Dec. 23, 1941. R. ANDRIEU 2,266,731

TELEVISION RECEIVER CIRCUIT

Filed April 11, 1939

Fig. 1

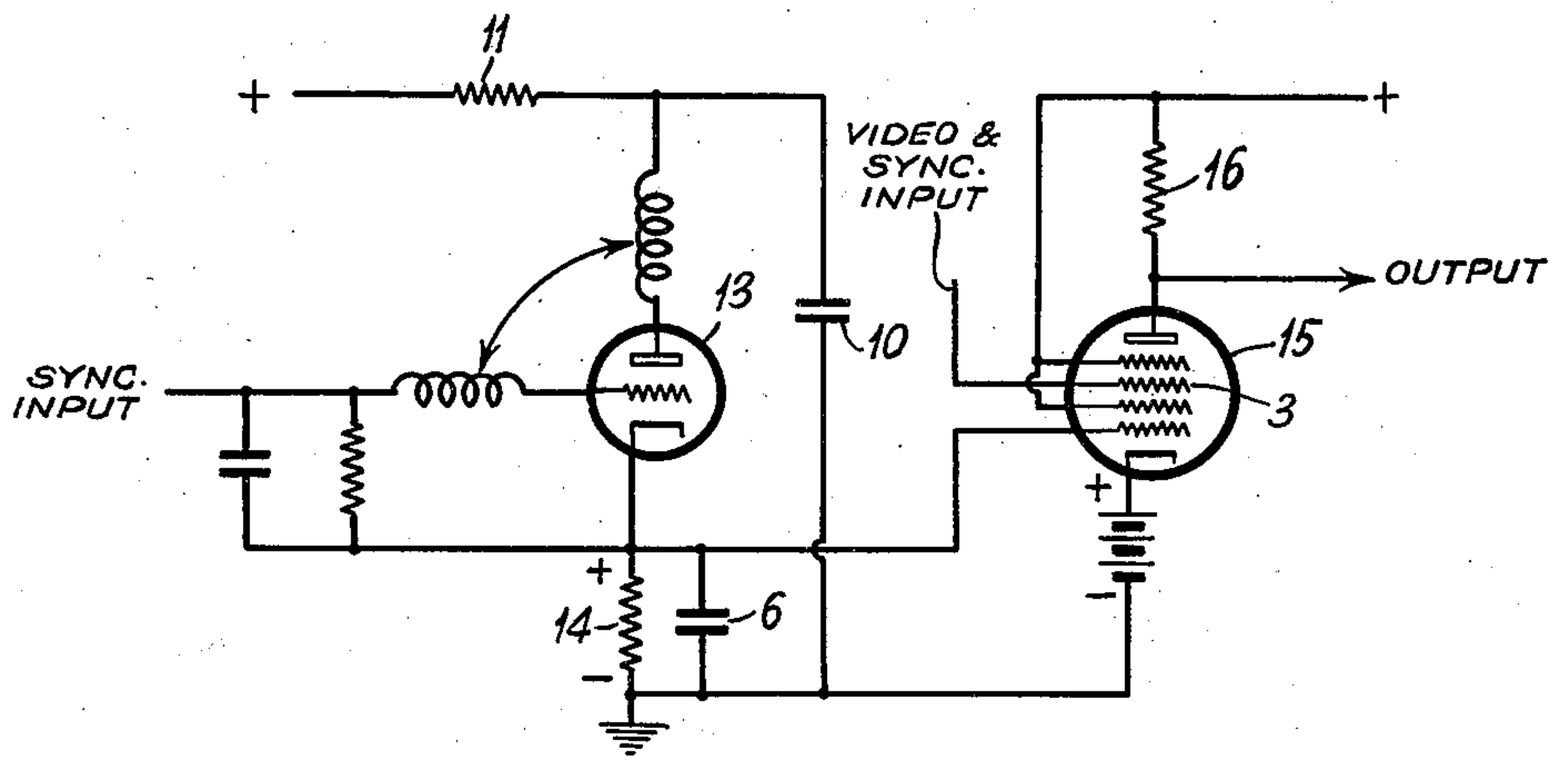


Fig. 2

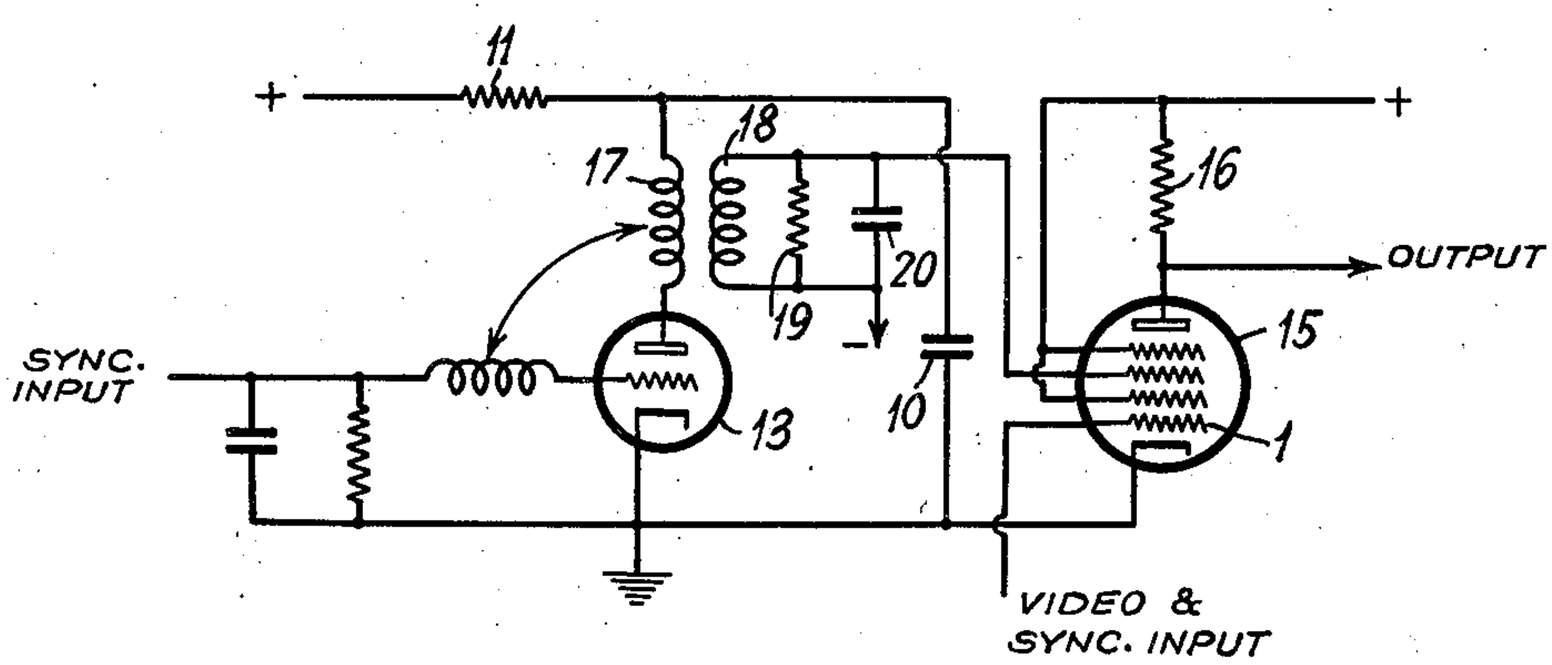
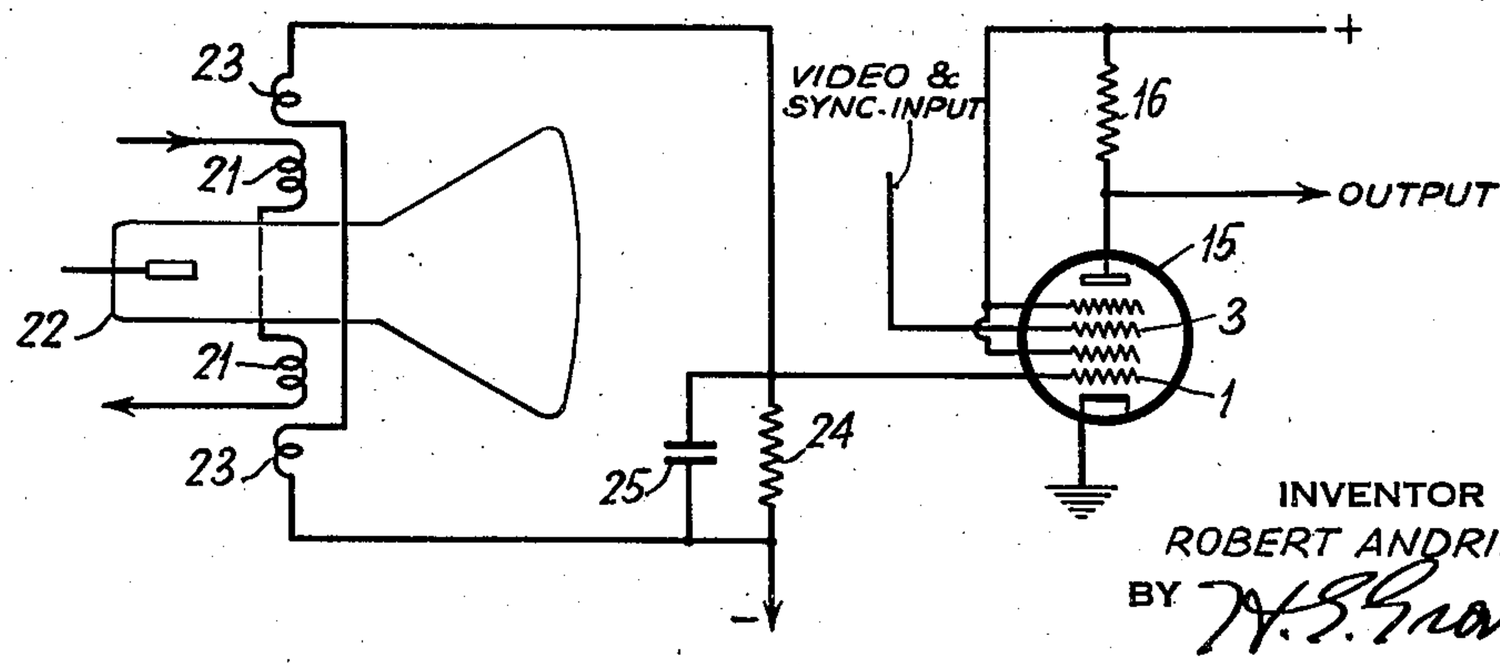


