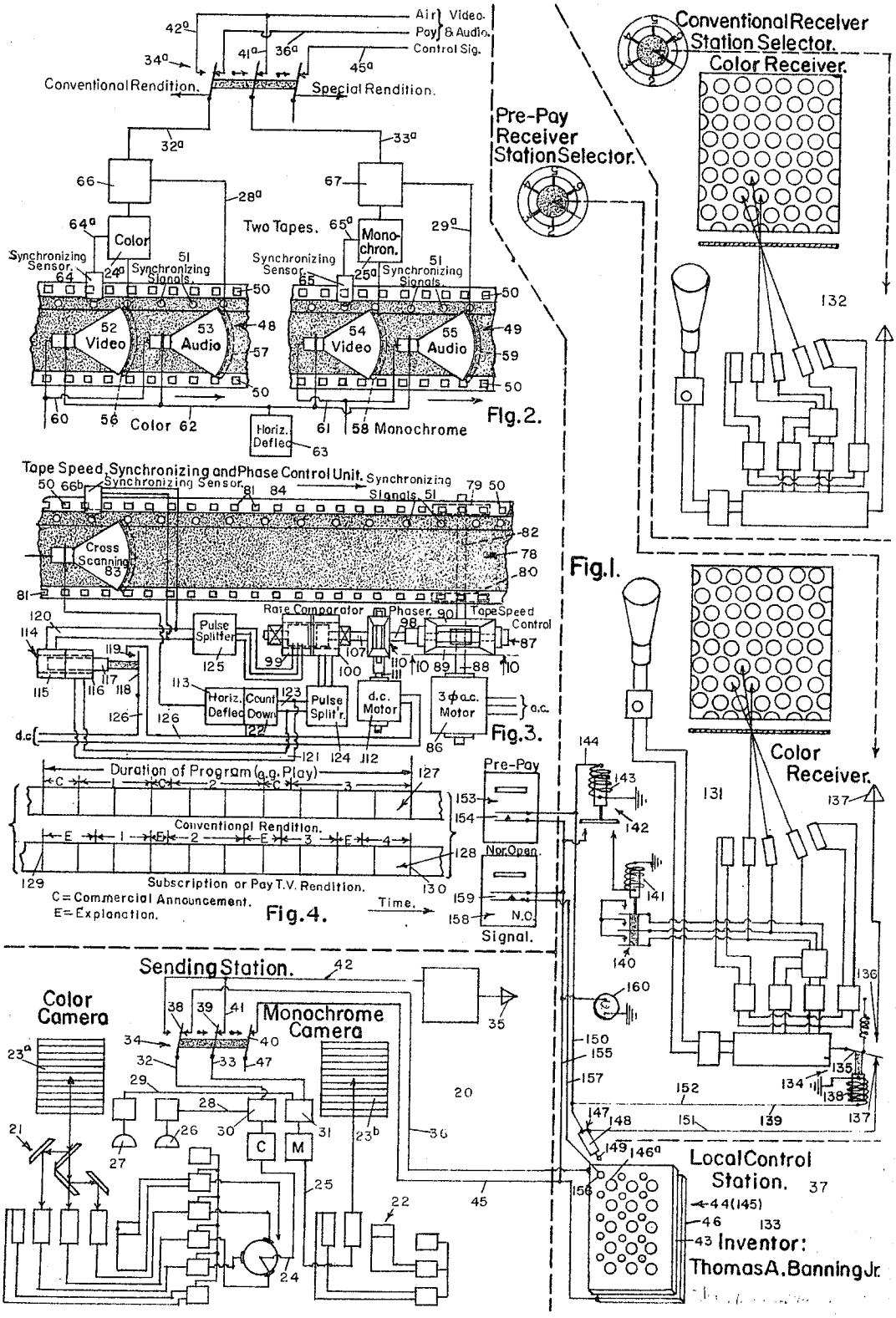
Jan. 23, 1968 T. A. BANNING, JR 3,365,542

SUBSCRIPTION OR PAY TELEVISION, AND THE LIKE

Filed May 27, 1965 2 Sheets-Sheet 1



Jan. 23, 1968 T. A. BANNING, JR 3,365,542

SUBSCRIPTION OR PAY TELEVISION, AND THE LIKE

Filed May 27, 1965 2 Sheets-Sheet 2

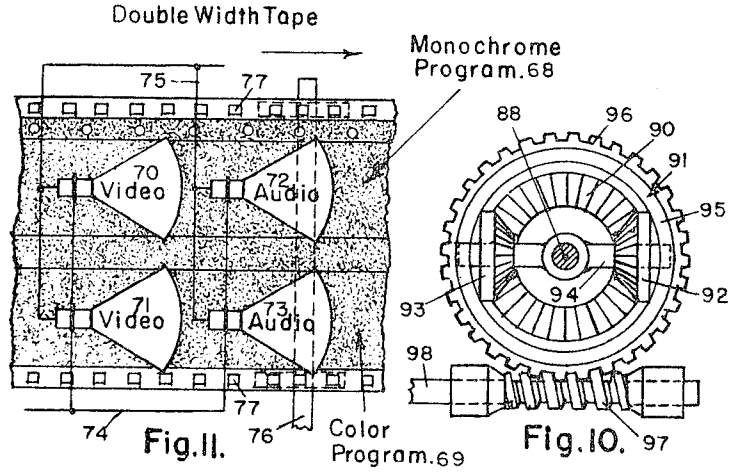



Fig.11. Fig.10.

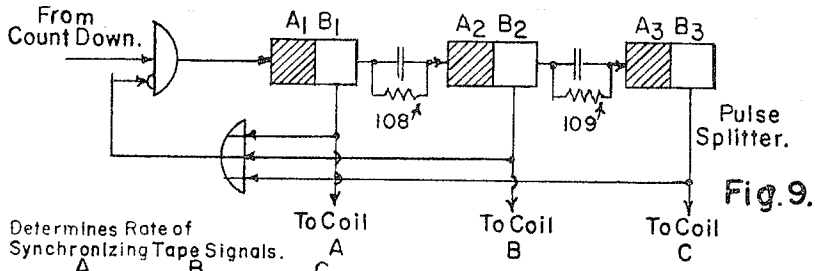



Fig.9.

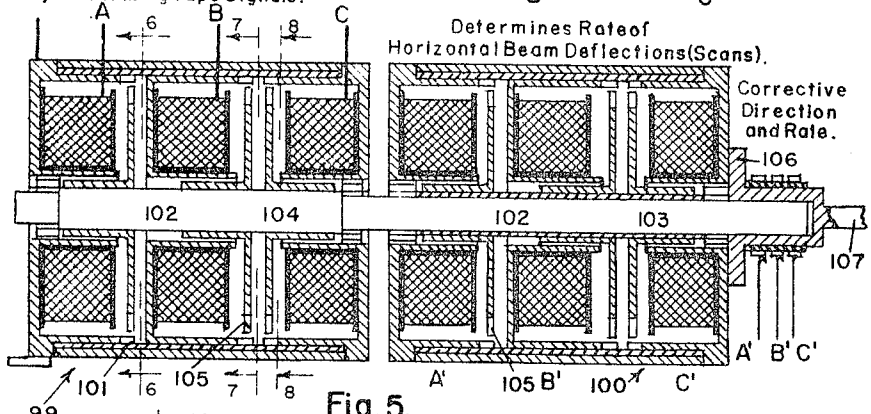



Fig.5.

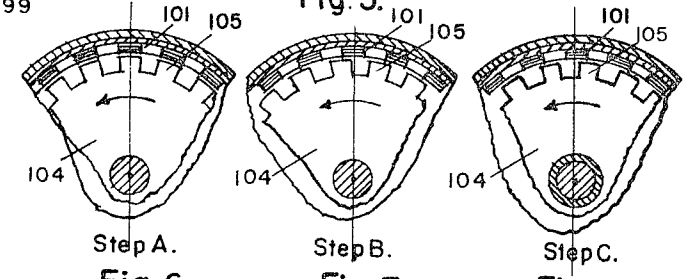



Fig.6. Fig.7. Fig.8.

Inventor:
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3,365,542

# SUBSCRIPTION OR PAY TELEVISION, AND THE LIKE

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Filed May 27, 1965, Ser. No. 459,399
37 Claims. (Cl. 178—5.2)

## ABSTRACT OF THE DISCLOSURE

This case discloses a wired video signal embodiment, together with switch means shown adjacent to the receiver, and controlled by signals sent out from a control station, such switch means being constituted for delivery of either broadcast, inferior aesthetic quality renditions to the receiver, without pay or subscription, or for delivery of the wired, superior aesthetic quality renditions to the receiver, under control of the attendant at the control station, the inferior aesthetic quality renditions being free—the superior aesthetic quality renditions being pay or subscription renditions.

This invention relates to improvements in subscription or pay-television, and the like. In various Letters Patent of the United States, and applications for additional protection by further Letters Patent of the United States presently pending, I have disclosed means to receive and interpret the programs emitted or sent out from the broadcasting or originating station, under either of two (or more) aesthetic qualities of interpretation, one being a superior quality and the other an inferior quality, but each such quality constituting a fully intelligible interpretation, acceptable by the user and viewer as such. In connection with such earlier disclosures I have also included various receiver operated (controlled by the user of the receiving equipment), means whereby the received program may be viewed and enjoyed by the user in either such superior or such infereior aesthetic quality of reception and interpretation; and I have also disclosed various arrangements in or in connection with such receiving equipment whereby the user of the equipment may select that quality of reception by a simple operation. In this connection I have also included in various of such disclosures, means whereby the reception of the superior quality of reception so made by the user of such equipment, can only be accomplished when proper pre-pay or subscription operation or instruction has been made by or for such user or subscriber. Nevertheless, such disclosed equipment has been such and of such a nature that the user of the equipment may receive the desired program in its inferior or less desirable quality, but nevertheless a fully intelligible and acceptable quality, without pre-pay or the making of a subscription operation. The inferior quality of reception thus received is therefore made available to any person having in his use control a receiver constituted to receive and interpret such program in its fully intelligible but less superior quality of reception.

Included in such earlier disclosures by me there are Letters Patent of the United States, No. 2,755,334, filed July 9, 1951, issued July 17, 1956, and No. 3,070,652, filed July 16, 1956, issued Dec. 25, 1962; as well as numerous presently pending further applications for Letters Patent of the United States.

