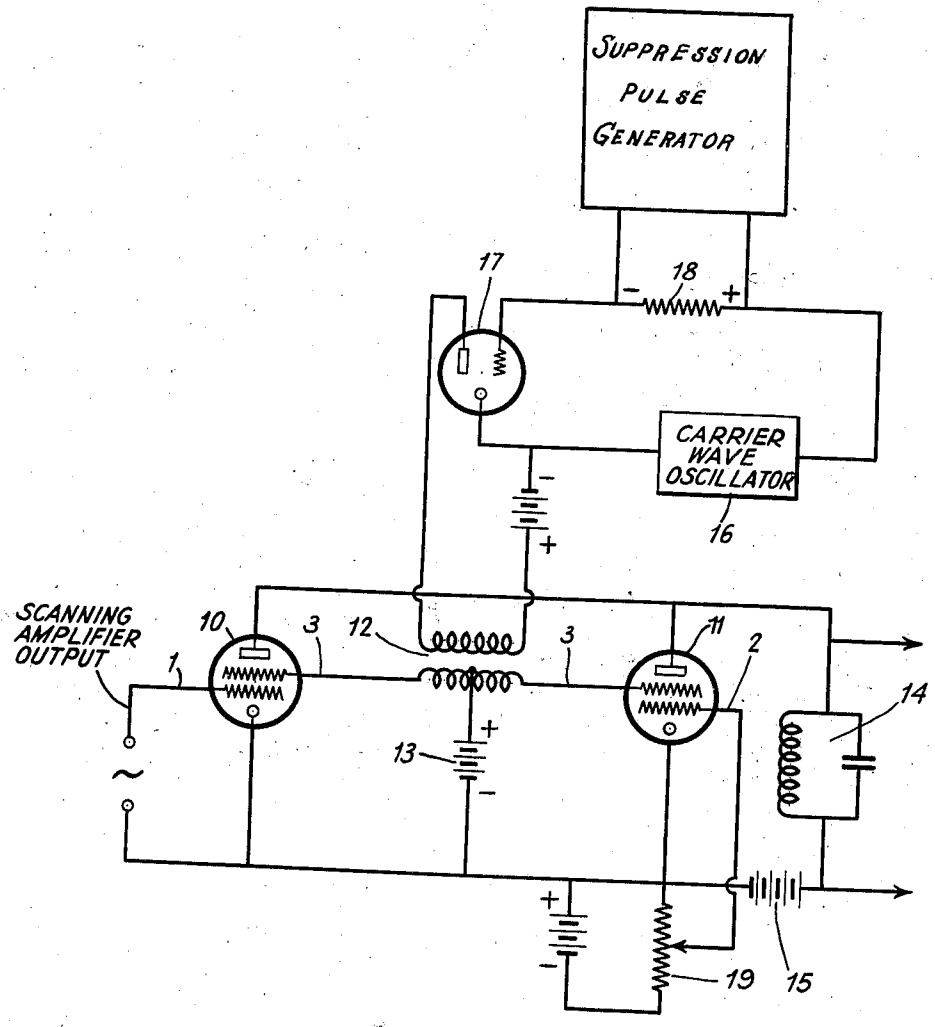
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TELEVISION TRANSMISSION APPARATUS

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TELEVISION TRANSMISSION APPARATUS

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5 Claims. (Cl. 178—7.1)

My invention relates broadly to modulating and synchronizing apparatus for use with television transmission and more particularly to a "bridge type" of apparatus in which a carrier wave is radiated at all times except when a synchronizing impulse is indicated.

It is the object of the invention to provide an apparatus which is readily and efficiently usable for modulating the transmitted carrier wave in a television system with television signals which have been developed by well known scanning means as, for instance, the Zworykin "Iconoscope."

It is also an object of my invention to provide a system wherein, in differentiation to the systems of today, in which a synchronizing impulse is actually transmitted, my system provides for the transmission of a carrier at all times except certain definite interrupted intervals when no carrier is radiated and it is this break in the carrier radiation which acts as a synchronizing signal.

