube, means for filtering the potential supplied to said electrodes comprising two condensers connected across the positive and negative conductors of the direct current source and a resistance in the negative conductor between said condensers, means for biasing said control electrode comprising a

connection to a point on said resistance, a first switching means for connecting the direct current source to the anode and cathode of the Braun tube, and a second switching means for directly connecting said control electrode to either the negative terminal of said direct current source, or to a point on said resistance, said first and second switching means being mechanically coupled whereby upon operation of said first switching means the control electrode is first connected to the negative terminal of the direct current source and is later connected to a point on said resistance.

2. A television arrangement comprising a Braun tube having a cathode, anode and control electrode, means energized from a commercial power source for supplying direct current potential to the electrodes of said Braun tube, means for filtering the potential supplied to said electrodes comprising two condensers connected across the positive and negative conductors of the direct current source and two resistances in the negative conductor, the first between said condensers and the second between said cathode and said connection point of said first resistance and said second filtering condenser connected through said first resistance to the potential source, means for biasing said control electrode comprising a connection to a point on said second resistance.

3. A television arrangement comprising a Braun tube having a cathode, anode and control electrode, means energized from a commercial power source for supplying direct current potential to the electrodes of said Braun tube, means for filtering the potential supplied to said electrodes comprising two condensers connected across the positive and negative conductors of the direct current source and a resistance in the negative conductor between said condensers, means for biasing said control electrode comprising a connection to a point on said resistance, an intensity control potential source, a third condenser and a second highly ohmic resistance connected in series between said control electrode and said positive terminal of said direct current potential source, a first switching means for connecting the direct current source to the anode and cathode of the Braun tube and a second switching means for preliminarily connecting said highly ohmic resistance in series with said control potential source, said first and second switching means being mechanically coupled.

4. A television arrangement comprising a Braun tube having at least a cathode, anode, and control electrode, potential supply means energized from a commercial power source for supplying direct current potential to the electrodes of said Braun tube, means for filtering the potential supplied to said electrodes, comprising two condensers connected across the positive and negative conductors of the direct current source, and a resistance in the negative conductor between said condensers, means for biasing said control-electrode from a potential developed across said resistance and means including said potential supply means and said filtering means for preventing the control electrode from becoming positive with respect to said cathode during the operation period of said television arrangement.

5. A television arrangement comprising a Braun tube having at least a cathode, anode, and control electrode, means energized from a commercial power source for supplying direct current potential to the electrodes of said Braun tube, means for filtering the potential supplied to said electrodes, comprising two condensers connected across the positive and negative conductors of the direct current source, and a resistance in the negative conductor between said condensers, means for biasing said control-electrode from a potential developed across said resistance comprising connections from said control-electrode and said cathode to said resistance and negative conductor respectively, the time constant of said filtering means connected in said conductor between said direct current potential source and said control electrode being no greater than, preferably smaller than the time constant of said filtering means connected in said conductor between said direct current potential source and said cathode, whereby the control-electrode is prevented from becoming positive with respect to said cathode during the operation period of said television arrangement.

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