Fig. 3



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TELEVISION RECEIVER CIRCUIT

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2 Claims. (Cl. 178—7.3)

For the purpose of compensating for fading in television receiver apparatus it is known in the prior art to use at the sending end a constant-amplitude auxiliary signal sent out in conjunction with the synchronizing impulses used in sequential and interlaced scanning. At the receiving end, the said auxiliary signal is separated by the aid of so-called "keying" impulses from the rest of the transmitted signals and thus a regulator or control potential is obtained which corresponds to the prevailing amplitude of the auxiliary signal in accordance with the amount of fading existing at the time. The keying impulses in the scheme known in the prior art have been obtained by a time-base generator comprising two mutually controlling tubes (multivibrator) which is controlled by the synchronizing impulses, or else they were produced by artificial delay introduced in the synchronizing impulses themselves.

According to the invention, the keying impulses are secured from the means serving for line or frame deflection so that it is possible to dispense with the ratchet wave or time-base generator and the delay means hereinbefore mentioned.

A number of exemplified embodiments of the invention in which the keying impulses are derived from the sawtooth generators as shown in Figures 1 and 2 and from an auxiliary winding as shown in the scheme Figure 3, the said auxiliary winding being in coupling relation with the deflector coils of a cathode ray picture re-creator tube, shall now be described in the following:

Referring to Figure 1, 10 is a condenser which is charged from a source of D. C. potential across resistance 11 in direct proportion to the time. The tube 13 which is connected in a blocking oscillator scheme, and which in some suitable circuit organization may be subjected to control action produced by synchronizing impulses, discharges the condenser 10 each time a synchronizing impulse comes in. Incidentally, a drop of potential is brought about across the resistance 14 in the cathode lead of tube 13, the said potential drop having a sense as indicated by the plus and minus signs. This drop of potential serves the object to open the tube 15 whose cathode is connected with a suitable positive potential relative to ground. Such opening of tube 15 in each case persists for the full length of the plate-current impulse of the blocking oscillator 13 which, as a general rule, is of greater duration than the synchronizing impulse in question. By connecting the condenser 6 in parallel relation to the resistance 14, conditions could also be made so that the drop of potential across resistance 14, after termination of the plate-current impulse, initially decays slowly with the result that tube 15 is kept open for a period of time that is greater than the plate-current impulse length. Grid 3 of tube 15 is fed with the entire signal spectrum which has been transmitted from a distant point, that is to say, either in the form of a radio frequency or of an intermediate frequency potential or else after rectification of the carrier frequency. However, since tube 15 by the action of the keying impulse furnished from resistance 14 is open only during the synchronizing impulse and during a limited length of time adjoining the said impulse, it is possible to tap across resistance 16 a voltage which will correspond to the transmitted auxiliary signal so that therefrom the fading-compensator or signal-volume control potential may be made.

