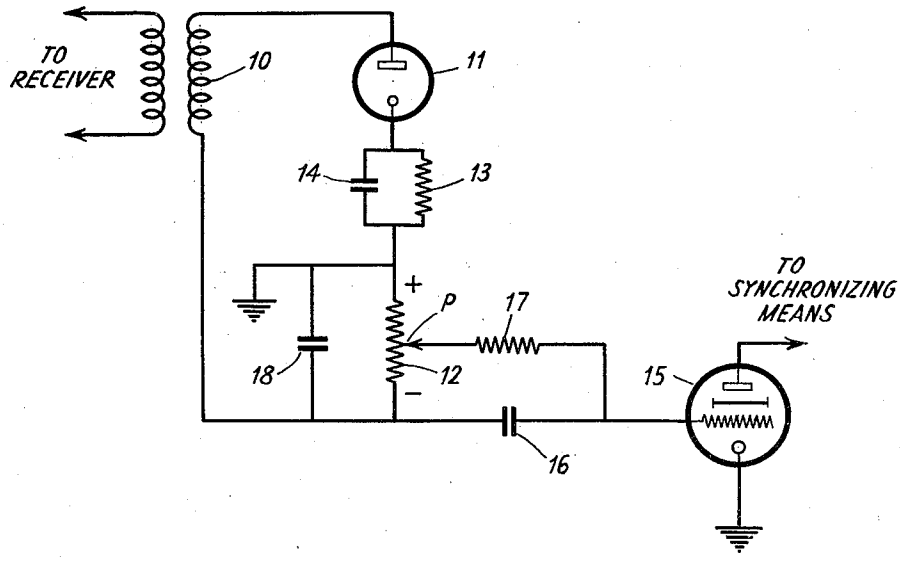
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ELECTRICAL IMPULSE SEGREGATION CIRCUIT

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ELECTRICAL IMPULSE SEGREGATION CIRCUIT

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4 Claims. (Cl. 178—69.5)

The invention relates broadly to a circuit arrangement whereby the video signals and the synchronizing signals which are ordinarily transmitted on the same carrier wave in present television practice may be separated from each other. More specifically it relates to an arrangement whereby the synchronizing impulses which are transmitted are adapted to be separated from the video signals and maintained at a substantially constant value.

It is common present day practice to transmit the video signal and the synchronizing signal by means of an amplitude modulated carrier wave. The modulation of the carrier, insofar as the video signal is concerned, varies between a value corresponding to black in the picture to a value corresponding to white in the picture. One hundred percent modulation is not used and accordingly for the black picture value the carrier wave is still transmitted, that is, the picture signal value corresponding to black does not suppress the carrier. Accordingly, the synchronizing impulses may be transmitted as a further decrease in the modulation of the carrier from the point or value corresponding to black in the picture. Of course, transmission not only implies herein wireless transmission from a transmitter to a receiver, but also transmission across cables connecting the scanner with the wireless transmitter or directly with the receiver. In other words, the word transmission is used in its broadest sense.

In the circuit arrangement in my invention, the synchronizing impulses have a vertical front to the wave flattened out to a slight degree and care is taken that the synchronizing impulses may be varied in amplitude.

My invention will best be understood by reference to the figure which shows one arrangement of the invention.

Referring to the figure, 10 is a transformer across the secondary of which is connected a rectifier circuit consisting of a rectifier 11, a resistor 12, and a resistance-capacity member 13, 14. The transformer is energized from a high frequency amplifier. The control grid of the separating tube 15 is connected through a condenser 16 to the lower end of the resistor 12 and also is connected across a resistor 17 to a tap point P of the resistor 12. The cathode of the tube 15 and the upper end of the resistor 12 are grounded. The upper end of the resistor 12 is also joined to the resistance-capacity member 13, 14. A shunt condenser 18 for high frequency is connected in parallel to the resistor 12.

As has been explained, the video signals corresponding to the brighter part have a larger carrier wave amplitude than those for the darker parts, and that the synchronizing impulses are transmitted by a further decrease of the amplitude of the carrier wave below that corresponding to the dark picture signals. Thus, during the time of sending of the synchronizing impulses, the rectifier circuit is passed by a direct current whose value is smaller than when the black parts of the image are being transmitted. Since the point P has a potential relative to the cathode of the tube 15 which becomes more negative as the magnitude of the current flowing through the resistor 12 increases, the tube 15 remains blocked so long as the currents corresponding to the video signals flow in the rectifier circuit. If, however, the current is decreased when a synchronizing signal is sent, the potential of the control grid approaches that of the cathode and the tube begins to conduct. Before the carrier wave has dropped to the lower peak of the synchronizing impulse, a grid current begins to flow in the control grid of the separating tube 15, so that the tube no longer changes its potential during the further course of the impulse. Accordingly, the plate current of the separating tube 15 remains practically constant after the synchronizing signal has reached a predeterminable level.

The production of the grid bias potential in dependence on the amplitude of the synchronizing impulse at the same time has the effect that also in case of a flat impulse front the moment of the development of the grid current depends only to a slight degree upon the amplitude of the synchronizing impulses. The same is true as regards the duration of the current passing through the plate circuit of the separation tube.

What I claim is:

1. A circuit for separating video signals from synchronizing signals comprising means for rectifying said signals, a time constant circuit connected in series with said rectifying means, a load resistor joined in series with said time constant circuit and said rectifying means, a vacuum tube, and means connected to the control grid of said tube and to said load resistor, said latter means being adapted to maintain the output current of said tube at a substantially constant value when said synchronizing signal reaches a predeterminable value.

2. A circuit for separating video signals from synchronizing signals comprising means for rectifying said signals, a time constant circuit connected in series with said rectifying means, a load resistor joined in series with said time constant

circuit and said rectifying means, a vacuum tube, and a time constant circuit joining said load resistor to the control circuit of said vacuum tube.

3. A circuit for separating video signals from synchronizing signals comprising means for rectifying said signals, a time constant circuit connected in series with said rectifying means, a load resistor comprising a potentiometer joined in series with said time constant circuit and said rectifying means, a vacuum tube, and means connected to the control grid of said tube and to said load resistor, said latter means being adapted to maintain the output current of said tube at a substantially constant value when said synchronizing signal reach a predeterminable value.

4. A circuit for separating video signals from synchronizing signals comprising means for rectifying said signals, a time constant circuit connected in series with said rectifier, a load resistor comprising a potentiometer connected in series with said time constant circuit and said rectifier, a thermionic vacuum tube having anode, cathode and control electrodes, a resistor connecting said control electrode to said potentiometer for impressing a predetermined potential thereon, and a condenser connected in parallel to said potentiometer for by-passing high frequencies.

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