

- SEE OR SEARCH CLASS:
246, Railway Switches and Signals, subclass 168.1 for wheel slip indicators for rail locomotives.
- 672 Direction of shaft rotation:**
This subclass is indented under subclass 671. Subject matter wherein the monitored angular velocity is characterized by direction of rotation of a shaft.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclasses 200+ for a mechanical shaft rotation indicator.
- 673 Article transport:**
This subclass is indented under subclass 540. Subject matter where the condition is of an object moving along a constrained path.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
933+, for traffic detection and signalling systems.
- SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclass 340 for signalling means at a station along a conveyor path; and subclass 502.01 for a conveyor or load alarm or indicator.
- 674 Discrete articles:**
This subclass is indented under subclass 673. Subject matter where the object has discrete boundaries which pass the point at which the condition is observed.
- SEE OR SEARCH CLASS:
250, Radiant Energy, subclass 222.1 for photocell circuits for detecting article passage.
- 675 Web, film, or strip:**
This subclass is indented under subclass 673. Subject matter where the moving object is a continuous web, film, or strip.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 157 for film sprocket hole testing; and subclasses 159+ for sheet, woven fabric, or fiber testing.
- 242, Winding, Tensioning, or Guiding, subclass 357, 472.0+, 479.9+, 484.8, 484.9+, 534+, and 563+ for a detector or stop associated with winding or unwinding an elongated material.
- 250, Radiant Energy, subclass 548 and 559.01+ for photocell circuits for detecting a web, strip, or sheet.
- 676 Conveyor belt:**
This subclass is indented under subclass 675. Subject matter where the web is a conveyor belt.
- (1) Note. This subclass relates to the condition of the conveyor belt, not to the articles thereupon.
- 677 Strand:**
This subclass is indented under subclass 673. Subject matter where the object is a continuous strand (e.g., thread, rope, wire).
- SEE OR SEARCH CLASS:
57, Textiles: Spinning, Twisting, and Twining, subclass 81 for stopping and starting control.
- 66, Textiles: Knitting, subclass 163 for strand stop control.
- 250, Radiant Energy, subclass 548 and 559.01+ for photocell circuits responsive to a web, strand, strip, or sheet.
- 678 Of geometrical gauge:**
This subclass is indented under subclass 540. Subject matter where the condition is determined by monitoring the size or shape of an object.
- SEE OR SEARCH CLASS:
33, Geometrical Instruments, appropriate subclasses for measuring or gauging means with electrical indicators.
- 73, Measuring and Testing, subclass 104 for surface or cutting edge testing.
- 679 Machine condition:**
This subclass is indented under subclass 540. Subject matter wherein the monitored condition is that of a particular mechanical device or component thereof.

680 Machine tool:

This subclass is indented under subclass 679. Subject matter where the machine component monitored is a tool (e.g., drill bit or cutting tool).

SEE OR SEARCH CLASS:

173, Tool Driving or Impacting, subclasses 20+ for a tool driving device with indicating or signalling means.

681 Synchronization:

This subclass is indented under subclass 679. Subject matter where the condition is synchronization between mechanisms.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclass 87 for connecting plural supply circuits or sources at correct phase relationship.
318, Electricity: Motive Power Systems, subclass 85 for synchronizing motors.
324, Electricity: Measuring and Testing, subclasses 378+ for ignition timing.
375, Pulse or Digital Communications, subclass 106 for synchronizers.

682 Bearing:

This subclass is indented under subclass 679. Subject matter where the machine component is a bearing.

SEE OR SEARCH THIS CLASS, SUBCLASS:

584, and 600, for temperature monitoring of bearings.
631, for bearing particles in oil.

683 Vibration:

This subclass is indented under subclass 679. Subject matter where the condition is a vibration.

SEE OR SEARCH THIS CLASS, SUBCLASS:

566, for intrusion vibration responsive systems.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 570+ for vibration measurement and testing.

684 Agricultural:

This subclass is indented under subclass 679. Subject matter where the machine is an agricultural machine.

SEE OR SEARCH CLASS:

56, Harvesters, appropriate subclasses for detailed structure thereof.
111, Planting, appropriate subclasses for detailed structure thereof.
460, Crop Threshing or Separating, appropriate subclasses for detailed structure thereof.

685 Cranes:

This subclass is indented under subclass 679. Subject matter where the machine is a crane.

SEE OR SEARCH THIS CLASS, SUBCLASS:

668, for cable tension in cranes.

SEE OR SEARCH CLASS:

212, Traversing Hoists, subclasses 276+ for automatic stop control for cranes, and other condition sensors which regulates an indicator, alarm, or controller. Class 212 takes condition responsive indicator systems claimed in combination with any structural details of a crane.

686.1 Position responsive:

This subclass is indented under subclass 540. Subject matter responsive to a standing point of one object relative to another.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 553+ for a position or extent of motion indicator or alarm combined with a fluid handling means such as a valve.
219, Electric Heating, subclass 121.3 and 121.32 for nonalarm position responsive in metal heating by electron beam.
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 186 through 193 for machining digital positioning technique using data processing.

686.2 Alignment or misalignment:

This subclass is indented under subclass 686.1. Subject matter wherein indication is provided when two or more elements come into a relative position in (a) a precise adjusting, or (b) unprecise adjusting manner.

686.3 Shaft or rotary element:

This subclass is indented under subclass 686.1. Subject matter wherein an indication is provided when a particular point is reached along the circumference of a cylindrical bar which supports or transmits motion by rotation.

686.4 One article inserted into another:

This subclass is indented under subclass 686.1. Subject matter wherein two elements which normally interact by one being placed inside the other, and an indication is provided either in response to this occurrence or some particular condition of this occurrence (e.g., improper insertion).

686.5 Workpiece:

This subclass is indented under subclass 686.1. Subject matter including an element which is in the process of being manufactured, and wherein the indicating system monitors whether the element is in a proper position to be worked on.

SEE OR SEARCH CLASS:

- 219, Electric Heating, subclass 121.32 for nonalarm workpiece position responsive in metal heating by electron beam.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 186 through 193 for machining digital positioning technique using data processing.

686.6 Proximity or distance:

This subclass is indented under subclass 686.1. Subject matter responsive to an object coming too close to, or moving too far away from, another object.

- (1) Note. This subclass requires that two objects maintain a predetermined maximum or minimum distance from each other.

SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclass 517 for generic transistor circuitry responsive to proximity or touch.

687 Connected or disconnected:

This subclass is indented under subclass 686.1. Subject matter responsive to the mechanical connection of two or more objects.

- (1) Note. The system may, for example, be responsive to the mechanical connection of electrical connectors.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 431, for trailer signal light systems and hitch alignment devices.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclasses 51+ for connector actuated switches.
- 307, Electrical Transmission or Interconnection Systems, subclass 9.1 for vehicle-to-trailer electrical interconnection systems which may include an alarm or indicator of connection or disconnection.

688 Meter dial:

This subclass is indented under subclass 686.1. Subject matter responsive to the position of a pointer on a scale.

- (1) Note. If the pointer is automatically responsive to a specified condition, the system will be found with measurement of the condition.

689 Tilt:

This subclass is indented under subclass 686.1. Subject matter responsive to the angular orientation of an object with respect of a predetermined reference orientation thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 429, and 440, for vehicle alarms or indicators responsive to tilt of the vehicle.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclass 366.11 for measuring levels with electrical indicators.
- 200, Electricity: Circuit Makers and Breakers, subclass 52 for tilting vehicle operated switches; and subclasses 61.45+ for tilt operated switches.

690 Geophysical (e.g., fault slip):

This subclass is indented under subclass 686.1. Subject matter responsive to the position of parts of the earth relative to other parts of the earth.

- (1) Note. This subclass includes, for example, position of mine roofs, earthquake faults, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 855.3, for signaling in a wellbore telemetering system.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclass 784 for earth stress measurement.
- 166, Wells, subclass 64 for a well with time or distance measuring or temperature responsive or counting means; and subclass 66 for a well with electrical indicating means.
- 175, Boring or Penetrating the Earth, subclasses 40+ for such subject matter which is particularly described and combined with signalling or indicating means.
- 324, Electricity: Measuring and Testing, subclasses 323+ for determining an electrical characteristic of the subsurface of the earth, in situ.
- 367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 81 for wellbore alarm systems.

691.1 Specified indicator structure:

This subclass is indented under subclass 500. Subject matter wherein the means translating electrical signals into humanly perceptible signals are particularly described.

- (1) Note. Mere inclusion by name only is insufficient for classification herein;

detailed structure or circuitry is necessary.

- (2) Note. This subclass includes specific circuitry which provides the desired indication effects (e.g., pulsed or steady indication, bright or dim) as well as structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 384.1+, 407.1+, 815.4+, for audible, tactual, and visual indicators, respectively.

691.2 Simulated effect:

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal is intended to give the impression that a physical object is present when it actually isn't (e.g., 'dummy' surveillance camera, or arrows providing direction to emergency exit).

- (1) Note. For example, a set of visual indicators are actuated in sequence to indicate a direction, thereby 'simulating' a means providing an escape route during events such as a fire.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 384.3, for audible indication simulation.
- 693.8, for specific housing simulation.

691.3 Degree or urgency:

This subclass is indented under subclass 691.1. Subject matter where multiple discrete stages or levels of a condition are monitored, and a different discrete humanly perceptible signal is provided for each stage or level.

- (1) Note. For example, a 'pre-alarm' warning vs. an all-out alarm.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 328+, for a generic audible signaling system with degree or urgency.
- 691.4, for a condition responsive with plural indicating signals.

691.4 Plural:

This subclass is indented under subclass 691.1. Subject matter where the system provides more than one humanly perceptible indication in response to a single condition.

- (1) Note. For example, multiple alarms in different rooms of a dwelling, each responsive to events such as intrusion or fire being sensed at any point in the dwelling.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 326+, for a generic indicating system having plural concurrent single indications.
691.3, for a condition responsive indicating with multiple discrete human perceptible signals generated in different stages or levels.

691.5 Diverse:

This subclass is indented under subclass 691.4. Subject matter where at least two of the indications are of different types.

- (1) Note. For example, visual and audible, continuous light and flashing light.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 326+, for a system having plural concurrent single indications (e.g., light flashes when bell rings).
815.69+, for a generic diverse indications.

691.6 Information display:

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal is a written message communicated via means such as an electronic sign or screen.

- (1) Note. For example, a cathode ray tube (CRT) or a liquid crystal display (LCD) is included.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing and Selective Visual Display Systems, appropriate subclasses for processing and control of a display system.

