

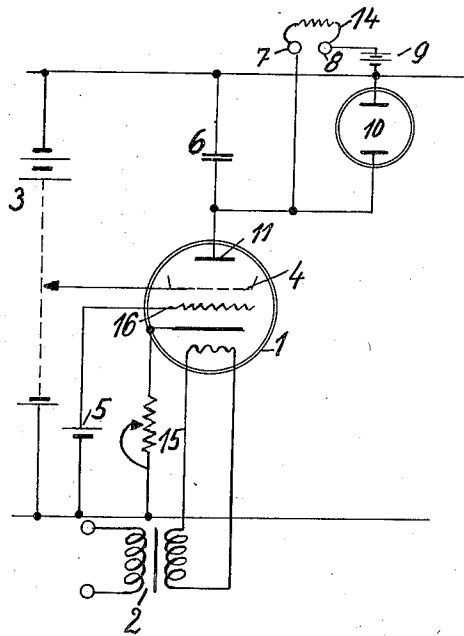
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TILTING APPARATUS

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Inventor:

have feelings.

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TILTING APPARATUS

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Original application July 11, 1933, Serial No.
679,866. Patent No. 2,053,536, dated Septem-
ber 8, 1936. Divided and this application Janu-
ary 13, 1936, Serial No. 58,952. In Germany
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1 Claim. (Cl. 250—36)

In the parent application Ser. No. 679,866, filed July 11, 1933, Patent #2,053,536 dated Sept. 8, 1936 of which the present case is a divisional application, I have described a method and an arrangement of producing relaxation oscillations making use of screening grid tubes furnished with an interception grid. The use of screening grid tubes enables charging tubes with saturated emission and tungsten cathodes otherwise un-avoidable in connection with relaxation oscillation generators to be dispensed with.

Even if in the manner described the constancy of the charging current is ensured within a wide range of the anode potential, there is still to be observed with sufficient accuracy of measurement a delay in the ignition.

The present invention shows a method and an arrangement for producing relaxation oscillations which enable relaxation potentials to be obtained which are linearly ascending. I have found out that the disadvantage of the generators used up to now, with regard to non-linearity is due to the fact that the load of the consuming apparatus connected to the output of said generators causes distortion. This will be removed by the method according to the present invention.

The novel features, which I believe to be characteristic of my invention, are set forth with particularity in the appended claim. My invention, however, both as to its organization and method of operation together with further objects and advantages may be best understood by reference to the following description taken in connection with the accompanying drawing in which the figure represents an embodiment of my invention.

In the drawing 1 is a charging valve, the cathode of which is indirectly heated, by a main current transformer 2. 6 is a condenser which is charged by the direct current potential source 3 through the medium of said valve. 10 is a glow discharge device for discharging said condenser, in case the charging potential of said condenser has reached the ignition potential of said glow discharge device. The charging valve may be furnished with a screen grid 4 and a further control grid determining the strength of charging current through said valve by suitably biasing said grid by means of the bias battery 5. The delay in ignition above referred to is due to the fact that at the charging condenser 6 a load requires to be connected between the terminals 7, 8. This load is represented in the present instance by an ohmic resistance 14. A

bias battery 9 is connected between one electrode of the discharge device and terminal 8, the bias of which is adjusted to the centre point of oscillation, so that the potential between 7 and 8 oscillates to an equal extent into positive and negative. The load 14 in the discharge phase of the condenser then makes itself noticeable by acceleration of the discharge, because the terminal 8 is then more negative than the terminal 7, and an auxiliary charging current accordingly flows over the resistance 14, whilst the load near the ignition makes itself apparent in the form of an obstruction, because in this case a leakage current flows in the opposite direction from 7 to 8.

Now it has been found very convenient, particularly for television purposes, to make use of methods, which permit of correction at will of these small remaining errors.

Certain methods of this kind are set forth in the following: The figure, for example, shows a correction at the grid of the charging tube 1 by the grid bias correcting resistance 15 according to the invention. The potential of the inner grid 16 of the screening grid charging tube 1 is biased as compared with the cathode of the same tube to the extent of the drop in potential produced by the charging current through the tube 1 at the resistance 15. If now owing to excessive compensation of the potentials of anode and protective network, or secondary emission in the tube 1, etc., a decrease of this charging current takes place round about the ignition moment, the same simultaneously makes itself apparent by a reduction in the negative bias of the grid 16, as the charging current itself creates this bias at the resistance 15. The grid becomes less negative, and a sinking of the anode current is thus compensated. The degree of compensation may be adjusted by the fact that, as shown, the resistance 15 may be varied.

I claim:

A generator for producing relaxation oscillations of saw tooth form with rectilinear rise comprising a direct current source, a condenser, an electronic valve for charging periodically said condenser with a constant current intensity having cathode, control grid, screening grid and anode and a discharge tube for discharging periodically said condenser, a second D. C. potential source for biasing said control grid with respect to said cathode and a variable resistance, one electrode of said condenser being connected to the positive terminal of said source and to one electrode of said discharge tube, the other

electrode of said condenser being connected to said anode and to the second electrode of said discharge tube, said cathode being connected over said resistance to the negative terminal of said source, said screening grid being connected to a tapping point of said source below said

anode potential, one terminal of said second potential source being connected to the negative terminal of said first potential source, the other terminal of said second potential source being connected to said control grid.

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