An important feature and object of the present invention is to provide various embodiments of equipment, and systems of operation, so constituted that the program being sent out or emitted, being a special or subscription or pre-pay program, may be received by conventional receivers in the inferior but intelligible quality of reception, without subscription operation or pre-pay; and at the same time to forbid or prevent the reception and interpretation of such special program in its superior quality of translation, no special equipment, either in or adjacent to such conventional receiver, or alteration of the conventional equipment or circuitry of such conventional receiver being needed in order to prevent or forbid the reception and translation of such special program in its superior or more desired quality by such conventional receiver. Under the above stated conditions, the features of my present disclosure, and my presently disclosed system or operations, may be introduced into and used in connection with presently widely used conventional receivers, these already in use conventional receivers being enabled to receive and translate the special program without subscription operation or pre-pay, but in the inferior aesthetic quality of translation, only the subscription or pre-pay receivers being then able to receive and translate such special program in its superior quality.

By way of illustration of an embodiment of my present improvements, but not as any limitation of the protection to be afforded to me by the claims to follow, except as I may include such limitation in a claim or claims, I mention the condition and the operations under which the superior quality of reception may be a translation of the video signals for production of the picture in full color, or for production of such picture in monochrome. Under present specifications of the F.C.C., and/or other controlling agencies, the signals for color reception are compatible. Accordingly, either color signals or monochrome signals may be received and interpreted by such conventional monochrome receivers, as an acceptable monochrome translation on the viewing screens. Also under such specifications, a color receiver (capable of receiving and translating color signals as a color raster and picture) may also receive and translate monochrome signals, to produce a monochrome translation from such monochrome signals, or may receive and translate color signals to produce either a monochrome or a color translation and raster, selectively.

Accordingly, all conventional receivers, whether a monochrome receiver or a color receiver, so designated, may receive and translate monochrome sginals, as a monochrome translation; and a conventional monochrome receiver may receive and translate color signals, as well as monochrome signals, to produce a monochrome raster and picture translation; and a conventional color receiver, may receive and translate monochrome signals as a monochrome translation, and may receive and translate color signals, as either a color raster and picture translation or, selectively, according to the circuitry and equipment of such color receiver, as a monochrome raster and translation.

Accordingly, if the special program be emitted and cast on the air in monochrome signal operation, and simultaneously such program be delivered through another channel of communication in color video signals only to the subscription or pre-pay receivers, it is evident that the conventional receivers tuned to receive such monochrome radio transmitted video signals, may receive the video component of the program directly, whether such conventional receivers be monochrome receivers or color receivers, and without subscription or pre-pay operations; whereas the subscription or pre-pay receivers may receive the color video signalled component of the program either in monochrome (without subscription or pre-pay operation), or in full color (under the conditions that such subscription or pre-pay receiver be constituted for selection of the quality of video translation, selectively). Thus, any person provided with a conventional television receiver, whether a conventional monochrome picture

receiver or a color picture receiver, may receive the program video component without subscription or pre-pay; and all persons provided with the subscription or pre-pay receivers, may receive the video component of such program in monochrome, without subscription or pre-pay, or in full color by the subscription or pre-pay operation.

I shall hereinafter illustrate and describe means whereby the foregoing operations may be carried on, including an embodiment of such means, which embodiment makes it possible for the reception of the special program by use of conventional receivers without subscription or pre-pay operation, but in the less than superior aesthetic quality; and in the superior aesthetic quality by subscription or pre-pay operation of the receivers of the subscribers or pre-pay operated receivers.

A further feature of the present invention resides in the following:

Under presently applicable Rules and Regulations of the F.C.C. it is permissible for the broadcasting station to include in its broadcast programs interruptions to the regular program, be such musical, or primarily video, or a combination of both components, such interruptions usually constituting advertising announcements or picture displays, or both. Many viewers or listeners to such programs find annoyance due to such interruptions or "Commercials," and either shut down the receiver during the reception of such commercials, or in some cases, shift the tuning to some other broadcasting station then operational. In any case, however, it is recognized that many listeners and viewers of the programs have expressed a desire to find means to eliminate such undesired portions of the programs of their choice, so that they may receive the video and audio portions of such programs without the annoyance of the interspersed commercials. But since financial requirements of the broadcasting stations and those owning or operating the same, must find means to secure the income needed for operations, and other purposes, it remains to find such income from sources other than such commercials. The pre-pay or subscription feature enables the production of such needed and desired income without the need of injecting the commercials into the programs being received and translated by the user's receiver at the time of its use.

An important feature of the present invention resides in the provision of operational novelty in the broadcasting of the programs, and in the reception and translation thereof to the listener and/or viewer, whereby substantially the same program either audio or video, or a combination of both of these, may be received in either of two aesthetic qualities of reception and translation; wherein one such reception may include the commericals, so-called, being here defined as an inferior quality reception, and the other reception does not include such commercials, being here defined as a superior quality reception. Provision is made for securing the inferior quality reception without need of pre-pay or subscription operation, being a "free" program; but such provision includes means to require pre-pay or subscription operation by the user or for his benefit, when the superior quality reception is to be received and translated to the user's perception. I have herein disclosed means to enable emission of the stated program in both qualities of emission, one such emission including the "commercial" qualities of emission, being the inferior quality emission, and the other such emission being free of such commercials, and being the superior quality emission. I have then provided means to enable reception of the inferior quality reception as thus defined, by any conventional receiver constituted to receive the signals, either or both video and audio, emitted for such inferior quality reception and translation, without pre-pay or subscription operation; and for receiving and translating the superior quality reception as thus defined, by a receiver constituted to enable such reception in either the inferior quality reception without pre-pay or subscription operation, or in the superior quality reception, only when pre-pay or subscription operations have been made or authorized.

Under the operational conditions just above defined the inferior quality reception may also be in an inferior quality of video or audio production, such as monochrome instead of full color, whereas the superior quality reception may be in full color, thus producing a double benefit in the quality of the superior reception as compared with the inferior reception. I have hereinafter disclosed means to enable production and perception of the inferior and the superior qualities of reception for inclusion of both of the benefits already defined.

Provision may be made at the sending station for emission of one or both of the signalled programs either "live," or by sensing and playing-back previously recorded programs. It is to be noted that under either of such arrangements the overall time interval of the program should generally be the same, whether including the intervals of the commercials of the inferior quality operation, or without such commercials when the program is of the superior quality. Generally, however, various explanatory statements will be included in the superior quality operation at suitable portions thereof; and these, when present, may be devised to substitute for the "commercials" time consumed during the inferior quality operation, so that the overall times of both of the program operations will be substantially the same.

When the emission of the two quality programs is produced from tape recordings, use may be had at the sending station of sensing and playing-back equipment in the form of two sets of such equipment, if necessary, acting to sense their individual tape recordings, such two playing-back equipments being adjusted for operation at substantially equal speeds; or use may be made of a tape recording and playing-back equipment carrying a tape of sufficient width to receive and carry the signals for both the inferior and the superior quality recordings, with proper sensing and other means for playing-back both of the sets of recordings, and with proper means to emit the signals for the two sets of recordings, under the conditions necessary for carrying forward the operational conditions already explained herein.

It is now noted that during the recording of the video signals of a program by cross-scan rcording on a wide band tape, a synchronizing signal is recorded on the tape stimultaneously with execution of the first cross-scan of each field, or simultaneously with execution of the last horizontal deflection of the deflections comprising the previous field on the kinescope. Then further cross-scans are recorded on the tape corresponding to successive horizontal deflections of the beam of the kinescope until the final cross-scan of the field has been recorded, corresponding to the terminal horizontal deflection of the kinescope beam. At that instant the next synchronizing signal is recorded on the tape, corresponding to shift of the kinescope beam to the starting position for the horizontal deflections of the next field; and at that instant the recording of the cross-scans corresponding to the next field to be produced on the viewing screen of the kinescope commences. Thus the recording of the video component of the program proceeds from field to field. These operations are recording operations necessarily preceding the use of the tape for playing-back at a later time.

It must now be noted that the production of the cross-scans on the viewing screen of the kinescope, and the production of the corresponding cross-scan recordings on the tape, are under control of the conventional saw-tooth generator, either in the kinescope or elsewhere. Conventionally the frequency of such cross-scans is at the rate of 15,750 c.p.s. regardless of the speed of travel of the tape under its tape drive. Accordingly, the spacings between sucessive cross-scans as recorded, will depend on the tape speed at the time of recording. Any slight variations of such tape speed during such recording will be reflected as slight variations between successive cross-scans. It is

also now noted that during playing-back the rate at which the recorded cross-scans pass the sensing unit will depend on the tape speed during the playing-back, and that any slight variations of the tape speed will also be reflected as variations in the times of arrival of the cross-scans at the location of the sensing unit. It is also noted that during recording, the distance between successive synchronizing signal records on the tape will depend on the speed of the tape during the recording operation, including any slight variations of such speed during that recording operation.

When the previously recorded signals are to be correctly sensed and signalled back to a kinescope or program interpreting unit, it is evident that two conditions must be complied with, namely, a first condition being the speed of the tape during playing-back. The speed of the tape during playing-back must be so related to the rate of horizontal deflections produced in the kinescope, that the same number of recorded cross-scans on the tape are sensed as the number of horizontal deflections produced in the kinescope during a selected interval of time; that is, the rate of arrival of recorded cross-scans on the tape at the location of the sensing unit must exactly equal the rate of horizontal deflections produced in the kinescope. Any departure from this equality can be corrected by control of either the tape speed or the rate of horizontal scans in the kinescope, generally produced by adjustment of the horizontal scan saw-tooth generator of the kinescope. The Second condition above referred to is that the starting of the horizontal deflections for a field of the kinescope scans (being the shift of the kinescope beam to the starting point of the raster to be produced) must be coincident with the arrival of a recorded synchronizing signal carried by the tape, at the synchronizing signal sensing unit location. If such coincidence be absent, it is evident that although a full number of cross-scans will be sensed and produce signalling during production of a full number of horizontal deflections in the kinescope, still some (or many) of the cross-scans sensed and signalled to the kinescope will be out of phase with the kinescope deflections, so that the picture or interpretation produced on the viewing screen will comprise a portion of one field (e.g., the lower portion) and a portion of the proximate field (e.g., the upper portion). Such a condition must be corrected by ensuring proper phasing of the cross-scan records sensed, with the production of the horizontal deflections in the kinescope.

