CLASS 348, TELEVISION

SECTION I - CLASS DEFINITION

This class deals with generating, processing, transmitting or transiently displaying a sequence of images, either locally or remotely, in which the local light variations composing the images may change with time (e.g., natural "live" scenes) by methods involving the following steps:

Step 1. The scanning of an object or a scene by partitioning the object or scene into subareas of image information (e.g., pels or pixels) and generating therefrom an electrical signal representative of an image.

Step 2. The transient display of an object or a scene image by converting an electrical signal representative of the object image (i.e., video signal) into a visible image of the object.

In this class, the sequence of images is intended to portray motion with exception of special television type systems that produce a sequence of still images from a conventional television system (e.g., videophone, slow scan, film retrieval, and security systems). These special television systems normally select an image from a sequence of images of a conventional television system and normally use a transient display (e.g., CRT or liquid crystal).

Facsimile images are normally of a fixed scene (e.g., document) that do not form a sequence, cannot portray motion, and normally the display is fixed (e.g., hard copy). (See References to Other Classes, below.) In television recording, the sequence of images are dynamically recorded for later reproduction.

SUBCOMBINATIONS OF TELEVISION SYSTEMS

This class includes circuits specially designed for dealing with a peculiar component of the television signal (e.g., sync or chrominance), as distinct from merely signals of a particular frequency range.

Electrical circuits that are not specific to television which may constitute subcombinations of such apparatus are classified in the appropriate class for such circuits.

For a video camera or television receiver having a static storage device as subcombination, see Subclass References to the Current Class, below.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

COMBINATIONS OF OTHER APPARATUS WHICH INCLUDE APPARATUS OF THIS CLASS

This class does not include the following subject matter:

1. Systems in which legible alphanumeric or like character forms are analyzed according to step 1 above to derive an electric signal from which the character is recognized by comparison with stored information are classified elsewhere. (See References to Other Classes, below.)

2. Systems for the direct photographic copying of an original picture in which an electric signal representative of a characteristic of the picture is derived and employed to modify the operation of the system are classified elsewhere. (See References to Other Classes, below.)

3. Systems for the reproduction, according to step 2, of images comprising alphanumeric or computer generated graphics and systems for the conversion of a computer generated signal into a television signal are classified elsewhere. (See References to Other Classes, below.)

4. Systems for the dynamic recording, or reproducing, of black and white television using a nonmagnetic medium, systems for the dynamic recording or reproducing of color television, and systems for photographing displayed images are classified elsewhere. (See References to Other Classes, below.)

5. Systems for the dynamic recording or reproducing of black and white images from magnetic media (e.g., magnetic tape) are classified elsewhere. (See References to Other Classes, below.)

For related elements or systems, see References to Other Classes, below.

SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

231+, and 714+, for a video camera or television receiver having a static storage device as subcombination.

SECTION IV - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 596+ for measuring and testing an apparatus including acoustic imaging.

128, Surgery, subclasses 4+ for endoscopes in general.

250, Radiant Energy, subclasses 200+ and 216+ for photocells, circuits and optics therefor, and subclasses 330+ and 338+ for devices responsive to invisible radiation.

312, Supports: Cabinet Structure, subclass 7.2 for television cabinets.

313, Electric Lamp and Discharge Devices, subclasses 364+ for cathode-ray tubes.

315, Electric Lamp and Discharge Devices: Systems, subclasses 1+ for cathode-ray tube circuits.

318, Electricity: Motive Power Systems, subclasses 41 and 85 for synchronization circuitry.

324, Electricity: Measuring and Testing, subclass 76.12 for analysis of complex waves.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous nonlinear active device circuits.

329, Demodulators, subclasses 311+, 315+, 345+, and 347+ for pulse frequency, phase, or amplitude demodulators, respectively.

330, Amplifiers, subclass 11 for DC reinsertion circuit, subclasses 127+ for control of power supply, and subclass 149 for noise compensation.

331, Oscillators, subclasses 20 and 172 for television type oscillator synchronization.

332, Modulators, various subclasses for modulators.

333, Wave Transmission Lines and Networks, subclasses 14 and 24+ for companders and coupling networks.

334, Tuners, various subclasses for tuners, per se.

341, Coded Data Generation or Conversion, appropriate subclasses for A/D or D/A conversion.

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 1 through 205 for radar systems.

345, Computer Graphics Processing and Selective Visual Display Systems, for systems for the reproduction, according to the Class 348 Class Definition, step 2, of images comprising alphanumeric or computer generated graphics and systems for the conversion of a computer generated signal into a television signal. (Lines With Other Classes and Within This Class, "Combinations of Other Apparatus Which Include Apparatus of This Class").

346, Recorders, subclasses 150.1+ for electric recording of phenomenon, particularly subclasses 150.2 for electric discharge and 150.3 for electrochemical, subclasses 134 for particular record receivers, subclasses 139+ for scanning devices for markers, and subclasses 107.1+ for light or beam recording of phenomenon.

347, Incremental Printing of Symbolic Information, subclasses 112+ for electrostatic marking, particularly subclasses 129+ for photo scanning, subclasses 224+ for light beam marking.

355, Photocopying, subclass 38 for systems for the direct photographic copying of an original picture in which an electric signal representative of a characteristic of the picture is derived and employed to modify the operation of the system. (Lines With Other Classes and Within This Class, "Combinations of Other Apparatus Which Include Apparatus of This Class").

356, Optics: Measuring and Testing, subclasses 3+ for range or distance measurement, subclasses 241.1+ for borescopes, subclasses 426+ and 237.1+ for inspection devices, and subclasses 402+ for shade or color measuring.

358, Facsimile and Static Presentation Processing, appropriate subclasses for transmitting, processing, or reproducing a permanent picture, and particularly subclass 479 wherein the image signal is generated by a television type camera. (See References to Other Classes, above.)

359, Optical: Systems and Elements, various subclasses for optical devices, especially subclass 1 for holography, and subclasses 196-226 and 887 for light beam deflectors and sequentially additive filters.

360, Dynamic Magnetic Information Storage or Retrieval, subclasses 9.1+, 14.1+, 19.1, and 33.1+ for dynamic magnetic recorders peculiar to non-color television signal processing. (Lines With Other Classes and Within This Class, "Combinations of Other Apparatus Which Include Apparatus of This Class").

361, Electricity: Electrical Systems and Devices, subclass 243 for synchronization of shafts and subclasses 173+ and 211 for a photosensitive device in circuits for electromagnets.

365, Static Information Storage and Retrieval, appropriate subclasses. The storage of information, which includes video signal processing, is excluded from this class.

369, Dynamic Information Storage or Retrieval, appropriate subclasses for recording or reproducing information absent any feature peculiar to video processing.

370, Multiplex Communications, appropriate subclasses for multiplex systems in general.

375, Pulse or Digital Communications, for communication using pulse or digital signals which do not include video signals, with particular exception, digital television bandwidth compression are classified in subclasses 240.01 through 240.29.

378, X-Ray or Gamma Ray Systems or Devices, subclasses 98.2+ for systems which deal with television signals.

379, Telephonic Communications, for communication by telephone which do not include videophone.

380, Cryptography, especially subclasses 200 through 242 for cryptographic video equipment and techniques.

382, Image Analysis, appropriate subclass for pattern recognition or alphanumeric character sensing.

382, Image Analysis, for systems in which legible alphanumeric or like character forms are analyzed according to the Class 348 Class Definition, step 1, to derive an electric signal from which the character is recognized by comparison with stored information. (Lines With Other Classes and Within This Class, "Combinations of Other Apparatus Which Include Apparatus of This Class").

386, Television Signal Processing for Dynamic Recording or Reproducing, for systems for the dynamic recording, or reproducing, of black and white television using a nonmagnetic medium, systems for the dynamic recording or reproducing of color television, and systems for photographing displayed images. (Lines With Other Classes and Within This Class, "Combinations of Other Apparatus Which Include Apparatus of This Class").

396, Photography, appropriate subclasses for a camera which when actuated uses light to record a chemically developable image or subcombinations thereof. See Lines With Other Classes and Within This Class, in the class definition therein for the line with Class 348.

398, Optical Communications, various subclasses for optical communication.

409, Gear Cutting, Milling, or Planing, subclasses 2+, 79+, 245+, and 289+ for a pattern controlled device including scanning.

430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, appropriate subclasses for process, composition, and product involving radiation imagery chemistry.

434, Education and Demonstration, subclass 307 for teaching devices including television combinations.

439, Electrical Connectors, for electrical connectors, per se.

455, Telecommunications, various subclasses for radio transmission or reception.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 90 through 306 for the application of a computer in various combinations that may include use of television equipment, as in, for example, subclasses 95-212 product manufacturing, and subclasses 245-264 for data processing of robot control systems.

702, Data Processing: Measuring, Calibrating, or Testing, for the application of a computer in measuring, testing, or calibrating apparatus that may include use of television equipment.

704, Data Processing: Speech Signal Processing, Linguistics, Language Translation and Audio Compression/Decompression, subclasses 200+ for artificial intelligence systems that process speech signals.

706, Data Processing: Intelligent Processing Systems and Methods, various subclasses for artificial intelligence systems that represent, apply, and acquire knowledge and subclasses 15+ for neural networks and circuits.

709, Electrical Computers and Digital Processing Systems: Multiple Computer or Process Coordinating, appropriate subclasses for data transmission among plurality of spatially distributed computers or digital data processing systems and FOR 101 for foreign art collection of computer-bases communication engineering which may include object defection or tracking.

714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for digital data error in general.

SECTION V - GLOSSARY

BASIC RECEIVER

A receiver for converting incoming electric signals into television pictures and the associated sound.

BURST

Also called reference burst, the portion of the composite or noncomposite color-picture signal, comprising a few cycles of a sine wave of chrominance subcarrier frequency, that is used to establish a reference for demodulating the chrominance signal.

COMPOSITE COLOR SIGNAL

A color picture signal with all blanking and synchronizing signals. Including luminance and chrominance components; vertical- and horizontal-sync pulses; vertical- and horizontal-blanking pulses; and the color burst signal, with or without accompanying audio.

COMPOSITE VIDEO SIGNAL

A signal in television that conveys all of the intelligence present in the image together with the synchronizing information (e.g., vertical and horizontal pulses) with or without audio information.

CONVENTIONAL CHANNEL

A portion of the spectrum assigned for the standard operation of a specific carrier and the minimum number of sidebands necessary to convey intelligence.

FORMAT

The particular method for combining the time variable video signal with a synchronizing signal to allow reconstruction of an image from the originating video signal.

FREQUENCY DOMAIN

A way of looking at the frequency of waveform components.

IMAGE SENSOR

A generic name for both cathode-ray tube and solid-state imaging devices which converts an optical image of an object into an electrical signal representative of the object image.

KEYSTONING

A distorted scanning pattern, with a top wider than the bottom or vice versa, produced when the electron beam in the television camera tube is at angle with the principal axis of the tube.

PICKUP TUBE

A television camera tube consists of a cathode-ray tube which includes vidicon, orthocon, iconoscope, or plumbicon (i.e., vidicon with lead-oxide target, trademark of N. V. Philips of Holland).

PIXEL OR ELEMENT RATE

The smallest distinguishable and resolvable area in an image.

SCANNING

The successive analyzing or synthesizing, according to a predetermined method, the light values or equivalent characteristics of elements constituting a picture area.

SOLID-STATE IMAGING DEVICE

A device that uses a mosaic of tiny light-sensitive semiconductors (photo-transistors) to produce individual outputs which are then converted into a coherent video signal.

SPATIAL CONTENT, DOMAIN

The content of a single video image.

TEMPORAL CONTENT

The content of the image is changed with respect to time.

VIDEO SIGNAL

A signal in television derived from optical image (e.g., active video).

SUBCLASSES

14.01 TWO-WAY VIDEO AND VOICE COMMUNICATION (E.G., VIDEOPHONE): This subclass is indented under the class definition. Subject matter comprising a bidirectional communication of both image signal and accompanying speech signal over a transmission line.

SEE OR SEARCH CLASS:

725, Interactive Video Distribution Systems, subclass 99 for user-requested video program using a telephone network, subclass 106 for telephony via a television distribution network, and subclass 122 for detail of return path via telephone network in video distribution with upstream communication.

14.02 Over wireless communication:

This subclass is indented under subclass 14.01. Subject matter using communication medium other than transmission line (e.g., radio frequency or infrared frequency).

14.03 User Interface (e.g., touch screen menu):

This subclass is indented under subclass 14.01. Subject matter wherein a user input command to select videophone relating functions.

(1) Note. For example, the user can input command through a touch sensor on a display.

SEE OR SEARCH CLASS:

715, Data Processing: Presentation Processing of Document, Operator Interface Processing, and Screen Saver Display Processing, subclasses 733 through 759 for concurrently established related or collaborative user interfaces including computer conferencing and computer supported cooperative work.

14.04 Operating with other appliance (e.g., VCR, FAX, etc.):

This subclass is indented under subclass 14.01. Subject matter having provision for connecting other electronic communication appliance.

14.05 Remote control:

This subclass is indented under subclass 14.01. Subject matter having provision for controlling a videophone equipment at a distance.

14.06 Answering machine:

This subclass is indented under subclass 14.01. Subject matter having provision for storing voice and video information for retrieval at a later time.

SEE OR SEARCH CLASS:

379, Telephonic Communications, subclasses 67.1 through 88.28 for audio message storage, retrieval, or synthesis in telephone communication, per se.

386, Television Signal Processing for Dynamic Recording or Reproducing, for appropriate subclasses.

14.07 Display arrangement (e.g., multiscreen display):

This subclass is indented under subclass 14.01. Subject matter including circuitry for inserting additional image into an existing image on a display.

SEE OR SEARCH THIS CLASS, SUBCLASS:

563 through 570, for basic television receiver having additional display function which may include multiscreen display.

14.08 Conferencing (e.g., loop):

This subclass is indented under subclass 14.01. Subject matter wherein three or more terminals intercommunicate.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 733 through 747 for computer conferencing with visual display.

370, Multiplex Communications, subclasses 260 through 269 for conferencing with significant multiplexing techniques.

379, Telephonic Communications, subclass 202 for three or more terminals on distinct subscriber lines to be included in a single call connection.

709, Electrical Computers and Digital Processing Systems: Multiple Computer or Process Coordinating, subclasses 204 through 207 for multiple computer conferencing with significant data processing.

14.09 Conferencing with multipoint control unit:
This subclass is indented under subclass 14.08. Subject matter wherein three or more terminals intercommunicate with at least one central unit.

14.1 Motion image conferencing:
This subclass is indented under subclass 14.08. Subject matter wherein transmitted image information represents only changes from a previous image among three or more terminals.

14.11 Switching:
This subclass is indented under subclass 14.01. Subject matter including a structure for selectively connecting a conversational video call to a receiving station.

14.12 Transmission control (e.g., resolution or quality):
This subclass is indented under subclass 14.01. Subject matter including detail of signals formatting, modulating, combining voice and video, or synchronizing for transmission between stations.

SEE OR SEARCH THIS CLASS, SUBCLASS:
469 through 496, for formatting a video signal in general.

14.13 Compression or decompression:
This subclass is indented under subclass 14.12. Subject matter including particular details of transmission scheme for reducing or reconstructing transmission bandwidth.

SEE OR SEARCH THIS CLASS, SUBCLASS:
384.1 through 440.1, for analog television signal bandwidth reduction system.

SEE OR SEARCH CLASS:
370, Multiplex Communications, subclass 477 for transmission bandwidth conservation and subclass 521 for time compression of expansion for multiplex signals.
375, Pulse or Digital Communications, subclasses 240.01 through 240.29 for digital television signal bandwidth reduction or expansion.
382, Image Analysis, subclasses 232 through 253 for image compression or coding.
704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/ Decompression, subclasses 500 through 504 for audio signal bandwidth or time reduction or expansion.

14.14 Still frame (e.g., freeze frame):
This subclass is indented under subclass 14.12. Subject matter wherein video displayed is a single image or a sequence for nonmoving images.

SEE OR SEARCH THIS CLASS, SUBCLASS:
22, for slow scanning transmission.

14.15 Field or frame difference (e.g., moving frame):
This subclass is indented under subclass 14.12. Subject matter wherein transmitted image information represents only changes from a previous image.

SEE OR SEARCH THIS CLASS, SUBCLASS:
412.1, 413.1, and 415.1-417.1, for analog television bandwidth reduction involving difference transmission which may include field or frame difference.

SEE OR SEARCH CLASS:
375, Pulse or Digital Communications, subclasses 240.12 through 240.17 for digital television predictive bandwidth reduction which may include field or frame difference.

14.16 User positioning (e.g., parallax):
This subclass is indented under subclass 14.01. Subject matter including a structure to ensure that the user is positioned properly in front of a television camera.

21 PLURAL TRANSMITTER SYSTEM CONSIDERATIONS (E.G., INTERFERENCE REDUCTION):
This subclass is indented under the class definition. Subject matter including two or more transmitters with means or method for reducing interference between the transmitters.

(1) Note. Such methods include frequency offsets and special formats.

22 SLOW SCANNING TRANSMISSION (E.G., STILL FRAME):
This subclass is indented under the class definition. Subject matter involving a periodic or selective transmission of single video frames during a period greater than the period required for a portrayed motion.

(1) Note. A portrayed motion requires at least 8 frames per second. In a television system, 25 or 30 frames per second are mostly used.

(2) Note. A system included herein is normally intended for use with a telephone system, but the telephone system is not claimed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
17, for two way conversational television systems which may use a slow scanning transmission technique, and see particularly subclass 18 for a still frame transmission.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclasses 500 through 540 for facsimile scanning and subclass 479 for facsimile video scanning.

23 Color TV:
This subclass is indented under subclass 22. Subject matter wherein the transmitted video signal includes portions indicating the existing color of an original object or scene.

24 PLURAL STILL IMAGES OVER CONVENTIONAL CHANNEL:
This subclass is indented under the class definition. Subject matter comprising a system which forms a series of unrelated images at convention frame rates and a receiver which selectively grabs one frame for display.

(1) Note. The frame selected is selected as the viewer watches a program. The systems classified herein often are selected when the frame code matches a viewer selected code.

SEE OR SEARCH THIS CLASS, SUBCLASS:
473, for formats and systems that add an unrelated image to a conventional video program.
559, for frame grabbing, in general.

25 IMAGE FALSIFICATION TO IMPROVE VIEWER PERCEPTION OF SELECTIVE OBJECT (E.G., MOVING OBJECT OR TARGET):
This subclass is indented under the class definition. Subject matter involving a system wherein a picture is presented or processed in such a manner as to enable a viewer to quickly perceive selected information in the picture.

(1) Note. Included herein are systems that subtract two images to present the difference, such as motion, or subtract a polarized image from a nonpolarized image to present objects that polarize light.

SEE OR SEARCH THIS CLASS, SUBCLASS:
578, for special effect devices that modify an image to please a viewer.

SEE OR SEARCH CLASS:
382, Image Analysis, subclasses 254+ for image enhancement or restoration.

26 Contour generator:
This subclass is indented under subclass 25. Subject matter wherein a display is produced in the form of a line drawing, a line being generated as a result of the interconnection of points exhibiting substantial changes between adjacent pixels.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 558 for stereoplotters.

356, Optics: Measuring and Testing, subclass 2 for contour plotters in which the contour is recorded from stereoscopic images.

27 Quantizer:

This subclass is indented under subclass 25. Subject matter wherein a picture signal is separated into discrete amplitudes to expand the difference between selected information and background.

SEE OR SEARCH THIS CLASS, SUBCLASS:

405, for bandwidth reduction involving transform coding adaptive quantizer.

418, for bandwidth reduction involving difference transmission with vector quantization.

422, for bandwidth reduction involving vector quantization.

SEE OR SEARCH CLASS:

382, Image Analysis, subclasses 270+ for image transformation or pre-recognition using adaptive quantization or variable thresholding.

28 Selective contrast expander:

This subclass is indented under subclass 25. Subject matter wherein a picture signal has (a) a selected geometrical area with a gray scale which is extended generally to a full range or (b) a selected range of gray scale which is extended generally to a full range to enable a viewer to perceive a selected object from a similar background.

29 False color:

This subclass is indented under subclass 25. Subject matter including a color display with a presentation or processing that uses differences in color to accentuate different information in an image.

(1) Note. An example of a system found herein is a movement detection system that presents one field in green and the other in magenta (blue and red) such that stationary objects are in black and white and moving objects are outlined in color.

(2) Note. A system that maps different gray levels to arbitrary colors is found in subclass 34 (pseudo color including intensity to color conversion) regardless of the statement of intent to provide a colored display or to present data for easier presentation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

34, for pseudo color including intensity to color conversion.

30 Hue expander:

This subclass is indented under subclass 29. Subject matter including means for mapping a narrow area of the hue circle into a larger area of the hue circle.

(1) Note. For example, if the center of the narrow area is red after hue expanding, red input will be displayed as red, purple input will be displayed as blue, and orange input will be displayed as yellow.

31 BACK SCATTER REDUCTION:

This subclass is indented under the class definition. Subject matter including means to minimize an adverse effect on a reproduced picture due to the presence of an imperfect optical medium between an object being viewed and a camera.

(1) Note. Examples of imperfect optical medium are turbid water or atmospheric fog which may scatter light transmitted between the camera and the object, the reduction of backscattered light may be obtained by gating a camera during a period corresponding to the round trip transit time of light from the light source to the object and back to the camera.

32 PSEUDO COLOR:

This subclass is indented under the class definition. Subject matter including generating, transmitting, recording, reproducing, or displaying a picture representative signal which includes portions indicating arbitrarily assigned color.

SEE OR SEARCH CLASS:
378, X-Ray or Gamma Ray Systems or Devices, subclass 100 for color television display of X-ray density.

33 Multispectral to color conversion (e.g., infrared and visible, infrared bands, etc.):
This subclass is indented under subclass 32. Subject matter including more than one picture signal each represented by a distinct frequency band which is arbitrarily assigned a color.

(1) Note. For example, more than one camera is pointing to a sole object, each camera is responsive to a different specific band of wavelengths.

34 Including intensity to color conversion (e.g., colorizer, etc.):
This subclass is indented under subclass 32. Subject matter wherein a color is arbitrarily assigned in relation to an amplitude of the picture signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
29+, for false color.

35 PSEUDO BLACK AND WHITE:
This subclass is indented under the class definition. Subject matter including generating, transmitting, recording, reproducing, or displaying a picture representative signal which includes portions indicating arbitrarily assigned gray level representative of color.

36 PANORAMIC:
This subclass is indented under the class definition. Subject matter including means for generating television information for a wide-angle field of view.

(1) Note. The wide-angle field of view should be greater than the television wide aspect ratio (e.g., 16:9).

SEE OR SEARCH THIS CLASS, SUBCLASS:
432, for bit-rate reduction with added video information in standard channel format.
903, for side panel information in single channel.
904, for separation or joining of side and center panels.

SEE OR SEARCH CLASS:
352, Optics: Motion Pictures, subclasses 69+ for panoramic motion picture apparatus.
359, Optical: Systems and Elements, subclass 725 for panoramic lenses.
396, Photography, subclass 436 for panoramic cameras.

37 With continuously rotating element:
This subclass is indented under subclass 36. Subject matter wherein a continuously rotating element is used to generate images of successive portions of the scene.

38 Multiple channels:
This subclass is indented under subclass 36. Subject matter wherein more than one transmission path is used to provide simultaneously plural portions of the scene.

SEE OR SEARCH THIS CLASS, SUBCLASS:
388, for a multiple channel bandwidth reduction system.

39 With observer selected field of view:
This subclass is indented under subclass 36. Subject matter having provision for a user to select a portion of the whole scene to be displayed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
445, for format conversion between aspect ratios.
556, for receiver with additional function to receive signals of different aspect ratio.

40 HOLOGRAPHIC:
This subclass is indented under the class definition. Subject matter wherein the picture signal includes information derived from an object wave formed by the resulting interference pattern of two mutually coherent component light beams.

(1) Note. In the holographic process a coherent beam is first split into two component beams, one of which irradiates a

recording medium. The diffraction or scattering of the first component beam by the object forms the object wave which proceeds to, and interferes with, the second component beam or reference wave at the medium. The resulting pattern is a three-dimensional record (hologram) of the object wave.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 1+ for optical holographic system or element, per se.

41 Color TV:
This subclass is indented under subclass 40. Subject matter wherein the picture signal is displayed in a hue as contrasted with black, white, or gray.

42 STEREOSCOPIC:
This subclass is indented under the class definition. Subject matter in which the picture signal also includes portions indicating the three-dimensional nature of the original object or scene.

SEE OR SEARCH CLASS:
352, Optics: Motion Pictures, subclass 86 for motion picture apparatus wherein an illusion of depth is presented.
359, Optical: Systems and Elements, subclasses 462+ for optical elements to give a three-dimensional effect.
396, Photography, subclasses 324+ for stereoscopic photography.

43 Signal formatting:
This subclass is indented under subclass 42. Subject matter including an arrangement for combining video signals representing different viewing positions for transmission.

SEE OR SEARCH THIS CLASS, SUBCLASS:
469+, for television signal formatting, per se.

44 Pseudo:
This subclass is indented under subclass 42. Subject matter wherein an image signal is modified to simulate a three-dimensional image.

45 Endoscope:
This subclass is indented under subclass 42. Subject matter wherein a stereoscopic picture signal generator is combined with an instrument which is used for the medical inspection of the interior of a human body.

SEE OR SEARCH THIS CLASS, SUBCLASS:
65+, for non-stereoscopic endoscope.

SEE OR SEARCH CLASS:
356, Optics: Measuring and Testing, subclasses 241.1+ for borescope.
385, Optical Waveguides, subclasses 117+ for imaging optical fiber bundle for use in endoscope.
600, Surgery, subclasses 101+ for endoscopes in general.

46 Picture signal generator:
This subclass is indented under subclass 42. Subject matter including means for scanning an object or scene and deriving in response thereto a stereoscopic picture signal.

47 Multiple cameras:
This subclass is indented under subclass 46. Subject matter comprising at least two picture signal generators.

48 More than two cameras:
This subclass is indented under subclass 47. Subject matter comprising at least three picture signal generators.

49 Single camera with optical path division:
This subclass is indented under subclass 46. Subject matter including an arrangement for optically combining different views for presentation to a single scanning device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
343, for camera optical multiplexing.
344, for camera optical path switching.

50 Single camera from multiple positions:
This subclass is indented under subclass 46. Subject matter wherein the camera is either continuously or intermittently moved between left and right viewing positions.

51 Stereoscopic display device:
This subclass is indented under subclass 42. Subject matter including means for converting an image representative electrical signal (i.e., video signal) of an object or scene into a visible image.

52 More than two display devices:
This subclass is indented under subclass 51. Subject matter comprising more than two display devices.

53 Viewer attached:
This subclass is indented under subclass 51. Subject matter wherein the display device is mounted on a support adapted to be worn by a user at the level of his field of view.

54 Single display with optical path division:
This subclass is indented under subclass 51. Subject matter includes an arrangement for optically presenting different views from a single display device to the right and left eye of a viewer.

55 Separation by time division:
This subclass is indented under subclass 54. Subject matter wherein the different views are presented to respective eyes of the viewer during alternating time periods.

56 With alternating shutters:
This subclass is indented under subclass 55. Subject matter wherein the different views are presented to respective eyes of the viewer by the use of shutters alternately opening and closing.

57 With alternating polarization:
This subclass is indented under subclass 55. Subject matter wherein the different views are presented to respective eyes of the viewer by the use of at least one polarizing filter whose axis of polarization is alternately changed.

58 Separation by polarization:
This subclass is indented under subclass 54. Subject matter wherein the different views are presented to respective eyes of the viewer by the use of at least one optical device which vibrates a light ray passed therethrough in accordance with a particular orientation pattern.

59 Separation by lenticular screen:
This subclass is indented under subclass 54. Subject matter wherein the different views are presented to respective eyes of the viewer by the use of a screen comprising multiple lens elements.

60 Separation by color (i.e., anaglyphic):
This subclass is indented under subclass 54. Subject matter wherein the different views are presented to respective eyes of the viewer by the use of contrasting color filters on each eye, usually red on one eye and blue or green on the other.

61 SPECIAL APPLICATIONS:
This subclass is indented under the class definition. Subject matter including modification of or addition to an ordinary television system to adapt that system to a specific use.

62 Aid for the blind:
This subclass is indented under subclass 61. Subject matter wherein a particular representation is generated in a form (a) which is to be principally interpreted by a sense other than the sense of sight or (b) which is easy to perceive by an individual having partial loss of sight.

(1) Note. Examples of nonvisible displays are a matrix of mechanical or electrical elements which selectively apply pressure or voltage to portions of a person and electrodes which may be implanted into appropriate areas of the brain.

SEE OR SEARCH CLASS:
434, Education and Demonstration, subclasses 112+ for reading devices for the blind.
623, Prosthesis (i.e., Artificial Body Members), Parts Thereof, or Aids and Accessories Therefor, appropriate subclasses for artificial body members, including seeing aids for the blind.

63 Image magnifying:
This subclass is indented under subclass 62. Subject matter wherein the reproduced picture of a viewed object is greater in dimension than the viewed object.

SEE OR SEARCH THIS CLASS, SUBCLASS:
561, for receiver processing circuitry for magnification of part of image.
581, for special effect, geometric transformation of size.

64 Combined electronic sensing and photos:graphic film cameras:
This subclass is indented under subclass 61. Subject matter wherein a picture signal generator is combined with a photographic still or motion picture camera to provide a visible indication of the scene being photographed (e.g., remote viewing by an operator or a director).

SEE OR SEARCH CLASS:
352, Optics: Motion Pictures, subclass 131 for motion picture cameras combined with a diverse type device.

65 With endoscope:
This subclass is indented under subclass 61. Subject matter wherein a picture signal generator is combined with an instrument which is used for the medical inspection of the interior of a human body.

SEE OR SEARCH THIS CLASS, SUBCLASS:
45, for stereoscopic endoscope.
82+, for television systems for use in inaccessible locations such as pipeline or borehole.

SEE OR SEARCH CLASS:
128, Surgery, subclasses 4+ for endoscopes in general.
356, Optics: Measuring and Testing, subclasses 241.1+ for borescope.
385, Optical Waveguides, subclasses 117+ for imaging optical fiber bundle for use in endoscope.

66 Dental:
This subclass is indented under subclass 65. Subject matter wherein the picture signal generator is combined with the endoscope for the examination of teeth or gum.

SEE OR SEARCH CLASS:
433, Dentistry, subclasses 29+ for apparatus having means to emit radiation or facilitate viewing of the work.

67 Laser:
This subclass is indented under subclass 65. Subject matter wherein an endoscopic light source is provided by an optical resonator which utilizes the natural oscillations of atoms or molecules between energy levels to transform an incoherent light into a very narrow, intense beam of coherent electromagnetic radiation in the ultraviolet, visible, or infrared regions of the spectrum.

(1) Note. Laser is an acronym for "Light Amplification by Stimulated Emission of Radiation."

