

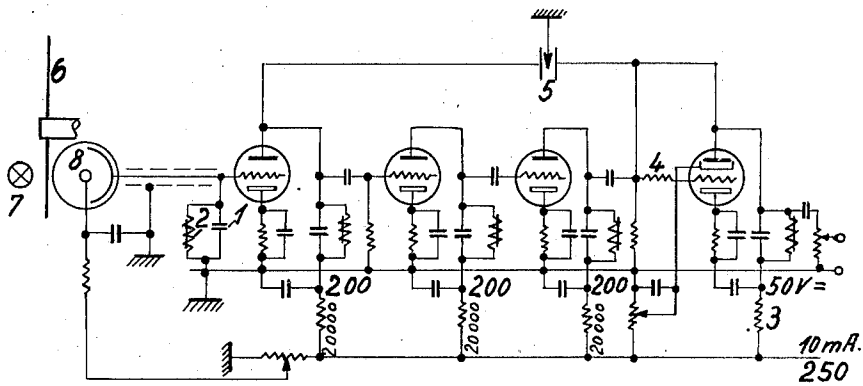
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FILTER AMPLIFIER FOR TELEVISION SYNCHRONIZATION

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## UNITED STATES PATENT OFFICE

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FILTER AMPLIFIER FOR TELEVISION  
SYNCHRONIZATIONKurt Schlesinger, Berlin, Germany, assignor to  
Radioaktiengesellschaft D. S. Loewe, Berlin-  
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3 Claims. (Cl. 178—69.5)

In the television art it is usual to employ for line-synchronization purposes a light siren which comprises, for example, slots in the Nipkow disc 6 in conjunction with a lamp 7 and a photo-cell 8. If the frequency generated by the light siren is employed immediately for controlling an impulse generator, which produces synchronization impulses which are radiated by the transmitter together with the image signals, there will be found upon the reception, in the reproduction of the image, irregularities and displacement of the line edges. This is due to the fact that the synchronization frequency generated by the light siren is of an irregular character insofar as the amplitude maxima of the frequency are not exactly equidistant and the amplitude varies, so that for these reasons the threshold value of the impulse generator is not reached at exactly equal intervals. These irregularities in the synchronization frequency are the result of unavoidable inaccuracy in the light siren (flickering, errors in stamping, fluctuations of the light, and the like).

Now it has been found that these interferences may be wholly eliminated by adopting precautionary measures as follows:

1. Filtering the frequency by highly selective tuned amplifiers, and
2. Filtering the light intensity of the amplitude by means of electrical limiting circuits.

The invention is illustrated by way of example in the accompanying drawing, which shows a filter amplifier of the kind in question, in which for filtering the frequency each valve is coupled with the succeeding one by way of a tuned circuit of low damping. For improving these oscillatory circuits there is also provided a reaction coupling between the valves by the aid of the screened condenser 5. To obtain a minimum damping the tuned circuits consist of coils, which are furnished with an iron-powder core, and condensers free of losses. The final valve acts as amplitude limiting means, on the one hand by grid current flowing in the case of positive grid potential half-wave, so that there is a limitation of the grid current with the assistance of the resistance 4, and on the other hand receiving an anode potential which is limited by the resistance 3, so that the

anode oscillations touch on the anode potential limit.

At the output of the amplifier there is obtained by means of this arrangement an exactly equidistant frequency having a rectangular form of curve. This alone is capable of use for the undisturbed control of an impulse generator, the threshold value of which has been set to a certain amplitude. Apart from the filter amplifier as set out in the above, an exact filtering of the frequency in the manner indicated can be attained only by mechanical or magnetic striction.

I claim:

1. An arrangement for producing synchronizing impulses of highly uniform periodicity and amplitude for television, comprising means for generating oscillations, a multistage thermionic amplifier, means for applying said oscillations to the input terminals of said amplifier the stages of said amplifier being coupled by means of tuned circuits, means for amplitude limiting and means for grid current limiting.

2. An arrangement for producing synchronizing impulses of highly uniform periodicity and amplitude for television comprising means for generating oscillations, a multistage thermionic amplifier, means for applying said oscillations to the input terminals of said amplifier, the stages of said amplifier being coupled by means of tuned circuits, the final valve of said amplifier being supplied with an anode potential of such a value, that the valve is over-modulated and with a grid bias of such value that grid current is flowing.

3. An arrangement for producing synchronizing impulses of highly uniform periodicity and amplitude for television comprising means for generating oscillations, a multistage thermionic amplifier, means for applying said oscillations to the input terminals of said amplifier, the stages of said amplifier being coupled by means of tuned circuits, consisting of coils having an iron-powder core and condensers having low losses, an adjustable reaction coupling being provided between said stages, the final valve of said amplifier being supplied with an anode potential of such a value, that the valve is over-modulated and with a grid bias of such value that grid current is flowing.

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