When the sensed synchronizing signal recordings are used to activate the saw-tooth generator circuitry (or other circuitry) to cause restoration of the beam to its starting position for production of the succeeding field, it is evident that each such kinescope field will be started when the first recorded scan of such field on the tape is being sensed, so that the successive scan records will be properly sensed and signalled to the beam intensity control element of the kinescope, provided that the speed of the tape, as compared to the rate of the horizontal deflections produced in the kinescope equals unity. When the restoration of the beam to its starting point is produced by signals other than originating at the synchronizing sensing unit of the recorder, it is evident that lack of exact phasing may and probably will occur from time to time, thus causing production of an imperfect picture. Accordingly, I have provided means to test the times of arrival of the sensed tape recorded synchronizing signals against the times of arrival of the signals corresponding to start of deflections comprising a field of horizontal scans of the kinescope. When these two signals (defining respectively, start of a field of scans as compared to a field of sensed records), arrive at substantially the same time at the test unit, no correction is made by advance or delay of the tape; when a difference in such times of arrival at the test unit exists, a slight correction in tape travel is made, or a continuation of such delay is made, until the condition of simultaneous arrival of both kinds of signals occurs. Then no further correction is needed, and none is made until a later need for the same exists. This test unit I term the phaser. When it is producing no correction the picture being produced on the viewing screen is correctly framed; it then consists of a complete integer, and not two complementary sections of two succeeding frames. The corrections produced by this phaser are superimposed on the corrections of tape speed, by producing slight reduction of such speed or slight increase thereof, for a short interval. This produces a corresponding slight increase or decrease of the tape advance during such correction operation. Thereupon, the tape speed is left unchanged at its correct value as determined by the speed comparison unit.

It is seen that when both renditions of the program (superior and inferior) are produced from recordings carried by the same tape it is only necessary to provide a single tape control unit (comprising both the rate comparison control unit, and the phaser) for controlling such single tape. On the other hand, when such tape recordings for the two qualities of rendition are separate, provision must be made for full control of each tape by its own control equipment; or for interconnections between the drive motors of both recorders, or the drive shafts of the two recorders may be connected in manner to produce desired tape speed and phasing corrections as needed from time to time.

A further feature of the present invention relates to the provision of means, in addition to the foregoing operations by which the program may be received and interpreted by use of conventional receiving units, for production of the program in an inferior quality without pre-pay or subscription operations; whereby a subscriber to the service, or a person provided with suitable pre-pay equipment, may also receive the program without pre-pay or subscription operation, but as an inferior aesthetic quality production; and whereby such person may, at his selection receive the program in its superior quality rendition by making pre-pay or subscription operations. Specifically, in one embodiment of such selection operation, the inferior quality rendition of the program will be as a monochrome translation, and the superior quality rendition of the program will be one in full color. Provision is, however made for producing the program to such pre-pay or subscriber user, such that the rendition of the program to his perception will be a rendition without the inclusion of the commercials or other objectionable components of conventional programs.

Other objects and uses of the invention will appear from a detailed description of the same, which consists in the features of construction and combinations of parts, hereinafter described and claimed.

In the drawings:

FIGURE 1 shows, more or less schematically, an embodiment of my invention, wherein provision is made for the emission of the program in two forms of emission, one such form being a monochrome signal emission, with provision for broadcasting such program under radio frequency emission so that any person equipped with conventional receiving and translating apparatus, may receive and have translated to his perception, the conventional program, in monochrome picture translation, and without pre-pay or subscription operations; and the other form of emission, being for the special program being transmitted to the subscriber to the service, in form non-accessible to non-subscribers; together with provision in the subscriber's receiver for selecting either a monochrome or inferior quality translation, without pre-pay or subscription operations, or a full color, superior quality translation, by making pre-pay or subscriber operation; and with provision for emitting such special program signals without inclusion of the "commercials" or other objectionable components; the showing of FIGURE 1 including provision for emitting both forms of the signals as a "live" emission;

FIGURE 2 shows, also in fragmentary schematic form, a modification of the showing of FIGURE 1, such modification comprising provision for emitting the program in both of its forms of emission, from tape recordings instead of live;

FIGURE 3, shows, also schematically, my inprovements in the control means for the tape translation, including means for accurately controlling the tape speed according to the requirements previously stated herein; and including means for accurately controlling the phasing of the cross-scans to correspond to the horizontal deflections being executed by the beam of the kinescope;

FIGURE 4 shows by diagram, a comparison of the timing progress of a typical program when emitted as a conventional program with interspersed commercials, and when emitted as a special program without the commercials, both forms of emission being arranged for the same overall time lapse;

FIGURE 5 shows one embodiment of a rate comparator for comparing the rates of execution of horizontal deflections of the kinescope beam and of the passage of recorded scans through the sensing zone of the recorder, for purposes of determining the direction and rate of disparity between such two rates, if any, and for translating such disparity into rotations which may be delivered to other elements of the tape controlling unit; the comparator illustrated comprising two identical stepping motors acting together to compare rates of pulses delivered to their stators, and delivering to an output shaft rotations in direction depending on which of the compared rates predominates, and at rate equal to the difference between the two compared rates;

FIGURES 6, 7 and 8 are cross-sections through the showing of FIGURE 5, taken on the lines 6—6, 7—7 and 8—8 of FIGURE 5, looking in the direction of the arrows; and these three figures show the relative tooth positions of the rotor section of one of the motors, at completion of a pulse delivered to the motor stator A, to bring the rotor and stator teeth of such rotor and stator into registry, with simultaneous shift of the rotor teeth of the other two motor sections B and C, to positions with respect to the stators of such sections B and C as shown in the figure;

FIGURE 9 shows, schematically, a simple form of element constituted to receive a pulse and translate the same into three successive and equally time spaced pulses; such unit being used for delivery of the sets of three pulses each, to the stator sections of each of the stepping motors shown in FIGURES 5, 6, 7 and 8;

FIGURE 10 shows an irregular section taken on the line 10—10 of FIGURE 4: and FIGURE 10 shows schematically, the form of a differential transmission unit for transferring driving shaft rotations to a driven shaft, with provision for changing the phase between such driving and driven shafts by rotation of the differential cage element of the differential unit, rotation of such cage through a given angle serving to advance or retard the driven shaft by double the angle of such cage rotation; and by driving such cage in the one direction or the other, the driven shaft will have its speed either increased or decreased during the interval of such cage rotation, by an amount double the rate of the cage rotation during such correction; and

FIGURE 11 shows a section of tape of width sufficient to accommodate two sets of cross-scan recordings; and this figure also shows schematically, a video signal sensing element for each set of the recordings, and an audio signal sensing element for each of the sets of cross-scans; and this figure also shows the synchronizing signal recordings along one edge portion of the tape.

Referring first to FIGURE 1, I have therein shown the sending station 20, as provided with two television cameras, 21 and 22, both being directed towards the same object for producing and sending video signals according to conventional systems. The object 23 is twice shown for convenience of illustration, as $23^a$ and $23^b$. The camera 21 is shown as a color signal producing unit, and the camera 22 is shown as a monochrome signal producing unit. Accordingly, the signals delivered by the camera 21 over the line 24 are color signals, and the signals delivered by the camera 22 over the line 25 are monochrome signals. The audio signals for the color program operation originate in the microphone 26, and the audio signals for the monochrome program operation originate in the microphone 27. These respective audio signals are delivered over the lines 28 and 29, to the mixers 30 and 31, respectively; and the lines 32 and 33 extend from such mixers, respectively, to the control switch 34.

The antenna 35 radiates such signals as are delivered to it. The line 36 extends from the sending station to a control station 37; and there are one or more such control stations located at locations for servicing groups of subscribers to the pay or subscriber service, a line $36^a$ or $36^b$ or $36^c$ or $36^n$ extending to each such control station as needed. The control station 37 shown in the figure will be further described hereinafter.

The control switch 34 includes the three blades 38, 39 and 40 ganged together as shown by the stippling. Such switch is a double throw switch; its two positions providing operational conditions as follows: when in its rightwardly moved position, shown in the figure, the line 33, monochrome, delivers signals over the lines 41 and 42 from the blade 39, to the antenna for broadcasting the monochrome program; the line 32, color, delivers signals from the blade 38 over the line 36 to the top plate 43 of a plug-in group 44 (presently to be referred to in greater detail) and the control line 45, delivers potential (conveniently D.C.) from the line 47 and blade 40, to the bottom plate 46 of such plug-in group. When the control switch is in its leftward position, the blade 38 disconnects from the line 36 and connects to the antenna line 42, thus delivering color signals to the antenna and leaving the plate 43 (of the control station) dead; the blade 39 disconnects from the line 41, and the blade 40 disconnects from the control line 45, thus leaving the plate 46 (of the control station) dead. Such leftward switch position is the "conventional" switch position (not providing for any special program emissions), and the rightward switch position is the "special" switch position (including provision for delivery of the special program to the control station, and delivery of the monochrome program with "commercials" to the antenna).

It is now seen that I have made provision at the sending station (when emitting "live" programs), whereby when the control switch is in its conventional or non-special program position the program is emitted (if desired) in full color so that any receiver, either of conventional structure and operation, may receive such program in full color, if the conventional receiver is a color receiver, or may receive such program in monochrome translation, if such conventional receiver is a monochrome receiver. In each case, such reception is available without any requirement being imposed to make pre-pay or to perform a subscription operation. As will presently appear, such non-special program may also be received and translated by the special or pre-pay or subscriber receiver in color (if the emitted signals are for color translation), or in monochrome (if the emitted signals are for monochrome translation, only). It will also be seen that when the control switch at the sending station is in its special program or rightwardly moved position (as shown in FIGURE 1), such program will be emitted and radiated through the antenna as a monochrome signals program. Accordingly, any person may then receive and translate such program on a conventional receiver, either monochrome receiver, or color receiver, as a monochrome translation, and without pre-pay or subscription operation. Under such switch position conditions, it will also be seen that the control stations will each receive the program as a color signals program, and with the control signals transmitted to such

control stations, for special operations which will presently be revealed. It will also presently appear that under such special program emitted conditions (switch in its rightward position, as shown in FIGURE 1), and with the pay or subscriber receivers in the hands of the subscribers, the special program will be received and translated by any subscriber in monochrome translation (although the signals are being emitted as color signals, and the subscriber receiver is constituted for reception and translation of color signals as a color picture), when pre-pay or subscriber operation has not been made by the subscriber; and that such subscriber may, by making pre-pay or subscription operation, cause such color emitted, special program signals, to be received and translated in full color, on his receiver.