SEE OR SEARCH CLASS:
372, Coherent Light Generators, for laser, per se.
606, Surgery, subclasses 2+ for light application instruments.

68 Illumination:
This subclass is indented under subclass 65. Subject matter wherein an optical arrangement is used to direct a light source or to control the intensity of a light source projected on the inspected surface of a human body.

SEE OR SEARCH THIS CLASS, SUBCLASS:
370+, for television camera with object or scene illumination.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclass 203.2 for photocell control illumination of a target by artificial light source and subclasses 227.29, 227.3, 227.31, and 227.32 for light conductor with particular illumination.
362, Illumination, appropriate subclasses for illumination structure details.
600, Surgery, subclasses 101+ for endoscope illumination for use in surgery.

69 Controlled by video signal:
This subclass is indented under subclass 68. Subject matter wherein the generated picture signal is fed back to the light source to regulate the intensity of light projected on the inspected surface of the human body.

70 Color sequential illumination:
This subclass is indented under subclass 68. Subject matter wherein the picture signal is displayed in a hue as a result of a sequential illumination of an object by different wavelengths (e.g., red, green, blue, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:
269, for camera with color sequential illumination.

71 Color TV:
This subclass is indented under subclass 65. Subject matter wherein the picture signal is displayed in a hue as contrasted with black, white, or gray.

72 Plural endoscopes interchangeable:
This subclass is indented under subclass 65. Subject matter having more than one endoscope which permits mutual substitution.

73 External camera:
This subclass is indented under subclass 65. Subject matter wherein the picture signal generator is placed outside of the endoscope.

74 With additional adjunct (e.g., recorder control, etc.):
This subclass is indented under subclass 65. Subject matter wherein the endoscope is combined with another system to improve the television system.

75 Adaptor or connector:
This subclass is indented under subclass 65. Subject matter including an auxiliary structure for coupling the endoscope to the picture signal generator or to another apparatus or system.

76 Physical structure of circuit element:
This subclass is indented under subclass 65. Subject matter comprising a configuration detail of an endoscope optical arrangement or its solid-state integrated circuit layout.

77 Human body observation:
This subclass is indented under subclass 61. Subject matter wherein the television system is specifically used for examining a person in total or part.

SEE OR SEARCH CLASS:
396, Photography, subclasses 14+ for eye, mouth, or body photography.

78 Eye:
This subclass is indented under subclass 77. Subject matter wherein the human body being observed is an organ of sight.

SEE OR SEARCH CLASS:
351, Optics: Eye Examining, Vision Testing and Correcting, subclasses 206+ for eye examining or testing including eye photography.

79 Microscope:
This subclass is indented under subclass 61. Subject matter wherein the television system is combined with an optical instrument which generates enlarged images of minute objects.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 368+ for microscope, per se.

80 Electronic:
This subclass is indented under subclass 79. Subject matter wherein the microscope utilizes an electron beam for the observation and recording of submicroscopic samples.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclass 311 for electron microscope, per se.

81 Underwater:
This subclass is indented under subclass 61. Subject matter wherein a picture signal generator is mounted on or enclosed within an apparatus permitting placement of the generator in an environment below the surface of the water.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclass 66.2 for an underwater television camera, nomi-

nally claimed, in combination with underwater handling equipment.

396, Photography, subclasses 25+ for underwater-type photographic cameras.

398, Optical Communications, subclasses 104 through 105 for underwater optical communication.

82 Hazardous or inaccessible:

This subclass is indented under subclass 61. Subject matter wherein a picture signal generator is enclosed in or provided with structure to permit its use in environments of extreme heat or radiation or where access is not possible by humans or an ordinary television system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

65+, for picture signal generators employed in endoscopes.

81, for picture signal generators used in underwater environments.

SEE OR SEARCH CLASS:

138, Pipes and Tubular Conduits, subclass 97 for apparatus to locate and repair cracks in pipes that may utilize television.

356, Optics: Measuring and Testing, subclasses 241.1+ for bore inspection utilizing optical elements.

83 Furnace (e.g., nuclear reactor, etc.):

This subclass is indented under subclass 82. Subject matter wherein the hazardous environment is an enclosed structure in which relatively intense heat is produced.

SEE OR SEARCH CLASS:

976, Nuclear Technology, digest 235 for monitoring, testing, or maintaining a structural combination of reactor core or a moderator structure with viewing means which may be a television camera.

84 Pipeline:

This subclass is indented under subclass 82. Subject matter wherein the inaccessible environment is a tubular conduit.

85 Borehole:

This subclass is indented under subclass 82. Subject matter wherein the inaccessible environment is a hole drilled in the earth (e.g., an exploratory well).

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclasses 302 and 304+ for borehole directions indications.

73, Measuring and Testing, subclasses 152.01+ for instruments for borehole studies.

166, Wells, subclasses 64 and 66 for well apparatus including measuring, testing, or indicating means and subclasses 250.01+ for well processes including measuring, testing, or indicating.

175, Boring or Penetrating the Earth, subclasses 40+ for a process +or means of measuring or testing combined with an earth boring process or apparatus.

181, Acoustics, subclasses 102+ for well exploration by use of seismic prospecting systems which do not involve the handling of electric signals that contain geophysical information.

250, Radiant Energy, subclasses 256+ for ray energy detection or measurement (including detection or measurement of radioactive materials) applied to a borehole or drilling study.

324, Electricity: Measuring and Testing, subclasses 323+ for electrical testing of boreholes.

340, Communications: Electrical, subclasses 853.1+ for telemetering in wells.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 25+ for seismic well logging using acoustic wave responsive electrical means.

86 Manufacturing:

This subclass is indented under subclass 61. Subject matter wherein a picture signal generator (i.e., television camera) is utilized for monitoring a manufacturing operation.

(1) Note. Patents included in this subclass contain detailed structure of the television system and nominal or no specific recitation of machine or tool structure. Patents with detailed structure of the tool or machine are classified according to the tool or machine structure.

SEE OR SEARCH CLASS:
382, Image Analysis, subclasses 141+ for manufacturing using image analysis.

87 Electronic circuit chip or board (e.g., positioning):
This subclass is indented under subclass 86. Subject matter wherein the manufacturing object includes a semiconductor substrate or a board on which multiple semiconductor devices are integrated.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 833 for methods of assembling an electronic component to an insulative base by utilizing an optical sighting device wherein the assembly is performed at least in part by using means which aid or enhance visual location or determination of the position of the component relative to the base.

88 Web, sheet or filament:
This subclass is indented under subclass 86. Subject matter wherein an object being manufactured is a thin sheet, plate or strip, or a thin flexible threadlike object.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclass 571 for photocell operated devices for detecting web, strand, strip, or sheet.

89 Agricultural or food production:
This subclass is indented under subclass 86. Subject matter wherein an object being manufactured is a produced crop or a livestock or a preparation of these products.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 341 for cooking with observation means.

90 Welding:
This subclass is indented under subclass 86. Subject matter wherein the manufacturing includes joining metallic parts by heating.

SEE OR SEARCH CLASS:
219, Electric Heating, subclass 121.83 for electric heating with monitoring.

91 Sorting, distributing or classifying:
This subclass is indented under subclass 86. Subject matter wherein the picture signal generator is used to separate manufactured objects in different categories by structure or destination.

92 Quality inspection:
This subclass is indented under subclass 86. Subject matter wherein the picture signal generator is used to determine acceptability of a manufactured object.

93 Color TV:
This subclass is indented under subclass 92. Subject matter wherein the control involves a distinction of different aspect of an object or a light source in terms of hue.

94 Position detection:
This subclass is indented under subclass 86. Subject matter wherein the television system is used to determine a point or a place where an object is located.

95 Alignment or positioning:
This subclass is indented under subclass 94. Subject matter wherein the television system is used in manufacturing to help adjust an apparatus or place an object to an appropriate position.

SEE OR SEARCH CLASS:
356, Optics: Measuring and Testing, subclasses 138+ for angle measuring or axial alignment and subclasses 399+ for alignment in lateral direction.

96 Film, disc or card scanning:
This subclass is indented under subclass 61. Subject matter including an apparatus to position a picture signal generator or the record whereby the record can be viewed by the pic-

ture signal generator and displayed on a display device.

(1) Note. The picture signal generator and display may also be utilized as an aid in locating a given record.

SEE OR SEARCH CLASS:

360, Dynamic Magnetic Information Storage or Retrieval, subclasses 9.1+, 14.1+, 19.1, and 33.1+ for magnetic storage or retrieval of non-color television signals.

365, Static Information Storage and Retrieval, appropriate subclasses for storage and retrieval of electrical signals.

97 Motion picture film scanner:

This subclass is indented under subclass 96. Subject matter including means for scanning a motion picture film (e.g., telecin) and synchronously advancing or stepping the film past the scanning apparatus.

98 Mechanical optical scanning:

This subclass is indented under subclass 97. Subject matter wherein the scanning is performed by a mechanical moving device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

195, for mechanical optical scanning which is not applied to motion picture film.

474+, for facsimile systems utilizing mechanical-optical elements.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 234+ for photocell combined with moving optical systems.

352, Optics: Motion Pictures, appropriate subclasses for mechanical film advancing devices.

359, Optical: Systems and Elements, subclasses 196+ and 298+ for optical scanning devices.

99 Flying spot scanner:

This subclass is indented under subclass 98. Subject matter wherein the mechanical optical scanning means provides a small beam of light which moves over a film and translates the highlights and shadows into electrical signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:

209.99, for generic camera flying spot scanner, per se.

100 Flying spot scanner:

This subclass is indented under subclass 97. Subject matter wherein the scanning means provides a small beam of light which moves over a film and translates the highlights and shadows into electrical signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:

209.99, for camera flying spot scanner, per se.

101 Color TV:

This subclass is indented under subclass 100. Subject matter wherein the picture signal generated having portion indicating the existing color of an object or scene in the film.

SEE OR SEARCH THIS CLASS, SUBCLASS:

210.99, for color camera flying spot scanner, per se.

102 Intermittent film movement:

This subclass is indented under subclass 100. Subject matter wherein the film is advanced past the scanner in a periodically stopping and moving manner.

103 With modification of scanner sweep:

This subclass is indented under subclass 100. Subject matter including apparatus to modify the scanning motion of the scanning means to properly coordinate the scanning motion with the film position.

104 Color TV:

This subclass is indented under subclass 97. Subject matter wherein the picture signal generated having portion indicating the existing color of an object or scene in the film.

105 Intermittent film movement:

This subclass is indented under subclass 97. Subject matter wherein the film is advanced past the scanner in a periodically stopping and moving manner.

106 With modification of scanner sweep:
This subclass is indented under subclass 97. Subject matter including apparatus to modify the scanning motion of the scanning means to properly coordinate the scanning motion with the film position.

107 With record location:
This subclass is indented under subclass 96. Subject matter including an apparatus to select a particular information containing record.

108 Flying spot scanner:
This subclass is indented under subclass 96. Subject matter wherein the scanning means provides a small beam of light which moves over a film and translates the highlights and shadows into electrical signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:
209.99, for camera flying spot scanner, per se.

109 Color TV:
This subclass is indented under subclass 108. Subject matter wherein the picture signal generated having portion indicating the existing color of an object or scene in the film.

SEE OR SEARCH THIS CLASS, SUBCLASS:
210.99, for color camera flying spot scanner, per se.

110 Slide:
This subclass is indented under subclass 96. Subject matter including a photos:graphic transparency or film individually mounted on a frame adapted to be moved to a scanning area.

111 Color TV:
This subclass is indented under subclass 110. Subject matter wherein the picture signal generated having portion indicating the existing color of an object or scene in the slide.

112 Microfilm:
This subclass is indented under subclass 96. Subject matter including a film bearing a photos:graphic record on a reduced scale.

113 Navigation:
This subclass is indented under subclass 61. Subject matter wherein a picture signal generator or reproducer is used with a steerable vehicle to permit control of the vehicle from a remote location or to provide an indication in the vehicle of its position as an aid in the guidance of the vehicle.

(1) Note. Included here is a significant television processing system and nominal recitation of the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
143+, for television surveillance systems wherein a selected area is viewed from a remote location for other than navigational purposes.

SEE OR SEARCH CLASS:
244, Aeronautics and Astronautics, subclasses 3.11+ for remote control of a missile trajectory.
340, Communications: Electrical, subclasses 945+ for electrical aircraft alarm or indication systems, subclasses 984+ for electrical watercraft alarm or indication systems, subclasses 988+ for electrical vehicle position indication systems, and subclasses 425.5+ for electrical land vehicle alarm or indication systems.
434, Education and Demonstration, subclasses 111, 186, and 239+ for apparatus to instruct in navigation of various vehicles.
701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 200+ for navigation using computer systems.

114 Remote control:
This subclass is indented under subclass 113. Subject matter wherein a picture signal generator or reproducer is used with a steerable vehicle to permit control of the vehicle from a distant location.

115 Head-up display:
This subclass is indented under subclass 113. Subject matter wherein a television image is optically superimposed upon a real live scene within a field of view of an observer.

(1) Note. The superimposition is typically performed by a partially silvered mirror.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclass 980 for aircraft alarm or indicating systems which may include a head-up display.
345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 7+ for head-up display having electrical features.
359, Optical: Systems and Elements, subclass 13 for holographic head-up display.

116 Direction finding or location determination:
This subclass is indented under subclass 113. Subject matter including an apparatus for assistance in pointing out a proper route or determining coordinates of an unknown place in reference to a known place.

117 Aircraft or spacecraft:
This subclass is indented under subclass 113. Subject matter wherein the vehicle is a load-carrying structure for navigation in the air or in space.

SEE OR SEARCH CLASS:
244, Aeronautics and Astronautics, appropriate subclasses for spacecraft of aircraft, per se.
340, Communications: Electrical, subclasses 945+ for electrical aircraft alarm or indication systems.

118 Land vehicle:
This subclass is indented under subclass 113. Subject matter including a steerable machine for transportation on a solid surface.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 988+ for electrical vehicle position indication systems and subclasses 425.5+ for electrical land vehicle alarm or indication systems.

119 Program control (e.g., path guidance, etc.):
This subclass is indented under subclass 118. Subject matter wherein certain functions of the vehicle can be set in advance by previously stored instructions.

SEE OR SEARCH CLASS:
701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 23+ for vehicle automatic route guidance system.
901, Robots, (cross-reference art collection), subclass 1 for mobile robot.

120 Farm vehicle:
This subclass is indented under subclass 118. Subject matter wherein the vehicle being navigated is devoted to agriculture purposes.

121 Simulator:
This subclass is indented under subclass 61. Subject matter including television means to recreate some aspects of the displayed environment (e.g., land, air, or sea).

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclass 384 for apparatus for producing audible sounds as signaling indications such as sound which simulates the noise in an airplane for use in training programs.
434, Education and Demonstration, subclasses 111, 186, and 239+ for apparatus to instruct in the navigation of various vehicles; subclasses 43 and 69 for apparatus to instruct in the use of various vehicles; and subclasses 11+ for apparatus to portray various operations in war.

122 Visibility (e.g., fog, etc.):
This subclass is indented under subclass 121. Subject matter wherein the particular environment to be simulated is a condition that affects the quality or state of being visible.

123 Aircraft or spacecraft:
This subclass is indented under subclass 121. Subject matter wherein the particular environment to be simulated is a load-carrying structure for navigation in the air or in space.

124 Ship:
This subclass is indented under subclass 121. Subject matter wherein the particular environment to be simulated is a vessel that navigates in water.

125 Flaw detector:
This subclass is indented under subclass 61. Subject matter wherein a picture signal generator is utilized to view an object and the signals so generated produce a display whereby imperfections in the object may be visually observed, or wherein the signals generated are compared with signals representative of a standard to provide an indication of whether imperfections exist in the object.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 600 for flaw detection by measuring velocity or propagation time of beamed mechanical waves.
250, Radiant Energy, subclasses 562+ and 572 for photocell operated devices for evaluating and detecting defects in a sheet.
324, Electricity: Measuring and Testing, subclasses 200+ for flaw testing using magnetic effect.
356, Optics: Measuring and Testing, subclasses 426+ for optical inspection of an article with agitation or rotation; subclasses 429+ for inspection of moving webs or thread; and subclasses 237.1+ for optical systems for detecting flaws or imperfections.
382, Image Analysis, appropriate subclasses for flaw detection by image analysis.

126 Of electronic circuit chip or board:
This subclass is indented under subclass 125. Subject matter wherein the object to be inspected is a semiconductor substrate or a board on which multiple semiconductor devices are integrated.

127 Of transparent container or content (e.g., bottle, jar, etc.):
This subclass is indented under subclass 125. Subject matter wherein the object to be observed for imperfection detection is a clear receptacle or a clear flexible covering or its content.

128 Of surface (e.g., texture or smoothness, etc.):
This subclass is indented under subclass 125. Subject matter wherein the television system aids in inspecting the appearance of an surface for its polish (smoothness) or its pattern structure regularity (texture).

129 By comparison with reference object:
This subclass is indented under subclass 125. Subject matter wherein the picture signals of a viewed object is compared with signals representative of a standard to provide an indication of whether imperfections exist in the object.

130 With stored representation of reference object:
This subclass is indented under subclass 129. Subject matter wherein a device is used to hold picture signals of reference objects, which will be retrieved latter to compare with picture signals of the inspected object.

131 With specific illumination detail:
This subclass is indented under subclass 125. Subject matter wherein a particular optical arrangement or material is used for directing a light source or varying its brightness on the surface of an inspected object.

SEE OR SEARCH THIS CLASS, SUBCLASS:
370, for camera with object or scene illumination.

132 With strobe illumination:
This subclass is indented under subclass 131. Subject matter wherein a flashtube is used to emit a high intensity flash of light into an examination region.

SEE OR SEARCH THIS CLASS, SUBCLASS:
371, for camera with flash or strobe illumination.

133 With circuit detail:
This subclass is indented under subclass 125. Subject matter wherein a structural detail of a video circuit for flaw detection is being presented.

134 Including line to line comparison:
This subclass is indented under subclass 133. Subject matter wherein a video signal of one scan line is being compared to a video signal of a preceding line.

135 Object or scene measurement:
This subclass is indented under subclass 61. Subject matter including apparatus for utilizing the signal developed by a picture signal generator viewing an object or scene to provide quantitative information about the object or scene.

SEE OR SEARCH CLASS:
356, Optics: Measuring and Testing, subclasses 3+ for range or remote distance finding utilizing optical elements in combination with a photocell.
702, Data Processing: Measuring, Calibrating, or Testing, subclasses 127+ for a generic measuring system.

136 Projected scale on object:
This subclass is indented under subclass 135. Subject matter wherein a known geometry light source (i.e., optical pattern) is projected onto the surface of an object for measuring purpose.

SEE OR SEARCH CLASS:
353, Optics: Image Projectors, subclass 28 for projected image combined with real object and subclasses 40+ for scale or scale indicator projector.

137 Scale on camera target:
This subclass is indented under subclass 135. Subject matter wherein an image of a series of marks at known intervals (i.e., scale) is superposed on an image of an object on a picture pickup device for measuring purpose.

138 Pulse or clock counting:
This subclass is indented under subclass 135. Subject matter wherein a counting of digital signals is performed for measuring purposes.

139 Multiple cameras on baseline (e.g., range finder, etc.):
This subclass is indented under subclass 135. Subject matter wherein several cameras are placed on a line of known position and are aimed at a target to determine the position or orientation of the target.

140 Distance by apparent target size (e.g., stadia, etc.):
This subclass is indented under subclass 135. Subject matter including an instrument for determining a distance to an object based on the known dimension of the object.

141 By cursor coordinate location:
This subclass is indented under subclass 135. Subject matter wherein the picture signal of an object is displayed with a superposed identifying marker (cursor) used to determine the dimension of the object.

142 With camera and object moved relative to each other:
This subclass is indented under subclass 135. Subject matter wherein the camera or object position change is considered as a factor for determining a dimension.

143 Observation of or from a specific location (e.g., surveillance):
This subclass is indented under subclass 61. Subject matter including apparatus to view a scene at a specified location remote from the reproducer for the purpose of monitoring a specific location, function, or event not provided for in the above subclasses.

144 Aerial viewing:
This subclass is indented under subclass 143. Subject matter wherein the specific location, function, or event is viewed from an aircraft or satellite.

SEE OR SEARCH CLASS:
396, Photography, subclasses 7+ for aerial cameras.

145 With linear array:
This subclass is indented under subclass 144. Subject matter having a plurality of photosensitive elements arranged in one row to perform a line scanning.

146 With rotating reflector:
This subclass is indented under subclass 144. Subject matter having a mirror type apparatus rotating about an axis to accomplish one scanning dimension.

147 With transformation or rectification:
This subclass is indented under subclass 144. Subject matter having an image processing apparatus which corrects any distortion produced in the picture image when the position of the observed point is moved with respect to the picture image pickup.

SEE OR SEARCH THIS CLASS, SUBCLASS:
580+, for geometric transformation special effects.

148 Vehicular:
This subclass is indented under subclass 143. Subject matter wherein the surveillance system includes a steerable machine for carrying or transporting a load on or below land or water surface.

149 Traffic monitoring:
This subclass is indented under subclass 148. Subject matter wherein the movement of vehicles through an area or along a route is being regulated.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 907+ for electrical traffic control indicator.
346, Recorders, subclass 107 for vehicle photographing.
360, Dynamic Magnetic Information Storage or Retrieval, subclass 5 for recording for selective retention of a special occurrence (e.g., vehicle crash recorder, etc.).

150 Point of sale or banking:
This subclass is indented under subclass 143. Subject matter wherein the location to be surveyed is a place where currency is being exchanged.

SEE OR SEARCH CLASS:
902, Electronic Funds Transfer, subclass 6 for electronic means providing security using image processor (e.g., video camera).

151 Camera concealment:
This subclass is indented under subclass 143. Subject matter wherein the picture pickup apparatus is intended to be out of normal view.

152 Intrusion detection:
This subclass is indented under subclass 143. Subject matter including a camera for discovering the presence of a person or an object to which entrance is not welcomed.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 541+ for systems to detect approach of object or persons.

153 Using plural cameras:
This subclass is indented under subclass 152. Subject matter wherein several cameras are used for intrusion detection.

154 Motion detection:
This subclass is indented under subclass 153. Subject matter including apparatus for utilizing a television picture signal to develop signals indicative of whether movement has taken place in a selected scene or area over a given period of time.

SEE OR SEARCH THIS CLASS, SUBCLASS:
700, for signal processing circuitry involving motion dependent key signal generation or scene change detection.

155 Motion detection:
This subclass is indented under subclass 152. Subject matter including apparatus for utilizing a television picture signal to develop signals indicative of whether movement has taken place in a selected scene or area over a given period of time.

SEE OR SEARCH THIS CLASS, SUBCLASS:
700, for signal processing circuitry involving motion dependent key signal generation or scene change detection.

156 Access control:
This subclass is indented under subclass 143. Subject matter wherein a camera is used to permit entrance or exit of an authorized person or vehicle.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 5.2 through 5.74 for authorization control (e.g., entry into an area).
382, Image Analysis, subclasses 115+ for personnel identification using image analysis.

157 Sporting event:
This subclass is indented under subclass 143. Subject matter wherein the camera is used for remote monitoring of an athletic endeavor.

SEE OR SEARCH CLASS:
715, Data Processing: Presentation Processing of Document, Operator Interface Processing, and Screen Saver Display Processing, subclasses 700 through 866 for operator interface processing.

158 Portable:
This subclass is indented under subclass 143. Subject matter wherein the surveillance system is made to be easily carried along with a user.

159 Plural cameras:
This subclass is indented under subclass 143. Subject matter wherein several cameras are used.

160 Reading meter or data printer:
This subclass is indented under subclass 143. Subject matter wherein the television system is used for remote reading of data on a measuring instrument or a printer.

161 Object comparison (e.g., remote verification of signature, etc.):
This subclass is indented under subclass 61. Subject matter wherein the video signal of an object is sent to a viewer at a remote site for a characteristic or quality examination with respect to a reference in order to discover resemblances or differences.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 5.1 through 5.92 for intelligence comparison for controlling in a selective communication system
382, Image Analysis, subclasses 2+ for personnel verification by checking signature or fingerprint, etc., using systematic analysis of image data.

162 RESPONSIVE TO NONVISIBLE ENERGY:
This subclass is indented under the class definition. Subject matter including a picture signal generator that is responsive to energy other than visible light for conversion into electrical signals representative of the scene or object viewed and providing a visible display.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 336.1+ for invisible radiant energy responsive systems and non-scanning process.

163 Sonic or ultrasonic:
This subclass is indented under subclass 162. Subject matter wherein the energy is sonic or ultrasonic waves.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 596+ for similar apparatus utilizing acoustic wave energy to produce an image corresponding to the acoustic properties (e.g., absorption, reflection) of a viewed object.
340, Communications: Electrical, subclasses 850+ for compressional wave systems in an underwater environment.
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 7+ for acoustic image conversion.

164 Infrared:
This subclass is indented under subclass 162. Subject matter wherein energy is infrared radiation.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 330+ for infrared to visible imaging and sub-

classes 338.1+ for infrared responsive devices.

374, Thermal Measuring and Testing, subclass 124 for similar subject matter for providing the spatial distribution of temperature by measuring thermally emitted radiant energy.

165 Pyroelectric:
This subclass is indented under subclass 164. Subject matter wherein an image is generated in response to a change of temperature of incremental pixel areas.

166 With linear array:
This subclass is indented under subclass 164. Subject matter including a multiplicity of sensor elements which are arranged in a one-dimensional matrix.

167 With rotating reflector:
This subclass is indented under subclass 166. Subject matter wherein the sensor includes multifaceted polygon reflecting elements for scanning sweep in the primary (fast) direction.

(1) Note. The fast direction may be a horizontal or vertical scan.

168 With rotating reflector:
This subclass is indented under subclass 164. Subject matter wherein a sensor includes multifaceted polygon reflecting elements for scanning sweep in the primary (fast) direction.

169 OBJECT TRACKING:
This subclass is indented under the class definition. Subject matter wherein signals representative of the position of a moving object projected onto a picture signal generator viewing surface are utilized to control the generator (optically, electrically, or by reorientation) to maintain the object in the field of view of the generator.

(1) Note. Electrical control of the generator involves control of the sweep system as an example.

SEE OR SEARCH THIS CLASS, SUBCLASS:
208.99, for image stabilization.

SEE OR SEARCH CLASS:
235, Registers, subclasses 411+ for means to determine the position of an object in ordnance control systems and not employing a particular sighting means.
250, Radiant Energy, subclasses 203.1+ for systems utilizing a photocell to follow a point.
342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 75+ wherein the position of the object determines antenna orientation.

170 Using tracking gate:
This subclass is indented under subclass 169. Subject matter wherein the object is maintained within the field of view by gating signals derived from a small area of the picture signal generator viewing surface and maintaining the signals representative of the object in that gated area.

171 Centroidal tracking:
This subclass is indented under subclass 170. Subject matter wherein a center of optical mass of the object is employed for location designation.

172 Centroidal tracking:
This subclass is indented under subclass 169. Subject matter wherein a center of optical mass of the object is employed for location designation.

173 CATHODE-RAY TUBE BURN-IN PREVENTION:
This subclass is indented under the class definition. Subject matter including a device to prevent damage to a cathode-ray tube phosphor screen or target due to a steady non-moving image or due to a sweep cessation.

(1) Note. For example, superimposed on a regular horizontal and vertical deflection of the scanning beam is an imperceptably slow horizontal and/or vertical movement of the display image.

174 Camera:
This subclass is indented under subclass 173. Subject matter wherein the device is applied to prevent burn-in of the target of an image pickup tube.

175 CAMERA WITH BUILT-IN TEST SIGNAL GENERATOR, TEST PATTERN, OR ADJUSTING ADJUNCT:
This subclass is indented under the class definition. Subject matter including the integral combination of a camera and a further means which aids in correctly adjusting the operation of the camera when the further means is used.

(1) Note. The further means is normally selected by the operator.

(2) Note. Self-regulating devices such as automatic white balance, automatic black level, or automatic gain control which often use a "test signal" are excluded from this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
207.99 through 207.2, for camera with self-regulating control.

176 Setup:
This subclass is indented under subclass 175. Subject matter wherein the adjusting adjunct includes means for disabling a normal circuit function.

177 DISPLAY OR RECEIVER WITH BUILT-IN TEST SIGNAL GENERATOR, TEST PATTERN, OR ADJUSTING ADJUNCT:
This subclass is indented under the class definition. Subject matter including the integral combination of a display and means to aid in adjusting the display.

(1) Note. Self-regulating devices such as automatic white balance, automatic black level, or automatic gain control which often use a "test pulse" or "test signal" are excluded from this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
657, and 658, for a display with a self-regulation white balance.
678+, for a receiver with automatic gain control.
691+, for a receiver with automatic black level control.

178 Setup:
This subclass is indented under subclass 177. Subject matter wherein the adjusting adjunct includes means for disabling a normal circuit function.

179 Color match comparator:
This subclass is indented under subclass 177. Subject matter including a means for comparing a picture signal with a reference picture signal to permit an accurate adjustment for the color reception.

SEE OR SEARCH THIS CLASS, SUBCLASS:
657, and 658, for color match comparator built-in to the receiver.

180 MONITORING, TESTING, OR MEASURING:
This subclass is indented under the class definition. Subject matter including means separate from the television system or components for monitoring, testing, or measuring parameters of the television system or components being tested, measured, or monitored.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclass 504 for color facsimile testing and measuring.
455, Telecommunications, subclasses 67.11 through 67.7 for modulated carrier wave systems including monitoring, measuring, or testing means.

181 Test signal generator:
This subclass is indented under subclass 180. Subject matter including a means for generating a video test signal.

182 Chroma or color bar:
This subclass is indented under subclass 181. Subject matter wherein the test signal represents the quality of light which includes color and its purity or a color bar signal which consists of six colors (yellow, cyan, green, magenta, red, and blue).

183 VITS or ILTS:
This subclass is indented under subclass 181. Subject matter wherein the test signal is a vertical interval test signal (VITS), interjected during the vertical blanking interval, or is an in-line test signal (ILTS), injected during the portion of the visible or image interval.

184 Monitor:
This subclass is indented under subclass 180. Subject matter including a means for displaying to a human observer information concerning the video signal being measured.

185 Combined plural functions (e.g., picture and waveform monitor):
This subclass is indented under subclass 184. Subject matter wherein the monitor includes plural modes for selectively displaying incompatible signals.

186 Vectorscope:
This subclass is indented under subclass 184. Subject matter including an instrument for displaying in two dimensions the phase relationships of two signals or signal components.

(1) Note. The signal is normally a chrominance signal with one component controlling the x-direction and the other component controlling the y-direction.

SEE OR SEARCH CLASS:
324, Electricity: Measuring, and Testing, subclass 88 for phase measurement.

187 Testing of camera:
This subclass is indented under subclass 180. Subject matter including a means for testing an image signal generator.

188 Using test chart:
This subclass is indented under subclass 187. Subject matter wherein the means includes an optical pattern containing a group of lines and circles for testing the performance of the TV camera.