691.7 Mechanical:

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal, while controlled by electrical means, is itself nonelectrical in nature.

- (1) Note. For example, a deployable flag or balloon, or the release of fluent material is included.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 815.83, for a generic movable visual indication.

SEE OR SEARCH CLASS:

- 116, Signal and Indicators, appropriate subclasses for a mechanical indicator without electrical control circuitry.

691.8 Control circuit detail:

This subclass is indented under subclass 691.1. Subject matter wherein electronic components, or an arrangement thereof for actuating the indicator, is particularly described.

692 Sound reproducer:

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal is an audible message communicated via means such as a loudspeaker.

SEE OR SEARCH CLASS:

- 381, Electrical Audio Signal Processing Systems and Devices, appropriate subclasses for audio systems in general.

693.1 Specified power supply:

This subclass is indented under subclass 500. Subject matter wherein either some portion of the energizing supply, or a function of the energizing supply in addition to energization, is particularly described.

- (1) Note. Power supplies included by name only are not classified herein.

- (2) Note. The additional function referred to above is generally to cope with a particular problem, e.g., switching to an alternate power supply upon failure of the main power supply.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 43+ for plural supply circuits or sources for electrical transmission or interconnection in general.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 530+ for a specific transistor circuitry source of supply or bias voltage.
- 361, Electricity: Electrical Systems and Devices, subclasses 1+ for a power supply with a safety feature; and subclasses 600+ for a housing having diverse electrical components.
- 363, Electric Power Conversion Systems, for power supply conversion (e.g., A.C. to D.C.), generally.

693.2 Substitute or emergency source (e.g. back-up battery):

This subclass is indented under subclass 693.1. Subject matter wherein upon the failure of a primary power supply there is energized a secondary power supply to maintain operation of the electrical means providing the humanly perceptible signal.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 64+ for substitute or emergency source in a generic plural power supply transmission system.

693.3 Having reduced power consumption (e.g. intermittent power):

This subclass is indented under subclass 693.1. Subject matter wherein means causing the power supply to operate at less than full strength for at least part of the time the power supply is in operation are particularly described.

693.4 Having specified voltage regulator:

This subclass is indented under subclass 693.1. Subject matter wherein means causing the energy output by the power supply to be at a constant level or in a consistent pattern are particularly described.

693.5 Specified housing:

This subclass is indented under subclass 500. Subject matter wherein some portion of the structure of a housing for the electrical means providing the humanly perceptible signal is particularly described.

SEE OR SEARCH CLASS:

- 248, Supports, subclass 542 for support with indicator or inspection means.
- 361, Electricity: Electrical Systems and Devices, subclass 679.01 for electronic systems or devices housing or mounting assemblies, and subclasses 679.02-679.61 for computer related housing or mounting assemblies.

693.6 Configured to promote sensing capability (e.g., smoke detector):

This subclass is indented under subclass 693.5. Subject matter wherein at least a portion of the housing is particularly described in such a way that a sensor inside the housing may detect a condition outside the housing.

- (1) Note. For example, the housing structure includes an element to permit air flow or radiation from outside the housing to come into contact with the sensor inside the housing.

693.7 Inserted battery required for housing closure:

This subclass is indented under subclass 693.6. Subject matter wherein the housing has structure preventing two or more housing portions from being properly fastened together unless the DC power supply for the electrical means providing the humanly perceptible signal is positioned in its proper place within the housing.

693.8 Simulation:

This subclass is indented under subclass 693.5. Subject matter wherein at least a portion of the housing is in the shape of a further object unrelated to the alarm condition but clearly recognizable to a person or persons to whom the humanly perceptible signal is directed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 691.2, for simulated effect indicator.

693.9 Having specified mounting structure:

This subclass is indented under subclass 693.5. Subject matter wherein means for attaching the sensor housing to a further structure, which may or may not be the object or portion of the object sensed by the sensor, are particularly described.

693.11 To wall or ceiling:

This subclass is indented under subclass 693.9. Subject matter wherein the further structure is a wall or ceiling.

693.12 Within another housing:

This subclass is indented under subclass 693.9. Subject matter wherein the further structure is the object having a condition sensed by the sensor, the object itself having an outer housing, and the sensor housing is secured within the outer housing of the object.

815.4 VISUAL INDICATION:

This subclass is indented under the class definition. Subject matter comprising a means for producing a visually perceptible indication of the presence, absence, or occurrence of an electrical signal.

- (1) Note. Indicators for quantitative characteristic of the electrical signal (e.g., voltage) per se, are excluded from this subclass and are classified in Class 324.
- (2) Note. The presence, absence, or occurrence of the electrical signal and the resulting visual indication is often intended to indicate some other condition or state or to convey some message (e.g., servant "call" annunciators).
- (3) Note. Display of printed or painted objects that does not contain electrical communication is classified in Class 40 Card, Picture, or Sign Exhibiting.
- (4) Note. Mechanical, as distinguished from electrical, devices for giving signals of the nature of either alarms or indicators are classified in Class 116, Signals and Indicators.
- (5) Note. Radiant energy actuated visual indicators, (i.e., all methods and appara-

tus for using, generating, controlling, or detecting radiant energy) that do not contain electrical communications are found in Class 250, Radiant Energy.

- (6) Note. An optical element or an optical element system that includes a liquid crystal display is classified in Class 349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal device in general.
- (7) Note. A light source structure to cast light in at least one direction to render objects in that direction visible and/or the combination of a source of visible radiant energy and means to modify the distribution or composition of the radiant energy emanating from the source, or methods for utilizing said combination are found in Class 362, Illumination.
- (8) Note. Display systems having selective electrical control are classified in Class 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 286.01+, for a signalling system having a visual indicator.
- 435+, for visual indicators used with vehicles.
- 500+, for a condition responsive indicating system, particularly subclass 600 for condition responsive radiant energy used in electrical communication.
- 907+, for visual indicators used to control vehicle or pedestrian traffic.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, appropriate subclasses for indicators void of electrical communications.
- 116, Signals and Indicators, subclass 200 for mechanical indicators.
- 219, Electric Heating, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator or subclass 720 where a control system for a

- microwave heating device has a display or alarm.
- 250, Radiant Energy, appropriate subclasses for radiant energy responsive signalling.
- 313, Electric Lamp and Discharge Devices, subclass 513 for character display with particular mask or electrode shape.
- 315, Electric Lamp and Discharge Devices: Systems, subclass 169.1 for a visual indicator used in the shifting of a register, counter, or display.
- 345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 1.1-3.4 for selective electrical control display systems.
- 349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal device in general.
- 359, Optical: Systems and Elements, subclasses 265+ for a nonselective electrochromic display element.
- 362, Illumination, appropriate subclasses for electric lights and associated apparatus used for illumination.
- 368, Horology: Time Measuring Systems or Devices, subclasses 223+ for displays or display devices details.
- 482, Exercise Devices, subclass 3 for pace setting indicator and subclass 84 for striking exercise devices having indicators.
- 902, Electronic Funds Transfer, subclass 21 for ATM (Automatic Teller Machine) with specific data output means or indicator.

815.41 False signal prevention (anti-sunlight):

This subclass is indented under subclass 815.4. Subject matter having means for preventing an improper indication.

815.42 Having light piping:

This subclass is indented under subclass 815.4. Subject matter including a light conducting material characterized by an extended longitudinal dimension along which it guides light from a light admitting end connected to a light source to a light emitting end configured to display the visually perceptible indication.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclass 547 for fiber optic illuminated sign.
- 250, Radiant Energy, appropriate subclasses for light piping used in radiant energy.
- 362, Illumination, subclasses 23.09 and 23.16 for edge illuminated modifier or light rod/pipe.
- 385, Optical Waveguides, appropriate subclasses for fiber optics, particularly subclasses 116+ for fiber optical imaging including shaping, enhancing, and correcting coherent fiber structure, per se.

815.43 With specified colors:

This subclass is indented under subclass 815.42. Subject matter having means for selecting the displayed colors of the visually perceptible indication.

- (1) Note. Means for selecting the displayed colors comprises, for example, color filter, color wheel, or a plurality of light sources.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 600 through 605 for selectable color attributes display systems having selective electrical control.

815.44 Seven-segment indicator:

This subclass is indented under subclass 815.4. Subject matter in which the visually perceptible indication consists of segments of a seven-segment character.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclass 450 for bar segment (e.g., figure eight).
- 313, Electric Lamp and Discharge Devices, subclass 510 for luminescent solid or liquid material with character display (e.g., digits or letters) and subclass 581 for three or more electrode discharge devices.

- 315, Electric Lamp and Discharge Devices: Systems, subclasses 129+ for signal, indicator, or alarm.
- 345, Computer Graphics Processing and Selective Visual Display Systems, subclass 34 for seven-segment display in selective display systems.

815.45 Using light emitting diodes:

This subclass is indented under subclass 815.4. Subject matter in which the signal indicating device is a light emitting semiconductor device.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclass 214 for light amplifiers and subclasses 552+ for solid state light source, including matrices and array, per se.
- 257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), subclasses 13, 79 through 103, and 918 for incoherent light emitting injection luminescent devices.
- 345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 39, 47, and 82+ for light emitting diode display in selective display systems.

815.46 Audio responsive lamp:

This subclass is indented under subclass 815.4. Subject matter comprising an electric light controlled or powered by electrical signals representative of sound waves.

SEE OR SEARCH CLASS:

- 367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 197+ for acoustic responsive selective system in general.

815.47 Switchboard or panel type (e.g., bullseye):

This subclass is indented under subclass 815.4. Subject matter comprising electric light means associated with a plurality of circuit breakers to indicate the status (opened or closed) of the circuit breakers.

SEE OR SEARCH CLASS:

- 379, Telephonic Communications, subclasses 308+ for switching apparatus, per se.

815.48 Pushbutton:

This subclass is indented under subclass 815.47. Subject matter in which a manual actuator must be depressed to operate the circuit breakers.

815.49 Housing:

This subclass is indented under subclass 815.47. Subject matter wherein the indicating means is enclosed in a protective covering.

SEE OR SEARCH THIS CLASS, SUBCLASS:

815.73, for lamp enclosed in transparent housing.

815.5 Including optical means:

This subclass is indented under subclass 815.49. Subject matter comprising a lens covering part of the signal indicating device for affecting the light emitted therefrom.

815.51 Including spring:

This subclass is indented under subclass 815.49. Subject matter comprising a resilient member.

- (1) Note. This subclass includes, for example, a resilient member for controlling the energization of the indicating means, or for holding, supporting, or retaining the indicating means in its position.