Before describing the pay or subscriber receiver by which the foregoing operations are made possible, I shall describe the tape recorder arrangements shown in FIGURE 2, here disclosed to show how the program may be emitted according to the operational features and functions above described, when the emitted signals are produced from tape recordings, instead of "live" as shown in FIGURE 1.

In FIGURE 2 I have shown the control switch **34a**, corresponding to the control switch **34** of FIGURE 1, and the various lines leading to and from such control switch, numbered the same as the numbering in FIGURE 1, but with suffixes *a* to the identifying numerals of FIGURE 2, for convenience of comparison of the two figures. Examination and comparison of these figures shows that the chief differences between the live program operation and the tape recorded and played-back program reside in the inputs to the blocks identified as C and M in the live program embodiment, and corresponding blocks identified as "Color" and "Monochrome" in the tape recorded operation.

In the tape recorded embodiment I have shown the two wide band tapes **48**, for the color program recording and **49**, for the monochrome recording. These tapes carry cross-scans (instead of linear scans) for the video components of the two program renditions, such scans not being shown to avoid confusion in the two figures; but such system of recording is extensively disclosed in my issued Patent No. 2,976,354, issued to me Mar. 21, 1961, and other issued patents to me, as well as numerous pending applications. Such tapes are shown as provided with edge perforations **50** by which the tapes are driven. This will be hereinafter referred to. Also, the regularly spaced synchronizing signal recordings **51** and shown on these tapes **48** and **49**, and such recordings are also extensively shown in my identified earlier tape recording and translating patents. These will also be referred to hereinafter. I have also, in such FIGURE 2 (and also in FIGURE 3) shown the kinescope deflectable beam units of generally triangular form **52** and **53** in FIGURE 2, left-hand tape element, and **54** and **55** in such figure, right-hand tape element. There are designated the elements **52** and **54** as "Video," and the elements **53** and **55** as "Audio." These units are deflectable electron beam scanning units constituted for delivering scanning force effects to the outside of the units, for sensing previously produced cross-scan recordings carried by the respective tapes, which units are sensing units sensing the variations of the previously recorded scans. It is here noted that in my earlier issued patent, No. 2,976,354, I have disclosed tape recordings and sensings, wherein the audio cross scans and the video cross-scans are both recorded on the same tape areas, such being possible due to the great differences in frequencies of the video and the audio components of the programs. Accordingly, the sensing units **53** and **55** "Audio" correspond to the microphones **26** and **27** shown in FIGURE 1. I have also shown the sensing plates or elements **56**, **57**, **58** and **59** close to the right-hand edges of the units **52**, **53**, **54** and **55**, respectively, which sensing plates deliver variations of potential corresponding to the variations in the strengths of the magnetized elemental areas above them or adjacent to them; and I have also shown the lines **24a** and **25a** connecting such sensing plates **56** and **58**, for the video sensings, to the corresponding "Color" and "Monochrome" blocks, for delivering the sensed video signals to such blocks; and I have also shown the lines **28a** and **29a** connecting the sensing plates **57** and **59** connecting such sensing plates for the audio recordings, to the corresponding blocks which lead to the output lines **32a** and **33a**, being mixing units of conventional functions.

During such sensing operations, the electron beams of the several deflectable beam units are held constant, so that the effects produced by the sensing of the plates **56**, **57**, **58** and **59** are imposed on such steady beams, and from such beams transferred to further processing operations. Accordingly, in FIGURE 2, I have shown a line **60** connected to the electron beam controls for the units **52** and **53**, and another line **61** connected to the electron beam controls for the units **54** and **55**. These lines **60** and **61** may be connected to other elements of the recorder, the details of which need not be described here, as they are disclosed in one or more of my earlier issued patents.

I have also, in FIGURE 2 shown a line **62** connected to the horizontal deflection unit **63**, generally in the form of a saw-tooth generator, for delivering the needed signals to the yokes of the several deflectable beam units, for producing the horizontal deflections of substantially 15,750 c.p.s., already referred to.

I have also in FIGURE 2 shown the synchronizing signal sensing units **64** and **65** in position to be influenced by the successively passing records **51** for delivering the pulses which correspond to the arrival of the successive synchronizing signal records carried by the tape. In FIGURE 2 these units **64** and **65** are shown as connected to the adjacent blocks **66** and **67** to thus inject such synchronizing pulses into the stream of signals being emitted and to be received and translated by the tuned receivers.

Since the showing of FIGURE 2 includes the two tapes **48** and **49** it is necessary to provide two tape controls therefor or some form of drive for both of the tapes from a common drive unit. In some cases it will be found desirable to locate the two sets of recordings for the two programs on a single tape of sufficient width to accommodate both of such program recordings side by side along the tape. Such an arrangement is shown in FIGURE 11, where the band areas for the two program renditions are legended as "Monochrome Program," **68** and "Color Program," **69**, respectively. The sensing units **70** and **71** legended "Video," and the sensing units **72** and **73** legended "Audio," are provided for the two band areas, the units **70** and **72** serving the "Monochrome Program" area and the units **71** and **73** serving the "Color Program" area. In the present case the single horizontal deflection line **74** serves all four of such sensing units to thereby retain them in full synchronism of their scanning deflections; and when sensing is being produced the single potential line **75** serves the electron beam controls for all four of the sensing operational units.

Since this embodimemnt of FIGURE 11 requires but a single tape I have shown only the single drive shaft **76** driving sprockets engaging openings **77** at both edge portions of the tape. Correspondingly, only a single tape drive control is needed with this arrangement.

Reference is next made to the tape drive controlling and synchronizing and phasing means provided for use in connection with the drive of the several embodiments already described, and also usable in connection with control of drives for other embodiments presenting similar problems of synchronization, speed, and phasing, for solution. FIGURE 3 shows schematically a simple embodiment of the drive control elements, acting to control a cross-scan tape drive to produce proper synchronization and phase condition with respect to horizontal deflection producing means whether such deflecting means constitute

a portion of the tape drive and control elements themselves or constitute a portion of another unit such as the conventional kinescope which embodies a horizontal deflection producing means for its beam deflections.

In the present case the tape carrying the cross-scans is identified as **78**. It is driven by the two sprockets **79** and **80** engaging the sprocket holes **81** along both edge portions of the tape. Both sprockets are carried and driven by the common drive shaft **82**. For simplicity of illustration I have shown only one of the deflectable beam units **83** in place above the top surface of the tape. The synchronizing records **84** are shown along one edge portion of the tape and the corresponding senser is located in position to sense and deliver a signal as each of such records arrives at the location of such senser. Such senser is identified as **85**.

A constant speed motor **86** is provided for driving the shaft **82**; but it is noted that the term "constant speed" is subject to a slight broadening in its meaning since even a conventional three phase synchronous motor is subject to slight variations in its speed according to variations in the frequency of the supplied current. Additionally, conventional F.C.C. specifications fix the rate of horizontal deflections of the kinescope beam of a receiver at 15,750/c.p.s. When the tape speed is exactly 15¾ i.p.s., and the spacing between successive cross-scans is exactly 1 mil, the cross-scans will arrive at the location of the synchronizing senser at the same rate as the rate of deflections of the senser beam, when that rate is the same as the specified deflections above defined, for the kinescope of the receiver. Accordingly, when the deflection yoke of the recorder is supplied with its signals from the horizontal deflector unit of the receiver, it is evident that both such units will remain in step, as respects their beam deflections; but any slight change in tape speed or in horizontal deflection unit of the receiver, will probably result in non-synchronization of the deflections of the beams of the two units. In the absence of correction either by slight increase in the tape speed (or decrease, if proper), or slight change in the rate of horizontal deflections of the receiver, such disparity between the two rates (tape speed, and horizontal deflections) will produce a cumulative error in the interpretation of the picture produced on the receiver screen. The means disclosed herein for producing the desired correction is as follows, reference being made to FIGURE 3:

A differential transmission unit **87** is included between the output shaft **88** of the motor **86** and the sprocket shaft. Such differential unit includes the input or drive bevel gear **89**, driven by the motor shaft **88**, and the output or driven bevel gear **90** connected to the sprocket shaft. The cage unit **91** (see FIGURE 10) is included between the bevel gears. Such cage carries one or more (in the illustrated case, two) bevel pinions **92** and **93** journalled on a cross-wise extending rod **94** which extends across the cage. Both of such pinions mesh at all times with the two bevel gears. The perimeter of the cage includes the ring **95** having its outer surface provided with a worm gear **96**. Such worm gear is engaged by the worm element **97**, carried by the correction shaft **98**, suitably journalled stationary elements. The worm gear and the worm teeth constitute a drive from the shaft **98** to the cage, such drive being irreversible—that is, back drive from the cage to the shaft **98** is prohibited by reason of the small pitch of such worm and worm gear drive; but drive from the shaft to the cage is permitted.

It is evident that as long as the cage and the shaft **98** remain stationary, drive from the motor shaft to the sprocket shaft will occur at the same rate as the rate of the motor shaft, but in reverse direction from the motor shaft. Thus when no correction is to be made the correction shaft is allowed to remain stationary. When correction is to be made, such shaft **98** is rotated. Such rotation causes the cage to rotate in direction dependent on the direction of rotation of such shaft **98**; and each complete rotation of the cage produces a double angular rotation of the bevel gear **90**, and thus, two rotations of the sprocket shaft, provided that the motor shaft is stationary. If such motor shaft is rotating, such two rotations will be additive to the angular displacement of the worm gear **90** when the control shaft rotation is in one direction, but will be substractive, when the control shaft rotation is in the opposite direction. Also, the rate of change of the speed of the output worm gear **90** will depend on the rate of rotation of the control shaft, and thus the amount of corrective effect produced by operation of such control shaft will depend on the duration of the correcting operation. It is also evident that when correction is continuously required, as when the motor drive may be continuously slow due to some factor affecting the service supply lines, such continuous correction may occur as long as needed merely by continuing the rotation of the correction shaft.