189 Testing of image reproducer:
This subclass is indented under subclass 180. Subject matter including a means for testing a device that converts a scene-representative electrical signal into a visible image.

190 Alignment-manufacturing:
This subclass is indented under subclass 189. Subject matter including a means for an initial adjustment of the television receiver during a manufacturing process.

191 Display photometry:
This subclass is indented under subclass 189. Subject matter including a means for measuring and displaying the properties of light generated by the receiver or monitor.

SEE OR SEARCH CLASS:
356, Optics: Measuring and Testing, subclasses 213+ for photometry, per se.

192 Transmission path testing:
This subclass is indented under subclass 180. Subject matter including a means for testing a quality of a TV transmission channel.

SEE OR SEARCH CLASS:
714, Error Detection/Correction and Fault Detection/Recovery, subclasses 712+ for error testing of a transmission channel.

193 Signal to noise ratio:
This subclass is indented under subclass 192. Subject matter wherein the testing includes a signal to noise ratio.

194 Synchronization (e.g., H-sync to subcarrier):
This subclass is indented under subclass 180. Subject matter including a means for measuring the time or phase relationships between components of a TV synchronizing signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
186, for phase measurement.

195 MECHANICAL OPTICAL SCANNING:
This subclass is indented under the class definition. Subject matter wherein a mechanical moving device is used for scanning an object or a scene (i.e., partitioning it into elemental imaging areas to generate image representative electrical signals) or scanning imaging areas by a modulated light beam to reproduce the object or scene visible image.

SEE OR SEARCH THIS CLASS, SUBCLASS:

98, for mechanical-optical scanning systems in motion picture film scanning.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 234+ for photocell combined with moving optical systems.

358, Facsimile and Static Presentation Processing, subclasses 474 through 498 for facsimile systems utilizing mechanical - optical elements.

359, Optical: Systems and Elements, subclasses 196+ for deflection using a moving element or medium and subclasses 227+ for light control by opaque element or medium movable in or through light path.

196 Color TV:

This subclass is indented under subclass 195. Subject matter wherein the image signal generated or reproduced is in color.

197 With fiber optics:

This subclass is indented under subclass 195. Subject matter including an optical waveguide which confines a transmitted radiation therewithin by means of the principle of total internal reflection.

(1) Note. Optical fibers are usually comprised of a central light transmitting core of relatively high refractive index, surrounded by a concentric cladding of relatively low refractive index.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 227.11+ for photocell with fiber optic elements.

385, Optical Waveguides, appropriate subclasses.

198 By acoustic wave:

This subclass is indented under subclass 195. Subject matter wherein the scanning is effected by using an elastic or sound wave for displacing or deforming portions of an optically transmitting medium surface or interface.

SEE OR SEARCH CLASS:

359, Optical: Systems and Elements, subclasses 285+ and 305+ for acousto-optic modulation.

199 Moving aperture:

This subclass is indented under subclass 195. Subject matter wherein the scanning is accomplished by a moving device which has one or multiple openings that will pass light, electrons, or other forms of radiation (e.g., Nipkow disk).

200 Drum or belt:

This subclass is indented under subclass 199. Subject matter wherein the moving device is a cylinder or a continuous band of flexible material.

201 Multiple scanning elements:

This subclass is indented under subclass 199. Subject matter in which the apertures are included on more than one scanning element.

202 Moving lens or refractor:

This subclass is indented under subclass 195. Subject matter wherein the scanning is performed by a lens or refracting element that is given a prescribed motion.

203 Moving reflector:

This subclass is indented under subclass 195. Subject matter wherein the scanning is performed by an element that is given a prescribed motion and that has a property of returning incident light or sound wave.

204 Helical element:

This subclass is indented under subclass 203. Subject matter in which the reflecting element is of a spiral configuration.

205 Vibrating or oscillating:

This subclass is indented under subclass 203. Subject matter wherein the prescribed motion consists of periodic movements in alternately opposite directions from a position of equilibrium.

206 SPECIAL SCANNING (E.G., SPIRAL, RANDOM, ZIGZAG):
This subclass is indented under the class definition. Subject matter wherein a pattern of scanning is not generally horizontal from one side to the other with a quick blanked retrace to start all lines from the same side (e.g., spiral scanning, scanning without retrace, vertical scanning).

(1) Note. For systems using spotwobble which is generally horizontal with a small undulating vertical component, see subclass 428.

207.1 Camera connected to computer:
This subclass is indented under subclass 207.99. Subject matter wherein a camera is used as a computer peripheral for generating image data that is processed and/or stored by the computer for display to a local user, for downloading to an end user, or for being combined with computer-generated data.

(1) Note. Image transmission may be by asynchronous, isochroous or other protocol.

(2) Note. Network communication details are classified elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:
207.1, for camera combined with diverse art such as a computer.

207.11 Computer can control camera:
This subclass is indented under subclass 207.1. Subject matter wherein an external computer controls camera parameters.

(1) Note. Camera parameters are for example exposure, focus and gain and/or the camera s shutter timing and frame rate.

SEE OR SEARCH THIS CLASS, SUBCLASS:
211.99, for remote control.
207.1, for camera combined with diverse art such as a computer.

207.2 Camera connected to printer:
This subclass is indented under subclass 207.99. Subject matter including a system or device for scanning image or scene is connected to the printer wherein the data obtained by the scanning system or device is transferred to the printer for a hard copy print out.

SEE OR SEARCH CLASS:
347, Incremental Printing or Symbolic Information, subclass 2 for combined.
358, Facsimile and Static Presentation Processing, subclass 1.1, for Static presentation processing (e.g., processing data for printer), subclass 906 for hand-held camera with recorder in single unit, subclass 909.1, for electronic still camera or scene reproducer.

207.99 CAMERA, SYSTEM AND DETAIL:
This subclass is indented under the class definition. Subject matter comprising a system or device for scanning image of the object or scene (i.e., partitioning the scene into sub-areas of image information and generating there from an image representative electrical signal) or the above combined with circuitry for processing the image signal, and sub combinations specific to the camera.

(1) Note. The sub-area is usually an elemental area or pixtel.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclass 479 for a video camera scanning document or other static image.

208.1 Electrical motion detection:
This subclass is indented under subclass 208.99. Subject matter wherein the direction and magnitude of a camera s movement is computed by measuring changes in direction and magnitude between consecutive planes of image data.

SEE OR SEARCH THIS CLASS, SUBCLASS:
699, for motion vector generation.

SEE OR SEARCH CLASS:
382, Image Analysis, subclass 107 for motion measuring.

208.11 Optics, lens shifting:
This subclass is indented under subclass 208.7. Subject matter wherein the portion of the camera that is moved is its lens or another optical element.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclass 554 for image stabilization.
396, Photography, subclass 55 for stabilizing system.

208.12 Combined with other camera operations (e.g., autofocus or autoexposure details):
This subclass is indented under subclass 208.99. Subject matter wherein modification is camera operations are made in response to camera movement.

(1) Note. For instance, image stabilization is used to move a signal processing window from which signals are derived to perform an operation such as autofocusing or autoexposure, the movement of the window being made to follow camera movement.

208.13 Motion correction plus resolution enhancement:
This subclass is indented under subclass 208.12. Subject matter wherein image signals are processed so as to compensate for loss of resolution due to motion signal processing.

208.14 Object tracking:
This subclass is indented under subclass 208.12. Subject matter wherein camera motion is distinguished from object motion and object motion information is used to accomplish object tracking in the presence of camera shake.

SEE OR SEARCH THIS CLASS, SUBCLASS:
169, for object tracking.

SEE OR SEARCH CLASS:
382, Image Analysis, subclass 103 for target tracking.

208.15 Warning/indicator:
This subclass is indented under subclass 208.12. Subject matter wherein a warning is indicated when camera shake exceeds acceptable limits.

(1) Note. For instance, a warning may be via sound, light or display, etc.

SEE OR SEARCH CLASS:
396, Photography, subclass 52 for camera shake sensing.

208.16 Changing camera function based on motion detection (mode, power supply):
This subclass is indented under subclass 208.12. Subject matter wherein the camera s operating mode is automatically changed or power to the camera is automatically turned off when camera shake exceeds acceptable limits.

SEE OR SEARCH THIS CLASS, SUBCLASS:
372, for power supply control.

208.2 Mechanical motion detection (gyros, accelerometers, etc.):
This subclass is indented under subclass 208.99. Subject matter wherein the direction and magnitude of a camera s movement is measured using a motion transducer mounted on or within the camera body.

SEE OR SEARCH CLASS:
396, Photography, subclass 53 for shake sensing using accelerometers.

208.3 Differentiating unintentional from purposeful camera movement (pan, tilt):
This subclass is indented under subclass 208.99. Subject matter wherein measurements of a camera s movement are evaluated in order to distinguish between camera movement done on purpose and camera movement that is not done on purpose, i.e., accidental.

(1) Note. Image processing (including compensation for camera movement) is performed according to the differentiation.

208.4 Motion correction:
This subclass is indented under subclass 208.99. Subject matter wherein the movement of a camera during a photographing operation is compensated in order to produce an output image that is free from blur or other motion-induced artifacts.

208.5 Including both electrical and mechanical correcting devices:
This subclass is indented under subclass 208.4. Subject matter wherein the compensation for camera movement is performed by both electronic image shifting and mechanical movement of a portion of the camera.

(1) Note. These operations may be performed simultaneously or in sequence.

208.6 Electrical (memory shifting, electronic zoom, etc.):
This subclass is indented under subclass 208.4. wherein. Subject matter the compensation for camera movement is performed electronically.

(1) Note. For instance by reducing the image size and shifting the reduced image data either as it being stored in a memory or as it is being read out there from. Such an operation is often accompanied by electronic zooming of the image data to its original size.

SEE OR SEARCH CLASS:
382, Image Analysis, subclass 103 for target tracking.

208.7 Mechanical:
This subclass is indented under subclass 208.4. Subject matter wherein the compensation for camera movement is performed by mechanically moving either a portion of the camera, e.g., lens or the entire camera itself.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclass 554 for image stabilization.
396, Photography, subclass 55 for stabilizing system.

208.8 Variable angle prisms:
This subclass is indented under subclass 208.7. Subject matter wherein the portion of a camera that is moved is a solid whose bases or ends are any similar, equal, and parallel plane figures, and whose sides are parallelograms and said solid is moved through a variable angle.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclass 554 for image stabilization.

208.99 Camera image stabilization:
This subclass is indented under subclass 207.99. Subject matter including a device to compensate for unwanted movement of a camera to prevent blurring or distortion of resulting pictures.

209.99 With flying spot scanner
This subclass is indented under subclass 207.99. Subject matter having a device in which a rapidly moving spot of light scans an image on a transparent screen; a phototube then absorbs the light reflected by the screen and converts it into electric signals.

210.99 For color scanning
This subclass is indented under subclass 209.99. Subject matter wherein the electric signals represent the colors of the spectrum.

211.1 Communication methods:
This subclass is indented under subclass 211.99. Subject matter wherein specific methods of communication are used to transmit the signals used to implement remote control of a camera.

211.11 Plural cameras being controlled:
This subclass is indented under subclass 211.99. Subject matter wherein a plurality of cameras are controlled by the remote control system, including networks of cameras used for a common imaging operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
159, for plural cameras.

211.12 Video teleconferencing (including access or authorization):
This subclass is indented under subclass 211.11. Subject matter wherein the camera network is used for video teleconferencing and remote control of the camera includes authorizing the camera s access to the network via a password or assignment of priority.

(1) Note. Also included are control of camera functions such as pan, tilt, zoom, iris and focus.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14.08, for conferencing.

SEE OR SEARCH CLASS:
709, Electrical Computers and Digital Processing Systems: Multiple Computer or Process Coordinating, subclass 204 for computer conferencing.
715, Data Processing: Presentation Processing of Document, Operator Interface Processing, and Screen Saver Display Processing, subclasses 733 through 759 for concurrently established related or collaborative user interfaces including computer conferencing and computer supported cooperative work.

211.13 Monitor (including for controlling camera):
This subclass is indented under subclass 211.12. Subject matter wherein a display is used to generate control signals.

(1) Note A camera is made to respond to touch screen commands or to positions designated on the screen that displays the camera s output image.

SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, subclass 156 for display peripheral input device.

211.14 Camera located remotely from its image processor (i.e., camera head):
This subclass is indented under subclass 211.99. Subject matter wherein the imaging portion of the camera (i.e., camera head) is physically separated from the camera's image processing circuitry.

(1) Note. Camera is connected thereto by a cable over which are communicated image signal from the camera head to the processor and control signals from the processor to the camera head.

211.2 Wireless:
This subclass is indented under subclass 211.1. Subject matter wherein a wireless method is used to transmit the remote control signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14.01, over wireless communication.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 825 through 825.98 for remote control in general.
375, Pulse or Digital Communications, subclasses 259 through 285 for wireless pulse or digital communication systems.
455, Telecommunications, subclass 3.06 combined with diverse art.

211.3 Network (master/slave, client/server, etc.):
This subclass is indented under subclass 211.1. Subject matter wherein the remote control signals are communicated via a network, including networks configured in a master/slave or client/server arrangement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
207.1, for camera connected to computer.
552, for combined with diverse art (e.g., computer, telephone).

SEE OR SEARCH CLASS:
340, Communications: Electrical, appropriate subclasses for communication networks.
370, Multiplex Communications, appropriate subclasses for multiplex communication networks.
709, Electrical Computers and Digital Processing Systems, Multiple Computer or Process Coordinating, subclass 208 for master slave computer communications.

211.4 Control devices:
This subclass is indented under subclass 211.99. Subject matter wherein various control devices are used to generate signals for remote control of a camera.

211.5 Multiplexed or other embedded control signals:
This subclass is indented under subclass 211.4. Subject matter wherein the control devices generate and/or respond to control signals that are multiplexed with each other or with other types of control signals, or are embedded with data signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:
476, for during sync, blanking, or overscan.

211.6 Preprogrammed or stored control instructions:
This subclass is indented under subclass 211.4. Subject matter wherein the control devices operate according to digital control signals that have been stored in a computer memory or in a special purpose digital control device.

SEE OR SEARCH CLASS:
709, Electrical Computers and Digital Processing Systems, Multiple Computer or Process Coordinating, subclass 208 for master slave computer controlling.

211.7 Electromechanical controls (joystick, trackball, mouse, etc.):
This subclass is indented under subclass 211.4. Subject matter wherein control is implemented using a manual electromechanical device to generate control signals.

SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, subclass 156 for a display peripheral interface input device.

211.8 Monitor used to control remote camera:
This subclass is indented under subclass 211.4. Subject matter wherein a display is used to generate control signals.

(1) Note. A camera is made to respond to touch screen commands or to positions designated on the screen that displays the camera s output image.

SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, subclass 156 for a display peripheral input device.

211.9 Camera characteristics affecting control (zoom angle, distance to camera, time delays, weight, etc.):
This subclass is indented under subclass 211.99. Subject matter control signals are computed using camera characteristics as a parameter.

(1) Note. Pan and tilt driving speeds are varied as a function of zoom angle and/or distance between the camera and the subject; control voltages are varied in accordance with camera weight; compensation is made for time delays created by the length of the cable used to transmit control signals; etc.

SEE OR SEARCH CLASS:
318, Electricity: Motive Power Systems, subclass 597 for slewing systems.

211.99 Remote control:
This subclass is indented under subclass 207.99. Subject matter wherein the scanning system or device is operated by a control signal sent by a controller from a remote location.

215.1 With streak device:
This subclass is indented under subclass 207.99. Subject matter wherein the camera comprises a device which converts time information from a luminous event into spatial information, such conversion enable the measurement of high speed variations in intensity distribution of a light emission.

216.1 Low light level:
This subclass is indented under subclass 207.99. Subject matter including means suitable for detecting a weak or faint input image applied to the camera.

217.1 With image intensifier:
This subclass is indented under subclass 216.1. Subject matter including means for amplifying the light level of an image applied to the camera.

218.1 Unitary image formed by compiling subareas of same scene (e.g., array of cameras):
This subclass is indented under subclass 207.99. Subject matter wherein images of separate parts of a single scene are scanned by separate image sensors for subsequent combination into a single complete-image signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
262, for plural image sensors and each sensor scans the complete image of a scene.

219.1 Swing driven:
This subclass is indented under subclass 207.99. Subject matter wherein the image sensor is mechanically vibrated or oscillated to produce the effect of an increased resolution.

220.1 Still and motion modes of operation:
This subclass is indented under subclass 207.99. Subject matter wherein the operation of the camera is altered for single-frame (still) and multiple-frame (motion) photography.

221.1 Exposure control:
This subclass is indented under subclass 220.1. Subject matter having a device for regulating the total illumination (e.g., duration or intensity) admitted to an imaging device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
229.1, for exposure control combined with image signal automatic gain control.
362, for general exposure control.

222.1 Combined image signal generator and general image signal processing:
This subclass is indented under subclass 207.99. Subject matter including at least one image sensor or pickup device and in combination therewith related circuitry for correcting, adjusting, or otherwise altering the image signal output from the image sensor or pickup device.

(1) Note. The signal processing herein is limited to normal television signals, such as red, green and blue, or luminance and chrominance.

(2) Note. The image signal processing which depends upon structure of a sensor is not classified in this subclass, but is with the sensor, per se. For example, a single solid-state image sensor which converts the dot interlace output representing for example cyan, magenta, and yellow (i.e., not normal television signal) to red, green, and blue is found in subclass 280 for solid-state color image sensor with filter based on three colors.

SEE OR SEARCH THIS CLASS, SUBCLASS:
571 through 721, for general image signal processing not with the image generator (i.e., not in the camera).

223.1 Color balance (e.g., white balance):
This subclass is indented under subclass 222.1. Subject matter wherein the processing of the video output signal includes adjustment of relative amplitudes of plural color signals which are output from the camera.

SEE OR SEARCH THIS CLASS, SUBCLASS:
655, for color balance not combined with the camera.

224.1 Dependent upon operation or characteristic of iris, flash, lens, or filter:
This subclass is indented under subclass 223.1. Subject matter wherein the relative amplitudes of the plural color signals are adjusted in response to a parameter, a function, or the presence or absence of a camera peripheral which includes diaphragm, stop, illuminator, zoom or focus device, or a device altering the incident light on the sensor.

225.1 With means for preventing colored object from effecting color balance:
This subclass is indented under subclass 223.1. Subject matter including means for preventing a colored object from effecting the color balance.

226.1 Including flicker detection (e.g., fluorescent):
This subclass is indented under subclass 223.1. Subject matter wherein means are provided for detecting the characteristic spectrum or periodic nature of an electric discharge lamp.

227.1 With ambient light sensor:
This subclass is indented under subclass 223.1. Subject matter including an optical sensor separated from the image sensor for sensing the characteristics of the ambient light.

228.1 Responsive to output signal:
This subclass is indented under subclass 223.1. Subject matter wherein the adjustment of the relative amplitudes is derived by feedback from the output of the image sensor.

229.1 Combined automatic gain control and exposure control (i.e., sensitivity control):
This subclass is indented under subclass 222.1. Subject matter including a control unit which controls both the exposure to the image sensor and the amplitude of the sensor output signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
345, for generic focus control camera optics.
363, for exposure control camera optics by automatic control of an iris, stop, or diaphragm.
678, for general automatic gain control.

230.1 Readout of solid-state image sensor considered or altered:
This subclass is indented under subclass 229.1. Subject matter wherein the camera comprises a solid-state image scanning device and wherein the accumulation time and readout process thereof is altered in coordination with the operation of the camera`s shutter, iris or diaphragm.

231.1 Available memory space detection:
This subclass is indented under subclass 231.99. Subject matter wherein the remaining storage capacity of a memory is detected and storage of additional image data is either permitted, reduced or prohibited based on the detection result.

(1) Note. A warning may be given to indicate insufficient capacity.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclass 404 for facsimile memory monitoring.

231.2 Image file management:
This subclass is indented under subclass 231.99. Subject matter including manual or automatic file naming and categorizing of stored images enabling enhanced image retrieval and arrangement using the camera according to user instructions.

(1) Note. File naming may take place either before of after a picture is taken.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclass 450 for plural images combined into a single image.

231.3 Storage of additional data:
This subclass is indented under subclass 231.99. Subject matter wherein the camera output memory stores, in addition to the picture information, information other than that of the picture,

(1) Note. Information other than the picture information may be audio or character type information (e.g., time, date, etc.), or information relating to a camera or image sensor aspect ratio.

231.4 Audio:
This subclass is indented under subclass 231.3. Subject matter wherein the additional data is audio that accompanies the stored image.

SEE OR SEARCH CLASS:
386, Television Signal Processing for Dynamic Recording or Reproducing, subclass 39 for including audio signal.

231.5 Time or date, annotation:
This subclass is indented under subclass 231.3. Subject matter wherein the additional data is time or date data or annotations that are stored along with the image data produced by the camera.

231.6 Processing or camera details:
This subclass is indented under subclass 231.3. Subject matter wherein the additional data may include the compression ratio of the stored image and camera setting used in taking the picture.

(1) Note. Camera setting such as lens settings, processing parameters, etc.

231.7 Detachable:
This subclass is indented under subclass 231.99. Subject matter wherein the camera output memory can be removed from the camera system.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclass 906 for hand-held camera with recorder in a single unit.

231.8 Multiple detachable memories:
This subclass is indented under subclass 231.7. Subject matter wherein the detachable memory is in the form a plurality of detachable memories, having a plurality of memory insertion slots, plural memories used in tandem or for separate storage.

231.9 Details of communication between memory and camera:
This subclass is indented under subclass 231.7. Subject matter including details of how image data is transmitted between the camera and the detachable memory.

(1) Note. Details such as temporary interrupts of data transfer, temporary storage in an auxiliary memory prior to transfer to the detachable memory, etc.

(2) Note. The distinct luminance sensor may be either black and white or monocular (e.g., green).

231.99 With details of static memory for output image information (e.g., for a still camera):
This subclass is indented under subclass 222.1. Subject matter wherein the camera includes a non-dynamic memory device for storing one or more frames of image information.

(1) Note. Dynamic memory requires relative motion between the storage medium and the playback or recorder head.

SEE OR SEARCH CLASS:
360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for television signal storage system.
365, Static Information Storage and Retrieval, appropriate subclasses for details of static information storage structure which may be used for the storage of an image signal.
386, Television Signal Processing for Dynamic Recording or Reproducing, subclasses 1 through 45 and 46-131 for dynamic recording or reproducing a television signal, and subclass 117, for a television camera.

234 Details of luminance signal formation in color camera:
This subclass is indented under subclass 222.1. Subject matter including specific circuitry for forming a brightness component of a television color signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
659, for general formation of luminance and color difference signal from red, green, and blue or vice versa.

235 With means for providing high band and low band luminance signals:
This subclass is indented under subclass 234. Subject matter having an arrangement in which the image signal is channeled through appropriate filters for producing low frequency and high frequency brightness signals.

236 Using distinct luminance image sensor:
This subclass is indented under subclass 235. Subject matter wherein part of the image signal is supplied by a separate sensor for producing a luminance signal only.

(1) Note. The distinct luminance sensor may be either black and white or monocolor (e.g., green).

237 For single sensor type camera supplying plural color signals:
This subclass is indented under subclass 235. Subject matter wherein the plural luminance signals are derived from signals output of one multicolor image scanning device.

238 Using distinct luminance image sensor:
This subclass is indented under subclass 234. Subject matter wherein part of the image signal is supplied by a separate sensor for producing a luminance signal only.

239 Camera and video special effects (e.g., subtitling, fading, or merging):
This subclass is indented under subclass 222.1. Subject matter including means for modifying the image signal by selectively inserting, deleting, or replacing signal portions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
578+, for general special effects not combined with camera.

240.1 Using both optical and electronic zoom:
This subclass is indented under subclass 240.99. Subject matter wherein image size is expanded or reduced using both an optical zoom lens and electronic signal processing circuitry.

240.2 Electronic zoom:
This subclass is indented under subclass 240.99. Subject matter wherein the image signal is electronically expanded or reduced.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333.12, for modification of images.
581, for general size change of an image signal.

240.3 Optical zoom:
This subclass is indented under subclass 240.99. Subject matter wherein an optical zoom lens is provided to change the magnification of the image or picture generated by a solid-state sensor.

SEE OR SEARCH CLASS:
396, Photography, subclass 72 for having variable focal length of camera objective.

240.99 Zoom:
This subclass is indented under subclass 222.1. Subject matter including means to change the magnification of image or picture signal generated by a solid-state sensor.

241 Including noise or undesired signal reduction:
This subclass is indented under subclass 222. Subject matter wherein a circuit is provided to compensate for signal defects.

SEE OR SEARCH THIS CLASS, SUBCLASS:
607+, for noise reduction in general.

242 Color TV:
This subclass is indented under subclass 241. Subject matter wherein the correction is related to color image signals.

(1) Note. An example is false color due to smear.

SEE OR SEARCH THIS CLASS, SUBCLASS:
607+, and 624, for general noise reduction of a color TV signal.

243 Dark current:
This subclass is indented under subclass 241. Subject matter including control circuitry which compensates for an output current generated by the image sensor in the absence of an incident light.

244 With control of sensor temperature:
This subclass is indented under subclass 243. Subject matter wherein the control circuitry compensates the dark current by heating or cooling the image sensor.

245 Using dummy pixels:
This subclass is indented under subclass 243. Subject matter wherein the image sensor is provided with non-imaging (i.e., blank) elements which are used to generate a dark current correction signal.

246 Defective pixel (e.g., signal replacement):
This subclass is indented under subclass 241. Subject matter wherein a circuit is provided to compensate for effects of an inoperable image analyzing element or area.

SEE OR SEARCH THIS CLASS, SUBCLASS:
616, for dropout compensator normally associated with tape or dynamic recording.

247 With memory of defective pixels:
This subclass is indented under subclass 246. Subject matter wherein the location or nature of the inoperable image analyzing element is stored for repeated correction.

248 Smear:
This subclass is indented under subclass 241. Subject matter including circuitry which reduces signal defects due to crosstalk or leakage between pixels.

249 In charge coupled type sensor:
This subclass is indented under subclass 248. Subject matter wherein the image sensor is of the type which comprises an array of photosensitive shift registers, photoelectric charges therefrom being shifted out in a predetermined order to produce an image signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
250, for general noise or undesired signal reduction in charge coupled type image sensor.
282, for charge coupled type color image sensor combined with color filter.
298, for charge coupled type image sensor with accumulation or integration time responsive to light or signal intensity.
311, for charge coupled image sensor architecture.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous circuits utilizing a charge coupled device.

250 In charge coupled type sensor:
This subclass is indented under subclass 241. Subject matter wherein the image sensor is of the type which comprises an array of photosensitive shift registers, photoelectric charges therefrom being shifted out in a predetermined order to produce an image signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
249, for smear reduction in charge coupled type image sensor.
282, for charge coupled type color image sensor combined with color filter.
298, for charge coupled type image sensor with accumulation or integration time responsive to light or signal intensity.
311, for charge coupled image sensor architecture.

251 Shading or black spot correction:
This subclass is indented under subclass 241. Subject matter including an apparatus to compensate for brightness level variations in different areas of a given reproduced picture due to unequal characteristics of, or imperfections in, the image signal generator.

252 With transition or edge sharpening (e.g., aperture correction):
This subclass is indented under subclass 222.1. Subject matter including means for reducing the time of an amplitude transition or for increasing the size of an amplitude transition.

253 Color TV:
This subclass is indented under subclass 252. Subject matter wherein the image signal being processed has a portion representing a hue as contrasted with black, white, or gray.

254 Gray scale transformation (e.g., gamma correction):
This subclass is indented under subclass 222.1. Subject matter including circuitry which modifies the range of values contained in a TV signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
671, for general gray scale transformation not combined with the camera.

255 Amplitude control (e.g., automatic gain control):
This subclass is indented under subclass 254. Subject matter including means to control the amplitude of an input signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
300, for amplifier integrated in solid-state image sensor without controlling the amplitude.
678, for general automatic gain control not combined with the camera.

256 Color TV (e.g., saturation):
This subclass is indented under subclass 255. Subject matter wherein the image signal being processed has a portion representing brightness (i.e., black and white), hue (i.e., wavelength), and saturation (i.e., purity from white) as contrasted with black, white, or gray.

(1) Note. Examples of saturation are: Both red and pink have the same wavelength, but red is saturated and pink is desaturated.

SEE OR SEARCH THIS CLASS, SUBCLASS:
645, for chrominance signal amplitude control not combined with the camera.

257 With DC level control:
This subclass is indented under subclass 222.1. Subject matter including means for modifying the DC bias of the output signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
691, for general DC insertion.

258 With bias illumination:
This subclass is indented under subclass 257. Subject matter wherein a uniform auxiliary light of low luminosity is used to illuminate the light receiving surface of the camera image sensor.

(1) Note. Bias illumination is usually used to eliminate a blurred image or a trailing on an image caused by the motion of a scanned object.

259 Combined with color separating optical system:
This subclass is indented under subclass 258. Subject matter including, associated with the bias illumination, an optical structure which resolves a light beam from a scanned object into two or more beams of different wavelengths corresponding to different color components of the object.

SEE OR SEARCH THIS CLASS, SUBCLASS:
336+, for general color separating optics.

260 For single scanning device color camera:
This subclass is indented under subclass 258. Subject matter wherein the bias illumination is used with a single image sensor device supplying plural color signals.

261 Plural bias illuminators:
This subclass is indented under subclass 260. Subject matter including more than one bias illuminator.

262 With plural image scanning devices:
This subclass is indented under subclass 207.99. Subject matter wherein the camera comprises more than one image sensor and each image sensor scans the complete image of a scene.

SEE OR SEARCH THIS CLASS, SUBCLASS:
218, for plural image scanning devices whereby each device scans a sub-area of the complete image.

263 Color imagery registration:
This subclass is indented under subclass 262. Subject matter including apparatus to ensure at any instant that the signal from one device corresponds to the same analyzed point on a picture as the signals from another device.

264 Scanning devices offset in the image plane:
This subclass is indented under subclass 262. Subject matter wherein the image sensors are displaced with respect to each other (e.g., by a half-pixel) in a direction orthogonal to the incident optical axis of the image.

265 Each supplying only one color signal:
This subclass is indented under subclass 262. Subject matter wherein each image sensor generates one distinct color signal.

266 With single image scanning device supplying plural color signals:
This subclass is indented under subclass 207.99. Subject matter wherein a single photosensitive element of the camera is used for supplying more than one color signal.

267 Separate complete images on face of pickup device:
This subclass is indented under subclass 266. Subject matter wherein plural images of the same object or scene are focused onto separate areas of a single pickup device target.

268 Color sequential:
This subclass is indented under subclass 266. Subject matter including a device to decompose colors of an object or scene into components which are imparted in sequence to an image pickup device.

269 With color sequential illumination:
This subclass is indented under subclass 268. Subject matter wherein a light source, additional to ambient light, is provided in different wavelengths (e.g., red, green, blue, etc.) during successive intervals for producing color signals using a monochrome camera.

SEE OR SEARCH THIS CLASS, SUBCLASS:
70, for color illumination endoscope which may use color sequential technique.
371, for flashing or strobing illumination, per se.