815.52 With details of energizing circuit:

This subclass is indented under subclass 815.47. Subject matter comprising at least an electrical component for controlling the energization of the indicating device.

- (1) Note. The component includes, for example, a resistor, transistor, contact, or circuit breaker.

815.53 Lighted alphanumeric or character indicator matrix:

This subclass is indented under subclass 815.4. Subject matter comprising means for illuminating or emitting light to form alphanumeric or character indicative elements arranged in rows and/or columns.

- (1) Note. Means for illuminating includes, for example, an ambient and/or an artificial light source.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclasses 447+ for alphanumeric devices and subclasses 541+ for illuminated sign.
- 313, Electric Lamp and Discharge Devices, subclass 510 for luminescent solid or liquid material with character display (e.g., digits or letter).
- 345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 25+ for cathode-ray tube with alphanumeric display and subclasses 467-472.3 for character display in a generic selective display system.
- 362, Illumination, subclasses 23.01 through 23.22 for illuminated scale or dial.

815.54 Having optical means in viewing path:

This subclass is indented under subclass 815.53. Subject matter having a light modifying means between the light source and the matrix for affecting the presentation of the indicative elements.

- (1) Note. The optical means includes, for example, a lens, mask, grating, mirror, light guides, etc.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing and Selective Visual Display Systems, subclass 32 for optical means interposed in viewing path (e.g., filters, lens) in a generic selective display system.
- 359, Optical: Systems and Elements, subclasses 602+ for glare or unwanted light reduction with mirror, subclasses 515+ for signal reflector, and subclasses 642+ for lens, per se.

815.55 Transparent or translucent indicator with means for blocking light:

This subclass is indented under subclass 815.4. Subject matter wherein the perceptible indication is formed by a light source, a transparent

or a translucent panel, and a screen or mask to permit selected parts of the light to pass there-through.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclasses 541+ for illuminated sign.
- 359, Optical: Systems and Elements, subclass 608 for translucent or semi-transmitting panel positioned in front of an adjustable anti-glare mirror.

815.56 Color:

This subclass is indented under subclass 815.55. Subject matter including means to display the perceptible indication in selected color.

815.57 Having optical device:

This subclass is indented under subclass 815.55. Subject matter comprising a lens or a lens system for directing the rays of light from the light source to affect the formation of the perceptible indication.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing and Selective Visual Display Systems, subclass 32 for optical means interposed in viewing path (e.g., filters, lens) in a generic selective display system.
- 359, Optical: Systems and Elements, subclasses 515+ for signal reflector and subclasses 642+ for lens.

815.58 Step by step positioner:

This subclass is indented under subclass 815.4. Subject matter comprising pawl means engaging a toothed member for intermittently moving it by a distance of one or a series of teeth at a time to present the visually perceptible indication.

SEE OR SEARCH CLASS:

- 235, Registers, subclass 144 for pawl and notch.
- 345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 108+ for plural mechanically movable display elements with selective electrical control in selective display systems.

815.59 Having resetting device:

This subclass is indented under subclass 815.58. Subject matter comprising means for restoring the positioner or the visually perceptible indication to normal position.

815.6 Remote controller:

This subclass is indented under subclass 815.58. Subject matter wherein the operation of a distant step by step positioner is controlled over a wire or wireless communication channel by circuitry at a transmitting station.

815.61 Drum indicator:

This subclass is indented under subclass 815.58. Subject matter wherein the intermittently moved toothed member causes a rotation of a cylindrical mechanical element bearing alphanumeric or character indicative elements on its periphery thereby presenting the visually perceptible indication.

SEE OR SEARCH THIS CLASS, SUBCLASS:

815.64, for indicator wheel operated by electromagnetic rotator.

815.62 Electromagnetic actuator for indicator matrix:

This subclass is indented under subclass 815.4. Subject matter comprising an electromagnet capable of producing a force to change the positions of indicative elements arranged in an array thereby presenting the perceptible indication.

815.63 Binary indicator:

This subclass is indented under subclass 815.4. Subject matter in which the signal indicating device moves between first and second limit positions to indicate either one of two predetermined states in an operational system.

(1) Note. The two predetermined states may be, for example, set and reset, on and off, normal or fault, etc.

815.64 Electromagnetic rotator for indicator wheel:

This subclass is indented under subclass 815.4. Subject matter comprising an electromagnet capable of producing a force to rotate a wheel having indicative elements arranged on its face

or around its periphery thereby presenting the perceptible indication.

SEE OR SEARCH THIS CLASS, SUBCLASS:

815.61, for drum indicator that rotates intermittently by a distance of one or a series of teeth at a time.

815.65 Multiple colors:

This subclass is indented under subclass 815.4. Subject matter which produces the visually perceptible indication in at least two different colors.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 600-605 for selectable color attributes display systems having selective electrical control.

815.66 By light signal:

This subclass is indented under subclass 815.65. Subject matter in which the indication is produced by light rays emitted from a light source.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, subclass 581 for a colored light illuminated sign and subclass 444 for selective or intermittent illumination with colored light.

815.67 Plural:

This subclass is indented under subclass 815.66. Subject matter having a plurality of light sources.

815.68 With movable optical means:

This subclass is indented under subclass 815.66. Subject matter comprising means for selectively moving a light modifier located between the light source and the indication to produce different colors.

(1) Note. The optical means comprises, for example, a color filter, lens, colored shutter, or screen.

815.69 Diverse indications:

This subclass is indented under subclass 815.4. Subject matter for giving different types of indications.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclasses 2+ for nonelectrical combined function and subclass 280 for nonelectrical diverse indicators.

815.7 Having percussion type indication (e.g., electric bells, chimes):

This subclass is indented under subclass 815.69. Subject matter in which one of the indications is an audible sound produced by means having a striking mechanism.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

392.1, for percussion type sound producer (e.g., signal chimes or bells).

SEE OR SEARCH CLASS:

84, Music, subclass 404 for rigid vibrating instrument with striker and subclass 407 for bells with electric action.
379, Telephonic Communications, subclass 376 for signal reception at substation with visual indication of incoming call.

815.71 Electromagnetic:

This subclass is indented under subclass 815.7. Subject matter comprising an electromagnet for operating the striking mechanism.

815.72 Having pneumatic type indication:

This subclass is indented under subclass 815.69. Subject matter in which one of the indications is an audible sound produced by the flow of air or other gaseous substances.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

404.1, for pneumatic type sound producer (e.g., whistle or siren).

815.73 With lamp enclosed in transparent housing:

This subclass is indented under subclass 815.4. Subject matter having an electric lamp or discharge device inside a light transmissive enclosure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.49, for housing of switch board or panel type indicator.

SEE OR SEARCH CLASS:

362, Illumination, subclass 362 for lamp enclosed in housing.

815.74 Combined:

This subclass is indented under subclass 815.73. Subject matter combined with diverse art subject matter.

815.75 Light source modifier:

This subclass is indented under subclass 815.73. Subject matter having means to control the duration or intensity or direction of the light emanating from the lamp.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 589 through 605 for intensity control in generic selective electrical display systems.

815.76 Lens type:

This subclass is indented under subclass 815.75. Subject matter in which the transmissive enclosure comprising an optical device for focussing, converging, or diverging the light emitted from the lamp or the discharge device to obtain a desired light emitting characteristic.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

22+, for signal lens used as traffic lenses or vehicle indication.

SEE OR SEARCH CLASS:

359, Optical: Systems and Elements, subclasses 642+ for lenses, per se.

815.77 Relatively movable light source:

This subclass is indented under subclass 815.73. Subject matter having means for moving the lamp within the enclosure.

815.78 Pointer indicator:

This subclass is indented under subclass 815.4. Subject matter comprising a movable needle positioned to indicate the visually perceptible indication.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.86, for rotary indicator.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclasses 284+ for nonelectrical rotary indicator having pointers.

815.79 Annunciator:

This subclass is indented under subclass 815.78. Subject matter wherein the needle is raised or dropped from an inoperative position to an operative position to indicate the visually perceptible indication.

815.8 Having electromagnetically releasable latch:

This subclass is indented under subclass 815.79. Subject matter in which the needle is released for movement by the operation of an electromagnetically releasable latch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.9, for indicator having electromagnetically releasable latch.

815.81 Grouped drop annunciators:

This subclass is indented under subclass 815.4. Subject matter having a multi unit indicator comprising a device operable to move a plurality of visually perceptible members (i.e., targets) individually or simultaneously from a nonsignalling position to a signalling position.

815.82 Support:

This subclass is indented under subclass 815.81. Subject matter comprising a framework for mounting the drops or targets.

815.83 Movable:

This subclass is indented under subclass 815.4. Subject matter wherein the indicating device (i.e., target) signals by a change of position.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 108+ for plural mechanically movable display elements with selective electrical control in selective display systems.

815.84 Semaphore:

This subclass is indented under subclass 815.83. Subject matter wherein the signalling indicating device comprises one or more movable arms positioned to produce the visually perceptible indication.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

127, for semaphore used in traffic and vehicle signalling.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclass 319 for an arm that is a rotary indicator.

815.85 Self restoring type annunciator:

This subclass is indented under subclass 815.83. Subject matter comprising a target raised into an operative position by an energized electromagnet and dropped back to an inoperative position by gravitational force.

815.86 Rotary:

This subclass is indented under subclass 815.83. Subject matter wherein the visual indicator moves with a rotary motion.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.58, for step by step positioner.

815.63, for indicator that rotates between two positions to indicate either one of two predetermined operational states.

815.64, for indicator wheel operated by an electromagnetic rotator.

815.78, for pointer indicator.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclass 284 for nonelectrical rotary indicator with actuating means.