Since the rate of correction effect depends on the disparity between the rate of sensing scans produced in the sensing unit **83** and the rate at which recorded cross-scans are arriving at the location of such sensing operation, I have provided means to constantly test and compare such rates, with production of a rotational effect proportional to the difference between such rates, and also to cause that rotational effect to be in direction to reduce the difference between such rates until zero disparity is attained. This operation may be further analyzed as follows:

The disparity to be corrected comprises a difference between two rates—the one rate being the rate of horizontal deflections produced in the sensing unit, and the other rate being the rate of arrival of the recorded cross-scans at the sensing location. When the rate of horizontal deflections remains constant, and when the rotational rate of the drive motor remains constant, such two rates being fixed for the time being, it is evident that the desired agreement between the rates of horizontal deflection and of arrival of recorded cross-scans at the sensing location, can only be attained by a continuous correctional operation at a rate determined by the value of such disparity. It thus remains to determine that disparity in rates, and to make provision for effecting correction in amount as thus determined. This correction amount is determined, and correction effected as follows:

I have provided two stepping motors **99** and **100**, preferably located close together and co-axial as shown in FIGURES 3 and 5. Each of these motors includes a stator element including three field producing coils A, B and C in the motor **99**, and A′, B′ and C′ in the motor **100**. These several coils are caged in magnetic cages which include teeth around their perimeters so that when the coil of one such cage is electrified, its teeth all become magnetized at the same density and polarity. Such cages and their teeth are stationary. The teeth of a typical such cage are identified as **101** in FIGURES 6, 7 and 8. For convenience of identification and nomenclature, I shall refer the motor **99** as the reference motor, and the motor **100** as the correction motor. The shaft **102** of the reference motor is journalled for rotation. This shaft extends through the correction motor and terminates at the right-hand end thereof (see FIGURE 5). For convenience of assembly such shaft is reduced in diameter where it passes through the correction motor; but during assembly a sleeve **103** is set onto such reduced diameter portion and secured in place so that such sleeve constitutes in effect a portion of the shaft. Each of the motors **99** and **100** is provided with three disk-like armature or rotor elements **104** secured to the shaft **102** (or to the sleeve **103**), in position to register radially with the teeth of the corresponding stator cage. Each of these disk-like armatures is provided in its periphery with teeth **105** equal in number to the teeth of the cage to which it corresponds. The disk-like armatures are so secured to the shaft (or to the sleeve **103**) in rotated position or angularity such that when the

rotor teeth of the disk of the motor section A (or A') register completely with the corresponding cage teeth, the rotor teeth of the other motor sections B and C (or B' and C') are angularly displaced by one-third of a tooth distance center to center (in the case of motor section B (or B'), or two-thirds of a tooth distance center to center (in the case of motor section C (or C'). Accordingly, if the first pulse is delivered to the motor stator coil A (or A'), the rotor unit as a whole will be advanced to position of registry of the "A" teeth with corresponding stator teeth, as shown in FIGURE 6; and the rotor teeth of the sections B and C (or B' and C') will be brought into the positions shown in FIGURES 7 and 8. Then, when the next pulse arrives and is delivered to the coil B (or B'), the rotor as a whole will be advanced an angular amount equal to one-third of the angular distance between teeth (center to center); and when the third pulse arrives and is delivered to the coil C (or C'), the rotor as a whole will be advanced another third of such tooth-to-tooth angular distance, to restore the teeth of the section A (or A') to the position shown in FIGURE 6. Thus, by delivering successive pulses to the three coils of either of the motor units, with proper succession of such pulses to the three coils of such motor unit, rotation between the rotor and the stator of such motor unit will be produced.

It is further evident that such pulses thus delivered to the three coils of a motor unit may be thus delivered either according to the sequence A–B–C, or the sequence A–C–B. The direction of rotation will thus depend on which sequence of pulse delivery is used. It is also evident that the rate of rotation will in any case, be determined by the rate of pulse deliveries. It will also be evident that by the use of structures including a considerable number of teeth in each motor unit, the rate of rotation may be correspondingly lowered. For example, if the number of teeth in each motor section is thirty, and if the rate of pulse delivery is 180/sec., then the rate of rotation will be 2 per second, since the angular advance per pulse is one-third of a tooth. Further, if provision is made for delivery of one pulse corresponding to each recorded synchronizing signal (on the tape), and each such signal corresponds to one field of scanning (under F.C.C. specifications), then there will be delivered 60 such synchonizing signals per sec. And if each such synchronizing signal pulse be divided into three pulses, there will be delivered 180 of such divided pulses per sec., corresponding to 2/r.p.s. in the motor section to which such pulses are delivered.

Next, the horizontal deflection control unit, whether comprising a portion of the T.V. receiver, or a special saw-tooth generator unit comprising a portion of the recorder itself, will, or may be made to, deliver 60 pulses/sec., corresponding to the fields of scan of the receiver. These pulses may also be divided into three each, so that such horizontal deflection unit may be caused to deliver such rate of pulses corresponding to the rate scanning produced by the sensing unit of the recorder, thus delivering 180 pulses/sec., corresponding to the horizontal deflections and scans of the sensing unit. Whenever either the pulses delivered by the recorded synchronizing signals or by the horizontal deflector producing unit, vary from such 60/c.p.s. rate, correction may be produced by the unit shown in FIGURE 5 as follows:

The pulses delivered by the horizontal deflection producing unit are delivered to the stator coils of the motor section or unit **100**, identified as the correction motor. It was stated previously that the rotor disks of this correction motor are secured to the sleeve **103**, and thus to the shaft **102**. Accordingly, as such shaft rotates under the drive of the pulses delivered to the stator coils A, B and C, the disk-like rotor elements of the correction motor are also compelled to rotate at the speed thus determined by the rate of pulses delivered to such stator coils A, B and C. The pulses from the deflection producing unit are thus delivered to the motor section **100** whose rotor elements are rotating according to the rate of the synchronizing recorded pulses. By causing the pulses thus delivered from such horizontal deflection producing unit, to the stator coils A', B' and C', in reverse sequence as compared to the sequence established in the coils of motor **99**, there will be developed in such motor **100** a torque urging rotation of the stator of motor **100** at a speed, related to the rotational speed of the shaft and the rotor elements secured thereto, equal to the difference between the rotative speeds of the rotor elements, and the rotating stator field produced in the stator of motor **100**. If the rates of pulses delivered by the sensing of the recorded synchronizing signals, and by the horizontal deflection producing unit, are the same, the stator of motor **100** will tend to remain stationary. That stator section is journalled to the shaft **102**, so it is free to rotate or remain stationary during shaft rotation. When the rates of pulse delivery by the sensing of the recorded synchronizing signals, and by the horizontal deflection producing unit are different, the stator element of motor **100** will rotate at rate and in direction corresponding to the difference between the said rates.

Examination of FIGURE 5 shows that the stator of motor **100** has secured to it the rightward extension **106** which connects to the shaft **107**. Accordingly that shaft must rotate at speed determined as the difference between the two rates, and in direction depending on which rate predominates. The stator coils of motor **100** are brought out to slip-rings carried by the extension element **107**, and the brushes engage with such slip rings, all as evident from FIGURE 5.

The shaft extension **107** may comprise the worm shaft **93** of FIGURE 10, in which case the correctional effects of such dual-motor element, as thus connected and used, will act directly on the cage of the differential unit, to constantly urge or produce equality between the two compared rates, thus constantly producing corrections in the speed of tape drive, needed to hold the rate of cross-scan records scanned, to the rate of horizontal deflections produced in the beam of the scan sensing unit **83**.

Reference is next made to FIGURE 9 which shows a simple form of circuitry for producing three output pulses from each input pulse, a function already referred to. In this circuitry the following operations occur:

The three astable circuits $A_1B_1A_2B_2$ and $A_3B_3$ are connected in series. By astable circuit is meant a circuit that has a normal stable condition, which can be triggered into another condition, remain in the second condition for a definite period of time, at the end of which it, by itself and without further external signal, goes through a transition back into the normal stable state, remaining in that normal stable state until a triggering signal is again received. Referring to FIGURE 9, in the normal state $A_1$, $A_2$, and $A_3$ are conducting, and $B_1$, $B_2$, and $B_3$ are cut-off. Application of a signal to $A_1$ will turn $A_1$ off, and $B_1$ on. This condition will hold for a definite period of time, normally determined by the discharge of a capacitor between two voltages, at the end of which a transition takes place to the original condition with $A_1$ on and $B_1$ off. While $B_1$ is "On" the motor coil A (FIGURE 5) is energized.

The change in voltage at $B_1$ when $B_1$ goes off is used to cut-off $A_2$ and turn $B_2$ on. Again, at the end of the period $A_2$ comes on, $B_2$ goes off, and the resulting signal cuts on $A_3$. At the end of a third period $A_3B_3$ goes back to its normal condition. As a result, a single pulse applied at $A_1$ has caused coils A, B and C to be energized for definite periods of time.

In order to produce slight delays in the succesive functioning of the elements and to ensure that the pulses delivered to the three coils of a motor do not occur almost simultaneously, I have shown the delay elements **108** and **109** between the elements $B_1$ and $A_2$, and between the elements $B_2$ and $A_3$. In this connection it is noted that when

the arriving pulses arrive at the rate of 60 c.p.s., the successive divided pulses are separated by time intervals of slightly less than 1/180 sec.

It is also noted that when such rate of the coil energizing pulses is used (180/sec.), the rotor rotations are substantially continuous, but under such pulse activations. Therefore the shaft **102**, and the rotor elements of both motors will rotate substantially continuously at the rate of 2 r.p.s., assuming that the synchronous signal recordings are sensed at the rate of 60/sec. produced by a tape speed of substantially 15¾ i.p.s. The rotational speed of the stator of motor **100** will almost always be low, since that speed is determined by the difference between the two pulse rates, as already explained, and such difference would, in all probability be very small but enough to produce serious interference with the perfection of translation of the picture, as desired.

It is further noted that, since the drive from the shaft **107** to the shaft **98** of the differential unit is direct, or through another differential unit, presently to be described, and since the effect of the correction is applied through rotation of the cage of the differential unit shown in FIGURE 10, being a worm and gear connection between the parts, a slight departure from exact uniformity in the rate of correction will produce no final appearance as such non-uniformity, and the corrective effect as applied to the rotation of the sprocket shaft will be uniform. Thus the fact that each of the motors **99** and **100** is a stepping motor, will not be reflected at the point of final correction, but that final correction will be as a uniform rotational operation.

