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CATHODE RAY BEAM DEFLECTION APPARATUS

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Fig. 1

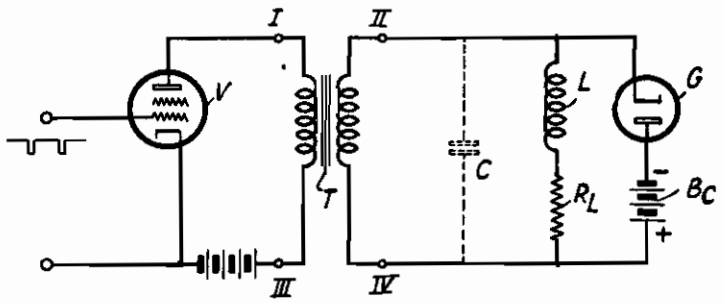
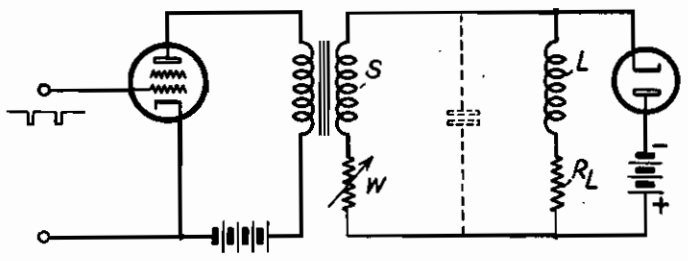


Fig. 2



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ALIEN PROPERTY CUSTODIAN

CATHODE RAY BEAM DEFLECTION APPARATUS

Max Geiger, Berlin, Germany; vested in the Alien Property Custodian

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The present invention is concerned with circuit arrangements of the kind serving to cause time proportional magnetic deflection of cathode ray pencils, especially in television.

The invention is concerned with means and measures to be adopted when a second inductance is connected in parallel relation to the deflection coil and for electromagnetic deflection. Such an inductance may be used in conjunction with the deflecting coil when it is necessary to superpose an additional wave onto the normal sawtooth wave of constant amplitude. The normal sawtooth current of constant amplitude produces what is commonly called keystone or trapezium effect in scanning. What is meant by this is the production of a rectangular frame or picture field in a television sending or receiver tube when the axis of the cathode ray tube upon the screen on which the picture field is to be projected is other than vertical. If in such an arrangement all lines of the picture field are attempted to be scanned with sawtooth currents of like amplitude, there results a trapezoidal or trapezium picture frame rather than the desired rectangular frame upon the screen to be scanned. In order to prevent this from happening and to scan a rectangular frame, the amplitude of the sawtooth currents during the scanning of each frame, or in interlaced scanning during an entire line series or sequence, has been changed in such a way that in spite of the obliquity of the scanning beam to the target a rectangular frame is produced. Other instances where a second oscillatory action arises and where the same is superposed upon the normal oscillatory process produced in a deflector coil shall be described further below.

My invention will best be understood by reference to the drawings in which

Fig. 1 shows an arrangement of the prior art, and

Fig. 2 shows another embodiment thereof.

Referring to Fig. 1, points I and II, and points III and IV respectively, are inter-connected. In other words, the deflection coil L whose ohmic resistance is denoted by R_L has been directly connected in the plate circuit of a tube V. The circuit organization known in the art serves for the production of sawtooth current curves for line deflection. The operation of the known arrangement is not essentially altered by the presence of transformer T. The current flowing in coil L is roughly sawtooth in shape, that is to say, a slow, almost straight rise followed by a very brief drop. In trapezium deflection, another periodic action of lower frequency is superposed upon the shape of current obtained in a circuit arrangement Fig. 1. (For instance, in case of sawtooth-shaped modulation of the amplitudes of the coil current as required for trapezium deflection, there arises an additional additive sawtooth-shaped current component due to the damping action of the coil). It has then been discovered that the scanning or reproduction of the lines is disturbed by superposed equalizing or building-up actions. The effects are explained from the fact that the inductance of the secondary winding is connected in parallel to the coil L, and that these two branches, as a general rule, do not have the same time constant. In order to avoid the distortions in the curve shape which will result therefrom, the invention discloses the idea to connect a resistance W in series with the secondary winding of the transformer by the aid of which, in both branches, the ratio between inductance (S and L), and the resistance (W and R_L) may be rendered alike (see Fig. 2). This balancing could also be obtained by winding the secondary winding of the transformer of suitable wire so that this winding may possess the desired values of inductance and resistance. However, the state of balance here suggested could be secured also by choosing the wire thickness or gauge for the deflector coil as well as the wire gauge for the secondary winding of the transformer in such a way that the ratio of inductance and resistance in both arms will beeome equal to each other.

The invention is not confined to the exemplified embodiment of trapezium deflection here discussed; in fact, it will be found useful in all cases where an inductance is paralleled to the deflector eoil, and where two actions of dissimilar frequency are superposed in one and the same circuit. Such a case of superposition is present also when the normal oscillation mechanism of a line deflection generator is transiently interrupted, as may be true, for example, when this generator is rendered inoperative, while the generator for deflection in the other coordinate just happens to produce the short flank or slope of its sawtooth. Also in this instance, as a result of the interruption, owing to coil damping an additive current component of lower frequency is produced which is liable to lead to troublesome building-up actions, and these are prevented by the present invention.

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