- 345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 649 through 659 for rotation of images on a generic selective display system.
- 815.87 Rotor driven:**
This subclass is indented under subclass 815.86. Subject matter in which the rotary motion is generated by an electromagnetic rotor mounted on a shaft.
- 815.88 Vane indicator:**
This subclass is indented under subclass 815.86. Subject matter comprising a hinged indicator swinging between positions to produce the visually perceptible indication.
- 815.89 Circuit closing type:**
This subclass is indented under subclass 815.83. Subject matter having means to close a switching or a contacting device of a normally open circuit when the signalling device moves.
- 815.9 By electromagnetically releasable latch:**
This subclass is indented under subclass 815.83. Subject matter wherein the target is released for movement by the operation of an electromagnetically releasable latch.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
815.8, for pointer annunciator having an electromagnetically releasable latch.
- 815.91 Having restoring means:**
This subclass is indented under subclass 815.9. Subject matter comprising means for resetting the released target to a normal position.
- 815.92 Gravity operated drop annunciator:**
This subclass is indented under subclass 815.9. Subject matter in which the target is moved into an annunciation or a set position by gravitational force.
- 850 UNDERWATER:**
This subclass is indented under the class definition. Subject matter in which a significant portion of the communication takes place under water.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
230, for electric signalling systems in which the signal is transmitted along a fluid conduit but not through the fluid therein.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclass 27 for this subject matter when nonelectrical.
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 131 for underwater electrical communication employing acoustic wave.
- 851 Ship guidance system:**
This subclass is indented under subclass 850. Subject matter for providing navigational signals to a vehicle.
- 852 Electrodes and electrode systems:**
This subclass is indented under subclass 850. Subject matter wherein the signal is communicated in the form of electric current passing to or from conductors immersed in water.
- 853.1 WELLBORE TELEMETERING OR CONTROL (E.G., SUBSURFACE TOOL GUIDANCE, DATA TRANSFER, ETC.):**
This subclass is indented under the class definition. Subject matter wherein an information or control signal is transmitted to or from equipment located in an opening into the earth, for a well or wellbore, over an information transmission link.
- (1) Note. One of either the downhole equipment or transmission link must be described as to electrically conduct or process an information or control signal so as to meet the class definition.
- (2) Note. The telemetering may be of either a pre-existing or a concurrently produced wellbore.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
870.01+, for telemetering equipment other than in a subsurface device.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclasses 152.01+ for borehole or drilling testing, per se, not involving a purely electrical test or a purely magnetic test.
- 166, Wells, subclasses 250.01+ for well processes including signalling equipment; and subclass 66 for well apparatus including electrical signalling.
- 367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 81+ for electrical wellbore telemetering systems in which the signal is transmitted in the form of an acoustic wave.

853.2 Diagnostic monitoring or detecting operation of communications equipment or signal:

This subclass is indented under subclass 853.1. Subject matter including a determination of the operation or other condition of the communication equipment or signal.

- (1) Note. The term “communication equipment” is intended to exclude determination of ambient or diverse equipment condition monitoring, which are classified in the subclasses below, or in the appropriate diverse subject matter class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 870.04, for calibration of a telemetry system not used in a wellbore.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclass 168 for a measurement or test of a pump or hydraulic equipment and subclasses 152.61+ for the testing of a pump in a borehole wherein the test is neither purely electrical nor purely magnetic.
- 714, Error Detection/Correction and Fault Detection/Recovery, subclasses 712+ for diagnostic testing of a transmission facility of general utility.

853.3 Selective control of subsurface equipment:

This subclass is indented under subclass 853.1. Subject matter having a communication link for controlling one or more devices in the underground equipment to obtain a plurality of results by transmission of a designated one of plural distinctive control signals over a smaller number of communication lines or channels than the total number of possible distinct results and which controls the underground equipment in accordance with the signal content.

- (1) Note. Recitation of a detail of diverse art underground equipment is classified with such equipment.
- (2) Note. Included in this and its indented subclasses are systems not limited to wellbore telemetering.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 1.1, through 16.1, for selective control of remote equipment, other than a subsurface device.

SEE OR SEARCH CLASS:

- 175, Boring or Penetrating the Earth, subclasses 24+ automatic control of drilling by other than an electrical communications system. Automatic control of drilling by other than an electrical communications system.
- 439, Electrical Connectors, appropriate subclasses for electrical connector structure, of general utility.

853.4 In horizontal or inclined drilling or passage:

This subclass is indented under subclass 853.3. Subject matter wherein the opening in the earth is in other than a substantially vertical direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 856.1, for this subject matter absent selective control of subsurface equipment.

853.5 Control of drilling apparatus using magnetic field:

This subclass is indented under subclass 853.4. Subject matter having a drilling device and a magnetic field detector for control of the drilling device.

- (1) Note. The sensed magnetic field may be either the earth's magnetic field or an applied magnetic field.

853.6 Control of drill bit or apparatus (e.g., steering, speed, etc.):

This subclass is indented under subclass 853.3. Subject matter including a drilling equipment controlled by an electrical communications system.

853.7 Repeater in subsurface link (e.g., cable, etc.):

This subclass is indented under subclass 853.1. Subject matter having a device which receives and retransmits the signals at an intermediate position between the subsurface equipment and cooperating surface communications equipment, and which is separated from both the surface and subsurface equipment by a significant portion of the subsurface transmission link.

- (1) Note. The term "significant portion" excludes devices with a repeater or amplifier on the surface or attached to the sonde housing.
- (2) Note. The retransmission is usually to strengthen or modify the signal being transmitted.
- (3) Note. Although systems including relays are in this subclass, the term relay is also used to designate a passive inductive or transformer device which is classified elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:

425.1+, for a repeater in an unspecified-type communications system.

SEE OR SEARCH CLASS:

370, Multiplex Communications, subclasses 274, 279, 293, 315+, 492, and 501+ for a multiplex repeater of a specific type.

375, Pulse or Digital Communications, subclasses 211+ for a pulse or repeater in a digital communications device not limited to wellbore telemetering.

455, Telecommunications, subclasses 7+ for a modulated carrier signal repeater.

853.8 With orientation sensing of subsurface telemetering equipment (other than drilling equipment):

This subclass is indented under subclass 853.1. Subject matter combined with a determination of the angular direction of the subsurface communications equipment with respect to a vertical axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

853.4 and 856.1, for subsurface communications in a horizontal or inclined opening in the earth.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclasses 302 and 304+ for wellbore configuration determination.

175, Boring or Penetrating the Earth, subclass 40 for determination of inclination of a drilling tool position or direction.

853.9 Including detail of subsurface signal storage (e.g., memory, recorder, register, etc.):

This subclass is indented under subclass 853.1. Subject matter including a particularly described feature or arrangement of electrical storage of signal values for subsequent retrieval.

- (1) Note. Named or nominal inclusion of signal storage equipment is not considered particularly described as required for classification in this subclass; however, a particular arrangement of plural named storage devices is classified in this subclass.

- (2) Note. An arrangement for storing and subsequently combining sequential signals to form a composite signal for transmission is classified in this subclass.

SEE OR SEARCH CLASS:

- 360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for dynamic magnetic information storage not limited to wellbore telemetering.
- 365, Static Information Storage and Retrieval, appropriate subclasses for static information storage not limited to wellbore telemetering.
- 369, Dynamic Information Storage or Retrieval, appropriate subclasses for dynamic information storage not limited to wellbore telemetering.

854.1 With position or depth recording (e.g., line payout, equipment locator, etc.):

This subclass is indented under subclass 853.1. Subject matter wherein the depth or location in the wellbore of specified equipment in the wellbore is recorded or utilized to control a system operation.

- (1) Note. This subclass includes location of a sonde or other wellbore related equipment.

854.2 Location of collar or stuck tool:

This subclass is indented under subclass 854.1. Subject matter including equipment to ascertain the identity of a collar or the presence of a stuck tool.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclasses 302 and 304+ for wellbore configuration determination.
- 73, Measuring and Testing, subclass 152.56 for a process or an apparatus for determining a free point or a stuck point of a casing in a borehole, per se, not involving a purely electronic test or a purely electrical test.
- 235, Registers, subclasses 375+ for a system controlled by a data bearing coded record; and subclass 435, for a coded record sensor.

854.3 Using a specific transmission medium (e.g., conductive fluid, annular spacing, etc.):

This subclass is indented under subclass 853.1. Subject matter including a particularly described feature of the structure or composition of a material or medium through which the information or control signals are transmitted.

- (1) Note. The material is usually an electrical conductor.
- (2) Note. Named or nominal inclusion of a conductor is not considered particularly described as required for classification in this or its indented subclasses.

SEE OR SEARCH CLASS:

- 174, Electricity: Conductors and Insulators, subclasses 37+ for an underground conductor.

854.4 Drill string or tubing support signal conduction:

This subclass is indented under subclass 854.3. Subject matter wherein a casing, or sleeve, of a series of drill connectors is used to conduct the signal to or from the underground equipment.

854.5 Wellbore casing or ground:

This subclass is indented under subclass 854.3. Subject matter including conduction or passage of the signal through a well casing or the surrounding earth.

854.6 Electromagnetic energy (e.g., radio frequency, etc.):

This subclass is indented under subclass 853.1. Subject matter wherein the signal is transmitted in the form of a presence or variation in an electromagnetic field.

- (1) Note. The term electromagnetic field is intended to include an electrical or magnetic field, as well as electromagnetic radiation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 870.01+, for a radio sonde telemetering system, of general utility.

SEE OR SEARCH CLASS:

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 81+ for an electrical wellbore telemetering system in which the signal is transmitted in the form of an acoustic wave.

854.7 Optical link (e.g. waveguide, etc.):

This subclass is indented under subclass 854.6. Subject matter wherein the signal is transmitted over a communications link which includes an element which transmits electromagnetic energy having a frequency in or near the visible range.

- (1) Note. The term near is to indicate that a system with an element which optically modifies IR or UV radiation is included in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.28+, for telemetering equipment having an optical link other than in a subsurface device.

SEE OR SEARCH CLASS:

385, Optical Waveguides, appropriate subclasses for an optical energy conducting element.

854.8 Near field coupling (e.g., inductive, capacitive, etc.):

This subclass is indented under subclass 854.6. Subject matter wherein the electromagnetic energy has a variation other than the inverse square of distance.

- (1) Note. The term near field is intended to include nonradiative coupling such as by an inductive or capacitive field.

SEE OR SEARCH CLASS:

379, Telephonic Communications, subclass 55.1 for a near field telephone device.

381, Electrical Audio Signal Processing Systems and Devices, subclass 79 for a for a near field audio system.

455, Telecommunications, subclass 41.1 for a modulated near field communication system.

854.9 Cable or wire (e.g., conductor as support, etc.):

This subclass is indented under subclass 854.3. Subject matter wherein an electrical information or control signal is transmitted over an electrical conductor forming an elongate element.

SEE OR SEARCH CLASS:

174, Electricity: Conductors and Insulators, subclasses 37+ for an underground conductor, per se.

855.1 Coupling connection structural feature:

This subclass is indented under subclass 854.9. Subject matter including a detail of structure forming an electrical connection to a cable or wire or a section thereof.

SEE OR SEARCH CLASS:

439, Electrical Connectors, subclass 624 for a seismic-type cable.

855.2 Single conductor cable or wire:

This subclass is indented under subclass 854.9. Subject matter wherein the signal conductor is composed of a single piece of solid material.

855.3 Multiplexed signals:

This subclass is indented under subclass 853.1. Subject matter wherein signals from different sources or to different receivers are transmitted over a single channel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.12+, for frequency division multiplex telemetering equipment other than in a subsurface device.