270 With moving color filters:
This subclass is indented under subclass 268. Subject matter wherein colors are decomposed by a device having a plurality of color transmitting or absorbing elements which move in and out of the camera's optical path.

(1) Note. Both continuous moving and oscillating filters are classified herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:
743, for image reproducer combined with moving color filters.

271 Four or more color types:
This subclass is indented under subclass 270. Subject matter wherein the camera generates four signals of different wavelengths which correspond to four or more distinct color signals, or three or more distinct color signals and a luminance signal.

272 Solid-state multicolor image sensor:
This subclass is indented under subclass 266. Subject matter wherein the photosensitive scanning device, which supplies more than one color signal, is an electronic device which operates by virtue of the movement of electrons within a solid material.

273 With color filter or operation according to color filter:
This subclass is indented under subclass 272. Subject matter having a color absorbing or transmitting device applied to each resolution element of the sensor.

274 Having overlapping elements:
This subclass is indented under subclass 273. Subject matter comprising two or more color absorbing or transmitting filters which are partially superimposed.

275 Staggered or irregular elements:
This subclass is indented under subclass 273. Subject matter which includes filter elements that are arranged on a surface in any of various zigzags or alternations; or comprises filter elements that are nonuniform in shape.

276 Including transparent elements:
This subclass is indented under subclass 273. Subject matter wherein the filter has a mosaic pattern made up of individual filter elements, some having a luminance transparency and some a chrominance transparency characteristic.

277 With three or more colors:
This subclass is indented under subclass 276. Subject matter wherein at least three chrominance components are applied to selected resolution elements.

278 Based on more than four colors:
This subclass is indented under subclass 273. Subject matter comprising more than four types of filter elements, each element passing a different wavelength.

279 Based on four colors:
This subclass is indented under subclass 273. Subject matter comprising exactly four types of filter elements, each element passing a different wavelength.

280 Based on three colors:
This subclass is indented under subclass 273. Subject matter comprising exactly three types of filter elements, each element passing a different wavelength.

281 X-Y architecture:
This subclass is indented under subclass 273. Subject matter wherein the image sensor comprises a two-dimensional matrix of photoelectric conversion elements, each element being individually selected by external scanning circuitry.

282 Charge coupled architecture:
This subclass is indented under subclass 273. Subject matter wherein the image sensor is of the type which comprises an array of photosensitive shift registers, photoelectric charges therefrom being shifted out in a predetermined order to produce an image signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
249, for smear reduction in charge coupled type image sensor.
250, for general noise or undesired signal reduction in charge coupled type image sensor.
298, for charge coupled type image sensor with accumulation or integration time responsive to light or signal intensity.
311, for charge coupled image sensor architecture.

283 With multiple output registers:
This subclass is indented under subclass 282. Subject matter wherein the charges are shifted into at least two orthogonal shift registers for providing plural outputs.

284 Cathode-ray tube:
This subclass is indented under subclass 266. Subject matter including a camera tube in which an optical image of an object is converted to a charge on a photosensitive target surface and then scanned by an electron beam to convert the charge image to an electrical signal.

(1) Note. Common cathode-ray tubes include iconoscope, orthicon, and vidicon.

285 Phase separable signals:
This subclass is indented under subclass 284. Subject matter wherein at least two color components of an image of a scene are spatially modulated (e.g., by optical striped filters) and the resulting modulated color signals are demodulated by utilizing electrical phase detectors for generating color signal components.

286 With indexing:
This subclass is indented under subclass 285. Subject matter including means for generating a position signal for indicating the instantaneous position of the scanning electron beam.

287 Conductive grid at target:
This subclass is indented under subclass 286. Subject matter wherein the indexing signal is produced by one or more conductive elements at the target location.

288 Index elements outside of image area:
This subclass is indented under subclass 286. Subject matter wherein the indexing signal is produced by one or more conductive elements located outside of the image area of the target.

289 Frequency separable signals:
This subclass is indented under subclass 284. Subject matter wherein at least two color components of an image of a scene are spatially modulated (e.g., by optical striped filters) and the resulting modulated color signals are demodulated by utilizing electrical bandpass filters for generating color signal components.

290 Specified optical filter arrangement:
This subclass is indented under subclass 289. Subject matter having specific detail of an optical filter arrangement.

291 Combined with grating, lens array, or refractor:
This subclass is indented under subclass 290. Subject matter wherein the optical filter arrangement includes a diffraction grating, a single or a multiple element refractor.

292 Having diagonally arranged stripes:
This subclass is indented under subclass 290. Subject matter wherein at least one array of color stripes is oriented non-orthogonally to the scanning direction.

293 Interdigital signal electrodes:
This subclass is indented under subclass 289. Subject matter wherein the cathode-ray tube includes a target structure comprising a plurality of interleaved sets of conducting strips for deriving respective component color signals.

(1) Note. For example, a target structure comprises red, green, and blue striped color filters in front of corresponding transparent electrodes.

294 Solid-state image sensor:
This subclass is indented under subclass 207.99. Subject matter including an electronic device which operates by virtue of the movement of electrons within a solid material (e.g., semiconductor) for producing electrical signals in response to light incident on elemental resolution elements thereon.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 200+ for photocell circuits and apparatus.
257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), appropriate subclasses for solid-state devices responsive to light.
358, Facsimile and Static Presentation Processing, subclasses 482 through 483 for image sensors relating to facsimile apparatus.

295 Time delay and integration mode (TDI):
This subclass is indented under subclass 294. Subject matter wherein a plurality of photosites or photosensitive devices are provided for each resolution element, and charges produced by each photosite or photosensitive device are summed to provide a signal corresponding to the resolution element.

(1) Note. There is a time delay of the charges sensed prior to the charge sensed by the last of the plurality of photosites before summation of the charges.

296 Electronic shuttering:
This subclass is indented under subclass 294. Subject matter wherein charges in the solid-state sensor are periodically cleared to emulate the effect of a mechanical shutter.

(1) Note. This subclass includes a large number of electronic still cameras wherein the image signal is read-out inhibited when the shutter is opened and read-out is enabled when the shutter is closed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
229, for a mechanical aperture control structure as a final control element for an exposure determination.

297 Accumulation or integration time responsive to light or signal intensity:
This subclass is indented under subclass 294. Subject matter wherein the photo conversion period (i.e., accumulation time or integration time) of the sensor is controlled in accordance with the intensity of light or of the picture signal.

298 In charge coupled type image sensor:
This subclass is indented under subclass 297. Subject matter wherein the image sensor is of the type which comprises an array of photosensitive shift registers, photoelectric charges therefrom being shifted out in a predetermined order to produce an image signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
249, for smear reduction in charge coupled type image sensor.
250, for general noise or undesired signal reduction in charge coupled type image sensor.
282, for charge coupled type color image sensor combined with color filter.
311, for charge coupled image sensor architecture.

299 With overflow gate or drain:
This subclass is indented under subclass 298. Subject matter wherein the charge coupled type image sensor device includes a structure to eliminate excess charges within the device.

300 With amplifier:
This subclass is indented under subclass 294. Subject matter includes a device for increasing the magnitude of a sensor intermediate or immediate output signal.

301 Pixel amplifiers:
This subclass is indented under subclass 300. Subject matter wherein an amplifier is provided for every imaging element.

302 X - Y architecture:
This subclass is indented under subclass 294. Subject matter wherein the image sensor comprises a matrix of rows and columns of photoelectric conversion elements, each element representing one image or picture resolution element of the entire image and each element being individually selected by external scanning circuitry.

303 With charge transfer type output register:
This subclass is indented under subclass 302. Subject matter wherein charge signals from the rows or columns of the image sensing elements are collected in parallel and serially output by a charge transfer type shift register.

SEE OR SEARCH CLASS:
377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, appropriate subclasses for charge transfer shift register, per se.

304 With charge transfer type selecting register:
This subclass is indented under subclass 302. Subject matter wherein external scanning signals for addressing row or column sensing elements are provided by a sequential charge transfer type shift register.

305 With interlacing:
This subclass is indented under subclass 302. Subject matter includes scanning means whereby odd- and even-numbered lines of a picture are outputted consecutively as two separate fields.

306 Charge injection device (CID):
This subclass is indented under subclass 302. Subject matter wherein the solid-state image sensor is composed of a two-dimensional array of coupled MOS charge-storage capacitors and is designed to convert near infrared energy to electrical signals, providing broad gray shade or tonal rendition.

307 Photosensitive switching transistors or "static induction" transistors:
This subclass is indented under subclass 302. Subject matter wherein the image resolution elements comprise light sensitive switching transistors.

308 Including switching transistor and photocell at each pixel site (e.g., "MOS-type" image sensor):
This subclass is indented under subclass 302. Subject matter wherein each image resolution element comprises at least one photosensitive element coupled to a switching transistor.

309 Exclusively passive light responsive elements in the matrix:
This subclass is indented under subclass 302. Subject matter wherein each element of the image resolution array is composed only by a passive device (i.e., excluding transistor).

310 With diode in series with photocell:
This subclass is indented under subclass 309. Subject matter wherein a two-electrode bipolar solid-state device is connected in sequence with a photosensitive element.

311 Charge-coupled architecture:
This subclass is indented under subclass 294. Subject matter wherein the image sensor is of the type which comprises an array of photosensitive shift registers, photoelectric charges therefrom being shifted out in a predetermined order to produce an image signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
249, for smear reduction in charge coupled type image sensor.
250, for general noise or undesired signal reduction in charge coupled type image sensor.
282, for charge coupled type color image sensor combined with color filter.
298+, for accumulation or integration time responsive to light or signal intensity in charge coupled image sensor.

SEE OR SEARCH CLASS:
377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 63 for charge-coupled device shift register.

312 With timing pulse generator:
This subclass is indented under subclass 311. Subject matter including a device for producing precisely timed, repetitive voltage pulses to actuate the transfer of charges.

313 With bias charge injection:
This subclass is indented under subclass 311. Subject matter wherein photosensitive resolution elements associated with potential wells formed under charge transfer are supplied with uniform charges in order to raise the operating point of the shift register, thereby increasing transfer speed.

314 With excess charge removal (e.g., overflow drain):
This subclass is indented under subclass 311. Subject matter having means to remove unwanted electric charges from the charge coupled type image sensing device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
299, for charge coupled type image sensor accumulation or integration time responsive to light with overflow gate or drain.

315 With staggered or irregular photosites or specified channel configuration:
This subclass is indented under subclass 311. Subject matter wherein the solid-state image sensor comprises sensor elements that are arranged on a surface of a substrate in any of various zigzags, or overlappings of position, or comprises sensor elements that are nonuniform in shape.

316 Charges transferred to opposed registers:
This subclass is indented under subclass 311. Subject matter wherein alternate rows or columns of charges are shifted to separate storage or transfer registers located at opposite sides of the charge coupled photosensitive area.

(1) Note. This technique is often used to produce odd and even fields.

317 Field or frame transfer type:
This subclass is indented under subclass 311. Subject matter wherein charges of an entire image area are shifted in parallel from an exposure area to a storage area of the charge coupled image sensing device prior to a readout.

318 With recirculation of charge:
This subclass is indented under subclass 317. Subject matter including provision for recycling the output from an output register to an input register or storage register.

319 Charges alternately switched from vertical registers into separate storage registers; or having vertical transfer gates:
This subclass is indented under subclass 317. Subject matter wherein charges from columns of photosensitive shift registers are transferred

to storage registers other than those directly below respective columns; or subject matter wherein charges from the photosites are transferred horizontally into vertical shift registers which are separate from the photosensitive area.

320 Interline readout:
This subclass is indented under subclass 317. Subject matter wherein image charges of every other column are shifted in parallel from an exposure area to a readout area of the charge coupled device prior to a sequential readout.

(1) Note. The term "interline" comes from the word "interlace-line".

321 Using multiple output registers:
This subclass is indented under subclass 320. Subject matter wherein the readout area comprises more than one horizontal register.

322 Interline readout:
This subclass is indented under subclass 311. Subject matter wherein image charges of every other column are shifted in parallel from an exposure area to a readout area of the charge coupled image sensing device prior to a sequential readout from the readout area.

323 Using multiple output registers:
This subclass is indented under subclass 322. Subject matter wherein the readout area comprises more than one horizontal register.

324 Line transfer type:
This subclass is indented under subclass 311. Subject matter wherein charges of an image line are shifted in parallel from an exposure area to a readout area of the charge coupled image sensing device prior to a readout.

325 Cathode-ray tube:
This subclass is indented under subclass 207.99. Subject matter including a camera tube in which an optical image of an object is converted to a charge on a photosensitive target surface and then scanned by an electron beam to convert the charge image to an electrical signal.

(1) Note. Common cathode-ray tubes include iconoscope, orthicon, and vidicon.

326 Automatic beam focusing or alignment:
This subclass is indented under subclass 325. Subject matter including means to automatically ensure that the beam scanning the target of the tube remains converged essentially to a point at the target face.

327 Automatic beam current control:
This subclass is indented under subclass 325. Subject matter including means to regulate the beam current of the tube such that it is held at a constant value, or to increase, decrease, or maintain the beam current such that the signal output has a fixed relationship to the light energy input.

328 Remanent image erasure:
This subclass is indented under subclass 325. Subject matter including means to remove charges still remaining on the tube target after it has been scanned by an electron beam.

329 With emissive target or photocathode (e.g., orthicon):
This subclass is indented under subclass 325. Subject matter wherein the cathode-ray tube includes a target surface which releases electrons when exposed to light or other radiation.

330 Dissector tube:
This subclass is indented under subclass 329. Subject matter in which an electron image emitted from the photocathode is scanned across an aperture, behind which aperture an electron detector is disposed.

331 With photoconductive target (e.g., vidicon):
This subclass is indented under subclass 325. Subject matter wherein the cathode-ray tube includes a target which changes its electrical conductivity when exposed to varying amounts of light incident thereon.

332 Array of photocells (i.e., nonsolid-state array):
This subclass is indented under subclass 207.99. Subject matter wherein the scanning is performed by a plurality of elements sensitive to light, each corresponding to a discrete, elemental area of the image.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 200+ for photocells, circuits, and apparatus.

333.01 With electronic viewfinder or display monitor:
This subclass is indented under subclass 207.99. Subject matter including an electronic display, which is a fixed or removable part of the camera for permitting an operator to see a captured image produced from the camera output signal or from an auxiliary.

SEE OR SEARCH CLASS:
396, Photography, subclass 374 for an electronic viewfinder.

333.02 With display of additional information:
This subclass is indented under subclass 333.01. Subject matter wherein the display shows additional information related to the camera operation or data related to the captured camera image.

(1) Note. Additional information is displayed in order to indicate camera status, to implement camera control, to classify images captured by the camera, or to annotate images.

333.03 Including display of a frame and line of sight determination:
This subclass is indented under subclass 333.02. Subject matter wherein the additional information includes a frame that is displayed in order to permit the user to discern the field of view or to discern the portion of the field of view of a captured camera image.

(1) Note. Automatic selection of a focus or exposure control area may be made by determining the user's line of sight to the area.

(2) Note. Examples of frames are a zoom frame, a field frame, a focus frame, or an exposure frame.

SEE OR SEARCH CLASS:
396, Photography, subclass 51 for eye tracking.

333.04 Including warning indication:
This subclass is indented under subclass 333.02. Subject matter wherein the additional information includes a visible warning which is displayed to indicate an undesirable picture-taking condition.

(1) Note. An undesirable condition may be excessive camera motion, inability to achieve focus or insufficient exposure condition.

SEE OR SEARCH CLASS:
396, Photography, subclass 296 for camera indicators having display in a viewfinder.

333.05 Display of multiple images (e.g., thumbnail images, etc.):
This subclass is indented under subclass 333.01. Subject matter wherein a plurality of images are displayed thereby enabling comparison between images, selection, combining, or deletion of images.

(1) Note. The images may be compressed to "thumbnail" size in order to facilitate display of a large number of images.

SEE OR SEARCH THIS CLASS, SUBCLASS:
552, for camera combined with diverse art such as a computer.

333.06 Movable or rotatable unit:
This subclass is indented under subclass 333.01. Subject matter wherein the display includes a mechanism for rotating or translating the viewfinder to a variety of angles.

(1) Note. This may include 180 degrees rotation for a self-photography operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
373 through 376, for support or housing for specified camera accessory.

333.07 Detachable:
This subclass is indented under subclass 333.06. Subject matter wherein the viewfinder is detachable from the body of the camera in

order to remotely view camera images or remotely control the camera.

(1) Note. This subclass includes a mechanism for detachably attaching the viewfinder to the camera body.

SEE OR SEARCH THIS CLASS, SUBCLASS:
373 through 376, for support or housing for specified camera accessory.

333.08 Including optics:
This subclass is indented under subclass 333.01. Subject matter including a specific optical configuration.

(1) Note. For example, an optical configuration may be a relative positioning of lenses, mirrors, and special purpose optical elements designed to perform viewfinder functions.

333.09 With optical viewfinder (e.g., correction for parallax, etc.):
This subclass is indented under subclass 333.08. Subject matter wherein the electronic viewfinder is used in combination with an optical viewfinder.

(1) Note. Solutions to parallax problems produced by the offset of the optical viewfinder from the electronic viewfinder are presented.

SEE OR SEARCH THIS CLASS, SUBCLASS:
341, for optical viewfinders.

SEE OR SEARCH CLASS:
396, Photography, subclass 149 and subclass 377 for parallax correction.

333.1 With projector function:
This subclass is indented under subclass 333.08. Subject matter wherein an image is projected from the viewfinder onto a screen for enlargement of the image.

(1) Note. A projected image from the viewfinder may be viewed by a person other than the photographer.

SEE OR SEARCH THIS CLASS, SUBCLASS:
744 through 789, for projection device.

333.11 Use for previewing images (e.g., variety of image resolutions, etc.):
This subclass is indented under subclass 333.01. Subject matter wherein the viewfinder is used to preview an image prior to either a photographing or an image storing operation.

(1) Note. In this way a proper exposure condition and desired location of the subject within the image field can be determined before camera resources are used to take the picture or store the captured picture. In some cases the image displayed in the preview mode is of lower resolution than that of the captured picture.

333.12 Modification of displayed image:
This subclass is indented under subclass 333.01. Subject matter wherein changing of the size (i.e., electronic zooming) or aspect ratio of the displayed image is performed by the viewfinder.

SEE OR SEARCH THIS CLASS, SUBCLASS:
240.99 through 240.3, for electronic zoom.
441 through 459, for format conversion.

333.13 Power saving mode:
This subclass is indented under subclass 333.01. Subject matter wherein the viewfinder is automatically turned off by a condition.

(1) Note. This mode of operation is used to conserve battery power when the viewfinder is not in use.

SEE OR SEARCH THIS CLASS, SUBCLASS:
372, for power supply.

335 Optics:
This subclass is indented under subclass 207.99. Subject matter wherein the camera includes an optical structure which changes a property of an incident light beam.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, appropriate subclasses for optical devices, per se.

336 Color separating optics:
This subclass is indented under subclass 335. Subject matter having an optical arrangement for resolving a multi-wavelength image into its component color signals.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 618+ for optical beam splitting or combining.

337 Prism arrangement:
This subclass is indented under subclass 336. Subject matter including a multi-sectional refractive optical element or a group of refractive optical elements for color-separating the incident image.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 831+ for prism, per se.

338 With dichroic layer or air gap between prism sections:
This subclass is indented under subclass 337. Subject matter wherein the color separation is obtained at the intersection between refractive optical elements by the optical effect of an air gap or a layer of material having a property of passing different colors by selectively reflecting or transmitting particular wavelengths of a light beam incident thereon.

339 Exclusively dichroic elements:
This subclass is indented under subclass 336. Subject matter wherein the separation of color components of an image signal is performed solely by elements having a property of passing different colors by selectively reflecting or transmitting particular wavelengths of a light beam incident thereon.

340 With optics peculiar to solid-state sensor:
This subclass is indented under subclass 335. Subject matter including a significant optical structure for solid-state image sensor.

341 Optical viewfinder:
This subclass is indented under subclass 335. Subject matter including an apparatus permitting an operator to see the image that is focused on the sensor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333.09, for an optical viewfinder used in combination with an electronic viewfinder.

342 With frequency selective filter (e.g., IR cut, optical LPF, etc.):
This subclass is indented under subclass 335. Subject matter including an optical device for selectively absorbing or transmitting a specific frequency band of the spectral response of the camera.

343 Optical multiplexing:
This subclass is indented under subclass 335. Subject matter including optical elements in the optical path to the picture signal generator permitting the light output of a plurality of diverse light sources to enter the path of the picture signal generator.

(1) Note. The light sources may include motion picture and slide projectors, for example.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 618+ for optical elements to permit the light from plural channels to enter a single channel.

344 Optical path switching:
This subclass is indented under subclass 335. Subject matter including a device for selecting diverse optical input or output paths.

345 Focus control:
This subclass is indented under subclass 335. Subject matter including a structure to adjust a camera's optical arrangement so that the optical image is maximally resolved on the sensor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

229, for depth of focus or field in the interrelated camera peripheral operation using an iris, a stop, or a diaphragm.

346 With display of focusing condition or alarm:
This subclass is indented under subclass 345. Subject matter including a device to visually or audibly indicate to an operator the state of the focused image.

347 With zoom position detection or interrelated iris control:
This subclass is indented under subclass 345. Subject matter including a device to detect a relative position of a variable focal length lens element or a relative position of an aperture with respect to a reference position or a reference optical element position.

348 Using active ranging:
This subclass is indented under subclass 345. Subject matter including a device, usually acoustical or optical, emitting energy and detecting the reflected emitted energy for the determination of the distance of a subject from a camera.

349 Using image signal:
This subclass is indented under subclass 345. Subject matter including a device for detecting a characteristic of the video output of the camera sensor for determining a focus condition.

350 With auxiliary sensor or separate area on imager:
This subclass is indented under subclass 349. Subject matter wherein a second photosensitive detector or an area outside an active imaging area of a primary photosensitive detector is used to determine the focus condition.

351 With oscillation of lens or sensor to optimize error signal:
This subclass is indented under subclass 349. Subject matter wherein a periodic relative movement of the lens or the sensor is used to determine the proper focus condition.

352 With motion detection:
This subclass is indented under subclass 349. Subject matter including a device to detect the movement of an object within a scene to control or disable the automatic focusing.

SEE OR SEARCH THIS CLASS, SUBCLASS:

700+, for image processing circuitry which may deal with scene change detection.

353 By detecting contrast:
This subclass is indented under subclass 349. Subject matter including a device for detecting brightness differences of video signal components for determining the focus condition.

354 By analyzing high frequency component:
This subclass is indented under subclass 349. Subject matter including a device for evaluating characteristics of a video signal upper frequency component for determining the focus condition.

355 Plural high frequencies:
This subclass is indented under subclass 354. Subject matter wherein more than one high frequency component is analyzed.

356 Detection of peak or slope of image signal:
This subclass is indented under subclass 354. Subject matter including a device to detect upper amplitudes or rate of change of the high frequency component for determining the focus condition.

357 Servo unit structure or mechanism:
This subclass is indented under subclass 345. Subject matter including details of an electromechanical device for achieving the focus condition.

359 Fiber optics:
This subclass is indented under subclass 335. Subject matter including the use of an optical waveguide.

SEE OR SEARCH THIS CLASS, SUBCLASS:

804, for video display system using fiber optics.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclass 901.1 for fiber optics cross-reference art collection.
385, Optical Waveguides, subclass 116 for optical imaging fiber bundles.

360 Lens or filter substitution:
This subclass is indented under subclass 335. Subject matter wherein one or more of a plurality of wavelength refractive or absorptive optical elements (e.g., lens or filter) are selectively positioned in the optical path of the camera.

361 Automatic:
This subclass is indented under subclass 360. Subject matter wherein the selective positioning of a lens or a filter is performed responsive to a predetermined condition without intervention of a human operator.

362 Exposure control:
This subclass is indented under subclass 335. Subject matter including a device for regulating the total illumination (e.g., duration or intensity) admitted to an imaging device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
221.1, for exposure control in a still and motion camera system.
229.1, for exposure control combined with image signal automatic gain control.

363 Automatic control of iris, stop, or diaphragm:
This subclass is indented under subclass 362. Subject matter wherein the exposure is controlled by opening or closing an aperture responsive to a predetermined condition without intervention of a human operator.

364 Based on image signal:
This subclass is indented under subclass 363. Subject matter including a device for analyzing the video output of the camera for determining an exposure condition.

365 Contrast:
This subclass is indented under subclass 364. Subject matter including a device for detecting brightness differences of video signal components for determining the exposure condition.

366 Based on ambient light:
This subclass is indented under subclass 363. Subject matter wherein the exposure control is based on an environmental illumination.

367 Periodic shuttering:
This subclass is indented under subclass 362. Subject matter including an element for alternately blocking and passing light to the image sensor at every field or frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:
296, for electronic shuttering.

368 Rotary:
This subclass is indented under subclass 367. Subject matter wherein a rotating mechanical blade or apertured device is used to accomplish shuttering.

369 Changing viewing angle via optics:
This subclass is indented under subclass 335. Subject matter including an optical structure for bringing image illumination from a certain position not on the principle optical axis of the camera to a position within a field of view of the camera.

370 With object or scene illumination:
This subclass is indented under subclass 207.99. Subject matter wherein a scanned object or scene is supplied with light or radiation in addition to ambient light.

SEE OR SEARCH THIS CLASS, SUBCLASS:
258+, for bias illumination of the camera surface.

371 Flash or strobe:
This subclass is indented under subclass 370. Subject matter wherein periodic or transient impulses of light are applied to the scanned object or scene.

372 Power supply:
This subclass is indented under subclass 207.99. Subject matter including a detail of energy supply necessary for the functioning of the camera.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333.13, for power saving modes.

373 Support or housing:
This subclass is indented under subclass 207.99. Subject matter including a detail of a mounting or casing structure for the picture signal generator.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333.06, for a movable or rotatable unit for an electronic viewfinder or display, and subclass 333.07 for a detachable viewfinder.

374 For internal camera components:
This subclass is indented under subclass 373. Subject matter including a mounting for elements within the camera housing.

375 For specified accessory:
This subclass is indented under subclass 373. Subject matter wherein the support or housing is associated with an auxiliary camera component (e.g., flash).

376 Portable or hand-held:
This subclass is indented under subclass 373. Subject matter wherein the casing for the camera is readily carried or grasped by the user.

377 CATHODE-RAY TUBE DISPLAY EXCESSIVE VOLTAGE CONTROL:
This subclass is indented under the class definition. Subject matter including a device to prevent the occurrence of high electrical potential which may damage the cathode-ray tube.

378 With disabling:
This subclass is indented under subclass 377. Subject matter including a device, responsive to a detected overvoltage, to inhibit the function of one or more display circuits.

379 CATHODE-RAY TUBE DISPLAY AUTOMATIC BLACK LEVEL BIAS CONTROL:
This subclass is indented under the class definition. Subject matter including a device to regulate the cut-off potential of the cathode-ray tube.

380 CATHODE-RAY TUBE DISPLAY BEAM CURRENT CONTROL:
This subclass is indented under the class definition. Subject matter including a device to regulate or limit the brightness of the displayed image.

381 With beam energy determining color:
This subclass is indented under subclass 380. Subject matter including an apparatus for imparting color to the picture by controlling the energy supplied to the beam.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclass 473 for tubes with screens of the plural layer type.

382 Variable depth of penetration of electron beam into the luminescent layer:
This subclass is indented under subclass 381. Subject matter wherein the depth of penetration of the beam into the luminescent layer determines the color.

383 MODULAR IMAGE DISPLAY SYSTEM:
This subclass is indented under the class definition. Subject matter which includes a display system comprising more than one display device, each displaying an image of part of the scene being televised.

384.1 BANDWIDTH REDUCTION SYSTEM:
This subclass is indented under the class definition. Subject matter including apparatus to compress the frequency range of the signal produced by a picture signal generator prior to transmission to accommodate the bandwidth limitation of the transmission medium or means at the receiver to utilize the signal to reconstruct an image.

(1) Note. Analog television bandwidth reduction system is classified in this subclass and its indented subclasses. See search class notes below for the location of the digital television bandwidth reduction system.

SEE OR SEARCH CLASS:

341, Coded Data Generation or Conversion, subclasses 50 through 107 for code converters wherein the signal may be encoded to reduce bandwidth.

358, Facsimile and Static Presentation Processing, subclasses 426.01 through 426.16 for bandwidth reduction systems peculiar to facsimile.

375, Pulse or Digital Communications, subclasses 240 through 254 for bandwidth reduction or expansion, especially subclasses 240.01-240.29 for digital television bandwidth reduction.

704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/ Decompression, subclasses 500 through 504 for bandwidth, or time compression, or expansion of audio signals.

385.1 Plural video programs in single channel:
This subclass is indented under subclass 384.1. Subject matter wherein two or more video signals are processed to reduce their bandwidth and combined such that the combined signal bandwidth is less than or equal to the bandwidth of one of the video signals.

(1) Note. Examples are time compressing and frequency limiting.

386.1 Color television:
This subclass is indented under subclass 385.1. Subject matter wherein color video signals are specified.

(1) Note. The color signals may be composite (chrominance modulated on a subcarrier) or component (e.g., luminance and chrominance or red, green, and blue).

(2) Note. Nominal recitations are insufficient to be classified here.

387.1 Data rate reduction:
This subclass is indented under subclass 385.1. Subject matter wherein the compression utilizes techniques to reduce the number of samples.

SEE OR SEARCH THIS CLASS, SUBCLASS:

390.1 through 425.4, for data rate reduction in a system not including plural video program in a single channel.

388.1 Multiple channel (e.g., plural carrier):
This subclass is indented under subclass 384.1. Subject matter wherein the signal is split and fed into plural channels, each of which has less bandwidth than the original signal.

(1) Note. Included herein are systems where the combined bandwidth, of the plural channels, equals the bandwidth of the input signal.

389.1 Including one conventional or compatible channel (e.g., two channel NTSC systems):
This subclass is indented under subclass 388.1. Subject matter wherein one channel can be received and utilized by a standard receiver to provide a standard display.

(1) Note. Examples of signals included in the augmentation channels are side panels to expand the aspect ratio of the high definition display; high frequency information, both horizontal and vertical; and extra audio information.

(2) Note. The second or additional channels are often referred to as augmentation channels and normally cannot provide a display by themselves. Reception of all channels allows a high definition display.

390.1 Data rate reduction:
This subclass is indented under subclass 384.1. Subject matter wherein the signal is processed to reduce the number of samples.

SEE OR SEARCH CLASS:

341, Coded Data Generation or Conversion, subclass 67 for data rate conversion.

391.1 Specified color signal:
This subclass is indented under subclass 390.1. Subject matter wherein the signals compressed are the components of a natural color video sig-

nal (e.g., luminance and chrominance or red, green, and blue).

(1) Note. A composite signal that is separated into chrominance and luminance or red, green, and blue is classified herein.