The foregoing disclosures respecting comparison of the rate of tape travel, with the rate of production of cross-scans as produced by the horizontal deflection unit, and the correction means which is activated under control of the finding of such comparison, makes it possible to bring such rates into equality, and to sustain such equality by producing intermittent or continuous corrections of the tape speed, as needed from time to time. It remains to disclose the means whereby provision has been made to ensure correct phasing combined with such correct tape speed operation. It will be recalled that such correct phasing involves the inclusion of means whereby, although both of the rates have been brought into equality, the commencement of translation of a field of scans produced on the viewing screen of the receiver, shall be coincident with the commencement of the scanning and production of video signals from a group of cross-scans previously recorded on the tape, corresponding to a field of such cross-scans; which field will when sensed, produce a substantially complete and correctly located field of scans on the viewing screen of the receiver.

Comparison of FIGURES 2 and 3 of this case will show that provision has been made for including in the video signals emitted by the sending station, synchronizing signals or bursts defining the commencement of the fields translated on the viewing screen. These signals are delivered over the line **64**[a] (or **65**[a]) from the synchronizing senser **64** or **65** (FIGURE 2), to the mixer unit **66**, or **67**, corresponding to arrival of each of the recorded synchronizing signal recordings **51** carried by the tape, at the location of such synchronizing signal senser unit. Accordingly, it remains to provide means whereby such so-sensed synchronizing signal recordings, and the signals emitted by the horizontal deflection producing means which produces the horizontal deflections of the beam of the sensing unit, shall be brought into time coincidence, to produce the correction of the tape travel needed to ensure correct phasing. Such means is as follows:

I have provided a small differential unit **110** between the output shaft **107** of the dual stepping motor unit, and the shaft **98** which drives the worm of the differential unit **87** (FIGURE 3) for producing correction of tape speed, as already fully disclosed herein. The worm of such small differential unit **110** is driven by the shaft **111**, which is under drive of the small D.C. motor **112**. It is evident that as long as the motor **112** remains unelectrified the worm of the small differential unit **110** will remain stationary. Thus drive from the dual motor shaft **107** to the worm of the differential unit **87** will be solely under control of such dual motor unit. No phasing will be produced under such conditions, and the adjusted speed of the tape drive will remain unchanged. Comparison of the delivery of the synchronizing signals from the senser **66**[b], and burst signals from the horizontal deflection producing unit **113**, as to times of production of such two groups of signals is made by the unit **114** (FIGURE 3). Such comparison means is as follows:

The unit **114** comprises two magnetizing coils **115** and **116** acting on the same armature **117**. Such coils are so wound and electrified as to act against each other so that, whenever both of the coils are simultaneously energized, their magnetizing effects are neutralized, and no force is developed to shift the armature. On the contrary whenever non-synchronization of the excitations of the coils exists, magnetization will occur, and each such coil will, in turn produce a pull on the armature, which pull will continue as long as the non-synchronization continues. The armature **117** acts on a contact **118** to draw it into engagement with the stationary contact **119** under the conditions of non-synchronization and non-phasing, thus closing a circuit. The coil **115** is excited by the synchronizing pulses from the senser unit **66**[b] over the lines **120**, and the coil **116** is excited by the synchronizing bursts produced by the unit **113** over the lines **121**. It is noted that such horizontal deflection producing unit **113** produces its deflection signals at the rate of 15,750 c.p.s. for production of the record scans senses on the tape. Such high rate signals are used to activate a count-down unit **122** to deliver the synchronizing signal rate of 60 pulses/sec., delivered to the lines **123** from which such 60 c.p.s. pulses are delivered to the lines **121**, already referred to. These pulses (60 c.p.s.) are also delivered to the pulse splitter **124** of the type shown in FIGURE 9 already referred to. The synchronizing signals from the senser **66**[b] are delivered to the pulse splitter **125**, also of the type shown in FIGURE 9; thus making provision for the delivery of the two sets of 60 c.p.s. signals which are compared by the dual motor unit.

Closing of the contacts **118** and **119** serves to deliver D.C. to the small motor **112** over the lines **126**. Accordingly, as long as the two sets of synchronizing signals are not in phase (that is, as long as they are not produced at coinciding timing), the contacts **118** and **119** will remain closed, thus producing drive of the small motor **112**. Such drive will act to momentarily change the rate of the shaft **98**, which drives the cage of the differential unit **87**, thus momentarily changing the rate of tape drive; and such change occurs without change of the rates of either of stepping motors **99** and **100**, whose rates are directly dependent on the rates of the signals produced by the senser **66**[b], and by the horizontal deflection productor **113** (as down counted). As soon as the two sets of pulses (delivered to the coils **115** and **116**) are in timed step, the contacts **118** and **119** will separate, and phase correction drive of the small motor **112** will cease. The rate of tape drive now continues correct, and the commencement of the production of the sensed fields from the tape, will occur in exact timing with the arrival of the groups of cross-scans carried by the tape, at the sensing location of the unit **83**. The operation will then continue with the rate of the tape correct, and with the cross-scanning operations of the unit **83** meeting the correct cross-scan recordings found on the tape.

Reference has been made to the fact that my presently disclosed structures make it possible to emit a selected program in either of two aesthetic qualities, a superior quality and an inferior quality, such inferior quality emission being receivable and translatable by conventional

receivers, without pre-pay or subscription operation; and the superior quality being receivable and translatable only by making pre-pay or subscription operation. Included in these operations are the conditions imposed by the presence of the "commercials" in conventional "free" programs, and the elimination of such commercials from the superior quality programs. I have previously herein disclosed means to produce and emit the signals for the two qualities of translation by or through two channels of communication, the inferior quality signals being emitted as radio frequency antenna emitted signals, available for reception and translation by conventional receivers, and the superior quality signals being emitted and transported under conditions such as to forbid reception and translation of such signals by use of such conventional type receivers.

I shall presently disclose a typical embodiment of such receivers which are constituted to receive and translate either type of signals, selectively; and which receivers are also so constituted that when the superior quality signals are being emitted, they may be received and translated solely by the pre-pay or subscription operation receivers, and whereby when thus receiving the superior quality signals, such signals may be received and translated by such receivers, either in an inferior quality of translation, without pre-pay or subscription operation, or in the superior quality of translation, by pre-pay or subscription operation.

When a specified time of emission for the program under both species of operation, is assigned, being a time interval of specified duration, it is necessary to take into consideration the time pauses which are consumed by the commercials, thus reducing the time available for emission of the program itself, against the fact that when the superior quality provisions for such program, do not include the time intervals used for the commercials, included in the inferior quality rendition of such program. Accordingly, the amount of the time intervals assigned for the commercials of the inferior quality rendition, may, in the superior quality rendition, be used for special announcements respecting the features of that superior quality rendition, or such time intervals may be used for a more extensive or fuller rendition of the acting or musical portions of the program, to the corresponding benefit of the persons receiving that program.

In FIGURE 4 I have shown, by diagram, a typical relationship of the times intervals for rendition of the selected program, during a stated time interval, under the inferior quality rendition, as compared to rendition of that program, during the same time interval, under the superior quality rendition. The "Conventional" rendition is shown by the time zone **127**, and the superior rendition by the time zone **128**, both of such time zones commencing at the time **129**, and both terminating at the time **130**. If such program be the rendition of a play, for example, the commercials injected into the conventional rendition may be as indicated by the interruptions C, the acts of the play being as shown by the identifications "1," "2," and "3"; and the subscription or Pay-T.V. rendition may include the explanations of the play acts to follow, as indicated by the time elements E, the play now being rendered with the four Acts, identified as "1," "2," "3" and "4," respectively; but the overall time assignments are the same for both renditions. As already stated, the superior quality reception may however, be received and interpreted by the users of the special receivers, or receivers equipped with special equipment, under an inferior quality of reception and translation, without pre-pay or subscription operation, or in a superior quality of reception and translation, by making pre-pay or subscription operation. Thus, there is an advantage in the case of those receiving the program under the latter conditions, in the sense that such persons may receive the program without the interruptions and annoyance incident to inclusion of the commercial announcements, even though such persons do not make the pre-pay or subscription operations.

In FIGURE 1 I have shown both the sending station **20**, and the special receiver, as well as a conventional receiver **132**; and I have also shown a control station **133** (**37**). The sending station has already been adequately described, both as a live program station, and also, in FIGURE 2, as a sending station provided with tape recorded equipment from the tapes of which both renditions of the program may be emitted as required from time to time.

The conventional receiver, shown schematically at **132** does not require special description here, as it is shown as being a color receiver, and thus capable of receiving and translating color programs from received color signals, or monochrome signalled programs.

The special receiver shown as **131** is also shown as a color receiver, constituted to receive and translate and display a color signal received program in color, or a monochrome signal program in monochrome; or to translate a color signal received program in monochrome, under certain operations to be presently described.

This special receiver is shown as provided with a normally first positioned switch **134** constituted to normally cause its tongue **135** to engage a contact **136** to which the antenna **137** is connected, such tongue is normally raised to produce such engagement, so that normally the receiver **131** will receive its signals, both video and audio, from such antenna, thus operating to receive such programs as are conventionally emitted, either as color signalled programs, or as monochrome signalled programs. By reversing the position of the switch tongue **135** it is withdrawn from the contact **136** and into engagement with the stationary contact **137**. Such withdrawal and re-engagement is produced by energization of the solenoid **138**, fed by the line **139**. The functions of this switch will be described hereinafter in more detail.

The special receiver **131** is also provided with means to cause the picture translation to be normally produced in color (when the received signals are color signals), but whereby such color received signals may be translated in manner to produce a monochrome picture when such means is activated. Such means to control the form of translation comprises a switch element **140**, normally open (being the position shown in FIGURE 1), but which switch, when activated by energization of the solenoid **141**, acts to tie all three of the color components delivering signals to the three guns, together, thus causing all of the guns to be activated at all times according to the total color signalling being received, for production of a monochrome translation. Such switch element **140** is normally open. Current may be supplied to its solenoid **141** from a relay **142** which is normally closed, but which relay moves to its open position when its solenoid **143** is energized over the line **144**. When such activation occurs the relay closes, thus activating the switch **140**, and causing color received signals to produce the picture in monochrome instead of color.

The control station includes a plug board **145** having a number of plug openings, into any or all of which suitable plugs may be inserted in conventional manner. These plug openings, **146** correspond to the special receivers being served by the control station in question. The opening for the special receiver shown in FIGURE 1 is identified as **146a**, and the plug for the receiver is identified as **147**. The plug board includes the two plates **43** and **46**, separated electrically from each other, and the plug includes the conventional sleeve contact **148** and the conventional tip contact **149**. When the plug is fully inserted its sleeve contact engages the top plate **43**, and its tip contact engages the lower plate **46**. The line **36** leading from the sending station connects to the upper plate **43**, thus connecting such upper plate to the color program signals from the sending station switch **34** when that switch is in its rightward position as shown in FIGURE 1; and in that rightward switch position the lower plate **46**

connects by the line 45 with the line 47 by which D.C. may be supplied to the lower plate, such D.C. constituting a "control" current for producing certain operations through the plugging at the control station.

