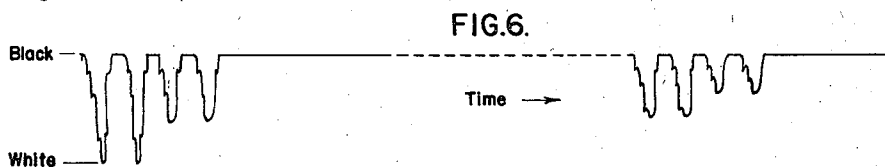


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TELEVISION RECEIVER INCLUDING
BLACK-LEVEL CONTROLHarold M. Lewis, Great Neck, N. Y., assignor to
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This invention relates to television receiving systems and more particularly to arrangements for automatically controlling one or more operating characteristics of such systems.

In accordance with the present television practice, a transmitted signal comprises a carrier wave modulated during successive intervals or trace periods by high-frequency and unidirectional components representative of variations in light over successive incremental areas of an image being transmitted and of its average background illumination, respectively. The carrier wave is unmodulated by light-representative components during retrace periods, ordinarily providing a level during such periods which has a fixed relation to black, but is modulated during such periods by synchronizing pulses which correspond to initiations of successive lines and fields in the scanning of the image.

At the receiver a scanning beam is developed and so deflected as to scan and illuminate a target in a series of fields of parallel lines. The synchronizing components of the received signal are utilized to control the scanning apparatus of the receiver so as to synchronize its operation with that of similar apparatus utilized at the transmitter in developing the signal. The intensity of the beam is controlled by the light modulation components, thereby to reconstruct the image.

In certain proposed television systems, the video-frequency modulation developed from the image is so impressed on the carrier that increases in the carrier amplitude correspond to increases in brightness of the image, this being termed positive modulation. The background illumination is transmitted directly, that is, by variation of the average carrier intensity during the trace intervals directly in accordance with the low frequency or steady background light components. Between the trace periods, a blanking signal or level is, as stated above, transmitted and corresponds in amplitude to black or a reference level fixed in value with respect to black but blacker than black. The synchronizing pulses are impressed on the carrier during the blanking intervals in the opposite sense to the light modulation signals, ordinarily periodically reducing the carrier amplitude to zero.

While systems utilizing the type of signal just described have, in general, given satisfactory results, certain difficulties are incident to their use.

For example, an important consideration in providing the proper operation of a television re-

ceiver is the stabilization of the detected signal, whether derived from a positively or negatively modulated carrier, with respect to its black level. More particularly, a fixed level for the detected signal amplitude corresponding to black must be established in order that all of such components will be represented by black in the reproduced signal and the light gradations from black to white represented by the various video-frequency signal components will be properly represented in the reproduced scene.

It is an object, therefore, of the present invention to provide a television receiver including improved means for automatically controlling certain operating characteristics of the receiver in accordance with characteristics of the received modulated-carrier signals.

It is a further object of the invention to provide an improved automatic black-level control system in conjunction with at least one other system for adjusting another operating characteristic for television receivers adapted for the reception of positively modulated television signals including background and high-frequency light-modulation components by which the amplification and at least one other operating characteristic of a receiver may be controlled.

It is a further object of the invention to provide a television receiver including improved means for automatically establishing a fixed signal level for the components corresponding to black in the detected signal.

It is a further object of the invention to provide a television receiver embodying improved control means for effecting both automatic amplification control and establishment of a fixed signal level for the components corresponding to black in the detected signal.

In accordance with the invention, a television receiver, adapted for the reception of a television signal-carrier wave the amplitude of which may vary at the receiver and modulated during trace periods by light components having a predetermined blanking level, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude range of the light-modulation components during retrace periods, comprises means for deriving from a received signal its modulation signal stabilized with respect to the peak of the synchronizing-pulse components, together with means for blocking out only the synchronizing-pulse components from the derived signal. The receiver also includes means for stabilizing the resultant derived signal with respect to the blanking level,

together with means for utilizing the blanking-level-stabilized signal to reproduce the transmitted light-modulation components.

For a better understanding of the present invention, together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

In the accompanying drawing, Fig. 1 is a circuit diagram, partially schematic, of a television receiving system including circuits embodying the present invention; while Figs. 2-6, inclusive, are graphs representing the wave forms of the signals as developed at different points in the receiver of Fig. 1.

