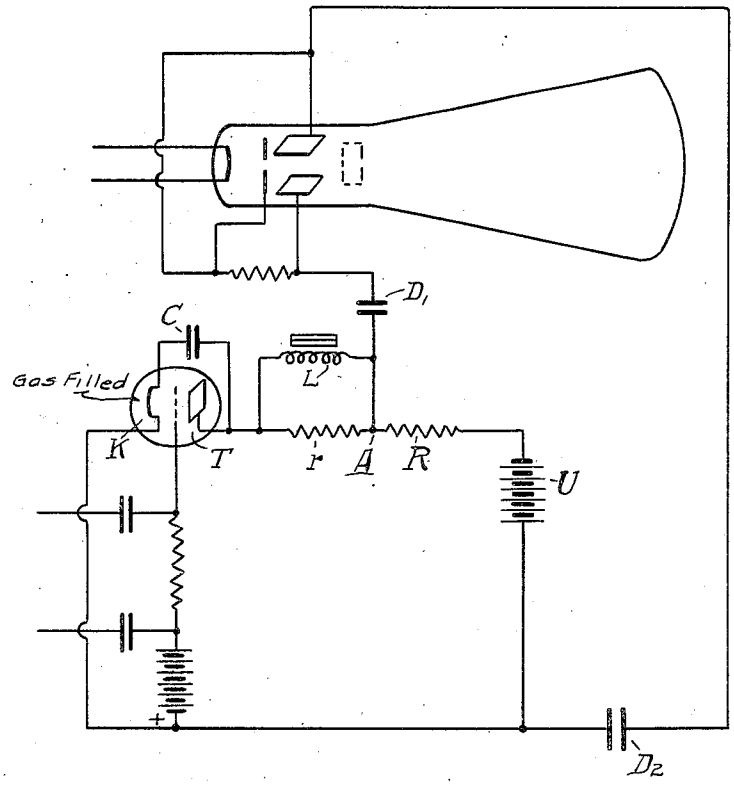
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DEVICE FOR CONTROLLING CATHODE BEAMS

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René Barthelemy
INVENTOR

BY Otto Munk

his ATTORNEY.

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## DEVICE FOR CONTROLLING CATHODE BEAMS

René Barthélemy, Fontenay aux Roses, France, assignor to Compagnie pour la Fabrication des Compteurs et Materiel d'Usines a Gaz, Montrouge, France

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5 Claims. (Cl. 250—36)

It is known to obtain the deflection of a beam of cathodes rays by the application between two conductive plates arranged on either side of the beam, of the tension at the terminals of a condenser in the course of discharge, this condenser being periodically discharged by various methods, for example with the aid of a gas discharge.

Although only the commencement of the charge of the condenser is utilized, this charge does not increase in proportion with the time. This defect is particularly noticeable when the frequency of the discharges is fairly low, as the case with a condenser controlling the displacement of the cathode beam at the frequency of the images in television and other long distance transmission apparatus.

The present invention renders it possible to obviate this drawback. It consists essentially in the introduction of an impedance into the charging circuit of the condenser, and in the application to the deflecting plates of a tension obtained by the addition of the tensions at the terminals of the condenser and of this impedance.

The invention will be well understood from the following description and from the accompanying drawing, which shows a practical form of the invention.

The resistance R, which is ordinarily in the path of the charging current of the condenser C emanating from the source U, is in series with an impedance constituted by the induction winding L in parallel with a resistance $r$. One plate of the oscillograph is connected through a condenser $D_1$ to the terminal A of the impedance and the other plate through the condenser $D_2$ and the cathode K of the gas tube T to the terminal of the condenser C not associated with the impedance. The gas tube T allows the discharge of the condenser C.

Under these conditions and for suitable values of $r$ and L, the characteristic of the tension applied between the deflecting plates is corrected, this tension being composed of the tension existing at the terminals of the condenser C and of the supplementary tension produced at the terminals of the impedance $r$, L. Suitable relative values of $r$ and L are for instance, the following:

$r$=10,000 ohms, L=196 henrys
$r$=12,500 ohms, L=306 henrys
$r$=15,000 ohms, L=437 henrys
$r$=17,500 ohms, L=593 henrys
$r$=20,000 ohms, L=770 henrys

What I claim is:—

1. Device for producing a tension which increases in proportion to the time element, which comprises a condenser, a charging circuit therefor, a self-inductance connected in series with said charging circuit and having one terminal in common with said condenser, a resistance connected in parallel with the self-inductance, and two connections for picking up the desired tension connected respectively to the terminals of the condenser and of the self-inductance not common to these two members, the said self-inductance and the said resistance being of such value that the sum total of the tensions between the terminals of the condenser and the said self-inductance give rise to a resultant tension which increases in proportion to the time element.

2. In an apparatus of the character described, the combination, with a condenser, and a charging circuit therefor, of a device for producing a tension, which increases in proportion to the time element, a self-inductance connected in series with the said charging circuit and having one terminal in common with the said condenser, and a resistance connected in parallel with the self-inductance, the said resistance and self-inductance being of such value that the sum total of the tensions between the terminals of the condenser and between the terminals of the self-inductance give rise to a resultant tension which increases in proportion to the time element.

3. In a device for producing a periodic sawtooth tension, the combination with a condenser, a charging circuit therefor, a resistance in said circuit, and means for periodically discharging the condenser, said device comprising, of an impedance disposed in series with the said charging circuit between the said resistance the condenser, said impedance comprising a self-inductance and a resistance shunting the latter, and two connections for picking up the desired tension connected respectively to the terminals of the condenser and of the self-inductance not common to these two members, the said self-inductance and an outlet circuit connected to the common terminal of the two resistances, on the one hand, and to the terminal of the condenser armatures, on the other hand, which last-mentioned terminal is not connected to the impedance in such manner as to utilize the resultant tension consisting of the tensions between the condenser terminals and the terminals of the impedance, the said self-inductance and resistance having their values regulated in such manner that the resultant tension increases strictly in proportion

to the time during each charging period of the condenser.

4. In a device for producing a periodic saw-tooth tension the combination with a condenser, a charging circuit therefor and means for periodically discharging the condenser, of an impedance disposed in series with the said charging circuit, said impedance consisting of a self-inductance and a resistance shunting the latter, said impedance having one terminal in common with the condenser, and an outlet circuit in shunt connection with the condenser and the impedance in series therewith, the values of said self-inductance and resistance being regulated in such manner that the tension of the outlet circuit increases strictly in proportion to the time during each charging period of the condenser.

5. A device for producing a saw-tooth tension, which comprises in combination a condenser, a charging circuit therefor, a resistance in series with said charging circuit, a gas discharge tube, which is controlled so as to discharge periodically the said condenser, an impedance inserted in said charging circuit between the resistance and the condenser and consisting of a self-inductance and a resistance shunting the same, and an outlet circuit in shunting connection with the said condenser and the said impedance in series therewith, the values of said self-inductance and resistances being regulated in such manner that the tension of the outlet circuit increases strictly in proportion to the time during each charging period of the condenser.

RENÉ BARTHÉLEMY.