392.1 Sub-Nyquist sampling:
This subclass is indented under subclass 391.1. Subject matter wherein the bandwidth reduction is performed by folding the higher frequencies down to fit inside a reduced frequency spectrum by sampling at a rate less than twice the highest frequency, causing the alias and baseband spectrums to overlap.

(1) Note. The Nyquist criteria states that the sampling rate should be at least twice the baseband. In sub-Nyquist systems, the sampling rate is less than the required Nyquist sampling rate.

(2) Note. The alias components, which are generated by sampling and centered on the sampling frequency, are normally placed in teeth or gaps of the video spectrum to allow recovery of the original full band signal.

(3) Note. These systems often use comb filters (two- or three-dimensional filters using line, field, or frame delays) to remove any signal in the gaps.

393.1 Direct coding of color composite signal:
This subclass is indented under subclass 391.1. Subject matter wherein the video signal that is band reduced is a video signal having a color subcarrier in the same band as the luminance signal or black and white signal.

(1) Note. Examples are NTSC, PAL, or SECAM.

SEE OR SEARCH THIS CLASS, SUBCLASS:
391.1, for systems that receive a color composite signal, separates it into luminance and chrominance components, and reduces the band of the separated components.

394.1 Predictive coding:
This subclass is indented under subclass 393.1. Subject matter including a means for coding the difference between the actual signal and an estimated signal.

395.1 Transform coding:
This subclass is indented under subclass 393.1. Subject matter including a remapping of image values (e.g., between spatial and frequency domains).

(1) Note. The video signals and frequency domain can have one, two, or three dimensions (horizontal, vertical, and temporal).

396.1 Including luminance signal:
This subclass is indented under subclass 391.1. Subject matter wherein one of the components is a brightness or luminance signal.

397.1 Using separate coders for different picture features (e.g., highs, lows):
This subclass is indented under subclass 390.1. Subject matter wherein individual systems of characters or rules are used for representing information related to diverse image portions.

398.1 Subband encoding (e.g., low horizontal/low vertical frequency, low horizontal/high vertical frequency):
This subclass is indented under subclass 397.1. Subject matter wherein the signal is divided into a plurality of frequency bands.

399.1 Picture feature dependent sampling rate or sample selection:
This subclass is indented under subclass 390.1. Subject matter wherein an instantaneous value of a signal is obtained at irregular intervals.

SEE OR SEARCH CLASS:
341, Coded Data Generation or Conversion, subclass 61 for data rate conversion.

400.1 Involving hybrid transform and difference coding:
This subclass is indented under subclass 390.1. Subject matter wherein a remapping of image values (i.e., between spatial and frequency domains) occurs in combination with a diminu-

tion of signal quantity by comparison with a preceding signal.

(1) Note. The preceding signal may be a temporal or spatial signal.

401.1 With prior difference coding:
This subclass is indented under subclass 400.1. Subject matter wherein the comparison with the preceding signal occurs prior to the remapping.

402.1 Including motion vector:
This subclass is indented under subclass 401.1. Subject matter wherein the comparison is used to produce a signal indicative of the magnitude and direction of spatial change during the stated temporal interval.

403.1 Involving transform coding:
This subclass is indented under subclass 390.1. Subject matter involving a remapping of image values (i.e., between spatial and frequency domains).

404.1 Adaptive:
This subclass is indented under subclass 403.1. Subject matter wherein an operation or parameter of the encoder is varied based upon the output signal.

405.1 Sampling:
This subclass is indented under subclass 404.1. Subject matter wherein the operation or varied parameter relates to signal amplitudes.

406.1 Normalizer:
This subclass is indented under subclass 404.1. Subject matter wherein the operation or varied parameter is the gain of the encoder.

407.1 Motion:
This subclass is indented under subclass 404.1. Subject matter wherein the operation or parameter is varied as a result of spatial change during a temporal interval.

408.1 Transformed sample selection (e.g., hierarchical sample selection):
This subclass is indented under subclass 403.1. Subject matter wherein the remapped values are chosen for further processing or transmission based upon content.

409.1 Involving difference transmission (e.g., predictive):
This subclass is indented under subclass 390.1. Subject matter wherein an output signal represents the difference between the input signal and a predicted value.

(1) Note. The predicted signal may be the preceding signal.

410.1 Involving both base and differential encoding:
This subclass is indented under subclass 409.1. Subject matter wherein the signal is sampled periodically and each sample comprises a reference combined with additional difference information.

411.1 Plural predictors:
This subclass is indented under subclass 409.1. Subject matter wherein more than a single predicted value is used for comparison.

412.1 Including temporal predictor (e.g., frame difference):
This subclass is indented under subclass 411.1. Subject matter wherein at least one comparison signal represents a prior image in time.

413.1 Including motion vector:
This subclass is indented under subclass 412.1. Subject matter wherein at least one comparison is used to produce a signal indicative of the magnitude and direction of spatial change during the stated temporal interval.

414.1 Involving pattern matching:
This subclass is indented under subclass 411.1. Subject matter wherein at least one comparison is with a set of stored reference image or subimage portions.

415.1 Including temporal prediction (e.g., frame difference):
This subclass is indented under subclass 409.1. Subject matter wherein the comparison signal represents a prior image in time.

416.1 Including motion vector:
This subclass is indented under subclass 415.1. Subject matter wherein a signal is produced which is indicative of the magnitude and direc-

tion of spatial change during the stated temporal interval.

417.1 Involving pattern matching:
This subclass is indented under subclass 415.1. Subject matter wherein a comparison is made with a set of stored reference image or subimage portions.

418.1 Involving pattern matching:
This subclass is indented under subclass 409.1. Subject matter wherein the resulting signal is further compared with a set of stored reference image or subimage portions.

419.1 Coding element controlled by buffer fullness:
This subclass is indented under subclass 409.1. Subject matter wherein the resolution of the comparison is determined by the amount of the remaining capacity of a temporary storage device.

420.1 Involving block coding:
This subclass is indented under subclass 390.1. Subject matter wherein a sampled image matrix is processed by the use of plural submatrices of reduced area.

421.1 Involving minimum, maximum, or average of block:
This subclass is indented under subclass 420.1. Subject matter including a representative of the lowest value of the block or the greatest value of the block or the sum of the values of a two-dimensional spatial array of values divided by the number of elements in the array.

422.1 Involving pattern matching:
This subclass is indented under subclass 390.1. Subject matter wherein the sampled image representation matrix is compared with a set of stored reference image or subimage portions.

423.1 Arrangements for multiplexing one video signal, one or more audio signals, and a synchronizing signal:
This subclass is indented under subclass 390.1. Subject matter wherein concurrent transmission of the sampled image signal, at least one related sound channel signal and a signal to ensure receiver scanning align with the picture signal generator.

424.1 Sub-Nyquist sampling:
This subclass is indented under subclass 390.1. Subject matter wherein the sampling rate is less than twice the highest frequency component.

424.2 Adaptive:
This subclass is indented under subclass 424.1. Subject matter wherein the sampling rate is determined by image signal content.

425.1 Associated signal processing:
This subclass is indented under subclass 390.1. Subject matter wherein the signal is further processed by circuitry unique to the rate reduction encoding/decoding process.

425.2 Involving error detection or correction:
This subclass is indented under subclass 425.1. Subject matter wherein the further circuitry detects or corrects invalid data.

SEE OR SEARCH THIS CLASS, SUBCLASS:
466, for error correction or prevention in nonpictorial data packet in television format.

425.3 Involving signal formatting:
This subclass is indented under subclass 425.1. Subject matter wherein the further circuitry combines the time variable video signal with a synchronizing signal to allow reconstruction of an image and converts the resultant signal into a format suitable for storage or transmission.

SEE OR SEARCH THIS CLASS, SUBCLASS:
441 through 459, appropriate subclasses for format conversion circuitry, per se, in television.
469 through 496, appropriate subclasses for format circuitry, per se, in television.

425.4 Involving synchronization:
This subclass is indented under subclass 425.1. Subject matter wherein further circuitry utilizes a synchronizing signal component to maintain a proper time or phase correspondence between components of the rate reduction encoding/decoding process with respect to a regular television frame rate of 25 to 30 frames per second (e.g., 100 frames per second, etc.).

(1) Note. Systems in this collection are mostly used to view high speed motion (e.g., a bullet or an airplane in motion, etc.).

426.1 Format type:
This subclass is indented under subclass 384.1.
Subject matter including systems that produce a narrow band signal, which resembles a conventional TV signal, from a broadband source and allow reconstruction of a broadband display.

(1) Note. Included herein are systems in which additional video information is transmitted by using a subcarrier, sampling, additional modulation of the picture carrier (e.g., quadrature), undulatory scanning, line number conversion, or placing an extra video in normal blanking areas.

427.1 Including frequency folding (e.g., subsampling):
This subclass is indented under subclass 426.1.
Subject matter wherein additional information is embedded in the video signal by causing the alias components centered about the sampling frequency to extend into the normal baseband signal.

(1) Note. Systems that use a subcarrier to achieve the same effect are classified herein.

(2) Note. Recitation and recognition of frequency folding is not required for classification herein.

(3) Note. The lower sideband of the alias components has the F or F s -F v, with F s being the sampling frequency, and F v being the video frequency the higher F v (the lower the alias F s -F v) the frequency folding occurs around F s/2.

428.1 Spotwobble (e.g., pixels from plural lines form single transmitted line):
This subclass is indented under subclass 427.1.
Subject matter wherein at least some pixels on the same transmitted line are vertically displaced from each other in addition to the horizontal displacement between pixels.

(1) Note. Included herein are systems that have vertically aligned samples as long as the scan is generally horizontal.

(2) Note. Systems that scan vertically are not classified herein.

(3) Note. The source and display either have more lines than the transmitted signal or undulate the scan.

SEE OR SEARCH THIS CLASS, SUBCLASS:
206, for special scanning which may include systems that scan in vertical, spiral, random, or zigzag.

429.1 Including video-related information:
This subclass is indented under subclass 427.1.
Subject matter including signals, in addition to the video signals, used in the receiver to reconstruct a broadband signal resembling the original broadband signal.

(1) Note. Examples of video-related information are motion vectors or motion indicators.

430.1 Using two or more frames:
This subclass is indented under subclass 427.1.
Subject matter wherein the same pixel is sampled at least every other frame.

(1) Note. Such systems are often referred to as dot interlaced.

(2) Note. Such systems require several frames to build up the broadband display.

431.1 Motion adaptive:
This subclass is indented under subclass 430.1.
Subject matter wherein different operating modes are used depending upon frame-to-frame differences.

432.1 Added video information in standard channel format:
This subclass is indented under subclass 426.1.
Subject matter wherein the narrow band signal is a conventional TV signal, and the broadband display is reconstructed using the conventional

signal and at least one other signal is transmitted with the conventional signal.

(1) Note. The conventional signal is usable by itself to produce a narrow band display. Chrominance information is not considered additional video information.

(2) Note. Examples of the conventional TV signals are NTSC, PAL, or SECAM.

433.1 Including additional modulation of picture carrier (e.g., quadrature):
This subclass is indented under subclass 432.1. Subject matter wherein the other video information modulates the picture carrier in a manner different than the conventional signal.

(1) Note. Included herein are quadrature modulation, phase modulation, and frequency modulation involving modulation of a carrier of the same frequency as the picture carrier and differing in phase by 90 degrees.

434.1 Including information in sync, blanking, or overscan:
This subclass is indented under subclass 432.1. Subject matter wherein the added video information occupies a time interval not occupied by the conventional display video.

(1) Note. Overscan is active video which is normally hidden by the faceplate.

435.1 During vertical blanking interval:
This subclass is indented under subclass 434.1. Subject matter wherein the added video information is inserted between the active interval of successive frames.

436.1 Including use of a subcarrier:
This subclass is indented under subclass 432.1. Subject matter wherein the additional signal is modulated on a carrier having a frequency other than the picture carrier and is located in the bandwidth of the video signal.

437.1 Individual processing of different parts of image frequency band (e.g., sum and difference, high band/low band):
This subclass is indented under subclass 426.1. Subject matter having at least two frequency bands which are treated differently.

438.1 Individual processing of different parts of image frequency band (e.g., sum and difference, high band/low band):
This subclass is indented under subclass 384.1. Subject matter having at least two frequency bands which are treated differently.

439.1 Frame field or line dropping followed by time expansion and time compression:
This subclass is indented under subclass 384.1. Subject matter wherein the original signal is band reduced by decimating frames, fields, or lines and time expanding the signal to occupy the time base of the original signal.

(1) Note. The process is reversed at the receiver to produce a signal having at least the same frame, field, and line rate as the original signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
438.1, for similar systems that also produce a different signal for the missing line field or frame which is band limited.

440.1 Scan rate variation:
This subclass is indented under subclass 384.1. Subject matter wherein the frequency range is reduced by lowering the speed of the scanning at the time significant transitions in the image occur and resume higher scanning speed when little or no transition occurs.

441 FORMAT CONVERSION:
This subclass is indented under the class definition. Subject matter including particular methods or apparatus for converting one format into another format.

(1) Note. Examples of converters found herein are NTSC to PAL or SECAM, High Vision to NTSC, or field sequential color to simultaneous color signal (e.g., NTSC).

SEE OR SEARCH THIS CLASS, SUBCLASS:
333.12, for modification of images.

442 Involving polar to Cartesian or vice versa:
This subclass is indented under subclass 441. Subject matter including a means for converting a radial scanned pattern to a rectangular scanned pattern or vice versa.

(1) Note. Examples herein are radar to TV or vice versa.

443 Involving both line number and field rate conversion (e.g., PAL to NTSC):
This subclass is indented under subclass 441. Subject matter wherein the conversion from the first signal to second signal changes both the number of lines per field and the number of fields per second.

444 Specified chrominance signal:
This subclass is indented under subclass 443. Subject matter including structure or process for converting a first chrominance signal into a second chrominance signal (e.g., converting from the quadrature modulated NTSC chrominance to either the line reversing PAL quadrature signal or the line alternating frequency modulated SECAM chrominance).

445 Conversion between standards with different aspect ratios:
This subclass is indented under subclass 441. Subject matter wherein input and output signals have different width to height ratios and the conversion adjusts the ratios.

(1) Note. Examples herein are systems that select the standard 4:3 aspect ratio of a wide aspect ratio signal or systems that fill in the top and bottom of a 4:3 aspect ratio (e.g., letter box) to display a wide aspect ratio signal.

446 Progressive to interlace:
This subclass is indented under subclass 441. Subject matter wherein an input signal has all the lines scanned during one vertical period and an output signal requires at least two vertical periods to scan all the lines.

(1) Note. In the input signal the spatially adjacent lines are temporally adjacent while in the output signal the spatially adjacent lines are not temporally adjacent and the temporally adjacent lines are not spatially adjacent.

(2) Note. Often the conversion also changes the frame rate, but such frame rate conversion is not required for classification herein.

447 Field rate type flicker compensating:
This subclass is indented under subclass 441. Subject matter comprising means to decrease the period of the output signal below 1/60th of a second to reduce large area flicker in a display.

(1) Note. Rate change between formats such as NTSC and PAL are classified in subclass 459 or subclass 441.

(2) Note. These systems can include line number doubling or halving.

448 Line doublers type (e.g., interlace to progressive IDTV type):
This subclass is indented under subclass 441. Subject matter wherein an input signal has N lines per vertical period and an output signal contains at least 2N lines per vertical period.

(1) Note. Most systems use a progressive scan where vertical periods (field) are in the same position on the display as compared with an interlaced system where lines in adjacent fields are offset. Classified herein are systems that double the number of the lines and produce an interlace display (e.g., conversion from 525 2:1 to either 525 1:1 or 1050 2:1).

449 Including nonstandard signal detection:
This subclass is indented under subclass 448. Subject matter including a means for determining whether the signal has a fixed line period (broadcast) or a variable line period (tape machine).

(1) Note. These systems normally switch operating modes using the previous field for standard signal and line interpolation for nonstandard signals.

450 Specified chrominance processing (e.g., Y/C separation):
This subclass is indented under subclass 448. Subject matter including a means for processing a composite color signal (a signal with a color subcarrier in the luminance band like NTSC, PAL, or SECAM).

(1) Note. The processing is normally chrominance luminance separation wherein the normal field delay used in line doubling is also used as a delay for chrominance luminance separation.

451 Motion adaptive:
This subclass is indented under subclass 450. Subject matter including a detector which senses field to field or frame to frame differences and which processing has at least two modes (e.g., still, moving, slow motion, or fast motion) with the difference signal selecting the mode.

(1) Note. The two modes maybe either the line doubling selecting between the previous field or interpolation or some other two modes processing like Y/C separation or noise reduction.

452 Motion adaptive:
This subclass is indented under subclass 448. Subject matter including a detector which senses field to field or frame to frame differences and which has at least two modes of line doubling (e.g., still, moving, slow motion, or fast motion) with the difference signal selecting the mode.

453 Specified chrominance processing:
This subclass is indented under subclass 441. Subject matter wherein an input color signal and an output color signal differ in the method in which the color information is assembled and wherein the system changes from the first method of assembly to the second method of assembly.

454 PAL to NTSC or vice versa:
This subclass is indented under subclass 453. Subject matter wherein a chrominance signal having the phase of one of the quadrature components inverted in alternating lines is converted into a quadrature modulated chrominance signal without phase inversion or vice versa.

455 In which simultaneous signals are converted into sequential signals or vice versa:
This subclass is indented under subclass 453. Subject matter wherein one of the signals has information for all three colors, red (R), green (G), and blue (B) all the time and the other has information for no more than two colors at any one time with at least two signals being time division multiplexed.

(1) Note. Systems that alternate signals at the pixel rate (dot sequential) are considered simultaneous.

(2) Note. Included herein are systems that convert from SECAM to PAL or NTSC or vice versa.

456 Field or frame sequential to simultaneous:
This subclass is indented under subclass 455. Subject matter wherein the sequential signals alternate at field or frame rate.

(1) Note. The signal are normally R, G, and B.

457 Frequency change of subcarrier:
This subclass is indented under subclass 453. Subject matter including a means for changing the frequency of the subcarrier.

458 Changing number of lines for standard conversion:
This subclass is indented under subclass 441. Subject matter including a means for converting numbers of line per field of an input signal to different numbers of lines per field of output signals.

(1) Note. Details of how output lines are formed from the input lines are classified herein.

459 Changing number of fields for standard conversion:
This subclass is indented under subclass 441. Subject matter including an apparatus or method for changing an input signal having a vertical period to an output signal having a different vertical period.

460 DIVERSE DEVICE CONTROLLED BY INFORMATION EMBEDDED IN VIDEO SIGNAL:
This subclass is indented under the class definition. Subject matter including a device other than the normal video processing circuits of a receiver which is controlled by a signal added to a normal TV signal.

461 NONPICTORIAL DATA PACKET IN TELEVISION FORMAT:
This subclass is indented under the class definition. Subject matter wherein lines of a TV signal are used to carry coded character data.

462 Audio:
This subclass is indented under subclass 461. Subject matter wherein the coded character data represent audio information.

463 Full field:
This subclass is indented under subclass 461. Subject matter wherein all the lines of the TV signal are utilized.

464 Sync:
This subclass is indented under subclass 461. Subject matter including details of synchronizing a coded character transmitted with a coded character receiver.

465 Data separation or detection:
This subclass is indented under subclass 461. Subject matter including circuitry for separating or identifying the character codes from the video signal.

466 Error correction or prevention:
This subclass is indented under subclass 461. Subject matter including circuitry for detecting or correcting invalid data within the character codes.

467 Data format:
This subclass is indented under subclass 461. Subject matter wherein details of the character code format are specified.

468 Including teletext decoder or display:
This subclass is indented under subclass 461. Subject matter including circuitry for processing extracted coded character information for display.

469 FORMAT:
This subclass is indented under the class definition. Subject matter including particular methods or apparatus for combining the time variable video signal with a synchronizing signal to allow reconstruction of the image from which the video signal originated.

470 Adapted to reduce noise or for frequency modulation (e.g., variable gain):
This subclass is indented under subclass 469. Subject matter including particular methods or apparatus for reducing the effects of noise or for optimizing the signal for FM transmission.

(1) Note. Time division multiplexing of chrominance and luminance components is classified in subclass 488.

471 Including pulse modulation of video signal (e.g., pulse width, PAM):
This subclass is indented under subclass 469. Subject matter wherein the video signal is encoded using short duration amplitude spikes.

472 Pulse code modulation:
This subclass is indented under subclass 471. Subject matter wherein the video is quantized into plural bits and the amplitude spikes represent either a one or zero with the absence of a pulse representing the other.

473 Including additional information:
This subclass is indented under subclass 469. Subject matter including a signal component other than the video and sync components.

(1) Note. Additional information includes sound signal which may or may not be related to the image carried by the video signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
426+, for similar systems wherein the added signal is an additional part of the image such as a side panel, a high frequency component, or a vertical high frequency component.

474 For controlling video processing (e.g., digitally assisted video):
This subclass is indented under subclass 473. Subject matter wherein the additional signal component is derived from video and controls the receiver processing of the signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:
429, for similar subject matter where the video signal has been frequency folded.

475 Additional modulation of picture carrier (e.g., quadrature):
This subclass is indented under subclass 473. Subject matter wherein the additional signal directly modulates a carrier of the same frequency as the picture carrier.

(1) Note. Most often the addition modulation is amplitude modulation of a carrier at 90 degrees to the picture carrier which is called quadrature modulation. However, both phase and frequency modulation of the carrier before or after amplitude modulation of the carrier by the video are classified herein.

476 During sync, blanking, or overscan:
This subclass is indented under subclass 473. Subject matter wherein the signal component occupies a time interval not occupied by the normal display video.

477 During both vertical and horizontal blanking:
This subclass is indented under subclass 476. Subject matter wherein the time interval is a time period of vertical and horizontal retrace.

478 During vertical blanking:
This subclass is indented under subclass 476. Subject matter wherein the time interval is a time period of the vertical retrace.

479 During horizontal blanking:
This subclass is indented under subclass 476. Subject matter wherein the time interval is a time period of the horizontal retrace.

480 Sound signal:
This subclass is indented under subclass 479. Subject matter wherein the additional information is an audio signal.

481 Plural (e.g., stereo or SAP):
This subclass is indented under subclass 480. Subject matter including more than one audio signal.

(1) Note. The audio signals may be related such as stereo or unrelated such as a second language.

SEE OR SEARCH CLASS:
381, Electrical Audio Signal Processing Systems and Devices, subclasses 1+ for binaural and stereophonic, per se.

482 Sound signal:
This subclass is indented under subclass 476. Subject matter wherein the additional information is an audio signal.

483 Plural (e.g., stereo or SAP):
This subclass is indented under subclass 482. Subject matter including more than one audio signal.

(1) Note. The audio signals may be related such as stereo or unrelated such as a second language.

484 Sound signal:
This subclass is indented under subclass 473. Subject matter wherein the additional information is an audio signal.

485 Plural (e.g., stereo or SAP):
This subclass is indented under subclass 484. Subject matter including more than one audio signal.

(1) Note. The audio signals may be related such as stereo or unrelated such as a second language.

486 Including the use of a subcarrier:
This subclass is indented under subclass 473. Subject matter wherein the additional information modulates a carrier located within the bandwidth of the picture carrier.

487 Broadband (e.g., occupying two adjacent channels or parts thereof):
This subclass is indented under subclass 469. Subject matter wherein the signal occupies a continuous frequency band greater than a conventional channel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
389, for systems that occupy two nonadjacent channels.

488 Specified color signal format:
This subclass is indented under subclass 469. Subject matter including particular methods or apparatus for combining individual color signals together with a sync signal for transmission.

489 Time division multiplexing of luminance and chrominance (e.g., MAC):
This subclass is indented under subclass 488. Subject matter wherein a signal representing the brightness or the black and white information and signals representing the color content are sequentially transmitted at a rate substantially less than the pixel or element rate.

490 Field or frame sequential systems:
This subclass is indented under subclass 488. Subject matter wherein signals are transmitted sequentially with a duration of at least one vertical period.

(1) Note. Dot sequential systems which select one color or luminance pixel followed by another color pixel etc., are classified in subclass 492.

491 Simultaneous and sequential (e.g., SECAM):
This subclass is indented under subclass 488. Subject matter wherein a single color or luminance signal is transmitted continuously while at least two additional color signals are transmitted alternately at a rate substantially less than the pixel or elemental rate.

492 Simultaneous signals:
This subclass is indented under subclass 488. Subject matter wherein a plurality of color signals or luminance and color signals are transmitted simultaneously.

493 Luminance plus dual-phase modulated color carrier:
This subclass is indented under subclass 492. Subject matter in which one signal conveys brightness or black and white information and a second carrier signal conveys two distinct quantities of color information at either two distinct phases or phase and amplitude.

494 Dot sequential:
This subclass is indented under subclass 492. Subject matter wherein the components are time division multiplexed at the pixel or element rate.

495 Of sync signal:
This subclass is indented under subclass 469. Subject matter wherein the format includes details of sync information for transmission.

496 Color:
This subclass is indented under subclass 495. Subject matter wherein the sync information is for a color TV signal.

497 FLUTTER OR JITTER CORRECTION (E.G., DYNAMIC REPRODUCTION):
This subclass is indented under the class definition. Subject matter including circuitry for correcting a timebase error of a video signal which may vary with respect to time.

498 Specified color:
This subclass is indented under subclass 497. Subject matter wherein the video signal is a specified color.

499 Using frequency shifting (e.g., heterodyne):
This subclass is indented under subclass 498. Subject matter wherein the chrominance signal is corrected by mixing another frequency.

500 SYNCHRONIZATION:
This subclass is indented under the class definition. Subject matter including particular techniques or apparatus for utilizing synchronizing signal components to maintain proper time or phase correspondence between scanning components of the television system.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 141+ for miscellaneous synchronizing circuits.

331, Oscillators, subclasses 20, 21, 145, 149, 153, and 172 for TV sync type oscillators and oscillators with sync circuits.

361, Electricity: Electrical Systems and Devices, subclasses 243+ for electrical systems including synchronization of shafts.

501 Reprocessing:
This subclass is indented under subclass 500. Subject matter including means for extracting, processing, or reinserting the sync signal of a video signal.

502 Specified color:
This subclass is indented under subclass 501. Subject matter wherein the video signal is a specified color.

503 For sequential color components:
This subclass is indented under subclass 500. Subject matter including apparatus for synchronizing the color components of a sequential system.

504 With line rate switch (e.g., SECAM):
This subclass is indented under subclass 503. Subject matter wherein the sync is used to cause a switch to change state at a horizontal line rate.

505 Phase locking regenerated subcarrier to color burst:
This subclass is indented under subclass 500. Subject matter including circuitry for generating continuous color subcarrier from the burst of a video signal.

506 Burst gate:
This subclass is indented under subclass 505. Subject matter including specific circuitry for separating the burst from other components of a composite color signal.

507 Including demodulator:
This subclass is indented under subclass 505. Subject matter including means for demodulating the color components.

508 Digital:
This subclass is indented under subclass 507. Subject matter wherein the demodulator is implemented using digital circuitry.

509 With line rate switch (e.g., PAL):
This subclass is indented under subclass 507. Subject matter wherein the sync is used to cause a switch to change state at a horizontal line rate.

510 Locking of computer to video timebase:
This subclass is indented under subclass 500. Subject matter including means for controlling a programmable processor so as to operate in time or phase of a TV signal.

511 Control of picture position:
This subclass is indented under subclass 500. Subject matter including means for directly changing the phase or time relationship between a video signal and its sync signal components in order to produce picture translation upon display.

512 Locking of video or audio to reference timebase:
This subclass is indented under subclass 500. Subject matter including means for changing the time or phase of video or audio signals so as to correspond to a reference time or phase.

513 Frame or field synchronizers:
This subclass is indented under subclass 512. Subject matter in which the audio or video data is written into a frame or field memory according to its own time or phase and read out according to the reference time or phase.

514 Color television:
This subclass is indented under subclass 513. Subject matter wherein the video signals are natural color video signals.

515 Audio to video:
This subclass is indented under subclass 512. Subject matter including means for changing the time or phase of one of a video or audio

signal so as to be in time or phase with the other one of the audio or video signals.

516 By controlling video or sync generator:
This subclass is indented under subclass 512. Subject matter wherein the time or phase is changed by control of video or sync generation.

517 Color television:
This subclass is indented under subclass 516. Subject matter wherein the video signals are natural color video signals.

518 Including compensation for transmission delays:
This subclass is indented under subclass 512. Subject matter wherein the change in time or phase take into account the time or phase shifts caused during transmission through a channel.

519 Color television:
This subclass is indented under subclass 518. Subject matter wherein the video signals are natural color video signals.

520 Color:
This subclass is indented under subclass 512. Subject matter wherein the sync signal components are for natural color signals.

521 Sync generation:
This subclass is indented under subclass 500. Subject matter including methods and apparatus for the generation of the synchronizing signal components necessary for the proper synchronization between components of the television system.

(1) Note. Included in this subclass is apparatus for the generation of synchronizing signal components to achieve interlace scanning.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 141+ for miscellaneous synchronizing circuits.

522 Means on video signal generator:
This subclass is indented under subclass 521. Subject matter including means integral with the picture signal generator for producing the synchronizing signal components (e.g., separate aperture on a Nipkow disc for sync pulse generation conductive strip at raster edge on vidicon for sync signal generation).

523 With addressable memory:
This subclass is indented under subclass 521. Subject matter including a memory from which the sync signal components are read.

524 With counter or frequency divider:
This subclass is indented under subclass 521. Subject matter including means for counting or dividing a reference signal to generate the sync signal components.

525 Sync separation:
This subclass is indented under subclass 500. Subject matter including apparatus for separating the synchronizing signal components or a synchronizing signal component from other portions of a television signal.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 1+ for miscellaneous pulse selecting and separating circuits.

526 Field or frame identification:
This subclass is indented under subclass 525. Subject matter wherein the apparatus detects a field or a frame type.

527 Color:
This subclass is indented under subclass 526. Subject matter wherein the TV signals are natural color signals.

528 Including automatic gain control (AGC):
This subclass is indented under subclass 525. Subject matter wherein the separating circuitry includes an output providing a control signal for automatic gain control (AGC).

529 To produce distinct vertical output:
This subclass is indented under subclass 525. Subject matter wherein the separating circuitry includes an output providing only a vertical rate sync signal.

530 With distinct horizontal output:
This subclass is indented under subclass 529. Subject matter wherein the separating circuitry includes an additional output providing only a horizontal rate sync signal.

531 To produce distinct horizontal output:
This subclass is indented under subclass 525. Subject matter wherein the separating circuitry includes an output providing only a horizontal rate sync signal.

532 By amplitude:
This subclass is indented under subclass 525. Subject matter wherein the sync signal components are separated based on amplitude.

533 Noise reduction:
This subclass is indented under subclass 525. Subject matter including apparatus for reducing the deleterious effects of noise on the utilization of the synchronizing signal components.

534 Amplitude limiting:
This subclass is indented under subclass 533. Subject matter including apparatus to amplitude limit the synchronizing signal components to reduce the effects of noise on the utilization of such components.