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

Referring to the figure, 10 and 11 designate two tetrodes, whereby the modulation potential corresponding to the brilliancies of the picture points is applied to the grid 1 of tetrode 10, while the grid 2 of tetrode 11 has a controllable direct potential applied thereto. These signals may be developed by well known scanning means as, for instance, the Zworykin "Iconoscopes." The grids 3 of the two tetrodes are connected to the secondary of a transformer 12, whose primary is fed by the carrier frequency, and whose center point of the secondary winding is connected across a direct voltage source 13, to the cathodes of the tubes. The common anode current branch of the two tubes contains a parallel resonance circuit 14 and the plate current source 15. This bridge arrangement functions in the manner such that at the same potential at the two grids 1 and 2, the alternating plate currents compensate each other in the common anode branch owing to the phase opposition of the alternating potentials at the grids 3, so that therefore, when the bridge is balanced, no amplitude of the carrier frequency appears at the parallel resonance circuit 14. If, however, the potentials at the two grids 1 and 2 are different from each other, the atlernating plate current of the one of the two tubes predominates, and at the resonance circuit 14 there appears a voltage having carrier frequency and an amplitude established by the voltage difference of the two grids 1 and 2.

The primary winding of the transformer 12 is fed from a carrier wave generator 16 across a triode 17. The grid circuit of this triode contains a resistor 18. The tap point at resistor 19 is so adjusted that also at maximum modulation potential at grid 1 of tube 10, the potential appearing at the parallel resonance circuit 14 will not be modulated to the zero value, but at any time a certain residual amplitude appears at this resonance circuit. In order to send out the pulses, especially the synchronizing pulses, a direct current pulse furnished by an impulse generator is passed through the resistor 18, said D. C. pulse bringing the right hand end of this resistor upon a positive potential relative to its left hand end. The development of such a suppression potential may, for example, be like that shown in Vance, British Patent No. 395,499 or other well known means for developing direct current pulses intermittently. As a result thereof, the grid potential of tube 17 will be shifted to that value at which despite the finite voltage of the carrier generator 16 plate current no longer flows through the primary winding of the transformer 12. Therefore, the sending out of the pulses is obtained through a complete disconnection of the voltage of the carrier wave from the tube bridge.

The circuit for sending out synchronizing pulses as proposed in accordance with the invention, is especially valuable for the reason that the impulse generator supplying the D. C. pulses for the resistor 18 is not required to operate at constant voltage, it being only necessary that these D. C. pulses have a definite predetermined value given by the grid potential value necessary for a complete blocking of the current passage through tube 17.

What I claim is:

1. In modulation apparatus for picture transmission purposes, means for generating a carrier wave, two multi-grid vacuum tubes having a common output circuit, an inductive member for joining at least one grid of one of said multi-grid tubes to at least one grid of the other multi-grid tubes, means for applying the developed carried to the joined grids of the two tubes in phase opposition, means for impressing the developed picture signals onto a grid of one of said tubes, and means for positively preventing the application of the developed carrier to the joined grids at intervals bearing a definite relationship to the generation of the picture signals.

2. In modulation apparatus for picture transmission purposes, means for generating a carrier wave, two multi-grid vacuum tubes having a com-

mon output circuit, an inductive member for joining at least one grid of one of said multi-grid tubes to at least one grid of the other multi-grid tube, means for applying the developed carrier to the joined grids of the two tubes in phase opposition, means for applying developed picture signals to a free grid of one of said multi-grid tubes, variable biasing means for a free grid of the multi-grid tube which is free from a picture signal input, and means for positively preventing the application of the developed carrier to the joined grids at intervals bearing a definite relationship to the generation of the picture signals.

3. Apparatus in accordance with claim 2 wherein the means for positively preventing the application of the developed carrier to the joined grids comprises a unidirectional conductor having the conducting path thereof connected serially with the means for generating the carrier wave, said conducting path being rendered conducting at intervals bearing a definite relationship to the generation of the video signals by means of developed controlling pulses.

4. In modulation apparatus for picture transmission purposes means for generating a carrier wave, two multigrid vacuum tubes each having cathode, anode and at least two grid electrodes, an impedance member connecting the grid of each of said multi-grid tubes, a third thermionic tube having anode, cathode and at least one control electrode, means coupling the anode-cathode path of said third thermionic vacuum tube to the impedance member joining a grid of each of the multi-grid tubes, means for impressing the generated carrier wave onto the control grid-cathode circuit of said third thermionic tube, means for developing a control pulse at intervals bearing a definite relationship to the generation of picture signals, means for impressing said control pulses onto the control grid-cathode circuit of said third thermionic tube to render said tube impervious to current flow at intervals bearing a definite relationship to the generation of the picture signals, means for applying developed picture signals to a free grid of one of said multi-grid vacuum tubes, and variable biasing means for a free grid of the multi-grid tube which is free from the picture signal input.

5. Apparatus in accordance with claim 4 wherein there is provided in addition a parallel resonant circuit connected in the common anode-cathode circuit of said multi-grid thermionic tubes.

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