870.13+, for time division multiplex telemetering equipment other than in a subsurface device.

SEE OR SEARCH CLASS:

370, Multiplex Communications, appropriate subclasses for a multiplex communications device not limited to wellbore telemetering.

- 855.4 Pulse or digital signal transmission:**
This subclass is indented under subclass 853.1. Subject matter wherein the information is transmitted in the form of an abrupt variation in an electrical signal or a pattern thereof.
- 855.5 Digital signal processing in subsurface transmitter:**
This subclass is indented under subclass 855.4. Subject matter wherein the subsurface signal processing includes a particularly described feature of digital signal handling.
- (1) Note. Named or nominal inclusion of a digital device is not classified in this subclass.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
870.19+, for pulse signal telemetering equipment other than in a subsurface device.
- SEE OR SEARCH CLASS:
341, Coded Data Generation or Conversion, subclasses 173+ for a digital or pulse code generator of general utility.
375, Pulse or Digital Communications, subclasses 295+ for a pulse transmitter of general utility.
- 855.6 Having acoustic sensor:**
This subclass is indented under subclass 855.5. Subject matter having a subsurface vibratory transducer connected to the digital signal processing apparatus or the electrical communications link.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
856.4, for this subject matter absent subsurface digital circuitry.
- 855.7 Modification of signal bandwidth, frequency, or circuit impedance at subsurface location:**
This subclass is indented under subclass 853.1. Subject matter wherein the information to be transmitted is modulated on a signal and either the signal or circuit frequency characteristics are subsequently modified to optimize transmission between the surface and subsurface communications equipment.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
853.7, for a signal-modifying repeater in a wellbore cable or other subsurface link.
- 855.8 Including specified power transmission feature or source (e.g., battery, etc.):**
This subclass is indented under subclass 853.1. Subject matter having a particularly described feature of circuitry providing electric power to the subsurface communications equipment.
- (1) Note. A named or nominal inclusion of a power transmission device is not classified in this or its indented subclasses.
- (2) Note. This subclass includes circuitry for separating an information carrying signal and an electrical power signal.
- 855.9 Specified alternating current (A.C.) circuit feature:**
This subclass is indented under subclass 855.8. Subject matter wherein the feature providing for the energization of the subsurface station is described as having a feature varying as the frequency of an alternating current.
- 856.1 In horizontal or inclined passage arrangement:**
This subclass is indented under subclass 853.1. Subject matter wherein the opening in the earth is in other than a substantially vertical direction.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
853.4, for this subject matter having selective control of subsurface equipment.
- 856.2 With expandable or inflatable sensor element or mounting:**
This subclass is indented under subclass 853.1. Subject matter having an electrical sensor mounted on or including an element movable by expansion of an inflatable or mechanically movable device.
- (1) Note. Included herein are sensors which mechanically contact and electrically respond to the position of a wellbore interior.

856.3 Including particular sensor:

This subclass is indented under subclass 853.1. Subject matter having a particularly described feature of an underground condition-responsive sensor which provides information signals.

- (1) Note. A named or nominal inclusion of a sensor is not considered particularly described as required for classification in this or its indented subclasses.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 152.01+ for borehole or drilling testing, per se, not involving a purely electrical test or a purely magnetic test, and subclass 866.5 for a measuring probe, per se, not specifically provided for elsewhere.

856.4 Acoustic or vibratory (e.g., sonic, fluidic, etc.):

This subclass is indented under subclass 856.3. Subject matter in which the sensor includes an element a portion of which either generates or is responsive to mechanical vibration.

SEE OR SEARCH THIS CLASS, SUBCLASS:

855.6, for this subject matter combined with subsurface digital processing circuitry.

SEE OR SEARCH CLASS:

181, Acoustics, subclasses 101+ for acoustic geophysical or subsurface exploration not restricted to an electrical device.
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 81+ for an electrical wellbore telemetering system in which the signal is transmitted in the form of an acoustic wave.

870.01 CONTINUOUSLY VARIABLE INDICATING (E.G., TELEMETERING):

This subclass is indented under the class definition. Subject matter for giving an indication, at a receiving station, which is substantially continuous from a lower value to an upper value, said indication being under the control of a

transmitter, said control being exercised over an electric circuit.

- (1) Note. The word "continuous", as used in the above definition, refers to the characteristic under which the valve indicated is quantitative rather than qualitative; thus, for example, a system which nominally indicates a temperature in degrees is classified in this and indented subclasses, but a system which indicates temperature merely by designations such as "hot", "medium", and "cold" is not classified here, but in Class 340, subclass 584. Thus, the intelligence or variable indicated is basically an analog, human sensible value input.
- (2) Note. The quantity whose value is telemetered may be measured in a testing operation. This subclass, however, takes only those telemetering systems not limited to testing or which are not provided for in the testing classes. See the subclasses referred to below under "SEARCH CLASS".
- (3) Note. This subclass includes, in addition to automatically responsive telemetering systems, those in which the quantity to be telemetered is determined by a manual operation; for example, the desired as well as the actual temperature of an auditorium may be telemetered from the auditorium to the heat control room.
- (4) Note. This is the generic subclass for electrical telemetry signaling means useful in transmitting a sensed quantity and not provided for in other classes.
- (5) Note. For the purposes of this subclass definition, a telemetry system provides the equipment necessary to sense such conditions as pressure and temperature and to transmit their electrical equivalents via a particular channel or means, but often via a radio link to another location for display and/or recording.
- (6) Note. Telemetry, also called telemetering or remote metering, is measurement which through intermediate means, can

be interpreted at a distance from a primary detector. A receiving instrument converts the transmitted electrical signals into units of data which can then be translated by data reduction into appropriate units.

- (7) Note. Class 73 takes telemetric signaling means in combination with a particular measuring means of the type provided for in Class 73.
- (8) Note. Class 324 takes telemetric signaling means in combination with a particular measuring means of the type provided for in Class 324.
- (9) Note. Class 356 takes telemetric signaling means in combination with a particular measuring means of the type provided for in Class 356.
- (10) Note. Class 374 takes a telemetric signaling arrangement in combination with a structurally detailed measuring arrangement provided for by Class 374.

SEE OR SEARCH THIS CLASS, SUBCLASS:

853.1+, for nonacoustic wave wellbore telemetering.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclass 267 for straightline light ray type with telemetric means; subclass 312 for indicator of direction of force-traversing material media with borehole direction or inclination using electrical telemetering to read-out; subclass 317 for gyromagnetic compass with electrical telemetering; and subclasses 363+ for magnetic field responsive with electrical telemetering.
- 73, Measuring and Testing, appropriate subclasses for systems limited to mechanical testing in combination with telemetering systems to indicate the result of the test.
- 128, Surgery, subclass 903 for radio telemetry; and subclass 904 for telephone telemetry.
- 177, Weighing Scales, Digest 10 for telemetric systems indicating weight.

- 324, Electricity: Measuring and Testing, appropriate subclasses for systems limited to electrical testing combined with telemetering systems to indicate the result of the test.
- 333, Wave Transmission Lines and Networks, subclasses 1+ for plural channel wave transmission lines and networks.
- 356, Optics: Measuring and Testing, appropriate subclasses for systems limited to optical testing combined with telemetering systems to indicate the result of the test.
- 367, Communications, Electrical Acoustic Wave Systems and Devices, subclass 76 for seismic prospecting land-reflection type, using telemetry; and subclasses 81+ for wellbore telemetry.
- 370, Multiplex Communications, appropriate subclasses for combining or distributing information via frequency or via time channels, for multiplexing systems not restricted to telemetry.
- 374, Thermal Measuring and Testing, appropriate subclasses for systems limited to a thermal test combined with telemetering systems to indicate the result of the test.
- 702, Data Processing: Measuring, Calibrating, or Testing, appropriate subclasses for data processing measuring, calibrating or testing which may include telemetry.
- 714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for Error Detection/Correction and Fault Detection/Recovery combined with telemetry.

870.02 With meter reading:

This subclass is indented under subclass 870.01. Subject matter wherein telemetering means develops a composite signal representative of the indications of one or more meters and transmits the developed signal for reproduction at a remote point.

- (1) Note. Indicators, per se, are not classified herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.4, for particular indicators.

SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, appropriate subclasses for systems limited to measurement of electrical values, regardless of telemetering system between meter and indication.

870.03 Having plural transmitters:

This subclass is indented under subclass 870.02. Subject matter wherein the meter-reading means includes more than one sensing point or input to the telemetering system.

- (1) Note. A transmitter for the purpose of this definition is analogous to a transducer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.06, for plural transmitters in combination with calculation.
870.11, for plural transmitter, per se.

870.04 With calibration:

This subclass is indented under subclass 870.01. Subject matter wherein the telemetering system has means to ascertain, by measurement or comparison with a standard, any variation of the indication from an expected value.

SEE OR SEARCH CLASS:

702, Data Processing: Measuring, Calibrating, or Testing, subclasses 85+ for data processing calibrating or correction system.

870.05 With calculation:

This subclass is indented under subclass 870.01. Subject matter combined with means for performing some mathematical operation.

- (1) Note. The system, for example, may be provided with means to furnish an indication on a logarithmic basis.

SEE OR SEARCH CLASS:

235, Registers, subclass 419 for record-controlled calculators which are mechanical or electrical.
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 100+ for digital electrical calculators.

870.06 Plural transmitters (e.g., ratio):

This subclass is indented under subclass 870.05. Subject matter having plural sensing points or inputs to the telemetering system.

- (1) Note. The system, for example, may be provided with means to indicate the sum of a plurality of inputs or the ratio between the two inputs.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.03, for plural transmitters in combination with meter reading.
870.11, for plural transmitters not in combination with calculation.

870.07 Combined (TM system with other system):

This subclass is indented under subclass 870.01. Subject matter in which the telemetering system is combined with some other type of diverse system.

SEE OR SEARCH CLASS:

73, Measuring and Testing, appropriate subclasses for systems limited to mechanical testing in combination with telemetering systems to indicate the result of the test.
324, Electricity: Measuring and Testing, appropriate subclasses for systems limited to electrical testing combined with telemetering systems to indicate the result of the test.
356, Optics: Measuring and Testing, appropriate subclasses for systems limited to optical testing combined with telemetering systems to indicate the result of the test.
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 76+ for seismic prospecting land- reflection type, using telemetry; and subclasses 81+ for wellbore telemetry.
374, Thermal Measuring and Testing, appropriate subclasses for systems limited to a thermal test combined with telemetering systems to indicate the result of the test.