Referring more particularly to Fig. 1 of the drawing, the system there illustrated comprises a television receiver which may be of either the tuned radio-frequency or superheterodyne type and including, in cascade in the order named, an antenna system 11, 12, a carrier-frequency translator 13, a detector and video-frequency amplifier indicated generally at 14, a further video-frequency amplifier 15, a stabilizer 16, and an image reproducing device 17. Where the receiver is of the superheterodyne type, the conventional frequency changer and intermediate-frequency amplifier are included in the translator 13.

There is also connected to the output circuit of the translator 13, in cascade in the order named, a detector 18, a first separator 19, and an inter-synchronizing signal separator 20. A line-frequency scanning wave generator 21 and a field-frequency scanning wave generator 22 are coupled to the output circuit of the separator 20 and are connected to the scanning elements of the device 17 in a conventional manner. The parts of the receiver illustrated in detail are constructed in accordance with the present invention and will be hereinafter further described. Those parts of the system represented schematically may be conventional in construction and operation.

The system of Fig. 1, as described above, thus includes all the conventional components of a television receiver for receiving a television signal the amplitude of which may vary at the receiver. The circuits being, in general, well understood in the art, a detailed description of their general operation is unnecessary. Briefly, however, vision-modulated carrier waves are intercepted by the antenna 11, 12 and selectively amplified in the carrier-frequency translator 13. Where the receiver is of the superheterodyne type the signals are impressed on a frequency changer in the translator 13 where they are converted into intermediate-frequency signals and thereupon further selectively amplified. The amplified signal from the translator 13 is delivered to the detector and video-frequency amplifier 14 wherein there are derived and amplified the modulation-frequency components, including video-frequency and synchronizing components. The modulation-frequency components are thereupon supplied to the video-frequency amplifier 15 where they are further amplified and supplied by way of the stabilizer 16 to a brilliancy control element of the device 17.

The detector 18 also derives the modulation signal from the carrier output of translator 13 and translates the same to the separator 19, wherein the synchronizing-impulse components are separated from the video-frequency components, as further to be explained later. The

synchronizing-pulse components are thereupon supplied to the separator 20 in which the line-frequency synchronizing-pulse components are separated from the field-frequency synchronizing-pulse components and these separated components are then applied to the generators 21 and 22, respectively, to synchronize the operation thereof.

The intensity of the beam of the device 17 is thus controlled in accordance with the video-frequency voltages impressed upon its control element in the usual manner. Saw-tooth scanning waves developed by the generators 21 and 22 under the control of the synchronizing-pulse components are utilized in the conventional manner to produce electric fields of saw-tooth wave form to deflect the beam in two directions normal to each other, thereby to trace the scanning pattern upon the screen of the device 17 and to reconstruct the transmitted image.

Referring now more particularly to the portion of the system of Fig. 1 embodying the present invention, the detector and amplifier 14 comprises a vacuum tube 23 of the diode-triode type or equivalent. The diode section 24 is supplied from an inductance element 26 coupled to an inductance element 29 included in the output circuit of the carrier-frequency translator and is provided with a load circuit including a resistor 27 and condenser 28 in parallel, as shown. The negative end of the resistor 27 is directly connected to the control grid of the triode section 25 of the tube 23. The load circuit of the triode section 25 comprises a resistor 30 included in its cathode circuit. Operating potential is supplied to the anode of the tube from a suitable source, indicated at +B. The diode 24 operates in a conventional manner to derive the modulation voltages from the carrier signal and impress them upon the triode control grid. The triode section 25 also operates conventionally to amplify these voltages so that the amplified modulation signal voltages are developed across the load resistor 30.

The amplifier 15 may comprise a conventional pentode tube 31 having its input circuit connected across the resistor 30 as shown, a suitable biasing battery 32 being included in its cathode circuit. A load resistor 33 and choke 34 are included in the anode circuit while operating potentials are applied to the anode and screen from suitable sources, indicated at +B and +Sc, respectively.

The control element of the device 17, which may, for example, be the input electrode of a cathode-ray tube, is connected across the load circuit 33, 34 of the amplifier 15 by way of a coupling condenser 35. For the purpose of stabilizing the modulation signal with respect to its blanking level or the components thereof corresponding to black, there is provided the stabilizer 16 comprising a diode 36 and a parallel load resistor 37, connected across the input circuit of the cathode-ray tube. A fixed biasing potential may be applied to the control element of the device 17, for example, the input control electrode of a cathode-ray tube, by way of the resistor 37 from a suitable source indicated at -G.