535 Noise inversion:
This subclass is indented under subclass 533. Subject matter including apparatus for inverting the polarity of noise components associated with the synchronizing signal components and algebraically adding such inverted noise components to the synchronizing signal components to reduce the effects of noise on the utilization of the synchronizing signal components.

536 Automatic phase or frequency control:
This subclass is indented under subclass 500. Subject matter including a means for automatically controlling the time or phase of an oscillating signal in response to sync signal components.

537 Of sampling or clock:
This subclass is indented under subclass 536. Subject matter wherein the oscillating signal is used to control the sampling or clocking of video data.

538 With data interpolation:
This subclass is indented under subclass 537. Subject matter including means for creating data at a desired phase from two or more original data samples.

539 Color:
This subclass is indented under subclass 537. Subject matter wherein the sync signal components are for natural color signals.

540 Horizontal sync component:
This subclass is indented under subclass 536. Subject matter wherein the sync signal components are horizontal sync.

541 Cascaded phase or frequency adjusting:
This subclass is indented under subclass 540. Subject matter wherein the means includes plural serially connected time or phase control circuits.

542 Plural distinct operating modes:
This subclass is indented under subclass 540. Subject matter wherein the horizontal phase or frequency control means includes a plurality of distinct operating states.

543 Line rates:
This subclass is indented under subclass 542. Subject matter wherein the distinct modes correspond to different line rates.

544 Locking rates:
This subclass is indented under subclass 542. Subject matter wherein the distinct modes correspond to different locking rates.

545 Different mode during vertical blanking:
This subclass is indented under subclass 544. Subject matter wherein the locking rate is changed during the vertical blanking intervals.

546 Countdown:
This subclass is indented under subclass 540. Subject matter including a resetting divider for controlling the phase or time of the oscillating signal in response to the horizontal sync.

547 Vertical sync component:
This subclass is indented under subclass 536. Subject matter wherein the sync signal components are the vertical sync.

548 Countdown:
This subclass is indented under subclass 547. Subject matter including a resetting divider for controlling the phase or time of the oscillating signal in response to the vertical sync.

549 Using color subcarrier:
This subclass is indented under subclass 536. Subject matter wherein the sync signal component is a component of a color subcarrier.

550 To achieve interlaced scanning:
This subclass is indented under subclass 500. Subject matter including apparatus for utilizing synchronizing signal components to achieve a scanning process in which the distance from center to center of a successively scanned line is two or more times the nominal line width, and in which the adjacent lines belong to different fields.

551 Of mechanical scan:
This subclass is indented under subclass 500. Subject matter wherein the scanning is performed by mechanical means.

552 COMBINED WITH DIVERSE ART DEVICE (E.G., COMPUTER, TELEPHONE):
This subclass is indented under the class definition. Subject matter wherein the receiver is combined with a device that has utility other than a TV receiver.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333.05, for display of multiple images.

553 BASIC RECEIVER WITH ADDITIONAL FUNCTION:
This subclass is indented under the class definition. Subject matter including a specific circuitry that adds additional functions to a basic receiver.

554 Multimode (e.g., composite, Y, C; baseband RF):
This subclass is indented under subclass 553. Subject matter wherein the signal processing of the receiver is changed depending upon the format, modulation, or the nature of the signal inputs such as R, G, B, or composite (e.g., antenna signal).

555 For receiving more than one format at will (e.g., NTSC/PAL):
This subclass is indented under subclass 554. Subject matter including a specific circuitry that enables the receiver to receive and display two or more signal formats.

(1) Note. A conventional receiver receives and displays only on signal standard. A standard is limited to the number of lines, frame rate, and aspect ratio. Signals which have the same number of lines, frame rate, and aspect ratio wherein the only difference is the stage of signal development, such as R, G, B, or composite or SVHSs luminance and chrominance components are classified in subclass 554.

556 For format with different aspect ratio:
This subclass is indented under subclass 555. Subject matter including a specific circuitry to allow display of signals having different width to height ratios.

(1) Note. The receiver is normally designed to display one aspect ratio, the aspect ratio of the display, and circuitry is provided to change the second signal standard to make it displayable on the display. Examples of such signal changing include selecting a narrow aspect ratio section from a wide aspect ratio signal for display on a narrow aspect ratio display or time compressing a narrow aspect ratio signal for display on a wide aspect ratio display.

557 Color processing:
This subclass is indented under subclass 555. Subject matter including a specific circuitry for processing color signals.

558 Format detection:
This subclass is indented under subclass 554. Subject matter including a specific circuitry for detecting the number of lines or the frame rate of the signal.

559 Instant replay or freeze frame:
This subclass is indented under subclass 553. Subject matter including a specific circuitry for storing at least one frame for display.

560 Color television processing:
This subclass is indented under subclass 559. Subject matter including a specific circuitry for processing a color signal.

561 For magnification of part of image:
This subclass is indented under subclass 553. Subject matter including a specific circuitry for expanding a portion of the video signal to display an enlarged portion.

562 Color television:
This subclass is indented under subclass 561. Subject matter including a specific circuitry for processing a color signal.

563 For display of additional information:
This subclass is indented under subclass 553. Subject matter including a specific circuitry to display information in addition to the video image.

564 Simultaneously and on same screen (e.g., multiscreen):
This subclass is indented under subclass 563. Subject matter including a specific circuitry for inserting the additional information into or next to the normal image.

565 Picture in picture:
This subclass is indented under subclass 564. Subject matter including a specific circuitry for processing a second image signal and for inserting the second image into the normal image.

566 Color television:
This subclass is indented under subclass 565. Subject matter including a specific circuitry for processing color image signals.

567 Memory:
This subclass is indented under subclass 565. Subject matter including a specific circuitry for storing at least the second image signal before it is inserted or combined with the primary image signal.

568 Compression:
This subclass is indented under subclass 565. Subject matter including a specific circuitry for shrinking the size of the second image before insertion into the primary image.

569 Receiver indicator (e.g., on screen display):
This subclass is indented under subclass 563. Subject matter including a circuitry to display an operating parameter of the receiver.

570 Tuning indication:
This subclass is indented under subclass 569. Subject matter including a specific circuitry for indicating the tuning status of a TV receiver.

571 IMAGE SIGNAL PROCESSING CIRCUITRY SPECIFIC TO TELEVISION:
This subclass is indented under the class definition. Subject matter including a specific circuitry peculiar to processing image information of a television signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
725, for demodulator, per se, and other receiver circuitry in which no processing, per se, of the image information occurs.

572 A/D converters:
This subclass is indented under subclass 571. Subject matter including details of circuitry for converting an analog video signal into digital data.

SEE OR SEARCH CLASS:
341, Coded Data Generation or Conversion, subclasses 126+ for analog to or from digital conversion, per se.

573 Analog to binary:
This subclass is indented under subclass 572. Subject matter wherein the digital data comprises data having two quantization levels.

SEE OR SEARCH CLASS:
341, Coded Data Generation or Conversion, subclasses 126+ for analog to or from digital conversion, per se.

574 Including dither:
This subclass is indented under subclass 572. Subject matter including circuitry for adding a signal to the video signal whose amplitude changes randomly or pseudo randomly.

575 Video reprocessing:
This subclass is indented under subclass 571. Subject matter including circuitry for receiving a degraded video signal and for reforming the signal.

576 Selective image modification (e.g., touch up):
This subclass is indented under subclass 571. Subject matter including circuitry for altering the image in areas chosen for change without altering the image in areas not chosen.

577 Color change type:
This subclass is indented under subclass 576. Subject matter including a means for changing the hue of one color without changing the hue of other colors.

578 Special effects:
This subclass is indented under subclass 571. Subject matter including an apparatus for modifying the signal by the selective insertion or deletion of signal portions or replacement by further signals.

(1) Note. Fading and chroma keying are examples of effects produced by devices classified herein.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 700+ for selective visual display communication systems.
352, Optics: Motion Pictures, subclass 85 for special effects in motion picture photography.

579 Strobe (e.g., ball tracker):
This subclass is indented under subclass 578. Subject matter including a specific circuitry for combining a plurality of images into a single image which shows the different positions of an object in motion.

580 Geometric transformation:
This subclass is indented under subclass 578. Subject matter including a specific circuitry for changing the size, orientation, shape, or any other geometric attribute of an image.

SEE OR SEARCH THIS CLASS, SUBCLASS:
704, for sweep expansion or reduction.

581 Size change:
This subclass is indented under subclass 580. Subject matter including a specific circuitry for changing the size of the image.

582 Color signal:
This subclass is indented under subclass 581. Subject matter including a circuitry peculiar to color signals.

583 Rotation:
This subclass is indented under subclass 580. Subject matter including a specific circuitry for causing the image to appear to rotate.

584 Combining plural sources:
This subclass is indented under subclass 578. Subject matter including a specific circuitry for forming a single signal from more than one source.

585 Including priority key:
This subclass is indented under subclass 584. Subject matter wherein each source has an associated priority key and the sources are combined depending upon a comparison of the priority keys.

586 Foreground/background insertion:
This subclass is indented under subclass 584. Subject matter including a circuitry for selecting a part of one signal (called the foreground) and placing it in the second or background signal.

(1) Note. The foreground video often is used to generate a key signal which controls selection and insertion.

587 Including hue detection (e.g., chroma key):
This subclass is indented under subclass 586. Subject matter including a circuit which detects a hue in the foreground signal to control the mixing of the foreground and background videos.

588 Multiple distinct images (e.g., splitscreen):
This subclass is indented under subclass 584. Subject matter including a specific circuitry for combining two or more images without losing any significant information.

(1) Note. For receivers that insert a reduced image into a full size main image, see subclass 565. The information in the main image where the reduced image is inserted is lost. The image details lost in compression are not considered significant.

589 Including insertion of characters or s:graphics (e.g., titles):
This subclass is indented under subclass 584. Subject matter including a specific circuitry for combining an image signal with a s:graphics or character signal.

590 Specified details of key signal generation or processing:
This subclass is indented under subclass 584. Subject matter including a circuitry for producing a signal which controls combining two or more image signals.

591 Self keyers (e.g., key generated from video being mixed):
This subclass is indented under subclass 590. Subject matter including a circuitry for generating the combining control signal from one of the image signals.

592 Chroma key (e.g., hue detector):
This subclass is indented under subclass 591. Subject matter including a circuitry for recognizing a color and generating the key signal.

593 Artificial key generation:
This subclass is indented under subclass 590. Subject matter including a circuitry for generating the mixing control signal without using one of the image signals which is combined.

594 Wipes signal generator:
This subclass is indented under subclass 593. Subject matter including a circuit for causing one image to start in a small area and increase in size until the image is completed.

595 Fades signal generator:
This subclass is indented under subclass 593. Subject matter including a circuitry for increasing the amplitude of an image signal until full image is achieved or vice versa.

(1) Note. This subclass includes "cross-fading" wherein one image is faded in while another is faded out.

596 Window signal generator (e.g., rectangle):
This subclass is indented under subclass 593. Subject matter including a circuitry for defining an area in the image.

597 For generation of soft edge (e.g., blending):
This subclass is indented under subclass 590. Subject matter including a circuitry for increasing the amplitude of one image signal while reducing the other image signal where the two images meet.

598 Specified details of signal combining:
This subclass is indented under subclass 584. Subject matter including a circuitry for forming a single signal from two or more input signals.

599 Color signal:
This subclass is indented under subclass 598. Subject matter including a specific circuitry peculiar to a color television.

600 Graphic or character insertion type:
This subclass is indented under subclass 598. Subject matter including a specific circuitry peculiar to combining an image signal with a character signal.

601 Marker or pointer generator:
This subclass is indented under subclass 584. Subject matter including a circuitry for generating a point or line like image signal.

602 Display controlled by ambient light:
This subclass is indented under subclass 571. Subject matter including a circuitry for adjusting some operational characteristics of a display in accordance with the ambient lighting of the environment.

603 Specified color (e.g., saturation and contrast control):
This subclass is indented under subclass 602. Subject matter wherein the operational characteristic includes control of some color attribute such as amplitude.

604 Including nonstandard signal detection controlling processing:
This subclass is indented under subclass 571. Subject matter including a circuitry for detecting if the signal does not meet broadcast standards and for processing the broadcast standard and nonbroadcast standard signals differently.

(1) Note. The nonstandard signal is generally from a video tape player.

605 Including vertical interval reference (e.g., VIR):
This subclass is indented under subclass 571. Subject matter including a circuitry to use a predetermined signal located during the period that the electron beam returns from the bottom of a CRT to the top of a CRT to control processing of the image signal.

606 Combined noise reduction and transition sharpening:
This subclass is indented under subclass 571. Subject matter including a specific circuitry for elimination of unwanted signals generated in the system or by the transmission medium while either reducing the rise time or increasing the amplitude of wanted signal changes.

607 Noise or undesired signal reduction:
This subclass is indented under subclass 571. Subject matter including specific circuitry for the elimination of unwanted signals generated in the system, or by the transmission medium.

SEE OR SEARCH CLASS:
326, Electronic Digital Logic Circuitry, subclasses 22+ for a logic circuit having input noise margin enhancement.
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 165+ for rectangular waveform regeneration; subclass 317 for distortion compensation in limiting, clipping, or clamping; subclasses 379+ for gating circuit spurious noise override; and subclasses 551+ for miscellaneous unwanted signal suppression.
330, Amplifiers, subclass 149 for hum or noise bucking.
455, Telecommunications, subclasses 63.1 through 65, 296-312, and subclasses 501-506 for noise elimination in various type radio communication systems.

608 Processing at encoder or transmitter (e.g., pre-correction):
This subclass is indented under subclass 607. Subject matter including a specific circuitry at the originator of the signal which reduces the unwanted signal in comparison to systems without the circuitry.

609 Reduction of chrominance luminance crosstalk (e.g., precomb):
This subclass is indented under subclass 608. Subject matter wherein the unwanted signal being reduced is a portion of the luminance signal in the chrominance signal or a portion of the chrominance signal in the luminance signal.

610 Adaptive:
This subclass is indented under subclass 609. Subject matter wherein the processing varies depending upon signal content.

611 To suppress echo:
This subclass is indented under subclass 608. Subject matter including apparatus for materially reducing or eliminating the effects of reflected or time delayed versions of the same signal on the displayed image.

SEE OR SEARCH CLASS:
375, Pulse or Digital Communications, subclasses 259+ for pulse communications with interference prevention.
455, Telecommunications, subclasses 63.1 through 65 for interference prevention in radio systems.

612 Color signals:
This subclass is indented under subclass 608. Subject matter including a color television circuitry.

613 Complementary system (e.g., preemphasis - deemphasis):
This subclass is indented under subclass 608. Subject matter wherein the undesired signal reduction requires circuitry at both the transmitter and receiver with the functions being generally opposite.

(1) Note. In general the circuit at the transmitter increases amplitude while the circuit at the receiver decreases amplitude.

614 Ghost elimination (e.g., multipath):
This subclass is indented under subclass 607. Subject matter including apparatus for materially reducing or eliminating the effects of reflected or time delayed versions of the same signal on the displayed image.

615 Blackspot or shading correction (e.g., corrects for fixed pattern defects):
This subclass is indented under subclass 607. Subject matter including apparatus to compensate for the variations in brightness level over different areas of a given reproduced picture due to unequal characteristics of, or imperfections in, an image signal generator.

616 Dropout compensator (e.g., replacement type):
This subclass is indented under subclass 607. Subject matter including a circuitry for generating a substitute signal and for inserting the substitute when the signal is defective or missing.

617 For color television:
This subclass is indented under subclass 616. Subject matter wherein the circuitry is peculiar to a natural color television.

618 For removal of low amplitude random noise (e.g., variable bandwidth):
This subclass is indented under subclass 607. Subject matter including a specific circuitry for reducing small amplitude differences between pixels without, in general, significantly altering large amplitude differences.

619 Averaging type:
This subclass is indented under subclass 618. Subject matter wherein the pixels amplitude is replaced by an amplitude which is an average of itself and at least one other adjacent pixel.

620 Using frame or field delays (e.g., motion adaptive):
This subclass is indented under subclass 619. Subject matter wherein the pixels that are being averaged are separated by at least about the period of a vertical scan.

621 For color television:
This subclass is indented under subclass 619. Subject matter including a circuitry peculiar to color television signals.

622 Noise component generator, limiter, subtractor type:
This subclass is indented under subclass 618. Subject matter including a circuitry for generating a difference signal between pixels, limiting the amplitude of the difference signal to a small level, and for subtracting the limited difference signal from the original pixel signal.

623 Coring type:
This subclass is indented under subclass 618. Subject matter including a circuit element (e.g., diode) which removes small amplitude signal components without significantly altering large amplitude signal components.

624 For color television:
This subclass is indented under subclass 607. Subject matter including a circuitry peculiar to color television signals.

625 Transition or edge sharpeners:
This subclass is indented under subclass 571. Subject matter including a specific circuitry for reducing the time of the amplitude transitions or for increasing the size of the amplitude transition.

(1) Note. Most systems only sharpen transition over some given amplitude.

(2) Note. Search 606 for the systems that sharpen over the given amplitude but which systems also reduce transition under the given amplitude.

626 Scanning velocity modulation:
This subclass is indented under subclass 625. Subject matter including a device to reduce the deflection speed of a cathode ray scanning beam during transitions to make the transition appear to occur more quickly.

627 Including processing to prevent the addition of noise (e.g., coring enhancement signal, noise responsive peaking control):
This subclass is indented under subclass 625. Subject matter including a specific circuitry to prevent the edge sharpener from adding noise to the original signal.

(1) Note. The noise reduction found in this subclass differs from the noise reduction found in subclass 606 in that the noise reduction in this subclass reduces the noise of a signal added to the original signal while subclass 606 systems reduce noise in the original itself.

628 Vertical transition:
This subclass is indented under subclass 625. Subject matter wherein the transition is between pixels separated by line periods.

629 Including horizontal transition:
This subclass is indented under subclass 628. Subject matter including additional circuitry for sharpening transitions between pixels on the same scan line.

630 Color television processing:
This subclass is indented under subclass 625. Subject matter including a circuitry peculiar to color television signals.

631 Luminance transition controls chrominance transition:
This subclass is indented under subclass 630. Subject matter including a specific circuitry that sharpens the chrominance signal when there are transitions in both the luminance and chrominance signals.

632 Sound muting:
This subclass is indented under subclass 571. Subject matter including an apparatus for suppressing the sound portion of the television signal at selected times.

SEE OR SEARCH CLASS:
455, Telecommunications, subclass 194.1 for silent tuning.

633 Including picture blanking:
This subclass is indented under subclass 632. Subject matter including an apparatus for cutting off the electron beam during selected portions of the television signal.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclass 384 for cathode-ray tube deflection circuits with ray blanking.

634 Picture blanking:
This subclass is indented under subclass 571. Subject matter including an apparatus for cutting off the electron beam during selected portions of the television signal.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclass 384 for cathode-ray tube deflection circuits with ray blanking.

635 For color television:
This subclass is indented under subclass 634. Subject matter including a circuitry peculiar to a color television signal.

636 At transmitter:
This subclass is indented under subclass 634. Subject matter wherein the blanking is preformed at the signal source.

637 Retrace type:
This subclass is indented under subclass 634. Subject matter wherein the blanking is preformed during the short time period when the electron beam moves from right or bottom of a CRT to the left or top to start a new scan.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclass 384 for cathode-ray tube deflection circuits with ray blanking.

638 Chrominance signal demodulator:
This subclass is indented under subclass 571. Subject matter including a means particularly adapted for deriving color difference or chrominance signal from a subcarrier component of a color television signal.

639 Digital:
This subclass is indented under subclass 638. Subject matter wherein the subcarrier has been sampled and quantized and the component is derived from the sampled and quantized signal.

640 PAL signal:
This subclass is indented under subclass 638. Subject matter for demodulating a carrier whose phase is alternated at the line rate.

641 For quadrature signal (e.g., NTSC):
This subclass is indented under subclass 638. Subject matter for demodulating a carrier which has been modulated by two components at two distinct phases.

642 Color encoder or chrominance signal modulator:
This subclass is indented under subclass 571. Subject matter including a means particularly adapted for modulating a subcarrier of a color television signal or which may include other circuits to add the brightness signal to the modulated chrominance signal.

643 Color killer:
This subclass is indented under subclass 571. Subject matter including apparatus which disables the chrominance channel upon occurrence of a noncolor signal or a chrominance signal with insufficient amplitude or phase coherence.

644 Including chrominance signal amplitude control:
This subclass is indented under subclass 643. Subject matter including an apparatus for controlling the amplitude of a chrominance signal.

645 Chrominance signal amplitude control (e.g, saturation):
This subclass is indented under subclass 571. Subject matter including an apparatus for controlling the amplitude of a chrominance signal.

646 Digital:
This subclass is indented under subclass 645. Subject matter including an apparatus particularly adapted to controlling the level of a sampled and quantized chrominance signal.

647 Automatic:
This subclass is indented under subclass 645. Subject matter without requiring manual adjustment for variable signals.

(1) Note. Included herein are burst responsive systems which are known as automatic chrominance controls (ACC).

648 Picture responsive (e.g., overload):
This subclass is indented under subclass 647. Subject matter wherein the control is dependent upon the image signal.

(1) Note. Included herein are systems known as overload protection systems.

649 Hue control:
This subclass is indented under subclass 571. Subject matter including apparatus for causing the hue of the displayed signal to change.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 141+ for miscellaneous synchronizing circuits and subclasses 231+ for miscellaneous phase shift circuits.

650 Scene by scene color correction:
This subclass is indented under subclass 649. Subject matter peculiar to film-to-video (telecine) conversion where scenes shot under different lighting require different color modification.

651 Digital:
This subclass is indented under subclass 649. Subject matter including a means particularly adapted to control the hue of a sampled and quantized chrominance signal.

652 Fleshtone corrector (e.g., fixed):
This subclass is indented under subclass 649. Subject matter including a means to change hues closer to skin color.

(1) Note. Fleshtone is the same as I phase in NTSC.

653 By phase change of chrominance signal or subcarrier:
This subclass is indented under subclass 652. Subject matter wherein the hue change is caused by changing the phase of either the chrominance signal or the reference subcarrier.

654 By phase change of chrominance signal or subcarrier:
This subclass is indented under subclass 649. Subject matter including apparatus for changing the phase of the chrominance signal and/or reference signal to adjust the hue of the displayed signal.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 141+ for miscellaneous synchronizing circuits and subclasses 231+ for miscellaneous phase shift circuits.

655 Color balance or temperature (e.g., white balance):
This subclass is indented under subclass 571. Subject matter including apparatus for maintaining proper relative amplitude levels between plural color signals or adjusting the relative amplitude levels to achieve proper color temperature.

656 Receiver type:
This subclass is indented under subclass 655. Subject matter particularly adapted for use in image displays.

657 Including feedback control:
This subclass is indented under subclass 656. Subject matter including a sensor to detect the operation of the display and a control to control the display depending upon the detected operation.

658 Including optical sensor to observe display (e.g., CRT):
This subclass is indented under subclass 657. Subject matter wherein the sensor detects the light output of the display.

659 Matrixing or mixing:
This subclass is indented under subclass 571. Subject matter including specific circuitry for combining plural signals.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, particularly subclasses 105+ for miscellaneous synthesizing circuits and subclass 361 for miscellaneous mathematical summing of two input signals.
330, Amplifiers, subclass 69 for sum and difference amplifiers.

660 Digital:
This subclass is indented under subclass 659. Subject matter including a means for processing sampled and quantized signals.

661 Masking (e.g., R, G, B to R', G', B'):
This subclass is indented under subclass 659. Subject matter including a means to compensate for defects in the input signals.

662 Chrominance phase adjuster (e.g., inverter):
This subclass is indented under subclass 571. Subject matter including a means for changing the phase of a color subcarrier.

663 Chrominance-luminance signal separation:
This subclass is indented under subclass 571. Subject matter including specific circuitry for separating chrominance and luminance signals.

SEE OR SEARCH CLASS:
333, Wave Transmission Lines and Networks, subclasses 167+ for wave filters.

664 Logic circuit type:
This subclass is indented under subclass 663. Subject matter wherein the separation is preformed by logically combining signals such as using max, min, and/or coincident circuits.

(1) Note. Logic circuits used to select output or remove artifacts are classified in subclasses 665+.

665 Including comb filter (e.g., using line, field, frame delays):
This subclass is indented under subclass 663. Subject matter wherein the separation is preformed by adding and/or subtracting at least two signals which are on different lines, fields, or frames.

666 Including adaptive artifacts removal (e.g., switchable trap or LPF in luma channel):
This subclass is indented under subclass 665. Subject matter including an apparatus for altering the output of the comb filter when the comb filter is incapable of cleanly separating the signals.

(1) Note. For a comb filter to cleanly separate Y and C, the composite signals must be correlated (e.g., Y_1+C_1 and Y_2-C_2 will produce Y by adding and produce C by subtracting only if $Y_1=Y_2$ and $C_1=C_2$).

667 Adaptive comb filter:
This subclass is indented under subclass 665. Subject matter including specific circuitry for changing the output of the comb filter responsive to picture signal content.

668 Selects or blends two or more separated signals to derive output:
This subclass is indented under subclass 667. Subject matter including at least two distinct separation systems with the output either being one of the outputs or a combination of outputs.

669 Including frame or field delays (e.g., motion adaptive):
This subclass is indented under subclass 668. Subject matter wherein one of the outputs is generated by combining signals which are one or more vertical scan periods apart.

670 Including frame or field delays:
This subclass is indented under subclass 665. Subject matter wherein signals are combined in different vertical scan periods.

671 Gray scale transformation:
This subclass is indented under subclass 571. Subject matter including circuitry which modifies the range of values contained in a TV signal.

672 Using histogram:
This subclass is indented under subclass 671. Subject matter including circuitry which accumulates data representing past characteristics of the TV signal being processed.

673 Combined contrast control and brightness or DC level control:
This subclass is indented under subclass 671. Subject matter including circuitry in which both the gain and DC or gain and average brightness level can be controlled by a manually adjustable setting.

674 Nonlinear amplitude modification (e.g., gamma):
This subclass is indented under subclass 671. Subject matter including means for modifying the magnitude of a TV signal based on a nonlinear gain function.

675 Color television:
This subclass is indented under subclass 674. Subject matter wherein the TV signal is a color signal.

676 By adding outputs from parallel channels:
This subclass is indented under subclass 674. Subject matter including circuitry in which the TV signal is processed in a plurality of parallel signal paths and in which an output is provided by summing the output of the paths.

677 With specified DC level control:
This subclass is indented under subclass 674. Subject matter including circuitry for modifying the DC bias of the TV signal.

678 Automatic range control (e.g., AGC, automatic contrast control):
This subclass is indented under subclass 671. Subject matter including apparatus to develop a control signal in response to input signal variations to maintain the output signal level constant in various parts of the circuit.

SEE OR SEARCH CLASS:
455, Telecommunications, subclasses 234.1+ for automatic gain control devices.

679 Color television:
This subclass is indented under subclass 678. Subject matter wherein the TV signal is a color signal.

680 At transmitter:
This subclass is indented under subclass 678. Subject matter wherein the gain control is provided prior to transmission.

681 Carrier envelope:
This subclass is indented under subclass 678. Subject matter wherein the variations in the output signal are determined from the variations in the level of the carrier wave with the modulating signal removed.

682 Sync or blanking:
This subclass is indented under subclass 678. Subject matter wherein the variations in the input signal are determined by the sync or blanking levels in the video signal.

683 Noise reduction or elimination:
This subclass is indented under subclass 682. Subject matter including an apparatus to reduce or eliminate spurious pulses or the false response of the apparatus to spurious pulses.

684 Keyed:
This subclass is indented under subclass 682. Subject matter wherein the range control is made operative by a control signal during the horizontal sync interval.

685 Delayed AGC:
This subclass is indented under subclass 678. Subject matter wherein the control signal is prevented from being effective until the input signal exceeds a certain value.

SEE OR SEARCH CLASS:
330, Amplifiers, subclass 138 for amplifiers with biased gain control.
455, Telecommunications, subclasses 242.1+ for delayed action of AGC.

686 Manual contrast control (e.g., linear):
This subclass is indented under subclass 671. Subject matter in which the magnitude of a TV signal is modified by some manually adjustable setting.

687 Brightness control:
This subclass is indented under subclass 571. Subject matter including circuitry for changing the DC bias of a TV signal based on some manually set criterion.

688 By subtracting averaged active video portion (e.g., flare):
This subclass is indented under subclass 687. Subject matter including circuitry for detecting an average level of the active TV signal and subtracting the detected level therefrom.

689 With DC clamping:
This subclass is indented under subclass 687. Subject matter including means to set the black level of a TV signal to a reference value.

690 White limiter:
This subclass is indented under subclass 571. Subject matter including apparatus for limiting the excursion of the image signal in the "white" direction to a prescribed level.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 309+ for miscellaneous limiting circuits.

691 DC insertion:
This subclass is indented under subclass 571. Subject matter including apparatus for setting, maintaining, or reestablishing the direct current voltage level in an image signal.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 309+ for miscellaneous limiting, clipping, and clamping circuits.
330, Amplifiers, subclass 11 for amplifiers with DC reinsertion circuits.

692 Color television:
This subclass is indented under subclass 691. Subject matter wherein the image signal is a natural color signal.

693 At transmitter:
This subclass is indented under subclass 691. Subject matter in which the level is set prior to transmission of the TV signal.

694 For plural signals or signal components:
This subclass is indented under subclass 691. Subject matter wherein the respective DC bias of a plurality of different signals is controlled.

695 Level inserted during keying signals (e.g., keyed clamp):
This subclass is indented under subclass 691. Subject matter including circuitry for adding or setting the DC bias of a TV signal at selected times by a control signal.

696 Insertion level derived by key signals:
This subclass is indented under subclass 691. Subject matter including circuitry in which the bias to be added is derived at selected times using a control signal.

697 Level derived within feedback path:
This subclass is indented under subclass 696. Subject matter wherein the bias to be added is established using feedback.

698 Diode:
This subclass is indented under subclass 691. Subject matter wherein the apparatus includes a means for permitting current flow in only one direction.

699 Motion vector generation:
This subclass is indented under subclass 571. Subject matter including a specific circuitry for determining the direction and magnitude of displacement of elements in the image.

SEE OR SEARCH CLASS:
382, Image Analysis, subclasses 197+ for directional codes and vectors.

700 Motion dependent key signal generation or scene change detection:
This subclass is indented under subclass 571. Subject matter including a specific circuitry to produce a signal which indicates which areas of a frame are changed from one frame to another or to indicate that a frame is unrelated to a previous frame.

(1) Note. Most systems use frame or field differences.

(2) Note. The signals generated herein are used to control processing of the video signal, such as line doubling, noise reduction, or Y/C separation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
451, or 452, for motion adaptive line doublers.
620, for noise reduction using frame or field delays which are mostly motion adapted.
669, for Y/C separation using a frame comb filter which are mostly motion adapted selecting either frame or line comb outputs depending on the motion signal.

701 Specified processing of frame or field difference signal (e.g., noise reduction, key signal spreading):
This subclass is indented under subclass 700. Subject matter including specific circuitry to generate a frame or field difference signal and to further process the difference signal before the motion key signal is generated.