870.08 Radio dial:

This subclass is indented under subclass 870.07. Subject matter in which the telemetering system is responsive to the position of a radio operation indicator.

SEE OR SEARCH CLASS:

- 116, Signals and Indicators, subclasses 124.1+ for radio dial, per se.
- 334, Tuners, subclass 86 for radio dial combinations limited to tuning structure.
- 346, Recorders, subclass 37 for recorders for recording the position of radio dials.

870.09 With alarm or annunciator (concurrent with TM):

This subclass is indented under subclass 870.07. Subject matter in which the telemetering systems is combined with a binary indicator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 500+, for condition-responsive systems.

870.1 For radio sonde:

This subclass is indented under subclass 870.01. Subject matter wherein the telemetering is used in a balloon-borne instrument for simultaneous measurement and transmission of meteorological data.

870.11 Plural transmitters:

This subclass is indented under subclass 870.01. Subject matter having plural sensing points or inputs.

- (1) Note. A transmitter for the purpose of this definition is analogous to a transducer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 870.03, where the plural transmitters are combined with meter reading.
- 870.06, where the final output of the telemetering systems provides an indication which is a mathematical representation of some input.

870.12 Frequency division multiplex:

This subclass is indented under subclass 870.11. Subject matter whereby the transmission of data involving two or more quantities on a common transmission medium is accomplished by modulation of carriers of different frequencies.

- (1) Note. Differing segments need not be associated on a one-to-one basis with the information channels.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 1.1, through 16.1, for plural band selective systems, in general.
- 855.3, for signal multiplexing in a wellbore telemetering system.

SEE OR SEARCH CLASS:

- 370, Multiplex Communications, appropriate subclasses for combining or distributing information via frequency channels in multiplex communications in general.

870.13 Time division multiplex:

This subclass is indented under subclass 870.11. Subject matter whereby the transmission of data involving two or more quantities on a common channel is accomplished by dividing the available time among the quantities to form a composite pulse train.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 1.1, through 16.1, for selective systems, in general.
- 12.1, through 13.38, for pulse responsive systems.
- 855.3, for signal multiplexing in a wellbore telemetering system.

SEE OR SEARCH CLASS:

- 370, Multiplex Communications, appropriate subclasses for combining or distributing information via time channels in multiplex communications in general.

870.14 Using particular sync:

This subclass is indented under subclass 870.13. Subject matter wherein the time division multiplex system includes means to synchronize the transmitter with the receiver.

- (1) Note. The synchronization means of this subclass type must be more than inferred or nominally recited in the claims for classification in this subclass.

SEE OR SEARCH CLASS:

370, Multiplex Communications, subclass 324 for synchronization in satellite multiplex communications, subclass 350 for synchronization in multiplex communications over free space, and subclasses 503+ for synchronization in multiplex communications over wire in general.

870.15 With plural receiver:

This subclass is indented under subclass 870.11. Subject matter having more than one indicator.

- (1) Note. An indicator provides a humanly perceptible signal.
- (2) Note. A receiver is analogous to an indicator for the purpose of this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.41, for plural receivers in a subcombination that have a particular receiver indication.

870.16 Condition responsive:

This subclass is indented under subclass 870.01. Subject matter having electrical means to provide a humanly perceptible signal in response to the attainment of a predetermined value of a specific variable.

SEE OR SEARCH THIS CLASS, SUBCLASS:

500+, for alarms which are automatically responsive to a condition.

870.17 Temperature:

This subclass is indented under subclass 870.16. Subject matter wherein the condition is a predetermined degree of heat.

870.18 Using a particular modulation (e.g., phase, frequency, or amplitude):

This subclass is indented under subclass 870.01. Subject matter wherein the characteristic of a wave (carrier) is modified so that it varies with the instantaneous value of the quantity telemetered (modulating wave).

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.25, for phase variation without specific modulation.

870.26, for frequency variation without specific modulation.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, appropriate subclasses for systems in electrical transmission or interconnection that use modulation.

323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for systems in electricity, voltage magnitude, and phase control that use modulation.

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100+ for miscellaneous circuits that modify input signal parameters such as frequency, phase, and amplitude.

332, Modulators, appropriate subclasses for modulation, per se, unless particularly adapted to telemetering.

870.19 Pulse:

This subclass is indented under subclass 870.18. Subject matter wherein the wave characteristic of a series of modulated pulses is used to convey information.

- (1) Note. A pulse is a variation of a voltage or current normally having a constant value; this variation is characterized by a rise and a decay approaching infinitesimal duration.

SEE OR SEARCH CLASS:

- 332, Modulators, subclasses 106+ for pulse modulators, per se.
- 375, Pulse or Digital Communications, appropriate subclasses for generic communications which include modulated pulse signals.

870.2 Pulse repetition:

This subclass is indented under subclass 870.19. Subject matter wherein the number of pulses per unit of time is varied in accord with analog physical input.

SEE OR SEARCH CLASS:

- 708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 101+ for pulse repetition rate in electric digital calculation computer.

870.21 Analog-to-digital function convertor:

This subclass is indented under subclass 870.19. Subject matter wherein an analog-to-digital convertor is used in a pulse modulation system.

- (1) Note. Digital is of, or pertaining to, the class of devices or circuits in which the output varies in discrete steps (i.e., pulses or "on-off" operation).
- (2) Note. Analog is of, or pertaining to, the general class of devices or circuits in which the output varies as a continuous function of the input.
- (3) Note. Specific structure of an analog to digital function converter is necessary for classification herein, nominal recitation is not sufficient.

SEE OR SEARCH CLASS:

- 341, Coded Data Generation or Conversion, subclasses 155+ for an analog to digital converter.
- 708, Electrical Computers: Arithmetic Processing and Calculating, appropriate subclasses for analog to digital function converters used in electrical computers and data processing systems.

870.22 Permutation code:

This subclass is indented under subclass 870.19. Subject matter in which the pulse modulation is a code for use in the systematic construction of code groups from a fixed size pulse set.

870.23 Increase pulses plus decrease pulses:

This subclass is indented under subclass 870.19. Subject matter in which the pulse modulation consists of two types of pulses, one type to signify increase of quantity telemetered and the other type to signify a decrease of quantity telemetered.

- (1) Note. The pulses may differ, for example, by being of different polarity or they may be sent over two different channels and be of the same polarity.

870.24 Pulse duration (e.g., pulse train):

This subclass is indented under subclass 870.19. Subject matter wherein the time interval between the points at which the instantaneous value on the leading and trailing edges of the pulse bears a specified relationship to the analog physical input.

SEE OR SEARCH CLASS:

- 370, Multiplex Communications, appropriate subclasses for pulse duration used in multiplexing of information.
- 375, Pulse or Digital Communications, subclass 239 for pulse duration used in pulse or digital communications, per se.

870.25 Phase variation:

This subclass is indented under subclass 870.01. Subject matter in which the intelligence is transmitted over the telemetered system by means of phase shift.

- (1) Note. Representation of the analog value telemetered by phase control will be found in the claim language.
- (2) Note. Phase shift is the difference between corresponding points on input and output signal wave shapes expressed as degrees lead or lag.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

870.18, for particular phase modulation.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 212+ for phase variation in phase control.

332, Modulators, subclasses 144+ for phase modulation, per se.

370, Multiplex Communications, subclass 215 for phase modulation in multiplex communications.

455, Telecommunications, subclasses 110+ for angle modulation in telecommunication.

870.26 Frequency variation:

This subclass is indented under subclass 870.01. Subject matter in which the intelligence is transmitted over the telemetry system by means of frequency change.

- (1) Note. Frequency change or conversion is the process of converting a signal to some other frequency by combining it with another frequency.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

870.18, for particular frequency modulation.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for frequency variation in voltage magnitude and phase control systems.

332, Modulators, subclasses 117+ for frequency modulation, per se.

455, Telecommunications, subclass 110 for angle modulation in telecommunication.

870.27 Plural circuits, each for particular magnitude:

This subclass is indented under subclass 870.01. Subject matter having plural circuits between the transmitter and the receiver, each circuit being used to designate a particular quantity.

- (1) Note. To be classifiable as a telemetering system, the subject matter must have a

sufficient number of indications so as to be substantially continuous. Thus, for example, a system which has three indications to indicate, for example, "plenty", "little", and "in between", would not be classified as a telemetering system, but as a signaling system, for classification in subclasses 286+ of this class.

870.28 Via radiant energy beam (via particular energy):

This subclass is indented under subclass 870.01. Subject matter in which the intelligence is transmitted from the transmitter to the receiver by radiant energy.

- (1) Note. The radiant energy means, for example, may be an infrared means.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 200+ for photocell systems; and subclasses 338 for infrared and other radiant energy systems.

398, Optical Communications, for light ray communication systems, particularly subclasses 113 through 114 for duplex optical communication and subclasses 43-103 for multiplex optical communication."

455, Telecommunications, subclass 41.1 for induction or near field systems limited of radio telephony.

870.29 Photoelectric cell pickup:

This subclass is indented under subclass 870.28. Subject matter in which the radiant energy beam is sensed by a photoelectric cell.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 200+ for photocell systems; and subclasses 388.1+ for infrared and other radiant energy systems.

398, Optical Communications, subclasses 41 through 42 for duplex optical communication and subclasses 43-103 for multiplex optical communication.

870.3 With particular transmitter (e.g., piezoelectric, dynamo):

This subclass is indented under subclass 870.01. Subject matter wherein the transmitter is of the piezoelectric, dynamo, or other types of transmitters which are, per se, provided for elsewhere.

- (1) Note. A transmitter is analogous to a transducer for the purpose of this definition.

870.31 Inductive transmitter:

This subclass is indented under subclass 870.3. Subject matter wherein changes in inductance convey the information to be transmitted.

- (1) Note. Inductance is the property which opposes any change in an existing current in a circuit. Inductance is present only when the current is changing.

SEE OR SEARCH CLASS:

336, Inductor Devices, appropriate subclasses for inductor devices, per se.

870.32 Mutual inductance:

This subclass is indented under subclass 870.31. Subject matter in which voltage is produced in one circuit by the magnetic field change in current in a neighboring circuit.

870.33 Flux valve type (e.g., with movable saturating magnet):

This subclass is indented under subclass 870.32. Subject matter in which the mutual inductance is controlled by variably saturating a magnetic field.

- (1) Note. The saturation may be produced, for example, by a movable saturating magnet or by the earth's magnetic field.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclass 317 for systems limited to the earth's magnetic field.