For the purpose of separately deriving and separating the synchronizing-pulse components from the received signal carrier, there are provided the detector 18 and separator 19. The detector 18 comprises a diode 38 fed from an inductance element 41 coupled to the inductance element 29 in the output circuit of the translator 13 and provided with a load circuit including a

resistor 39 and condenser 40 in parallel. The separator 19 comprises an amplifier tube 42 preferably of the pentode type and having its input circuit connected across the load circuit 39, 40 and having a biasing resistor 43 and by-pass condenser 44 included in its cathode circuit and a load resistor 45 included in its anode circuit. Operating potential may be applied to the anode of the tube 42, by way of the resistor 45, and directly to the screen from suitable sources indicated at +B and +Sc, respectively. The input circuit of the separator 20 is connected across the load resistor 45.

The tube 42 is so biased and its grid voltage-plate current characteristic is such that, with signal input voltages of normal amplitude supplied from the detector 18, it operates beyond cutoff so that only the synchronizing pulses of the detected modulation signal are passed by this amplifier and developed in its output circuit. That is to say, the synchronizing-pulse components are separated from the video-frequency components, the former having a wave form such as indicated adjacent the resistor 45 in Fig. 1. The output circuit of the limiter 19 is also connected by way of a suitable lead 46 including a coupling condenser 47 to the control grid of the triode section 25 of the tube 23 and, by way of a suitable lead 48 including a coupling condenser 49, to a control element of the device 17, for example, the input electrode of a cathode-ray tube. Thus, the synchronizing-pulse components as developed in the output circuit of the limiter 19 are applied negatively to control electrodes or elements of the separator 20, the amplifier 23 and the device 17.

For the purpose of developing a unidirectional bias voltage for effecting automatic amplification control, there is provided a rectifier indicated generally at 50 comprising a diode 51 having a load circuit including a resistor 52 and condenser 53. The diode and its load circuit are effectively connected across the load resistor 30 of amplifier 14. For the purpose of suitably biasing the diode 50, which operates as a peak detector, a positive potential is applied to its cathode by way of the resistor 52 from a suitable source, indicated as the battery 54, to compensate for the positive bias on its anode applied from bias resistor 30.

The operation and results obtained by the system of Fig. 1 may best be understood by reference to the curves of Figs. 2-6, inclusive, which illustrate the wave forms of the signal as developed at various points in the system. In Fig. 2, there is illustrated the wave form of a portion of the complete modulation envelope of a television wave of the positively modulated type, such as may be developed in the output circuit of the carrier-frequency translator 13. The portion of the curve of Fig. 2 which is shown at A represents a wave of relatively great amplitude while that at A' represents a similar wave different only in that it is of lesser amplitude, as might be caused by occasional fading. The blanking level of the wave is indicated at X and is independent of light modulation. The portions of the wave during the blanking intervals when the carrier amplitude is reduced to zero, certain of which are indicated at L, represent retrace periods including the synchronizing pulses, the synchronizing-pulse components thus being outside the amplitude range of the light-modulation components. The portions between the line-blanking intervals correspond to the trace por-

tions of successive lines, being modulated as indicated at M₁ and M₂ by the high-frequency and background light components except during field block-out periods. A part of one of the field-blockout intervals is indicated at Y-Y. The field-blockout intervals ordinarily include the line-synchronizing pulses as well as additional broad pulses, not shown, which latter may constitute collectively a frame-synchronizing pulse. Ordinarily, the blanking level of the wave indicated at X corresponds to black in the scene being transmitted or a fixed value relative thereto which is blacker than black and may be termed the black level.