A line 150 connects to the tip element of the plug, and a line 151 connects to the sleeve element of the plug. Thus, when the plug is inserted, such line 150, being the "control" line, is electrified by current supplied from the sending station. The line 151 which connects to the sleeve element of the plug, connects to the contact 137 of the switch unit 134. Thus, when the plug is inserted into the plate unit 44 (145), the contact 137 is connected to the line 36 by which the color signals are transmitted from the sending station, the switch 34 being in its rightward position as illustrated. The line 152 (139) connects the solenoid 138 of the switch unit 134, to the line 150. Accordingly, when the plug is inserted into the plate unit the switch 134 is drawn into the position shown in FIGURE 1, thus transferring the input connection of the receiver from the antenna to the contact 137. This provides for delivery to the receiver, the program signals arriving over the line 36 from the sending station. These are the special rendition program signals.

The insertion of the plug also electrifies the line 150 by connection to the control line 45, remembering that the sending station switch 34 is still in its rightward position. Electrification of such line 150 by "control" current raises the relay 142 into its position shown in FIGURE 1. Also, such relay may be raised into its position as shown, alternatively, by a pre-pay operation, presently to be described. Such raising of said relay produces opening of the switch element 140, by releasing of such switch element, due to termination of electrification of its solenoid 141. This operation serves to restore the special receiver 131 to its condition for translation of incoming color signals from the sending station, special program, so that such special program may be received and translated in color, regardless of the concurrent operations of the conventional receivers which are receiving and translating monochrome program signals.

The foregoing operations to ensure reception and translation of the special program have been produced by the co-operation of the functions attendant on insertion of the plug at the control station, by the attendant, being a subscriber operation. I have also shown the coin or other control box 153 located at the location of the subscriber's receiver. This unit includes the contacts 154 which are normally open. Such contacts provide for alternative supply of current to the solenoid 143 of the relay 142, by insertion of a suitable coin or token into the coin box. Such coin box operation also serves to connect the line 152 to the "control" line over the line 155, thus providing for reception of the special rendition signals direct from the sending station, and without need of the control station operation.

I have in FIGURE 1, also shown a small signal lamp 156 on the element 44 (145) close to each of the plug openings 146. Such signal element connects by a line 157 to a convenient switch element located at the special receiver, for actuation by the user of such receiver to indicate to the attendant at the control station that the subscriber desires to receive the special program in its superior quality. Accordingly, I have shown the switching unit in the form of another token receptacle 158 whose contacts 159 connect to the control signal line 155 and to such line 157, respectively. Such contacts are normally separated, but insertion of the token into such box will close the circuit, thus illuminating the signal lamp, to advise the attendant of the desire of such subscriber.

I have also shown the signal lamp 160 at the location of the special receiver. The terminals of such signal lamp connect respectively to the control signal line 155 and to ground, so that whenever the switch 39 at the sending station is shifted to its rightward position, thus electrifying the control line, such lamp will be illuminated at the location of the special receiver, to inform the user of such receiver that the special program is now available for reception and translation on his receiver. It is also noted that the contacts 154 of the pre-pay coin or token unit 153, and the contacts 159 of the taken unit 158, are normally open.

The following operations are available by use of the disclosed equipment:

I. Control switch 34 in its leftward position; Color signals being emitted by antenna 35:

(A) Conventional receiver 132; Color receiver; May receive and translate the signals in color; Monochrome receiver may receive and translate such color signals in monochrome.

(B) Special receiver 131; The control signal is not being emitted. Accordingly, the control line 155 is dead, and the lower plate 46 of the unit 44 (145), is also dead. Accordingly, the relays 142 and 140 are still down (close-circuited for 142, but open-circuited for 140). Such special receiver may receive such color signals since the switch 134 is non-energized and the input to the special receiver is connected to the antenna 137. Since the relay 140 is down the color signals as received will be translated in color.

It is noted that under such operation IA, and IB, the color signals including any commercials are being radiated for the conventional program according to conventional color radiation, so that any receiver, either conventional or color, may receive the conventional program without pre-pay or subscription operation, but with inclusion of the commercials.

II. Control switch 34 in its rightward position. Monochrome signals being emitted by the antenna 35—Color signals being transmitted to the control station by another operation (e.g., co-axial cable), indicated by the line 36 in FIGURE 1, with control signal transmitted to the control station by the line 45.

(A) Conventional receiver 132; Color receiver of monochrome receiver. The monochrome signals may be received and translated in monochrome.

(B) Color receiver 131; The top plate 143 of the unit 44(145) is supplied with the signals for the color program over the line 36. The bottom plate of such unit 44, identified as 46, and the line 155, are electrified by the control signal over the line 45. Since the control signal line does not reach the solenoid 143 of the relay 142 (the contacts 154 of the pre-pay unit being normally open) and the plug 147 at the control station having not yet been inserted into the proper opening of the unit 44(145), current will be delivered from the control line 155 to the switch 140, raising its contacts, and thus tieing the three guns of the receiver together, for production of a monochrome translation on the viewing screen of the special receiver. Since the control line 155 is electrified, the signal lamp 160 will be illuminated to notify the user of the special receiver that the special program is now available.

The lines 150 and 152 are, as yet, non-electrified, since the pre-pay unit has not yet been activated, nor has the plug 147 been inserted into the proper opening of the unit 44(145). In case the user of the special receiver desires to have the control station attendant produce subscriber operation, such user may insert a token into the unit 158, thus closing its contacts 159, and delivering a signal over the line 157 to the signal lamp 156 at the control station, which signal lamp corresponds to the particular user. Or alternatively, such user may insert a coin or token into the unit 153, thus closing its contacts 154, and electrifying the lines 150 and 152 Electrification of such lines would alternately have been made by insertion of the proper plug 147 into the opening of the unit 44(145).

Electrification of the line 150 will energize the solenoid 138 of the switch 134, thus transferring the tongue 135 of the switch 134 from the antenna contact to the con-

tact 137 which connects, by the line 151 with the sleeve of the plug. Thus, insertion of the plug will transfer the input connection of the special receiver, from the antenna to the top plate of the unit 44(145); and, since such top plate is receiving the program signals (both video and audio) for the special program, it appears that the above operations will now cause the special receiver to receive and translate such special program signals.

It is thus evident that the special program in color signals may be received without pre-pay or subscriber operation, as a monochrome translation or, by pre-pay or subscriber operation, as a full color translation.

It is also evident that the reception of the special program, in either the inferior aesthetic quality (monochrome) or the superior aesthetic quality (color), is without the presence of the commercials or other objectionable components, although such objectionable components are included in the inferior quality program rendition which is broadcast and received and translated concurrently with such superior quality rendition.

It is apparent that when the control switch 34 or $34^a$ is in its leftward position, so that a program is being emitted by broadcast to the air, the program then emitted is available to all receivers which are tuned to the station in question; and that under this operative condition both the conventional receivers and the subscriber receivers may receive such program in color (if such conventional receiver be a color receiver), and without pre-pay or subscriber operation; and also that under this operative condition the conventional receivers which are compatible, are also able to receive and translate such program in monochrome, if they are not color receivers.

If needed or desired the unit 114 (FIGURE 3) may be provided with damping means to prevent "hunting" or similar improper operation when the signals from the synchronizing sensor $66^b$ and from the count down element 122 are non-synchronized to a considerable extent, as when the signals from the sensor $66^b$ may be arriving about half-way between the signals from such count down element. The leaf contact 118 is normally disengaged from the stationary contact 119, as by forming such leaf contact of springy material, non-biased to the normally open position shown in FIGURE 3.

It is also evident that, with the structures herein disclosed it is possible for a broadcasting station to produce operations enabling it to simultaneously supply the requirements of two classes of receiver users namely, those users who are willing to receive conventional programs which include the "commercials," and those users who prefer to receive the programs without the "commercials," on a pre-pay or subscription basis. Thus, a broadcasting company may obtain the benefits flowing from inclusion of the commercials in the one emitting service (by antenna or broadcast transmission), with the resultant revenue from the sponsors of such commercials; and at the same time such broadcasting company may secure the benefits flowing from the pre-pay or subscription operations, contributed by the users of the alternative, but simultaneously provided form of service. Such double or twin system of operation may be produced, in the disclosures of this case, either by "live" origination (as by the use of the microphones 26 and 27 of FIGURE 1), or by the use of recorded programs (as shown in FIGURES 2 and 11); or by use of one of the microphones for sending either of the program renditions "live," and by use of a record produced sending for the other rendition. Thus, a sending station equipped with the structures herein disclosed (or their equivalents) will be able to supplement its revenues obtained from the sponsors of the commercials, by revenues obtained from the pre-pay or subscription operations.

I claim:

1. A television program emitting, and receiving and translating system, including emitting elements comprising in combination means constituted to emit a first defined stream of video signals corresponding to a program including viewing an object wherein said first defined stream of signals includes video signal components constituted for reception of said first defined stream of signals and translation of said signals to produce a raster of said viewed object in color, said emitting elements also including means constituted to simultaneously emit a second defined stream of video signals corresponding to the same program and including viewing the same object, wherein said second defined stream of signals is constituted for reception and translation thereof to produce the raster in monochrome; together with a plurality of television receivers including pay-receivers and non-pay-receivers; wherein each pay-receiver includes means constituted to receive and translate the first defined stream of video signal components or the second defined video signals and video signal components, selectively, for production of the raster in color or in monochrome, selectively, and wherein each non-pay receiver is constituted to receive and translate the second defined stream of video signals for production of the raster in monochrome; together with a first defined video signal transmitting carrier from the first defined video signal emitting means to the pay-receivers, and a second defined video signal transmitting carrier from the second defined video signal emitting means to the non-pay receivers; together with operator controlled means in connection with each pay receiver and in connection with both the first defined video signal transmitting carrier and the second defined video signal transmitting carrier, and including means to connect the radio frequency signals input element of such pay receiver, selectively, under operator control to either the first defined or the second defined video signal carrier.