870.34 Self-synchronous type:

This subclass is indented under subclass 870.32. Subject matter in which the mutual inductance has a stator and a rotor which tend to line up magnetically.

- (1) Note. This subclass, for example, contains the familiar selsyn systems.

- (2) Note. A stator is a nonrotating part of a magnetic structure in an induction motor.

- (3) Note. A rotor is a rotating part of a magnetic structure in an induction motor.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, subclass 690 for selsyn-type electric motor systems; and subclasses 654 and 661 for electric motor systems controlled by a selsyn system.

870.35 Differential type:

This subclass is indented under subclass 870.32. Subject matter in which the mutual inductance contains two parts, and in which the magnetic field in the two parts flows through a common portion in a differential relationship.

870.36 Linear variable differential transformer (LVDT):

This subclass is indented under subclass 870.35. Subject matter comprising means to convert mechanical displacements to proportional electrical voltages.

870.37 Capacitive transmitter:

This subclass is indented under subclass 870.3. Subject matter in which a transducer is a variable capacitor.

- (1) Note. A capacitor is a device consisting essentially of two conducting surfaces separated by an insulating material of dielectric.

- (2) Note. A transmitter is analogous to a transducer for the purpose of this definition.

SEE OR SEARCH CLASS:

361, Electricity: Electrical Systems and Devices, subclass 271 for variable capacitors.

870.38 Resistive transmitter:

This subclass is indented under subclass 870.3. Subject matter in which a transducer is a variable resistor.

- (1) Note. A transmitter is analogous to a transducer for the purpose of this definition.

SEE OR SEARCH CLASS:

338, Electrical Resistors, appropriate subclasses for electrical resistor, per se.

870.39 With supply voltage regulation or compensation:

This subclass is indented under subclass 870.01. Subject matter having means to regulate the energizing supply or to compensate for changes in supply.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for means for regulating voltage and/or current, per se.

870.4 With particular receiver (e.g., ratiometer):

This subclass is indented under subclass 870.01. Subject matter comprising a receiver including recited indicating means or significant structure.

- (1) Note. A ratiometer is an instrument which measures electrically the quotient of two quantities.
- (2) Note. A receiver is analogous to an indicator for the purpose of this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.02, for meter reading.

870.41 Plural receivers:

This subclass is indented under subclass 870.4. Subject matter in which the telemetering system has plural receivers.

- (1) Note. A receiver is analogous to an indicator for the purpose of this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.15, for plural transmitters with plural receivers with transmitters.

870.42 With feedback (e.g., reflex along line):

This subclass is indented under subclass 870.4. Subject matter having means to feedback a signal from the receiver to the transmitter.

- (1) Note. The feedback, for example, may be negative feedback used to improve the stability of the system.
- (2) Note. The feedback may be in any form of energy.

870.43 Followup (e.g., circuit rebalanced when upset):

This subclass is indented under subclass 870.42. Subject matter having means responsive to the feedback to reduce the amount of feedback.

- (1) Note. The followup means may, for example, rebalance the system so as to reduce the feedback to zero.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, subclasses 600+ for electric motor rebalancing systems.

870.44 With discharge device (e.g., CRT):

This subclass is indented under subclass 870.4. Subject matter having a device which is intended to have an electrical current flow between two spaced electrodes, at least part of the path followed by the flow being constituted by a gas vapor or vacuum.

SEE OR SEARCH CLASS:

- 313, Electric Lamp and Discharge Devices, appropriate subclasses for space discharge devices, per se.
- 315, Electric Lamp and Discharge Devices: Systems, appropriate subclasses for cathode ray and gas tube circuits, per se.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous electron discharge device circuits.

901 EXTERNAL CONDITION VEHICLE-MOUNTED INDICATOR OR ALARM:

This subclass is indented under the class definition. Subject matter having an indicator or alarm in the vehicle actuated in response to a condition or input signal remote from the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

425.5 through 490, especially subclasses 426.1-426.36 for burglar alarms thereof, subclasses 438-462 for internal alarms, and subclasses 463-467 for external alarms.

500+, for condition responsive indicating systems not associated with the vehicle.

902 Transmitter in another vehicle (e.g., emergency vehicle):

This subclass is indented under subclass 901. Subject matter having the alarm actuated in response to the receipt of a signal generated by another vehicle.

(1) Note. The signal could be received from an emergency vehicle (e.g., police, fire) warning of its presence.

SEE OR SEARCH CLASS:

455, Telecommunications, subclass 99 for transmitter with vehicle, subclass 345 for receiver with vehicle.

903 Relative distance between vehicles (e.g., collision alert):

This subclass is indented under subclass 902. Subject matter wherein the alarm indicates the separation between vehicles.

(1) Note. Potential collision alerting systems are included here when the vehicles are not aircraft.

SEE OR SEARCH THIS CLASS, SUBCLASS:

961, for potential collision alerting systems when used on aircraft.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 29+, 41, and 455 for collision avoidance apparatus using radio wave communications.

904 Transmitter in one vehicle only:

This subclass is indented under subclass 901. Subject matter including a signal generating source located in the vehicle carrying the indicator or alarm.

SEE OR SEARCH CLASS:

455, Telecommunications, subclass 99 for transmitter with vehicle.

905 Highway information (e.g., weather, speed limits, etc.):

This subclass is indented under subclass 901. Subject matter including an indicator responsive to signals communicating the travel conditions along the highway.

(1) Note. Included, for example, are indications of the speed limit of the road, the vehicle position with respect to the lane, signals on the vehicle indicating wrong way travel, etc.

906 OVERRIDE OF TRAFFIC CONTROL INDICATOR BY COMMAND TRANSMITTER:

This subclass is indented under the class definition. Subject matter wherein the normal cycling of a traffic control indicator is interrupted by a remote transmitter not normally connected to the traffic indicator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

909, for the control of a traffic indicator by a remote station normally controlling the indicator.

907 TRAFFIC CONTROL INDICATOR:

This subclass is indented under the class definition. Subject matter having means to develop and/or display right of way indications to vehicular traffic.

- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclasses 63+ for mechanical indicators for street traffic.
246, Railway Switches and Signals, for related subclasses relating for railway signals.
- 908 Portable:**
This subclass is indented under subclass 907. Subject matter wherein the indicator can be moved from one place to another.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclass 63 for portable traffic indicators of mechanical design.
- 908.1 Barricade marker:**
This subclass is indented under subclass 908. Subject matter wherein the indicator is mounted on, or combined with, a portable structure used as a barrier or as a hazard marker.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
473, for similar devices which are intended to be carried in or on a vehicle and used to indicate that the vehicle itself is a hazard while parked or inoperative.
- 909 Plural intersections under common central station control:**
This subclass is indented under subclass 907. Subject matter having plural highways with at least two crossings with a traffic control indicator at each crossing and each under the control of the same central station.
- (1) Note. Mere continuous supply of power is not considered control means.
- 910 Central station responsive to traffic detectors:**
This subclass is indented under subclass 909. Subject matter including means responsive to vehicular presence, said means transmitting a presence signal to the central station.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
933, for vehicle detectors, per se.
- 911 Central station controls offset (time between beginning of same phase at adjacent intersections):**
This subclass is indented under subclass 910. Subject matter wherein the central station controls the time between the beginning of the same indicator phase at adjacent intersections.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
913, for offset control absent traffic detectors.
- 912 Standby cycling implemented if invalid transmission received or loss of transmission occurs:**
This subclass is indented under subclass 909. Subject matter wherein a local controller at an intersection assumes control of the traffic indicators of that intersection if an improper instruction is received from the central station.
- 913 Offset control:**
This subclass is indented under subclass 909. Subject matter wherein the central station controls the time between the beginning of the same indicator phase at adjacent intersections.
- (1) Note. The local controller may make offset adjustments but the basic control comes from the central station.
- (2) Note. Systems resynchronizing the indicators from the central station are classified here.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
911, for offset control with traffic detectors.
- 914 Split control:**
This subclass is indented under subclass 909. Subject matter wherein the central station controls the percentage of a complete cycle at each intersection allowed for a particular indicator phase.

- (1) Note. The local controller may make split adjustments but the basic control comes from the central station.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
910, for split control with traffic detectors.
- 915 Central station includes display of status of indicators:**
This subclass is indented under subclass 909. Subject matter including at the central station a visual representation of the traffic indicators then energized at any particular intersection.
- SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 2.1 through 2.3 for plural display systems remotely located.
- 916 Intersection normally under local controller:**
This subclass is indented under subclass 907. Subject matter including means at each intersection which acts as the main control for determining the traffic indicator energization.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
909, for intersection normally under common central station control.
- 917 Controller responsive to traffic detectors:**
This subclass is indented under subclass 916. Subject matter wherein the local controller is responsive to means detecting vehicular presence.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
933, for traffic detectors, per se.
- 918 Controller, when changing right of way, alters or skips normal "go" cycle of street having no traffic detected:**
This subclass is indented under subclass 917. Subject matter including means not allowing a normal right of way or "go" indicator period when no traffic is detected.
- 919 Plural cross highways at intersection each have traffic detectors:**
This subclass is indented under subclass 917. Subject matter including plural vehicular presence detector means each located at a different cross highway in the intersection.
- 920 Density determines split:**
This subclass is indented under subclass 919. Subject matter wherein the number of vehicles detected per unit time or area determines the percentage of a complete cycle allowed for a particular indicator.
- SEE OR SEARCH CLASS:
377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 9 for counting of vehicles, per se.
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 118 for computation of traffic analysis with determination of traffic density.
- 921 Extension of time:**
This subclass is indented under subclass 920. Subject matter wherein the energization period for an indicator phase may be increased beyond its normal time period.
- 922 Density determines split:**
This subclass is indented under subclass 917. Subject matter wherein the number of vehicles detected per unit time or area determines the percentage of a complete cycle allowed for a particular indicator phase.
- SEE OR SEARCH CLASS:
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 118 for computation of traffic analysis with determination of traffic density.
- 923 Extension of time:**
This subclass is indented under subclass 917. Subject matter wherein the energization period for an indicator phase may be increased beyond its normal time period.