It is well known that, with the positive type of modulation such as is represented in Fig. 2, increases of the light intensity of the image being scanned are represented by increases in the amplitude of the carrier and the average intensity of the signal is varied in accordance with the low-frequency or unidirectional background-illumination components of the image. Thus, in the particular portions of the wave shown, during the line-trace modulation periods represented at M₁, the amplitude of the carrier is such that it reaches the white level, whereas this does not occur during the modulation periods represented at M₂. Since there are no regularly recurring peak values, corresponding to the white level in a positively modulated signal, the peak value of the signal cannot be used for the purpose of automatic amplification control. Nor, as stated above, are there in this type of wave any synchronizing pulses which could be utilized for the purpose in question, since the signal is reduced to zero for the duration of the line-synchronizing pulses. However, the modulation envelope does include a certain representative level, for example, the blanking level X, at which the signal represents black or a predetermined value with respect thereto, and which appears in the signal not only for black pictures but also during the retrace periods. This level, therefore, affords a measure of the intensity of the carrier wave which is independent of light modulation and of other signal characteristics such as its periodicity or synchronization, and this level may, therefore, be utilized automatically to control a characteristic of the receiver such as its amplification.

In the operation of the present invention, therefore, the modulated-carrier wave is detected by the diode detector 24 of tube 23 to derive a voltage across its load resistor 27 corresponding to half of the modulation envelope, which voltage is impressed upon the triode amplifier portion 25 of the tube 23. Since the connection between the resistor 27 and the amplifier control electrode is a direct one, the signal as applied to this amplifier is stabilized with respect to the synchronizing pulses; that is, the peaks of the synchronizing pulses are maintained at a substantially fixed level as impressed on the control grid. The stabilized signal input to amplifier 25 is shown in Fig. 3, the synchronizing pulses being indicated in dotted lines. Were the connection between the diode and the control-grid not direct, as by way of a coupling condenser, the unidirectional component of the signal would be lost and it would tend to establish itself about its neutral axis so that the levels of the peaks of the synchronizing pulses would depend on the average signal amplitude; that is, the signal would not be stabilized with respect to the synchronizing pulses.

The diode 18 and limiter 19 operate, as explained above, to detect the signal derived from the output circuit of the translator 13 and to limit and amplify the derived modulation signal, thereby to develop a negatively poled synchronizing-pulse signal across the load resistor 45 and this signal, as explained above, is applied to the control electrodes of the triode section 25 of tube 23, the separator 20, and cathode-ray tube 17. This pure synchronizing-pulse signal is applied to the grid of amplifier section 25 with a polarity opposite to that of the synchronizing-pulse components in the signal derived from the diode detector section 24 so that the original synchronizing pulses are removed from, or blocked out of, the resultant signal and the inserted pulses appear in the signal output of amplifier 25 with opposite polarity from that of the original pulses. This modified signal as developed across the load resistor 30, therefore, is of a wave form such as illustrated in Fig. 3, the original synchronizing pulses being indicated by the broken lines as they would have appeared if not blocked out, and the inserted pulses with reverse polarity being indicated by L₁. It will be noted that the blanking level X still corresponds to its level in the original signal; that is, the modulation signal is still stabilized with respect to the peaks of the synchronizing pulses. This level, therefore, is a measure of the average amplitude of the carrier independent of light modulation and can be used to effect a control of any desired characteristic of the receiver, for example, automatic amplification control. To this end, the diode 51, the load circuit 52, 53 of which has a time constant which is preferably long as compared to the line-scanning period, detects the peak value in the positive or black direction of the signal developed across the resistor 30 and, hence, develops a control-bias voltage varying in accordance with the peak value of the wave of Fig. 3. Thus, this bias voltage is responsive to a predetermined level of the modulation envelope, in the present case the blanking level, and independent of other characteristics thereof; it is entirely independent of pulses which depend upon periodicity of synchronizing of the signal. This control-bias voltage is dependent only on the blanking level X, the nature of the video signal being immaterial as all components thereof are of lesser amplitude so that the peak detector 51 is not responsive thereto, the detector being effective to peak-rectify the shoulder on each side of the line-frequency pulses of Fig. 3. This shoulder is always present to represent a black level since the synchronizing pulses are of less duration than the blanking intervals. This control-bias voltage varies inversely in accordance with the carrier amplitude as unaffected by modulation components and is applied positively by way of the lead indicated as "A. V. C." to the control electrodes of one or more of the tubes in the translator 13 which have a large initial negative bias (not shown). The resultant negative bias utilized for controlling the amplification of translator 13 is thus as illustrated by the curve of Fig. 4, the variation in its value for signals of greater and lesser amplitudes being indicated at a and a₁, respectively. Thus the amplification in these tubes is controlled inversely in accordance with variations of the average carrier intensity and independently of light modulation components. A suitable conventional filter (not shown) may be included in the AVC lead for the purpose of removing residual fluctuations in

the bias voltage. Thus, the output signal intensity of the channel of the translator is maintained within a relatively narrow range for a wide range of received signal intensities.