2. A television system as defined in claim 1, wherein one of the defined signal transmitting carriers comprises a radiation antenna constituted to radiate one of the defined streams of video signals, and wherein the corresponding receivers are constituted to receive the signals radiated by said antenna; and wherein the other defined video signal transmitting carrier comprises a wired connection from the video signal emitting means for the other defined stream of video signals, to the video signals receiving means of corresponding receivers.

3. A television system as defined in claim 2, wherein the stream of video signals radiated by the radiation antenna is the stream of signals constituted for production of the raster in monochrome, and the other defined stream of video signals of which the transmitting carrier comprises a wired connection, in the stream of signals constituted for production of the raster in color.

4. A television system as defined in claim 2, wherein a pay-receiver is constituted to receive and translate radiated signals or wire transmitted signals selectively; wherein the operator controlled selecting means is constituted to cause said pay-receiver to receive either the radiated signals or the wire transmitted signals as selected.

5. A television system as defined in claim 1, wherein a non-pay-receiver is constituted to receive and translate emitted color signals and components as a color raster; and wherein the emitting elements include means constituted to emit and radiate the second defined stream of signals and components as signals and components constituted for reception and translation in said non-pay-receiver for production of a raster in color.

6. A television system as defined in claim 2; together with a two position switching means in connection with the first defined video signal emitting means and the second defined video signal emitting means; said switching means having a first defined switching position wherein the first defined stream of signals is connected to the antenna, and having a second defined switching position

wherein the first defined stream of signals is connected to the wired video signal transmitting carrier, and the second defined stream of signals is connected to the antenna.

7. A television system as defined in claim 6; wherein a pay-receiver includes a video signal input connection and a two position receiver switch in connection with said input connection, said receiver switch having a first defined position in which the input connection of the pay-receiver is connected to a receiver antenna, and a second defined position in which said input connection is connectable to the wired video signal transmitting channel; together with selecting means in connection with said receiver switch, said selecting means being constituted to move the receiver switch to said second defined position.

8. A television system as defined in claim 7, wherein the selecting means includes remote control means.

9. A television system as defined in claim 7, wherein the selecting means includes pre-pay means.

10. A television program emitting, and receiving and translating system, comprising in combination; a sending station, a plurality of pay-receivers, and a plurality of non-pay receivers; said sending station including means to produce a first defined stream of video signals and signal components corresponding to a program including the viewing of an object, and translatable in a receiver to produce a color raster; and said sending station also including means to simultaneously produce second defined stream of video signals and signal components corresponding to the same program and including viewing the same object, and translatable in a television receiver to produce a monochrome raster; said pay-receivers being constituted for reception and translation of the first defined video signals to produce a raster in color, and said non-pay receivers being constituted for reception and translation of the second defined video signals to produce a monochrome raster; together with sending station two position switching means having a first defined position and a second defined position; a radiation antenna in connection with the sending station; a local control station, and a video signal transmitting carrier from the sending station to the local control station; together with connections between the first defined video signal producing means, and the second defined video signal producing means, and the sending station switching means, and connections between said switching means and the radiation antenna, and between the switching means and the video signal transmitting carrier to the control station; all said connections and the switching means being constituted for delivery of the first defined color video signals to the radiation antenna when said switching means is in the first defined position, and said connections and the switching means being constituted for delivery of the second defined monochrome video signals to the radiation antenna, and for delivery of the first defined color video signals to the video signal transmitting carrier to the control station when the switching means is in its second defined position; and video signal connections between the control station and video signal input element of each pay-receiver including switching means for each pay-receiver constituted to make operative or inoperative the said video signal connections to the corresponding pay-receiver.

11. A television system as defined in claim 10; together with operator controlled means to make operative the switching means of each pay-receiver.

12. A television system as defined in claim 11, wherein the operator controlled means includes means individual to each of the pay-receivers constituted for control of the switching means of the corresponding pay-receiver.

13. A television system as defined in claim 12, wherein the operator controlled means for each of selected pay-receivers is a remote control means.



14. A television system as defined in claim 12, wherein the operator controlled means for each of selected pay-receivers is a coin or token pre-pay unit.

15. A television system as defined in claim 11, wherein each pay-receiver includes a video signal radiation receiving element, and wherein the switching means of each pay-receiver includes means constituted to connect said video signal input element of such pay-receiver to the video signal radiation receiving element of such pay-receiver when the switching means makes inoperative the video signal connections between the control station and such pay-receiver.

16. A television system as defined in claim 10, wherein there are control signal connections between the sending station switching means and the control station, and wherein the sending station switching means is constituted to deliver a control signal to said control signal connection when the sending station switching means is in its second defined position.

17. A television system as defined in claim 16, wherein the operator controlled means which makes operative the switching means for each pay-receiver, includes means operative by the control signal delivered to the control station.

18. A television system as defined in claim 16; together with means comprising a portion of a pay-receiver and constituted to cause such pay-receiver to receive and translate received color signals to produce a monochrome raster, means to make effective said monochrome raster producing means, and connections between the control station and said monochrome raster producing means constituted to cause said monochrome raster producing means to produce the raster in monochrome when the control signal is delivered to the control station.

19. A television system as defined in claim 18; together with operator controlled means constituted to make inoperative the means which is constituted to cause the monochrome raster producing means to produce the raster in monochrome when the control signal is delivered to the control station.

20. A television system as defined in claim 19; wherein said operator controlled means is remote control means.

21. A television system as defined in claim 19; wherein said operator controlled means comprises pre-pay means.

22. A television system as defined in claim 16; together with a signalling element in proximity to the pay-receiver, and connections between said signalling element and the control station, constituted to activate the signalling element when the sending station switching means is in its second defined position.

23. A television program emitting, and receiving and translating system, comprising in combination; a sending station, a plurality of pay-receivers, and a plurality of non-pay receivers; said sending station including means to produce first defined video signals corresponding to a program including viewing an object, and translatable in a receiver to produce a color raster for said program; and said sending station also including means to simultaneously produce second defined video signals corresponding to the same program, and translatable in a television receiver to produce a monochrome raster for said program; said pay-receivers being constituted for reception and translation of the first defined video signals to produce a raster in color, and said non-pay receivers being constituted for reception and translation of the second defined video signals to produce a monochrome raster.

24. A television system as defined in claim 23; together with a first defined video signal transmitting carrier from the first defined video signal emitting means to the pay-receivers, and a second defined video signal transmitting carrier from the second defined video signal emitting means to the non-pay-receivers.

25. A television system as defined in claim 24; wherein video signals being transmitted by the first defined

video signal transmitting carrier are non-accessible to the non-pay receivers.

26. A television system as defined in claim 24; wherein video signals being transmitted by the second defined video signal transmitting carrier are accessible to the pay-receivers.

27. A television system as defined in claim 23; wherein the pay-receivers are constituted for reception and translation of color video signals for production of a raster in either color or monochrome, selectively.

28. A television system as defined in claim 27; together with means constituted to cause the translation of received color video signals to be translated in monochrome, and operator controlled means to cause the translation of received color video signals to be translated in color.

29. A television system as defined in claim 23; wherein the means to produce the first defined color video signals includes first camera means constituted to produce color video signals, and wherein the means to produce the second defined monochrome video signals includes second camera means constituted to produce monochrome video signals.

30. A television system as defined in claim 23; wherein the means to produce the first defined color video signals includes tape recorder sensing means and tape-recorded color signals, and wherein the means to produce the second defined monochrome video signals includes tape recorder sensing means and tape-recorded monochrome signals.

31. A system for the emission, transmission, and translation of a television program, said system comprising in combination a sending station including first defined means constituted to produce and emit first defined radio frequency modulated carrier signals of a radio frequency carrier channel, which when recevied are demodulatable and translatable for production of a program of intelligence in a first defined superior aesthetic quality, and also including second defined means constituted to at the same time produce and emit second defined radio frequency modulated carrier channel signals of the same radio frequency carrier channel as said first defined radio frequency carrier channel, which when received are demodulatable and translatable for production of the same program of intelligence, in a second defined inferior aesthetic quality; means to broadcast said second defined emitted signals; a non-accessible conductor transmission line extending from the first defined means which emits the first defined signals; to a location in proximity to a plurality of receivers each constituted to receive and translate either said first defined signals or said second defined signals selectively, for production of an intelligible translation corresponding to such first defined or said second defined received and translated signals; together with receiver antenna means for said receiver constituted to receive the broadcast second defined signals; and plural position switching means and connections corresponding to each such receiver and constituted to connect either the receiver antenna means or the non-accessible conductor transmission line, to the radio frequency signals input element of such receiver, selectively.

32. A television system as defined in claim 31; together with operator actuated means corresponding to each such switching means, constituted to cause connection of such receiver radio frequency signals input element with the receiver antenna means, or with the non-accessible conductor transmission line selectively, under operator control.

33. A television system as defined in claim 32; wherein the operator actuated means corresponding to each receiver comprises a pre-pay unit.

34. A television system as defined in claim 32; wherein the operator actuated means corresponding to each receiver comprises remote control means.

35. A television program emission, receiving, and translating system, comprising in combination; a sending station, and a plurality of pay or subscription receivers, and a plurality of non-pay, non-subscription receivers; said sending station including means constituted to produce a first defined radio frequency carrier channel including first defined video signals and including first defined means to produce first defined audio signals corresponding to a first defined rendition of a video-audio program, receivable and translatable in such pay or subscription receivers for production of a first defined translation of said program; said sending station also including means constituted to simultaneously produce a second defined radio frequency carrier channel and including second defined video signals and including second defined means to produce second defined audio signals, corresponding to a second defined rendition of said video-audio program, receivable and translatable in the receivers for production of a second defined translation of said program; means and connections to broadcast said second defined signals, a non-accessible transmission carrier extending between the first defined signals producing means and such pay or subscription receiver; wherein the second defined audio signal include commercial announcements comprising subject-matter other than the subject-matter of said program; and wherein the first defined audio signals include announcements only comprising subject-matter which constitutes portions of the program being emitted and translated; a receiver antenna serving the pay or subscription receiver; switch means corresponding to the pay or subscription receiver, including connections between said switch means and the radio frequency input element of such pay or subscription receiver, and connections between said switch means and the receiver antenna and the non-accessible trasmission carrier, said swtich means and said connections including means to connect the radio frequency input element of the receiver with either the receiver antenna or the non-accessible transmission carrier selectively, under operator control.

36. A television system as defined in claim 35; wherein the operator controlled means comprises a pre-pay coin or token box.

37. A television system as defined in claim 35; wherein the operator controlled means comprises a remote control means.

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