702 Composite color signal:
This subclass is indented under subclass 700. Subject matter including circuitry peculiar to a video signal having a chrominance subcarrier.

703 Hue or saturation detector:
This subclass is indented under subclass 571. Subject matter including a specific circuitry to select an area of a predetermined color in a TV signal.

SEE OR SEARCH CLASS:
356, Optics: Measuring and Testing, subclasses 402+ for testing the color parameters of the light sample.

704 Sweep expansion or reduction:
This subclass is indented under subclass 571. Subject matter including an apparatus to enlarge or reduce the size of the picture or a portion thereof by modifying the deflection voltages.

705 Switching:
This subclass is indented under subclass 571. Subject matter wherein the output of a plurality of picture signal generators is selected by a switching means.

706 Receiver type:
This subclass is indented under subclass 705. Subject matter particularly adapted for use in a receiver or combined with a receiver.

707 Amplifiers:
This subclass is indented under subclass 571. Subject matter including amplifier circuitry in combination with another structure or circuitry peculiar to television systems.

SEE OR SEARCH CLASS:
330, Amplifiers, appropriate subclasses for amplifiers, per se.

708 Color television signal processing:
This subclass is indented under subclass 571. Subject matter including specific circuitry peculiar to natural color television, but not restricted in usability to any single system, signal generator, or display device specifically provided for elsewhere in this class.

709 Signal modification for one gun color tube (e.g., dot sequential):
This subclass is indented under subclass 708. Subject matter particularly adapted to modify a signal for application to a CRT having a single source of electrons which is sequentially modulated by color signals.

710 Differential phase or amplitude responsive:
This subclass is indented under subclass 708. Subject matter including specific circuitry for correcting distortions resulting from the system, wherein the distortion occurs when the rate of change of phase or amplitude at a particular frequency is not constant over the frequency range required for transmission.

SEE OR SEARCH CLASS:
333, Wave Transmission Lines and Networks, subclass 28 for equalizers.

711 Frequency response modification:
This subclass is indented under subclass 708. Subject matter including specific circuitry for changing the bandwidth or relative amplitude characteristics of a system.

(1) Note. Examples of devices classified herein are sound traps, black and white bandwidth extension circuitries, and band limiting filters.

712 Luminance channel circuitry:
This subclass is indented under subclass 708. Subject matter including specific circuitry of particular utility in the luminance section of a color television device.

(1) Note. Examples of devices classified herein are luminance delay lines, brightness controls, and contrast controls.

713 Chrominance channel circuitry:
This subclass is indented under subclass 708. Subject matter including specific circuitry of a particular utility in the chrominance section of a color television device.

714 With details of static storage device:
This subclass is indented under subclass 571. Subject matter including details of storing video data in a static memory.

715 For storing a sequence of frames or fields:
This subclass is indented under subclass 714. Subject matter wherein the video data represent a plurality of video frames or fields.

716 Specified data formatting (e.g., memory mapping):
This subclass is indented under subclass 714. Subject matter wherein the format of the video data being stored in the memory is specified.

717 Of color signal:
This subclass is indented under subclass 716. Subject matter wherein the video data represent a color signal.

718 Accessing circuitry:
This subclass is indented under subclass 714. Subject matter including circuitry for controlling the storage and retrieval of the video data from the memory.

719 Including processor interface (e.g., CPU):
This subclass is indented under subclass 718. Subject matter including a circuitry for allowing the stored data to be accessed.

720 Digital:
This subclass is indented under subclass 571. Subject matter including circuitry for processing a sampled and quantized video signal.

(1) Note. This subclass is intended to collect patents which are not classifiable in any processing circuitry subclasses or any digital processing circuitry claimed.

721 Plural processing units:
This subclass is indented under subclass 720. Subject matter including two or more digital processors.

722 STUDIO EQUIPMENT:
This subclass is indented under the class definition. Subject matter including apparatus or structure necessary for the production of a scene to be televised and not provided for elsewhere in this class.

SEE OR SEARCH CLASS:
352, Optics: Motion Pictures, subclass 4 for studio equipment for motion pictures.

723 TELEVISION TRANSMITTER CIRCUITRY:
This subclass is indented under the class definition. Subject matter including specific circuitry designed for dealing with television signals at the transmitter.

SEE OR SEARCH CLASS:
331, Oscillators, appropriate subclasses for carrier wave oscillator systems, per se.
455, Telecommunications, subclasses 91+ for modulated carrier wave transmitter circuits.

724 Modulator:
This subclass is indented under subclass 723. Subject matter including means for modulating TV signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:
642, for color encoder or chrominance signal modulator.

SEE OR SEARCH CLASS:
332, Modulators, appropriate subclasses for carrier wave modulators, per se.

725 RECEIVER CIRCUITRY:
This subclass is indented under the class definition. Subject matter including specific circuitry specially designed for dealing with television signals.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclasses 1+ for cathode-ray tube circuits.
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous nonlinear active device circuits.
331, Oscillators, appropriate subclasses for oscillator systems, in general, usable in a television receiver.
455, Telecommunications, subclasses 130+ for modulated carrier wave receiver circuits.

726 Demodulator:
This subclass is indented under subclass 725. Subject matter including means for recovering a video signal from a radio frequency modulated signal.

(1) Note. The demodulator is peculiar to a TV signal.

SEE OR SEARCH CLASS:
329, Demodulators, appropriate subclasses for demodulators, in general.

727 Color television:
This subclass is indented under subclass 726. Subject matter wherein the video signal is a color television signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
638, for chrominance signal demodulator.

728 Color television:
This subclass is indented under subclass 725. Subject matter including a circuitry peculiar to color television signals.

729 Television receiver adapted to receive radio broadcast or in combination with radio receiver:
This subclass is indented under subclass 725. Subject matter including apparatus which enables a television receiver to recover and utilize a standard radio broadcast signal, or television receivers in combination with a radio receiver.

SEE OR SEARCH CLASS:
455, Telecommunications, subclasses 142+ for modulated carrier wave receivers of the convertible type.

730 Power supply:
This subclass is indented under subclass 725. Subject matter including power supplies specially designed for use in a television receiver.

(1) Note. Included herein are filament supplies, power supply regulation circuits and power supplies providing "instant-on" receiver operation.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclass 411 for cathode ray deflection circuits with power supply from deflection circuit source.
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 530+ for miscellaneous circuits with a specific source of supply or bias voltage.
330, Amplifiers, subclasses 127+ for amplifiers with control of power supply.
331, Oscillators, subclass 185 for oscillators with a particular source of power.
455, Telecommunications, subclasses 127.1 through 127.5 and subclasses 343.1-343.6 for modulated carrier wave transmitter and receiver power supplies.

731 Tuning:
This subclass is indented under subclass 725. Subject matter including apparatus for adjusting the receiver to operate at a specified frequency.

(1) Note. Both manual and electronic television tuners are found herein.

SEE OR SEARCH CLASS:
334, Tuners, appropriate subclasses for tuners, per se, with channel or station selection means.
455, Telecommunications, subclasses 77+ for analog modulated carrier wave transceivers with tuning and subclasses 150.1+ for analog modulated carrier wave receivers with signal selection by tuning a desired carrier frequency.

732 Search tuning:
This subclass is indented under subclass 731. Subject matter including apparatus to cause the tuner to cycle through a plurality of possibly active channels or stations and cease such cycling upon reception of a usable signal.

(1) Note. Included herein is apparatus associated with television search tuners to assure proper tuning of the received signal.

SEE OR SEARCH CLASS:
455, Telecommunications, subclass 77 for transceivers with automatic tuning and subclasses 161.1+ for analog modulated carrier wave receivers with

signal selection by frequency scan tuning.

733 Tuning voltage:
This subclass is indented under subclass 731. Subject matter wherein the apparatus to select the specified frequency is responsive to voltage.

734 Remote control:
This subclass is indented under subclass 725. Subject matter including apparatus for controlling an operating condition of the receiver from a point outside the receiver.

(1) Note. This subclass includes both apparatus where the control function is performed electrically from a distance over intervening wired or radio circuits and apparatus where the control function is performed mechanically such as by a flexible shaft.

SEE OR SEARCH CLASS:
334, Tuners, subclass 8 for remotely controlled tuners.
455, Telecommunications, subclasses 151.1+ for analog modulated carrier wave receivers with remote control of receiver tuning.

735 Automatic frequency control:
This subclass is indented under subclass 725. Subject matter including a local oscillator combined with apparatus to adjust the generated frequency thereof in response to deviation of the generated frequency from a desired value.

SEE OR SEARCH CLASS:
331, Oscillators, subclasses 1+ for oscillators, per se, with automatic frequency control.
334, Tuners, subclasses 13, 16, and 26 for tuning apparatus combined with automatic frequency control.
455, Telecommunications, subclasses 255+ for analog modulated carrier wave receivers with automatic frequency control; subclass 71 for analog modulated carrier wave systems with automatic frequency control; subclass 75 for analog modulated carrier wave transceivers with automatic frequency control; and subclasses 173.1, 164.1, 182.2, and 192.2 for analog modulated carrier wave receivers having various apparatuses to provide signal selection (e.g., tuning) and further including automatic frequency control.

736 Sound traps:
This subclass is indented under subclass 725. Subject matter including apparatus at the receiver for substantially or totally eliminating frequencies at the frequency position of the sound signal.

737 Intercarrier circuits:
This subclass is indented under subclass 725. Subject matter including apparatus at the receiver to produce a frequency modulated signal whose center frequency is equal to the difference between the carrier frequency of an amplitude modulated carrier and a frequency modulated carrier.

738 Sound circuit:
This subclass is indented under subclass 725. Subject matter including apparatus at the receiver specially designed to separate from the image signal component, detect or otherwise process the sound signal component of a received composite television signal.

SEE OR SEARCH CLASS:
329, Demodulators, subclasses 315+ for frequency demodulators and subclasses 345+ for phase demodulators.

739 VIDEO DISPLAY:
This subclass is indented under the class definition. Subject matter including an apparatus for converting an image-representative electrical signal (i.e., video signal) of an object or a scene into a visible image of the object or scene.

SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, appropriate subclasses.

740 Array of shutters:
This subclass is indented under subclass 739. Subject matter wherein the image reproduction is achieved by a group of similar movable optical blocking elements, each corresponding to an image resolution element.

741 Red-white phenomena:
This subclass is indented under subclass 739. Subject matter wherein the effect of color in the displayed image is attained by using two unorthodox primaries.

742 Color sequential:
This subclass is indented under subclass 739. Subject matter including a device to reconstitute a color image by imparting in sequence color components of the image to a display device.

743 With moving color filters:
This subclass is indented under subclass 742. Subject matter wherein color is imparted by the periodic movement of more than one color transmitting or absorbing device.

(1) Note. This subclass includes both rotating and oscillating filters.

744 Projection device:
This subclass is indented under subclass 739. Subject matter including a viewing surface (e.g., screen or wall) which receives light from a light source type display (e.g., CRT or LED), or including an electro-optical device which imparts image information based on a video signal to a beam of source illumination wherein the resulting image is coextensively projected onto a screen.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333.1, for projecting an image from electronic viewfinder onto a screen.

745 With alignment, registration or focus:
This subclass is indented under subclass 744. Subject matter wherein an apparatus is provided for causing the images emanating from each of plural projection devices to be in coincidence (i.e., registered) on the screen or for causing one or more projected images to be in high resolution (i.e., focused).

746 Raster shape distortion:
This subclass is indented under subclass 745. Subject matter wherein a raster scan pattern of at least one projection device is modified to cancel out a distortion due to an angular placement of the tube in relation to the optical projection axis or due to the use of non-planar optical elements.

(1) Note. Raster scanning is scanning by means of a line-by-line sweep across the entire display surface to generate a complete display image.

(2) Note. Example of distortions are keystoning which refers to a trapezoidal distortion and pincushion distortion which emulates a square having curved sides.

747 Raster size or position compensation:
This subclass is indented under subclass 745. Subject matter wherein a raster scan pattern on at least one projection device is altered in size relative to those of another projection device whereby each of the projected images has the same relative size; or wherein the raster is shifted up or down or side to side in order that the projected images are in registration on the screen.

748 With cooling device:
This subclass is indented under subclass 744. Subject matter wherein the projector includes a device to reduce heat produced by intensive light rays from the source illuminator.

749 Liquid:
This subclass is indented under subclass 748. Subject matter wherein the projector is cooled down by a liquid.

750 Plural parallel light modulators:
This subclass is indented under subclass 744. Subject matter including two or more optically parallel devices, each device imparting image information based on a video signal to a beam of source illumination, wherein the resulting images are coextensively projected onto a screen.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 237+ for generic optical modulator.

751 Liquid crystal:
This subclass is indented under subclass 750. Subject matter wherein the modulator comprises a medium consisting of a material which flows like a liquid and exhibits, under the influ-

ence of an electrical signal, variable anisotropic optical properties characteristic of a crystal.

(1) Note. An anisotropic substance exhibits different magnetic, electrical, optical, and other physical properties when measured along axes in different directions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
58, for stereoscopic display device which may use a liquid crystal material.
761, 766 and 790, for projection type display devices wherein a liquid crystal material is used to modulate the light beam.

SEE OR SEARCH CLASS:
349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal display structure in general.

752 Using birefringent or polarizing medium (e.g., Kerr cell, Pockel's cell, etc.):
This subclass is indented under subclass 750. Subject matter wherein the modulators comprise a medium which, under the influence of a video signal, alters a polarization plane of the source illumination in order to impart image information.

(1) Note. Kerr and Pockel cells exhibit electro-optic effects of a particular material (e.g., nitrobenzene in Kerr and piezoelectric in Pockel) which are capable of advancing or retarding the phase of an induced ordinary light ray relative to an extraordinary light ray when an electric current is applied. The effect is quadratic nonlinear in the Kerr cell and linear in the Pockel cell. Because the two polarized components of an incident light beam have different phase velocities in the medium, these devices can rotate the plane of polarization.

SEE OR SEARCH THIS CLASS, SUBCLASS:
762, and 767, for projection type image reproducers having a single light modulator.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 245+ and 315+ for generic optical modulator using electro-optical techniques for light wave temporal or directional modulation.

753 Electron beam addressed:
This subclass is indented under subclass 752. Subject matter wherein a scanning electron beam sequentially controls predetermined areas of the light modulating medium to vary an optical property of the modulator.

SEE OR SEARCH THIS CLASS, SUBCLASS:
763, and 768, for projection type image reproducer having a single light modulator.

754 Acousto-optic (e.g., Bragg cell, etc.):
This subclass is indented under subclass 750. Subject matter wherein the modulator comprises media, the optical property of which is varied by a high frequency mechanical vibration (e.g., ultrasonic or sound wave, etc.).

(1) Note. Bragg cell is an example of a device that changes the intensity of a light beam by the interaction between sound waves and the light in a solid medium.

SEE OR SEARCH THIS CLASS, SUBCLASS:
769, for projection type image reproducer using acousto-optical technic to modulate light beam.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 285+ and 305+ for generic optical modulator using acousto-optical technic for light wave temporal or directional modulation.

755 Deformable medium:
This subclass is indented under subclass 750. Subject matter wherein the modulator comprises an elastic medium which is physically distorted under the influence of a video signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
764, and 770+, for projection type image reproducer having a single light modulator.

756 With optical element:
This subclass is indented under subclass 750. Subject matter including a structure which performs a basic optical function (i.e., the structure when exposed to or placed in the path of a group of light rays will cause a deviation, a blocking of the rays, or a modification in the character or properties of the light).

757 Beam combining:
This subclass is indented under subclass 756. Subject matter comprising an optical structure which forms, from a plurality of light rays having different optical axes, a single beam for the purpose of forming one channel containing the combined information of the plurality of groups of light rays.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 618+ for optical structure which may combine light beams.

758 Plural serial light modulators:
This subclass is indented under subclass 744. Subject matter including two or more devices placed in sequence, each device imparting image information based on a video signal to a beam of source illumination, wherein the resulting images are coextensively projected onto a screen.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 237+ for generic optical modulators.

759 Single light modulator:
This subclass is indented under subclass 744. Subject matter including only one device to impart image information based on a video signal to a beam of source illumination, wherein the resulting image is projected onto a screen.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 237+ for generic optical modulators.

760 Color TV:
This subclass is indented under subclass 759. Subject matter wherein the image information signal is displayed in a hue as contrasted with black, white, or gray.

SEE OR SEARCH THIS CLASS, SUBCLASS:
808+, for color image reproducer cathode-ray tubes.

761 Liquid crystal:
This subclass is indented under subclass 760. Subject matter wherein the modulator comprises a medium consisting of a material which flows like a liquid and exhibits, under the influence of an electrical signal, variable anisotropic optical properties characteristic of a crystal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
58, for stereoscopic display device which may use a liquid crystal material.
751, 766 and 790, for projection type display devices wherein a liquid crystal material is used to modulate a light beam.

SEE OR SEARCH CLASS:
349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal display structure in general.

762 Using birefringent or polarizing medium (e.g., Kerr cell, Pockel's cell, etc.):
This subclass is indented under subclass 760. Subject matter wherein the modulator comprises a medium which, under the influence of a video signal, alters a polarization plane of the source illumination in order to impart the image information.

SEE OR SEARCH THIS CLASS, SUBCLASS:
752, for projection type image reproducer having plural parallel light modulators and subclass 767 for projection type

black and white image reproducer having a single light modulator.

763 Electron beam addressed:
This subclass is indented under subclass 762. Subject matter wherein a scanning electron beam sequentially controls predetermined areas of the light modulating medium to vary an optical property of the modulator.

SEE OR SEARCH THIS CLASS, SUBCLASS:
753, for projection type image reproducer having plural parallel light modulators and subclass 768 for projection type black and white image reproducer having a single light modulator.

764 Deformable medium:
This subclass is indented under subclass 760. Subject matter wherein the modulator comprises an elastic medium which is physically distorted under the influence of a video signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
755, for projection type image reproducer having plural parallel light modulators and subclasses 770+ for projection type black and white image reproducer having a single light modulator.

765 Fluid:
This subclass is indented under subclass 764. Subject matter wherein the deformable media is a liquid or gas.

SEE OR SEARCH THIS CLASS, SUBCLASS:
773, for fluid medium modulator in black and white image reproducers.

766 Liquid crystal:
This subclass is indented under subclass 759. Subject matter wherein the modulator comprises a medium consisting of a material which flows like a liquid and exhibits, under the influence of an electrical signal, variable anisotropic optical properties characteristic of a crystal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
58, for stereoscopic display device which may use a liquid crystal material.
751, 761 and 790, for projection type display devices wherein a liquid crystal material is used to modulate a light beam.

SEE OR SEARCH CLASS:
349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal display structure in general.

767 Using birefringent or polarizing medium (e.g., Kerr cell, Pockel's cell, etc.):
This subclass is indented under subclass 759. Subject matter wherein the modulator comprises a medium which, under the influence of a video signal, alters a polarization plane of the source illumination in order to impart the image information.

SEE OR SEARCH THIS CLASS, SUBCLASS:
752, for projection type image reproducer having plural parallel light modulators and subclass 762 for projection type color image reproducer having a single light modulator.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 245+ and 315+ for generic optical modulator using an electro-optical technique for light wave, temporal or directional modulation.

768 Electron beam addressed:
This subclass is indented under subclass 767. Subject matter wherein a scanning electron beam sequentially controls predetermined areas of the light modulator to vary an optical property of the modulator media.

SEE OR SEARCH THIS CLASS, SUBCLASS:
753, for projection type image reproducer having plural parallel light modulators and subclass 763 for projection type color image reproducer having a single light modulator.

769 Acousto-optic:
This subclass is indented under subclass 759. Subject matter wherein the modulator comprises media, the optical property of which

being varied by a high frequency mechanical vibration (e.g., ultrasonic or sound wave, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:

754, for projection type image reproducer having plural parallel light modulators, one of which acousto-optically modulates light beam.

770 Deformable medium:
This subclass is indented under subclass 759. Subject matter wherein the modulator comprises an elastic medium which is physically distorted under the influence of a video signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

755, for projection type image reproducer having plural parallel light modulators and 764+ for projection type color image reproducer having a single light modulator.

771 Including solid-state deflection elements (e.g., deformable mirror device (DMD)):
This subclass is indented under subclass 770. Subject matter including an array of reflective electrodes to which a varying charge pattern is applied in response to a video signal, the charge pattern causing deformation of the electrodes to obtain an image pattern.

772 Medium in tape, ribbon, or membrane form:
This subclass is indented under subclass 770. Subject matter wherein the deformable medium having a form of a narrow flexible strip or band, or a thin soft sheet or layer.

773 Fluid medium:
This subclass is indented under subclass 770. Subject matter wherein the deformable media is a liquid or gas.

SEE OR SEARCH THIS CLASS, SUBCLASS:

765, for fluid medium modulator in color image reproducer.

774 Deformed into diffraction grating (e.g., using electron beam):
This subclass is indented under subclass 773. Subject matter wherein the fluid medium is deformed into a system of close equidistant and parallel lines whereby the light ray is diffracted to produce fringes of parallel light and dark or colored bands.

(1) Note. For example, the fluid medium is deformed by bombarding with a beam consisting of elementary particles of negative electric charge.

775 Having significant chemical composition:
This subclass is indented under subclass 770. Subject matter wherein the deformable medium has a specified chemical composition.

776 Cathode-ray tube image source:
This subclass is indented under subclass 744. Subject matter wherein the image focused on the projection device display surface is derived from a cathode-ray tube.

SEE OR SEARCH CLASS:

315, Electric Lamp and Discharge Devices: Systems, subclasses 10+ for a cathode-ray tube circuit.

777 With intensifier:
This subclass is indented under subclass 776. Subject matter wherein the image from the cathode-ray tube is subjected to a device which increases the brightness thereof.

(1) Note. For example, a fluorescent screen is placed next to a photocathode screen to increase the effect of radiation on the photocathode screen.

778 Plural CRTs:
This subclass is indented under subclass 776. Subject matter wherein more than one cathode-ray tube provides the displayed image.

779 With optical element:
This subclass is indented under subclass 778. Subject matter including a structure which performs a basic optical function (i.e., the structure when exposed to or placed in the path of a group of light rays will cause a deviation, a

blocking of the rays, or a modification in the character or properties of the light).

780 Beam combining:
This subclass is indented under subclass 779. Subject matter comprising an optical structure which forms, from a plurality of groups of light rays having different optical axes, a single group of light ray for the purpose of forming one channel containing the combined information of the plurality of groups of light rays.

781 With optical element:
This subclass is indented under subclass 776. Subject matter including a structure which performs a basic optical function (i.e., the structure when exposed to or placed in the path of a group of light rays will cause a deviation, a blocking of the rays, or a modification in a character or a property of the light).

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, appropriate subclasses for a specific optical element.

782 Mirror arrangement:
This subclass is indented under subclass 781. Subject matter wherein the optical function is derived from an optical reflecting structure.

783 Concave mirror:
This subclass is indented under subclass 782. Subject matter wherein the mirror surface is curved inward with respect to the image source.

784 With correcting plate:
This subclass is indented under subclass 783. Subject matter includes an optical plate to correct each zone of the reflector for spherical aberration.

785 Adjustable:
This subclass is indented under subclass 781. Subject matter comprising a structure for changing the spacing between optical components.

786 With screen or absorption filter:
This subclass is indented under subclass 781. Subject matter wherein the optical structure has an element which limits the passage of light or blocks a particular wavelength.

787 Cabinet or chassis:
This subclass is indented under subclass 776. Subject matter including structural details of a housing or a frame to support the image reproducer or its components.

SEE OR SEARCH THIS CLASS, SUBCLASS:
789, for generic projection type image reproducer cabinet or chassis.
794, for cabinet or chassis of a liquid crystal image reproducer.
836+, for generic image reproducer cabinet or chassis.

788 Folding:
This subclass is indented under subclass 787. Subject matter wherein the cabinet or chassis can be reduced in size or length by bending or pivoting a part to be placed over another part.

SEE OR SEARCH THIS CLASS, SUBCLASS:
838, for portable image reproducer housing which may have folding parts.

789 Cabinet or chassis:
This subclass is indented under subclass 744. Subject matter including a structural detail of a projection type image reproducer housing which may or may not combine with a television component support structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
787, for cabinet or chassis of a projection type cathode-ray tube image reproducer.
794, for cabinet or chassis of a liquid crystal image reproducer.
836+, for generic image reproducer cabinet or chassis.

SEE OR SEARCH CLASS:
312, Supports: Cabinet Structure, subclass 7.2 cabinet for radio with television adjunct wherein radio and television are only nominal.
361, Electricity: Electrical Systems and Devices, subclasses 600+ for generic electrical component housing.
455, Telecommunications, subclasses 347+ for radio cabinet, housing, or chassis.

790 Liquid crystal:
This subclass is indented under subclass 739. Subject matter wherein the image is reproduced by means of an externally scanned device having intersecting electrode sets between which an active liquid medium having electrically varying optical properties is disposed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
58, for stereoscopic display devices which may use a liquid crystal material.
751, 761 and 766, for projection type display devices wherein a liquid crystal material is used to modulate a light beam.

SEE OR SEARCH CLASS:
349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal display structure in general.

791 Color TV:
This subclass is indented under subclass 790. Subject matter wherein the image signal is displayed in a hue as contrasted with black, white, or gray.

792 Scanning circuit:
This subclass is indented under subclass 790. Subject matter wherein the liquid crystal display device comprises a circuit for successively addressing the electrodes.

793 Interlacing:
This subclass is indented under subclass 792. Subject matter wherein odd- and even-numbered lines of an image information containing area are transmitted consecutively as two separate fields, these fields make-up a complete picture at the receiver.

794 With cabinet or housing structure:
This subclass is indented under subclass 790. Subject matter includes a case or enclosure for supporting the liquid crystal display.

SEE OR SEARCH THIS CLASS, SUBCLASS:
787, and 789, for cabinet or chassis of a projection type reproducer.
836+, for generic image reproducer cabinet or chassis.

795 Direct viewed light valve:
This subclass is indented under subclass 739. Subject matter wherein a light modulator is interposed between a light source and a viewer, whereby the viewer of the display observes the images directly from the modulator.

(1) Note. Examples of direct viewed light valves are surface acoustic wave display and magnetic bubble display wherein light is modulated acoustically or magnetically.

796 Vacuum panel:
This subclass is indented under subclass 739. Subject matter wherein the display device consists of an evacuated envelope containing an array of cathodes sequentially producing electrons which cause corresponding fluorescent target areas to emit light.

797 Gas discharge:
This subclass is indented under subclass 739. Subject matter wherein the display device comprises a gas filled tube or cell that gives off light when a high voltage is applied to ionize the gas.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclass 169.4 for a gas display panel device.

798 Array of lamps:
This subclass is indented under subclass 739. Subject matter wherein the display surface includes a group of similar illuminators, each illuminator representing a single resolution element.

(1) Note. Included in this subclass are incandescent or discharge lamps, as well as any non-integral device employed as a bilevel illuminator.

799 Color TV:
This subclass is indented under subclass 798. Subject matter wherein the image signal is displayed in a hue as contrasted with black, white, or gray.

800 Electroluminescent (e.g., scanned matrix, etc.):
This subclass is indented under subclass 739. Subject matter wherein the display device comprises an array of segments or elements consisting of transparent conductive electrodes separated by a dielectric material which emits light when a voltage is applied to the electrodes.

(1) Note. Dielectric material may be a luminescent substance which includes both fluorescent and phosphorescent substances.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclasses 169.1+ and particularly subclass 169.3 for an electroluminescent illuminative device.
345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 30+ for plural physical display element control system which may include electroluminescent display elements.

801 Light emitting diode:
This subclass is indented under subclass 800. Subject matter wherein the electroluminescent element is a two-electrode (PN) semiconductor device which emits light when forward biased.

802 Color TV:
This subclass is indented under subclass 802. Subject matter wherein the image signal is displayed in a hue as contrasted with black, white, or gray.

803 Color TV:
This subclass is indented under subclass 800. Subject matter wherein the image signal is displayed in a hue as contrasted with black, white, or gray.

804 With optical fiber device:
This subclass is indented under subclass 739. Subject matter wherein the optical element includes one or more optical waveguides.

SEE OR SEARCH THIS CLASS, SUBCLASS:
359, for camera system using fiber optics.

SEE OR SEARCH CLASS:
385, Optical Waveguides, subclass 116 for optical imaging fiber bundles.

805 Cathode-ray tube:
This subclass is indented under subclass 739. Subject matter including a device in which a focused beam of electrons is employed to impart visual information.

(1) Note. A cathode-ray tube in general is a vacuum tube in which its electron beam is focused to a small cross section on a luminescent screen and is varied in position and intensity to produce a visible pattern.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclasses 10+ for cathode-ray tube circuits.

806 With distortion, alignment or focus:
This subclass is indented under subclass 805. Subject matter wherein circuitry is provided to regulate electron beam size, electron beam or picture position, or picture irregularities related to electron beam characteristics.

807 Color convergence correction:
This subclass is indented under subclass 806. Subject matter including at least two electron beam deflection elements connected in a circuit which generates a time varying signal to permit the focusing and scanning of plural electron beams in the envelope of a cathode-ray tube in one of two directions at each and every point of a screen of the cathode-ray tube.

808 Color TV:
This subclass is indented under subclass 805. Subject matter wherein the image signal is displayed in a hue as contrasted with black, white, or gray.

SEE OR SEARCH THIS CLASS, SUBCLASS:
760, for projection type color image reproducer.

809 Separate electron beams in single tube:
This subclass is indented under subclass 808. Subject matter including a single tube having a plurality of electron beams, each reproducing a separate color.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 409+ for plural beam cath ode-ray tubes.
315, Electric Lamp and Discharge Devices: Systems, subclass 13.1 for plural ray type tube circuits.

810 One electron beam supplying more than one color:
This subclass is indented under subclass 808. Subject matter wherein at least one electron beam is utilized to reproduce more than one color.

811 Beam position indicating:
This subclass is indented under subclass 810. Subject matter including an apparatus associated with the tube for indicating the instantaneous position of the electron beam.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclass 471 for cathode-ray tube beam indexing elements.
315, Electric Lamp and Discharge Devices: Systems, subclasses 10+ for beam indexing circuits.

812 Horizontal stripes:
This subclass is indented under subclass 811. Subject matter wherein the indicating means is in the form of stripes parallel to the horizontal raster scan.

813 Photoelectric sensor:
This subclass is indented under subclass 811. Subject matter including a photoelectric device positioned to detect the light output produced by the beam.

814 Secondary emission sensor:
This subclass is indented under subclass 811. Subject matter including an apparatus for detecting varying quantities of a secondary emission produced by beam impact.

815 With electron-optical color selection:
This subclass is indented under subclass 810. Subject matter including an apparatus internal or external to the tube for selectively controlling the position of the beam with respect to plural color phosphors.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 429+ for tubes with post deflection elements.
315, Electric Lamp and Discharge Devices: Systems, subclass 376 for post deflection control circuits.