As explained above, the signal developed in the output circuit of the detector and amplifier 14 is also applied by way of the amplifier 15 and stabilizer 16 to the cathode-ray tube 17. For the purpose of properly fixing the level of black in the signal as applied to the control element of the device 17, so that the components of the signal which represent black will appear as black in the reproduced image and the light gradations from black to white represented by various video-frequency components will be properly represented in the reproduced scene, the diode 36 of the stabilizer 16 derives from the output of the amplifier 15 a positive unidirectional voltage equal to the peak value of the signal in the black direction. More particularly, since the load circuit of diode 36 effectively comprises resistor 37 and condenser 35, diode 36 operates as a peak rectifier and passes current only during the negative peaks of the applied detected but unstabilized signal which is of the wave form illustrated in Fig. 3 but centered about an equal area axis by the alternating current coupling condenser 35. The diode load circuit 35, 37 is so proportioned that there is thus built up across the resistor 37 a bias voltage which varies with the amplitude of these negative peaks of the unstabilized signal. This bias voltage is applied positively from the upper terminal of resistor 37 to the control element of the device 17. The control element of the device 17 is initially negatively biased from a suitable source —G, and this bias is preferably such as to correspond approximately to black, the resultant of the bias voltage developed across resistance 37 and the bias voltage —G being utilized for stabilizing the signal input to unit 17 at the blanking level. The resultant video-signal applied to the control element of the device 17, therefore, is effectively stabilized with respect to the blanking level of the signal; that is, to a level representing black or a value blacker than black having a fixed value with respect to black. The signal, therefore, as applied to the control element has a wave form such as is illustrated by the curve of Fig. 5. It will be noted, however, that this signal still includes the synchronizing pulses with reverse polarity which were inserted by means of the connection from the output circuit of the amplifier 19. Since these pulses are of such polarity that they would appear as white in the reproduced image, it is necessary that they be effectively removed from the signal. For this purpose, therefore, as pointed out above, the synchronizing pulses developed by the amplifier 19 are applied negatively to a suitable control electrode of the cathode-ray tube 17 and, in case they are applied to the control grid of image-reproducing device 17, the synchronizing-pulse components are reinserted in the black direction in the blanking-level-stabilized signal input to image-reproducing device 17. Hence, the resultant signal developed by the device 17 has, in effect, a wave form such as is illustrated by the curve of Fig. 6 having a predetermined fixed black level and being reduced to zero during retrace periods. It will thus be seen that the present invention provides a television receiver which includes improved control means for effecting the setting of the black level of the signal at a proper value

for reproduction as well as automatic amplification control.

While there has been described what is at present considered to be the preferred embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is, therefore, aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and modulated during trace periods by light components having a predetermined blanking level, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received signal its modulation signal stabilized with respect to the peaks of said synchronizing-pulse components, means for blocking out only said synchronizing-pulse components from said derived signal, means for stabilizing the resultant derived signal with respect to said blanking level, and means for utilizing the blanking-level-stabilized signal to reproduce the transmitted light modulation components.

2. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and modulated during trace periods by light components having a predetermined blanking level, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received signal its modulation signal stabilized with respect to the peaks of said synchronizing-pulse components, means for separately deriving from said received signal said synchronizing-pulse components, means for utilizing said separately derived synchronizing-pulse components for blocking out corresponding components from said derived modulation signal, means for stabilizing the resultant signal with respect to said blanking level, and means for utilizing the blanking-level-stabilized signal to reproduce the transmitted light modulation components.

3. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and modulated during trace periods by light components having a predetermined blanking level, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received signal its modulation signal stabilized with respect to the peaks of said synchronizing-pulse components, means for blocking out only said synchronizing-pulse components from said derived signal, a diode rectifier for deriving from the resultant derived signal a positive bias voltage proportional to the peak value of said signal on the black side of its axis, means for utilizing said bias voltage for stabilizing said resultant derived signal with respect to said blanking level, and means for utilizing the blanking-level-stabilized signal to reproduce the transmitted light modulation components.