Figure 2 shows an exemplified embodiment which also comprises a condenser 10, a resistance 11, and a blocking oscillator tube 13. In coupling relation with the transformer winding 17 included in the plate circuit of the said blocking oscillator tube is an auxiliary winding 18 which works upon a resistance 19 to which, optionally, a condenser 20 may be connected in parallel. The cathode of tube 15 in this instance shall be assumed to be grounded as shown, and the lower end of winding 18 must then be united with a suitable negative biasing voltage. Grid 1 of tube 15 again is fed with the signal spectrum consisting of the brilliance or video signals, the synchronizing impulses, and the auxiliary signal, in the form of radio frequency or video frequency energy so that a potential may be taken off across the resistance 16 which corresponds to the size of the auxiliary signal stabilized at the send end and arising at the receiving end.

In the exemplified embodiment shown in Figure 3, an auxiliary coil 23 is in magnetic coupling relationship with the deflector coils 21 of the cathode ray picture re-creator tube 22, the said auxiliary coil 23 working upon a resistance 24 and optionally upon a condenser 25 connected in parallel thereto. The lower end of the said resistance 24 must be connected with a fixed biasing potential of such a size that grid 1 of tube 15 is impressed with the requisite negative biasing potential. But grid 3 of tube 15, as described by reference to Figure 1, is fed with the entire signal spectrum transmitted from the distant point either in radio frequency or video frequency

form so that the potential across the plate resistance 16 may be used as in Figures 1 and 2.

In other words, what the present invention may be regarded to consist of and reside in is the fact that the keying impulses are obtained from the means which serve for line or frame deflection, that is to say, the sawtooth generator, for example, as described by reference to Figures 1 and 2 or else from the very deflector coil as described in connection with Figure 3. However, inside the scope and spirit of the invention the said keying impulses could be derived also from a circuit in series with the sawtooth generator for the picture co-ordinate that is concerned.

I claim:

1. A system for producing automatic volume control potentials in a television receiver, comprising a first discharge tube having a cathode, a pair of control electrodes and an anode, means for applying a potential to one of the control electrodes to normally bias the tube to cut-off, a second discharge tube having a cathode, a control electrode and an anode, means for applying synchronizing signal impulses to the control electrode of said second discharge tube, a resistance connected from the cathode of the second discharge tube to a point of fixed potential, a condenser connected in parallel with said resistance, means for connecting the cathode of said second discharge tube to the said one control electrode of said first discharge tube to render said first tube conductive for short intervals corresponding to the application of synchronizing impulses to said second discharge tube, means connected to the other control electrode for varying the conductivity of said first discharge tube during such intervals in accordance with the intensity of the received signals, and an output circuit including the anode of said first discharge tube, whereby automatic volume control potentials are produced in the output circuit corresponding to the strength of the received signals.

2. A system for producing automatic volume control potentials in a television receiver comprising a first discharge tube having a cathode, a pair of control electrodes and an anode, means for applying a potential to one of the control electrodes to normally bias the tube to cut-off, a second discharge tube having a cathode, control electrode and anode, means for applying synchronizing signal impulses to the control electrode of said second discharge tube with the polarity of the synchronizing impulses extending in a positive direction, a resistance connected from the cathode of the second discharge tube to a point of fixed potential, a condenser connected in parallel with said resistance, means for connecting the cathode of said second discharge tube to the said one control electrode of the said first discharge tube to render said first tube conductive for short intervals of time coinciding with the application of the synchronizing signal impulses to said second discharge tube, means connected to the other control electrode for varying the conductivity of said first discharge tube during said short intervals of time in accordance with the intensity of the then received television signals, means for maintaining the anode of said first discharge tube positive with respect to its associated cathode, and an output circuit including the anode of said first discharge tube whereby automatic volume control potentials are produced in the output circuit in proportion to the intensity of the signals received during periods of conductivity of said tube.

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