816 With color specific optical device:
This subclass is indented under subclass 808. Subject matter including a device to modify an optical spectral characteristic of a color cathode-ray tube display.

(1) Note. For example, a color correcting filter is placed in front of the cathode-ray tube to improve the color balance.

817 Electrochromic device:
This subclass is indented under subclass 816. Subject matter wherein the cathode-ray tube display surface is supplied with a device that changes color when positively or negatively charged.

SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 49 and 105 having electrochromic light-controlling display elements.
359, Optical: Systems and Elements, subclass 265 for optical modulator using electrochromic element.

818 Protective device:
This subclass is indented under subclass 805. Subject matter including a structure to protect the tube or a television observer from physical damage.

(1) Note. Structure for supporting the cathode-ray tube that is integral with the protective device is included here or in indented subclasses.

819 Radiation protection for user:
This subclass is indented under subclass 818. Subject matter wherein the protective structure is intended to suppress an unwanted radiation emitted from the cathode-ray tube which may be harmful to a user.

820 External electric or magnetic effect:
This subclass is indented under subclass 818. Subject matter wherein the protective device is intended to eliminate influence from a spurious magnetic field, or a stray current or voltage.

SEE OR SEARCH CLASS:
315, Electric Lamp and Discharge Devices: Systems, subclass 8 for cathode-ray tube circuits to compensate for stray deflecting fields.
361, Electricity: Electrical Systems and Devices, subclass 150 for television degaussing.

821 Implosion protection:
This subclass is indented under subclass 818. Subject matter wherein the protective structure is intended to prevent viewer injury from an inward bursting of the cathode-ray tube.

SEE OR SEARCH CLASS:
220, Receptacles, subclasses 2.1 and 2.3 for a tube envelope intended to be used for a television tube.
313, Electric Lamp and Discharge Devices, subclass 477 for cathode-ray tube envelope.

822 Tensioned band:
This subclass is indented under subclass 821. Subject matter wherein the implosion protective structure includes a stretched narrow strip or cord surrounding the bulbous portion of the tube.

823 Protective glass or panel:
This subclass is indented under subclass 821. Subject matter wherein the protective structure is a transparent planar element placed in front of the tube.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclass 478 for cathode-ray tube envelope with external optical element which may be a glass or a transparent panel.

824 Bonded to CRT faceplate:
This subclass is indented under subclass 823. Subject matter wherein the glass or panel is permanently adhered or coated to the cathode-ray tube front surface.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclass 479 for cathode-ray tube with coating or shielding envelope.

825 Support:
This subclass is indented under subclass 805. Subject matter including a structure for mounting the cathode-ray tube or its associated deflecting elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
836, for cabinet or chassis wherein the type of display device is not claimed.

SEE OR SEARCH CLASS:
248, Supports, subclasses 309.1+ for CRT supporting bracket means, per se, which do not include a CRT structure.

826 CRT having only support at front portion:
This subclass is indented under subclass 825. Subject matter wherein the cathode-ray tube is held by only a supporting force applied at its face plate area.

827 CRT position adjustable by user:
This subclass is indented under subclass 825. Subject matter wherein the cathode-ray tube is movable by a user to facilitate viewing.

828 Deflection element support:
This subclass is indented under subclass 825. Subject matter including a mounting structure for an element which is placed on a cathode-ray tube to change the direction of an electron beam toward a screen of the cathode-ray tube.

829 Yoke:
This subclass is indented under subclass 828. Subject matter wherein the deflection element is a set of coils placed on a magnetically deflected cathode-ray tube to deflect the electron beam horizontally and vertically when suitable currents are passed through them.

830 Supported by CRT neck:
This subclass is indented under subclass 829. Subject matter wherein the yoke is supported only by the neck of the cathode-ray tube.

831 Adjustable:
This subclass is indented under subclass 830. Subject matter includes a mounting arrangement to variably position the yoke.

832 With optical element:
This subclass is indented under subclass 805. Subject matter including an optical device cooperating with and performing various operations on the image displayed on the cathode-ray tube.

SEE OR SEARCH THIS CLASS, SUBCLASS:
756, for projection type image reproducer combined with an optical structure.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, appropriate subclass for particular optical elements.

833 For line elimination:
This subclass is indented under subclass 832. Subject matter wherein the optical device eliminates the visible line structure present in the cathode-ray tube scanned raster.

834 Glare reduction:
This subclass is indented under subclass 832. Subject matter wherein the optical device reduces the intensity or changes the direction of light reflected from the face of the cathode-ray tube.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 601+ for glare reducing elements.

835 Filters:
This subclass is indented under subclass 832. Subject matter wherein the optical device includes a specific light wavelength absorption device.

SEE OR SEARCH CLASS:
359, Optical: Systems and Elements, subclasses 885+ for optical filters, per se.

836 Cabinet or chassis:
This subclass is indented under subclass 739. Subject matter including a structural detail of a video display housing which may be combined with a television component support structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
787, and 789, for projection type image reproducer cabinet or chassis.
794, for cabinet or chassis of a liquid crystal image reproducer.

SEE OR SEARCH CLASS:
312, Supports: Cabinet Structure, subclass 7.2 for TV cabinet, per se.
361, Electricity: Electrical Systems and Devices, subclasses 600+ for generic electrical component housing.
455, Telecommunications, subclasses 347+ for radio cabinet, housing, or chassis.

837 With vehicle:
This subclass is indented under subclass 836. Subject matter wherein the cabinet or chassis is adapted to mount on or within a passenger vehicle.

838 Portable:
This subclass is indented under subclass 836. Subject matter wherein the cabinet is designed to be readily moved by a user.

SEE OR SEARCH THIS CLASS, SUBCLASS:
788, for projection type image reproducer having foldable cabinet or chassis.

839 Modular:
This subclass is indented under subclass 836. Subject matter including an assembly with connectors adapted for easy interchanging or ser-

vicing electrical components of the television receiver.

840 Multiple screens:
This subclass is indented under subclass 836. Subject matter comprises a housing for supporting one or more display devices and having more than one opening, each opening allowing the viewing of at least a screen portion of a display device.

841 Masking:
This subclass is indented under subclass 836. Subject matter including a structure attached to the cabinet to cover a portion of the display area.

842 Light shielding:
This subclass is indented under subclass 836. Subject matter including a structure attached to the cabinet, or integral with it, to limit the amount of light striking the face of a cathode-ray tube picture reproducer.

843 Cabinet back:
This subclass is indented under subclass 836. Subject matter including a structural detail of a portion of the cabinet which covers the rear portion of the television receiver.

844 MISCELLANEOUS:
This subclass is indented under the class definition. Subject matter not provided for above.

CROSS-REFERENCE ART COLLECTIONS

901 HIGH SPEED TELEVISION SYSTEM:
Art collection of television systems having frame rates which are relatively high with respect to a regular television frame rate of 25 to 30 frames per second (e.g., 100 frames per second, etc.).

(1) Note. Systems in this collection are mostly used to view high speed motion (e.g., a bullet or an air plane in motion, etc.).

902 PHOTOCHROMIC:
Art collection of television-type system or component utilizing an optical device which transmits light in a reverse proportion to the surrounding brightness level; or which exhibits a reversible change in its absorption spectrum upon irradiation with given wavelengths of light.

903 INCLUDING SIDE PANEL INFORMATION IN SINGLE CHANNEL:
Art collection of television systems that add information (e.g., 5:3 or 16:9) display on a widescreen receiver in a conventional (e.g., NTSC, PAL, or SECAM) television signal that allows conventional receivers to receive and display the conventional picture.

904 SEPARATION OR JOINING OF SIDE AND CENTER PANELS:
Art collection of circuits that either receive a single wide aspect ration picture signal and produces at least two narrower picture signals or receive at least two narrow aspect ratio picture signals and produces one wider aspect ratio picture signal.

905 REPRODUCTION OF A COLOR FIELD OR FRAME:
Art collection of television systems that receive only a single field or frame of a TV signal and creates the sequence of fields required for display on a conventional TV.

(1) Note. Conventional television systems like PAL and NSTC have a sequence of fields which have different subcarriers; these systems modify the subcarrier phase to match the normal sequence.

(2) Note. Examples of systems found here are still reproductions from a tape or disc or freeze frame feature.

906 TELEVISION SCHEDULE:
Art collection of television receivers which are capable of displaying television schedules and systems which can transmit television schedule information for display.

907 COMMERCIAL VERIFICATION:
Art collection of television systems which monitor the broadcast of television signals to confirm the proper transmission of programs.

(1) Note. The program is usually a commercial which is usually identified (e.g., in the vertical blanking interval) to allow automated monitoring.

908 CONVERTIBLE CIRCUITS (E.G., Y/C SEPARATION OR NOISE REDUCTION):
Art collection of television circuits which include elements that can cause the circuit to take on at least two different configurations that perform different functions.

(1) Note. Systems in this collection are mostly used in video recorders where the circuit performs one function like Y/C separation in the record mode and a different function like noise reduction in play mode.

909 NOISE RESPONSIVE SIGNAL PROCESSING:
Art collection of television circuits that include a noise measuring or signal strength measuring circuit that controls a television signal processing circuit.

(1) Note. An example of a circuit found here is a transition sharpening circuit (e.g., peaking circuit) that reduces the amount of sharpening or peaking (e.g., making the picture softer) in a noisy environment.

910 FLICKER REDUCTION:
Art collection of television signal processing circuits that are designed to reduce flicker when the signal is displayed on a conventional receiver.

(1) Note. For displays that double the number of lines and/or double the number of fields, both of which reduce flicker compared to a conventional display, see subclass 447 for field rate doubling and subclasses 448+ for line doubling.

911 LINE DOUBLER ADAPTED FOR REPRODUCING PROGRAM ORIGINALLY FROM FILM (E.G., 24 FRAME PER SECOND):
Art collection of television receivers that convert the normal interlaced signal (e.g., NTSC) into a progressive signal for display and, which have at least two modes for so converting the received signal; one mode for regular TV signals and a different mode for converting signals that originally were on film.

(1) Note. When movies are broadcast on TV, the different frame rates must be compensated for this is usually done using a so called 3:2 pull down scheme where one frame of film is used to produce two fields of TV and the next frame of film is used to produce two fields of TV; many or the converters herein are designed to use two fields of the received TV signal to make one of the progressively scanned display frames making sure that the two fields used are from the same frame of film.

912 DIFFERENTIAL AMPLITUDE CONSIDERATION (E.G., AMPLITUDE VS. FREQUENCY):
Art collection of television circuits correcting for distortions resulting from the system, wherein the distortion occurs when the amplitude at different frequencies over the frequency range required for transmission is not constant.

(1) Note. Normally the higher frequencies have a lower amplitude than the lower frequencies which is often referred to as roll-off; these circuits normally give greater amplification to the higher frequencies to compensate for the "roll-off" caused by the system.

913 LETTERBOX (E.G., DISPLAY 16:9 ASPECT RATIO IMAGE ON 4:3 SCREEN):
Art collection of television systems having means for displaying a complete wide aspect ratio image on a narrow aspect ratio screen using the entire screen width and a portion of the screen height.

914 DELAY FOR EQUALIZATION:
Art collection of television systems having means for optimizing delay period for parallel processing.

FOREIGN ART COLLECTIONS

The definitions below correspond to abolished subclasses from which these collections were formed. See the Foreign Art Collection schedule of this class for specific correspondences. [Note: The titles and definitions for indented art collections include all the details of the one(s) that are hierarchically superior.]

FOR 100 BANDWIDTH REDUCTION SYSTEM:
Foreign art collection for subject matter including apparatus to compress the frequency range of the signal produced by a picture signal generator prior to transmission to accommodate the bandwidth limitation of the transmission medium or means at the receiver to utilize the signal to reconstruct an image.

FOR 101 Plural video programs in single channel:
Foreign art collection for subject matter wherein two or more video signals are processed to reduce their bandwidth and combined such that the combined signal bandwidth is less than or equal to the bandwidth of one of the video signals to allow use of a channel normally used by a single video signal.

FOR 102 Color television:
Foreign art collection for subject matter wherein color video signals are specified.

FOR 103 Bit-rate reduction:
Foreign art collection for subject matter wherein the compression utilizes digital techniques to reduce the number of bits in a sampled and quantized image.

FOR 104 Multiple channel (e.g., plural carrier):
Foreign art collection for subject matter wherein the signal is split and fed into plural channels, each of which has less bandwidth than the original signal.

FOR 105 Including one conventional or compatible channel (e.g., two channel NTSC systems):
Foreign art collection for subject matter wherein one channel can be received and utilized by a normal receiver to provide a normal display.

FOR 106 Bit-rate reduction:
Foreign art collection for subject matter wherein the signal is processed to reduce the number of bits in a sampled and quantized image.

FOR 107 Specified color signal:
Foreign art collection for subject matter wherein the signals compressed are the components of a natural color video signal (e.g., luminance and chrominance or red, green, and blue).

FOR 108 Sub-Nyquist sampling:
Foreign art collection for subject matter wherein the bandwidth reduction is performed by folding the higher frequencies down to fit inside a reduced frequency spectrum by sampling at a rate less than twice the highest frequency, causing the alias and baseband spectrums to overlap.

FOR 109 Direct coding of color composite signal:
Foreign art collection for subject matter wherein the video signal that is band reduced is a video signal having a color subcarrier in the same band as the luminance signal or black and white signal.

FOR 110 Predictive coding:
Foreign art collection for subject matter including a means for coding the difference between the actual signal and an estimated signal.

FOR 111 Transform coding:
Foreign art collection for subject matter wherein a remapping of image values (e.g., between spatial and frequency domains) is involved.

FOR 112 Including luminance signal:
Foreign art collection for subject matter wherein one of the components is a brightness or luminance signal.

FOR 113 Using separate coders for different picture features (e.g., highs, lows):
Foreign art collection for subject matter wherein individual discrete systems of characters or rules are used for representing information related to diverse image portions.

FOR 114 Sub-band encoding (e.g., low horizontal/ low vertical frequency, low horizontal/ high vertical frequency):
Foreign art collection for subject matter wherein the signal is divided into a plurality of frequency bands.

FOR 115 Picture feature dependent sampling rate or sample selection:

Foreign art collection for subject matter wherein an instantaneous value of a signal is obtained at irregular intervals determined by image spatial content.

FOR 116 Involving hybrid transform and difference coding:
Foreign art collection for subject matter wherein a remapping of image values (i.e., between spatial and frequency domains) occurs in combination with a diminution of signal quantity by comparison with a (temporally or spatial) preceding signal.

FOR 117 With prior difference coding:
Foreign art collection for subject matter wherein the comparison with the preceding signal occurs prior to the remapping.

FOR 118 Including motion vector:
Foreign art collection for subject matter wherein the comparison is used to produce a signal indicative of the magnitude and direction of spatial change during the stated temporal interval.

FOR 119 Involving transform coding:
Foreign art collection for subject matter involving a remapping of image values (i.e., between spatial and frequency domains).

FOR 120 Adaptive:
Foreign art collection for subject matter wherein an operation or parameter of the encoder is varied based upon the output signal.

FOR 121 Quantizer:
Foreign art collection for subject matter wherein the operation or varied parameter is the number of discrete signal amplitudes.

FOR 122 Normalizer:
Foreign art collection for subject matter wherein the operation or varied parameter is the gain of the encoder.

FOR 123 Motion:
Foreign art collection for subject matter wherein the operation or parameter is varied as a result of spatial change during a temporal interval.

FOR 124 Transformed sample selection (e.g., hierarchical sample selection):
Foreign art collection for subject matter wherein the remapped values are chosen for further processing or transmission based upon content.

FOR 125 Involving difference transmission (e.g., predictive):
Foreign art collection for subject matter wherein an output signal represents the difference between the input signal and a predicted value.

FOR 126 Involving both PCM and DPCM encoding:
Foreign art collection for subject matter wherein the signal is sampled periodically and each sample is quantized and transmitted as a digital binary code with additional difference information transmitted as a digital binary code.

FOR 127 Plural predictors:
Foreign art collection for subject matter wherein more than a single predicted value is used for comparison.

FOR 128 Including temporal predictor (e.g., frame difference):
Foreign art collection for subject matter wherein at least one comparison signal represents a prior image in time.

FOR 129 Including motion vector:
Foreign art collection for subject matter wherein at least one comparison is used to produce a signal indicative of the magnitude and direction of spatial change during the stated temporal interval.

FOR 130 Involving vector quantization:
Foreign art collection for subject matter wherein at least one comparison is with a codebook of stored reference image or sub-image portions.

FOR 131 Including temporal prediction (e.g., frame difference):
Foreign art collection for subject matter wherein the comparison signal represents a prior image in time.

FOR 132 Including motion vector:
Foreign art collection for subject matter wherein a signal is produced which is indicative of the magnitude and direction of spatial change during the stated temporal interval.

FOR 133 Involving vector quantization:
Foreign art collection for subject matter wherein a comparison is made with a codebook of stored reference image or sub-image portions.

FOR 134 Involving vector quantization:
Foreign art collection for subject matter wherein the resulting signal is further compared with a codebook of stored reference image or sub-image portions.

FOR 135 Coding element controlled by buffer fullness (e.g., adaptive quantizer):
Foreign art collection for subject matter wherein the resolution of the comparison is determined by the amount of the remaining capacity of a temporary storage device.

FOR 136 Involving block coding:
Foreign art collection for subject matter wherein the sampled and quantized image matrix is processed by the use of plural submatrices of reduced area.

FOR 137 PCM represents minimum, maximum, or average of block:
Foreign art collection for subject matter wherein a digital binary code is representative of the lowest value of the block or the greatest value of the block or the sum of the values of a two-dimensional spatial array of values divided by the number of elements in the array.

FOR 138 Involving vector quantization:
Foreign art collection for subject matter wherein the sampled and quantized image representation matrix is compared with a codebook of stored reference image or sub-image portions.

FOR 139 Arrangements for multiplexing one video signal, one or more audio signals, and a synchronizing signal:
Foreign art collection for subject matter wherein concurrent transmission of the sampled and quantized image signal, at least one related sound channel signal and a signal to ensure receiver scanning align with the picture signal generator.

FOR 140 Sub-Nyquist sampling:
Foreign art collection for subject matter wherein the sampling rate is less than twice the highest frequency component.

FOR 141 Adaptive:
Foreign art collection for subject matter wherein the sampling rate is determined by image signal content.

FOR 142 Associated signal processing:
Foreign art collection for subject matter wherein the signal is further processed by circuitry unique to the bit-rate reduction encoding/decoding process.

FOR 143 Involving error detection or correction:
Foreign art collection for subject matter wherein the further circuitry detects or corrects invalid data within a character code.

FOR 144 Involving signal formatting:
Foreign art collection for subject matter wherein the further circuitry combines the time variable video signal with a synchronizing signal to allow reconstruction of an image and converts the resultant signal into a format suitable for storage or transmission.

FOR 145 Involving synchronization:
Foreign art collection for subject matter wherein further circuitry utilizes a synchronizing signal component to maintain a proper time or phase correspondence between components of the bit-rate reduction encoding/decoding process.

FOR 146 Format type (e.g., HDTV or EDTV):
Foreign art collection for subject matter including systems that produce a narrow band signal, which resembles a conventional TV signal, from a broadband source and allow reconstruction of a broadband display.

FOR 147 Including frequency folding (e.g., subsampling):

Foreign art collection for subject matter wherein additional information is embedded in the video signal by causing the alias components centered about the sampling frequency to extend into the normal baseband signal.

FOR 148 Spotwobble (e.g., pixels from plural lines form single transmitted line):
Foreign art collection for subject matter wherein at least some pixels on the same transmitted line are vertically displaced from each other in addition to the normal horizontal displacement between pixels.

FOR 149 Including video related information (e.g., digitally assisted television):
Foreign art collection for subject matter including signals, in addition to the video signals, used in the receiver to reconstruct a broadband signal resembling the original broadband signal.

FOR 150 Using two or more frames:
Foreign art collection for subject matter wherein the same pixel is sampled at least every other frame.

FOR 151 Motion adaptive:
Foreign art collection for subject matter wherein different operating modes are used depending upon frame-to-frame differences.

FOR 152 Added video information in standard chan format (e.g., compatible EDTV):
Foreign art collection for subject matter wherein the narrow band signal is a conventional TV signal such as NTSC, PAL, or SECAM, and the broadband display is reconstructed using the conventional signal and at least one other signal is transmitted with the conventional signal.

FOR 153 Including additional modulation of picture carrier (e.g., quadrature):
Foreign art collection for subject matter wherein the other video information modulates the picture carrier in a manner different than the normal signal.

FOR 154 Including information in sync, blanking, or overscan:
Foreign art collection for subject matter wherein the added video information occupies a time interval not occupied by the normal display video.

FOR 155 During vertical blanking interval:
Foreign art collection for subject matter wherein the added video information is inserted between the active interval of successive frames.

FOR 156 Including the use of a subcarrier:
Foreign art collection for subject matter wherein the additional signal is modulated on a carrier having a frequency other than the picture carrier, but located in the bandwidth of the video signal.

FOR 157 Individual processing of different parts of image frequency band (e.g., sum and difference, high band/low band):
Foreign art collection for subject matter having at least two frequency bands, such as a low frequency and a high frequency which are treated differently.

FOR 158 Individual processing of different parts of image frequency band (e.g., sum and difference, high band/low band):
Foreign art collection for subject matter having at least two frequency bands such as a low frequency and a high frequency which are treated differently.

FOR 159 Frame field or line dropping followed by time expansion and time compression:
Foreign art collection for subject matter wherein the original signal is band-reduced by decimating frames, fields, or lines and time expanding the signal to occupy the time base of the original signal.

FOR 160 Scan rate variation:
Foreign art collection for subject matter wherein the frequency range is reduced by lowering the speed of the scanning at the time significant transitions in the image occur and resume higher scanning speed when little or no transition occurs.

FOR 161 With electronic viewfinder or display moni:
Foreign art collections including an electronic display which is a fixed or removable part of the cam for permitting an operator to

see an image produced from the camera output signal or from an auxiliary signal.

FOR 162 With indicium:
Foreign art collections including subject matter wherein the display shows addi information indicative of an external or internal condition of the camera or camera related apparatus.

(1) Note. For example the display shows a signal indicative of a lens setting, a field of view, or a level of tilt of the camera.

FOR 163 USE SURVEY AND ACCOUNTING:
Foreign art collection for subject matter including means for indicating, metering, or recording the number of receivers using a particular television presentation, the length of time that a presentation is being received, or which of concurrent presentations is being received.

FOR 164 Monitoring of physical reaction of viewer:
Foreign art collection for subject matter including a device to sense the presence or movement of a viewer.

FOR 165 With billing:
Foreign art collection for subject matter wherein remote means are used to compute, indicate, or receive a television subscriber payment.

FOR 166 Monitoring of synchronization or blanking pulse (e.g., horizontal or vertical pulse signal):
Foreign art collection for subject matter including means for indicating which program is being viewed based upon timing information peculiar to a particular video signal source.

FOR 167 With videocassette recorder (VCR):
Foreign art collection for subject matter wherein visual images and sound of the survey is recorded on a cartridge mounted magnetic tape.

FOR 168 USE OR ACCESS BLOCKING (E.G., LOCKING SWITCH):
Foreign art collection for subject matter which blocks access of a video signal source or otherwise limits usage of a television device.

FOR 169 WIRED BROADCAST (E.G., CABLE):
Foreign art collection for subject matter including a closed circuit network to distribute signals to a plurality of receivers or display devices.

FOR 170 Broadcast on demand:
Foreign art collection for subject matter wherein provision is made for a user to select a program or other information to be supplied to the distribution system from a plurality of such programs or information.

FOR 171 Local distribution (e.g., hotel, hospital, vehicle, etc.):
Foreign art collection for subject matter wherein the distribution system is confined to a single building or vehicle or closely related group of buildings or vehicles (e.g., in a parking or a camp ground) under common ownership or management.

FOR 172 Controlled signal substitution (e.g., emergency warning, local preemption, etc.):
Foreign art collection for subject matter wherein provision is made for program or information substitution which is beyond the control of a viewer.

FOR 173 With subscriber terminal details:
Foreign art collection for subject matter wherein a receiving site has specific means connected to the wired distribution network for converting a transmitted signal to a signal proper to be used by an ordinary receiver.

FOR 174 For frequency conversion:
Foreign art collection for subject matter wherein a converter shifts a carrier frequency (e.g., shift to channel 3 or 4).

FOR 175 Two-way:
Foreign art collection for subject matter including means for establishing communication to and from the receiving site.

FOR 176 TWO-WAY (E.G., INTERACTIVE):
Foreign art collection for subject matter including means for establishing a bidirectional communication of information

wherein at least one television signal is involved.

FOR 177 With voice capability (e.g., videophone):
Foreign art collection for subject matter comprising bidirectional communication of both video signal and accompanying voice signal.

FOR 178 Conferencing:
Foreign art collection for subject matter wherein three or more terminals intercommunicate.

FOR 179 Switching:
Foreign art collection for subject matter including a structure for selectively connecting a conversational video call to a receiving station.

FOR 180 Transmission scheme:
Foreign art collection for subject matter including particular details for formatting, modulating, or combining voice and video signals which may include control or synchronization signals for transmission between stations.

FOR 181 Still frame (i.e., freeze frame):
Foreign art collection for subject matter wherein video displayed is a single image or a sequence of nonmoving images.

FOR 182 Field or frame difference (e.g., moving frame):
Foreign art collection for subject matter wherein transmitted image information represents only changes from a previous image.

FOR 183 User positioning (e.g., parallax):
Foreign art collection for subject matter including a structure to ensure that the user is positioned properly in front of a television camera.

FOR 184 CAMERA, SYSTEM AND DETAIL:
Subject matter comprising a system or device for scanning image of the object or scene (i.e., partitioning the scene into subareas of image information and generating therefrom an image representative electrical signal) or the above combined with circuitry for processing the image signal, and subcombinations specific to the camera.

(1) Note. The sub-area is usually an elemental area or pixel.

FOR 185 Camera image stabilization:
Subject matter including a device to compensate for unwanted movement of a camera to prevent blurring or distortion of resulting television pictures.

FOR 186 Camera image stabilization:
Subject matter wherein the scanning device provides a small beam of light which moves over a scene and translates highlights and shadows of the scene into electrical signals.

(1) Note. Light spot is usually generated by a cathode-ray tube.

FOR 187 For color scanning:
Subject matter wherein a plurality of color detecting elements (e.g., red, green, and blue) are used to provide color component signals.

FOR 188 Remote control:
Subject matter wherein the scanning system or device is operated by a control signal sent by a controller from a remote location.

FOR 189 By multiplexed control signals (e.g., duplexing, etc.):
Subject matter wherein two or more control signals from a remote station is transmitted simultaneously over a common transmission medium in such a manner that information in the control signals is able to be discretely recovered.

(1) Note. In a duplex transmission, multiplexed control signals and a video signal at the opposite direction are transmitted simultaneously over the same transmission medium.

FOR 190 Preprogrammed or stored control instructions:
Subject matter wherein control information is previously stored in a memory device, in such manner as to be retrieved at appropriate time to remotely operate the camera.

FOR 191 Body movement actuation:

Subject matter wherein the camera operation is responsive to a movement of a whole or part of a living body.

FOR 192 With streak device:
Subject matter wherein the camera comprises a device which converts time information from a luminous event into spatial information, such conversion enables the measurement of high speed variations in intensity distribution of a light emission.

FOR 193 Low light level:
Subject matter including means suitable for detecting a weak or faint input image applied to the camera.

FOR 194 With image intensifier:
Subject matter including means for amplifying the light level of an image applied to the camera.

FOR 195 Unitary image formed by compiling subareas of same scene (e.g., array of cameras):
Subject matter wherein images of separate parts of a single scene are scanned by separate image sensors for subsequent combination into a single complete-image signal.

FOR 196 Swing driven:
Subject matter wherein the image sensor is mechanically vibrated or oscillated to produce the effect of an increased resolution.

FOR 197 Still and motion modes of operation:
Subject matter wherein the operation of the camera is altered for single-frame (still) and multiple-frame (motion) photography.

FOR 198 Exposure control:
Subject matter having a device for regulating the total illumination (e.g., duration or intensity) admitted to an imaging device.

FOR 199 Combined image signal generator and general image signal processing:
Subject matter including at least one image sensor or pickup device and in combination therewith related circuitry for correcting, adjusting, or otherwise altering the image signal output from the image sensor or pickup device.

(1) Note. The signal processing herein is limited to normal television signals, such as red, green and blue, or luminance and chrominance.

(2) Note. The image signal processing which depends upon structure of a sensor is not classified in this subclass, but is the sensor, per se. For example, a single solid-state image sensor which converts the dot interlace output representing for example cyan, magenta, and yellow (i.e., not normal television signal) to red, green, and blue is found is subclass 280 for solid-state color image sensor with filter based on three colors.

FOR 200 Color balance (e.g., white balance):
Subject matter wherein the processing of the video output signal includes adjustment of relative amplitudes of plural color signals which are output from the camera.

FOR 201 Dependent upon operation or characteristic of iris, flash, lens, or filter:
Subject matter wherein the relative amplitudes of the plural color signals are adjusted in response to a parameter, a function, or the presence or absence of a camera peripheral which includes diaphragm, stop, illuminator, zoom or focus device, or a device altering the incident light on the sensor.

FOR 202 With means for preventing colored object from effecting color balance:
Subject matter including means for preventing a colored object from effecting the color balance.

FOR 203 Including flicker detection (e.g., fluorescent):
Subject matter wherein means are provided for detecting the characteristic spectrum or periodic nature of an electric discharge lamp.

FOR 204 With ambient light sensor:
Subject matter including an optical sensor separated from the image sensor for sensing the characteristics of the ambient light.

FOR 205 Responsive to output signal:

Subject matter wherein the adjustment of the relative amplitudes is derived by feedback from the output of the image sensor.

FOR 206 Combined automatic gain control and exposure control (i.e., sensitivity control):
Subject matter including a control unit which controls both the exposure to the image sensor and the amplitude of the sensor output signal.

FOR 207 Readout of solid-state image sensor considered or altered:
Subject matter wherein the camera comprises a solid-state image scanning device and wherein the accumulation time and readout process thereof is altered in coordination with the operation of a shutter, iris or diaphragm, or vice versa.

FOR 208 With details of static memory for output image (e.g., for a still camera):
Subject matter wherein the camera includes a non-dynamic memory device for storing one or more frames of final image information.

(1) Note. Dynamic memory requires relative motion between the storage medium and the playback or recorder head.

FOR 209 With storage of additional, non-image information (e.g., audio, time, date):
Subject matter wherein the camera output memory stores, in addition to the picture information, information other than that of the picture.

(1) Note. Information other than the picture information may be audio or character type information (e.g., time, date, etc.), or information relating to a camera or image sensor aspect ratio.

FOR 210 233Detachable:
Subject matter wherein the camera output memory can be removed from the camera system.

FOR 211 Electronic zoom:
Subject matter including a solid-state sensor which operates to produce an effect of variable magnification.

FOR 212 Variable magnification (i.e., zoom)
Subject matter including a device for varying the apparent size of an object or scene focused on the sensor.

END