4. A television receiver adapted for the reception of a television signal carrier the amplitude

of which may vary at the receiver and modulated during trace periods by light components having a predetermined blanking level, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received signal its modulation signal stabilized with respect to the peaks of said synchronizing-pulse components, means for blocking out only said synchronizing-pulse components in said signal, a source of negative bias voltage of a fixed value, a diode rectifier for deriving from the resultant derived signal a positive control-bias voltage proportional to the peak value of said signal on the black side of its zero axis, means for utilizing the resultant of said two bias voltages for stabilizing the resultant signal with respect to said blanking level, and means for utilizing the resultant signal to reproduce the transmitted light modulation components.

5. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and modulated during trace periods by light components having a predetermined blanking level corresponding to black, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received signal its modulation signal stabilized with respect to the peaks of said synchronizing-pulse components, means for blocking out only said synchronizing-pulse components in said signal, a source of negative-bias voltage having a fixed value with respect to black, means for deriving from the resultant derived signal a positive control-bias voltage proportional to the peak value thereof on the black side of its zero axis, means utilizing the resultant of said two bias voltages to stabilize the resultant signal with respect to said blanking level, thereby to establish a fixed level for signal components corresponding to black, and means for utilizing the resultant signal to reproduce the transmitted light modulation components.

6. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and positively modulated during trace periods by background and video-frequency light components, having a predetermined blanking level, unmodulated by light components and modulated by negatively poled synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received signal its modulation signal stabilized with respect to the peaks of said synchronizing-pulse components, means for blocking out only said synchronizing-pulse components from said derived signal, means for stabilizing the resultant derived signal with respect to said blanking level, means for reinserting said synchronizing-pulse components in the black direction in the stabilized resultant signal, and means for utilizing the blanking-level-stabilized signal with reinserted synchronizing-pulse components to reproduce the transmitted light modulated components.

7. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and positively modulated during trace periods by background and video-frequency light components having a predetermined blanking level, unmodulated by

light components and modulated by synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received carrier signal its modulation signal stabilized with respect to the peaks of said synchronizing pulses, means for blocking out only said synchronizing-pulse components in said signal, means responsive to variations in the value of a predetermined level in the resultant modulation signal for developing a controlling effect, means for utilizing said controlling effect to adjust an operating characteristic of the receiver, means for stabilizing said resultant derived signal with respect to said blanking level, and means for utilizing the blanking-level-stabilized signal to reproduce the transmitted light modulation components.

8. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and positively modulated during trace periods by background and video-frequency light components having a predetermined blanking level, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude range of said light-modulation components during retrace periods, comprising means for deriving from a received carrier signal its modulation signal stabilized with respect to the peaks of said synchronizing pulses, means for blocking out only said synchronizing-pulse components in said signal, means responsive to variations in the value of a predetermined level in the resultant modulation signal for developing a controlling effect, means for utilizing said controlling effect to adjust an operating characteristic of the receiver, means for stabilizing said resultant derived signal with respect to said blanking level,

means for reinserting said synchronizing-pulse components in the blanking-level-stabilized signal, and means for utilizing the blanking-level-stabilized signal with reinserted synchronizing-pulse components to reproduce the transmitted light modulation components.

9. A television receiver adapted for the reception of a television signal carrier the amplitude of which may vary at the receiver and positively modulated during trace periods by background and video-frequency light components having a predetermined blanking level, unmodulated by light components and modulated by synchronizing-pulse components outside the amplitude of said light-modulation components during retrace periods, means for deriving from a received carrier signal its modulation signal stabilized with respect to said synchronizing pulses, means for separately deriving from said received signal said synchronizing-pulse components, means for utilizing said separately derived synchronizing-pulse components for blocking out only the corresponding components in said derived modulation signal, means responsive to the blanking level of said stabilized modulation signal for developing a controlling effect, means for utilizing said controlling effect to adjust an operating characteristic of the receiver, means for stabilizing the resultant synchronizing-pulse component stabilized signal with respect to said blanking level, means for utilizing said separately derived synchronizing-pulse components for reinserting said components in the blanking-level-stabilized signal, and means for utilizing the resultant blanking-level-stabilized signal with reinserted synchronizing-pulse components for reproducing said light modulated components.

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