- 924 Local controller can be superceded by central station controller:**
This subclass is indented under subclass 916. Subject matter wherein the traffic indicator control may be taken over by the central station.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
909, when plural intersections are normally under common central station control.
- 925 Pedestrian control:**
This subclass is indented under subclass 916. Subject matter wherein a pedestrian gains control of the traffic control indicator.
- 926 Manual setting of cycle length and split times:**
This subclass is indented under subclass 916. Subject matter including details of a controller having means to set the cycle length and split times by hand.
- 927 Rotating cam structure (specific structure required):**
This subclass is indented under subclass 916. Subject matter including specific details of electromechanical controller structure.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclasses 63+ for mechanical indicators for street traffic.
- 928 Combined (e.g., toll systems, one-way):**
This subclass is indented under subclass 907. Subject matter wherein a diverse art device is combined with a traffic control indicator.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
932.2, for systems specific to parking lots.
- 929 Indication of time remaining before change of phase:**
This subclass is indented under subclass 907. Subject matter having a means auxiliary to the traffic control indicator indicating when the upcoming change in the state of the traffic control indicator will occur.
- 930 Electromechanical movable auxiliary indicator:**
This subclass is indented under subclass 929. Subject matter wherein the auxiliary indicator changes position thereby indicating the upcoming change in traffic control indicator phase.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
929, where the auxiliary indicator is different lights actuated in sequence.
- 931 Traffic control or local controller failure indicator:**
This subclass is indented under subclass 907. Subject matter having means to detect failure of one of the traffic control indicators or the presence of an improper output from the local controller.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
641+, for generic alarms responsive to the condition of an indicator light element.
- 932 Pacing (e.g., vehicle keeps pace with sequentially activated lights):**
This subclass is indented under subclass 907. Subject matter having means, distinct from the conventional intersection traffic control indicator, for supplying an indication for maintaining flow of traffic at a specific pace.
- 932.1 Pivoted:**
This subclass is indented under subclass 907. Subject matter wherein the right-of-way indicating devices rotate or pivot in whole or in part.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
487+, for electromagnetically actuated pivoted indicating devices mounted on a vehicle.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclasses 46+ and 51+ for manually actuated pivoted indicating devices mounted on a vehicle.

932.2 VEHICLE PARKING INDICATORS:

This subclass is indented under the class definition. Subject matter including electrical signalling systems or devices which: (a) indicate the availability of parking, (b) direct a driver to available parking spaces, or (c) assist a driver in parking his vehicle.

- (1) Note. Included here are systems and devices which control traffic within a parking lot or garage as well as those which assist a driver in properly placing his vehicle within a parking space.

SEE OR SEARCH THIS CLASS, SUBCLASS:

436+, for vehicle mounted devices which may assist a driver in parking his vehicle by indicating contact with external objects such as curbs, walls, or other vehicles.

933 VEHICLE DETECTORS:

This subclass is indented under the class definition. Subject matter for sensing the presence or motion of traffic.

SEE OR SEARCH CLASS:

246, Railway Switches and Signals, subclasses 122+ for train position indication and subclasses 246+ for car actuated circuit controllers.

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 9 for vehicle counters, per se.

934 Density:

This subclass is indented under subclass 933. Subject matter including means for detecting and indicating the number of vehicles per unit time or area.

SEE OR SEARCH CLASS:

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 118 for computation of traffic analysis with determination of traffic density.

935 Discriminates vehicle direction:

This subclass is indented under subclass 933. Subject matter having means to distinguish between particular directions of travel.

936 Speed and overspeed:

This subclass is indented under subclass 933. Subject matter having means for detecting the velocity of the vehicle, said means being external to the vehicle.

SEE OR SEARCH CLASS:

346, Recorders, subclass 33 for vehicle speed recorders.

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 119 for computation of traffic analysis with determination of traffic speed.

937 With camera:

This subclass is indented under subclass 933. Subject matter including means to pictorially record the passage of a vehicle.

SEE OR SEARCH CLASS:

346, Recorders, subclass 107.2 for optical recorders including camera for recording phenomenal information.

938 Compensation for vehicle remaining at sensor position:

This subclass is indented under subclass 933. Subject matter including means for inhibiting a "vehicle detected" output when the vehicle detector is constantly sensing the same vehicle.

939 Environmental or drift compensation:

This subclass is indented under subclass 933. Subject matter including means for recalibrating the vehicle detector circuitry to compensate for nonvehicle outside influences.

- (1) Note. Examples of outside influences are temperature, humidity, aging of circuitry components.

940 With pneumatic:

This subclass is indented under subclass 933. Subject matter wherein the vehicle detector includes a means operated by the pressure or exhaustion of air.

SEE OR SEARCH CLASS:

116, Signals and Indicators, for mechanical indicators.

- 200, Electricity: Circuit Makers and Breakers, subclasses 81+ for fluid pressure switches, per se, and subclasses 85+ for weight switches, per se.
- 941 Inductive:**
This subclass is indented under subclass 933. Subject matter wherein the vehicle detector comprises measuring electromotive for which will be generated as a result of a given rate of change of current.
- SEE OR SEARCH CLASS:
246, Railway Switches and Signals, subclass 249 for magnetic responsive car actuated circuit controllers.
324, Electricity: Measuring and Testing, subclasses 200+ for generic magnetic measuring and testing devices.
- 942 Photoelectric:**
This subclass is indented under subclass 933. Subject matter wherein the vehicle detector comprises a light source and sensor means.
- SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 200+ for photocells; circuits and apparatus.
- 943 Sonic or ultrasonic:**
This subclass is indented under subclass 933. Subject matter wherein the vehicle detector comprises a means for sensing vibrations in the air whether audible or a higher frequency.
- SEE OR SEARCH CLASS:
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 93 and 94 for presence or movement detection.
- 944 PEDESTRIAN GUIDANCE:**
This subclass is indented under the class definition. Subject matter having means to develop and/or display right of way indications to pedestrian traffic.
- 945 AIRCRAFT ALARM OR INDICATING SYSTEMS:**
This subclass is indented under the class definition. Subject matter having alarm devices or indicators in or used with aircraft.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
500+, for a system having only nominal aircraft structure and significant alarm structure. Significant limitations to the aircraft would necessitate classification in subclass 945.
- 946 Nonairplane (e.g., balloon or helicopter):**
This subclass is indented under subclass 945. Subject matter including aircraft whose lift is provided by other than functionally stationary airfoils.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 178 for helicopter navigation.
244, Aeronautics, subclasses 17.11+ for helicopters, per se, and subclasses 31+ for balloons, per se.
- 947 Land-based landing guidance:**
This subclass is indented under subclass 945. Subject matter having means in the immediate vicinity of a landing field to guide the aircraft in its descent to the landing field.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
985, for similar systems when used to guide watercraft.
- SEE OR SEARCH CLASS:
244, Aeronautics and Astronautics, subclass 114 for landing field arrangements of nonelectrical design.
- 948 Aircraft actuation of land-based landing guides:**
This subclass is indented under subclass 947. Subject matter wherein the landing guides are normally in a standby condition and are activated by the aircraft.
- 949 Wind direction:**
This subclass is indented under subclass 947. Subject matter including means indicating the direction of the air currents at the landing field.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 170.11 for meteorology with fluid flow velocity determination.

- 950 Movable (e.g., rotatable) guides:**
This subclass is indented under subclass 947. Subject matter having guides that are changeable in position.
- 951 Phased landing guidance (e.g., runway approach, landing, touchdown):**
This subclass is indented under subclass 947. Subject matter wherein landing guides are clustered at different locations for different parts of the landing path for supplying different guidance indications.
- 952 Particular energy guide source (e.g., sound, electric field, radio):**
This subclass is indented under subclass 947. Subject matter including the use of a specific type of energy in the guide source.
- SEE OR SEARCH CLASS:
342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 385+ for directive beacons.
- 953 Visual source:**
This subclass is indented under subclass 952. Subject matter wherein the guide source can be seen by the pilot.
- 954 Alignment of plural sources:**
This subclass is indented under subclass 953. Subject matter wherein plural sources when seen in a particular alignment indicate the correct landing path.
- 955 Plural colors:**
This subclass is indented under subclass 953. Subject matter including plural sources of different visible light wavelengths or colors.
- 956 Modulated light source:**
This subclass is indented under subclass 953. Subject matter having means to vary the amplitude or frequency or phase of flashing of the light other than a mere change in color.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
953, through 955, for flashing of lights in merely an on/off nature without unique communications.
- SEE OR SEARCH CLASS:
398, Optical Communications, particular subclasses for optical communication.
- 957 Magnetic field guide:**
This subclass is indented under subclass 952. Subject matter wherein the guide source is a conductor or coil carrying a current within which moving electric charges will be acted upon by a magnetic force.
- 958 Docking guidance:**
This subclass is indented under subclass 945. Subject matter including means to guide the pilot to a particular airport bay.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
932.2, for parking systems.
- 959 Takeoff indicator:**
This subclass is indented under subclass 945. Subject matter having indicator means operable during the lift off phase of flight.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 178 for takeoff navigation monitors.
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 15 for computation including indication or control of takeoff.
- 960 Landing gear indicator:**
This subclass is indented under subclass 945. Subject matter having indicator means responsive to the condition or location (e.g., up or down) of the landing wheel structure.
- 961 Potential collision with other aircraft:**
This subclass is indented under subclass 945. Subject matter including an alarm indicating a possible upcoming crash with another aircraft.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
903, for potential collision alerting alarms when receiving a transmitted signal from another vehicle.

- SEE OR SEARCH CLASS:
342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 29+, 41 and 455 for collision avoidance apparatus using radio wave communications.
- 962 Icing indicator:**
This subclass is indented under subclass 945. Subject matter including means combined with particular structure unique to aircraft for indicating deposits of frozen water on critical aircraft structures.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
580+, for alarms responsive to ice conditions not aircraft related.
- 963 Flight alarm:**
This subclass is indented under subclass 945. Subject matter having alarms on-board the aircraft actuatable upon a particular flight condition.
- (1) Note. Any indication which could be considered both an alarm and a nonalarm type indication is classified as an alarm.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
971, for nonalarm flight condition indicators.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 178 for related navigation systems.
244, Aeronautics, subclasses 175+ for related aircraft control systems.
318, Electricity: Motive Power Systems, subclasses 580+ for vehicle guidance systems with single axis control.
701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 1+ for vehicles and vehicles indication, operation, or guidance.
- 964 Phased warnings for same flight condition:**
This subclass is indented under subclass 963. Subject matter having plural alerting alarms for different deviations from the standard for a particular flight parameter.
- 965 Tactile:**
This subclass is indented under subclass 963. Subject matter having an alarm means which can be perceived by touch.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
407.1+, for tactile alarms, per se.
- 966 Stall:**
This subclass is indented under subclass 963. Subject matter having an alarm which activates when the aircraft loses the air speed necessary for support and control.
- 967 Attitude (including yaw, angle of attack, roll, pitch, glide slope):**
This subclass is indented under subclass 963. Subject matter having an alarm responsive to the position of the airborne vehicle by the inclination of its axes to some frame of reference.
- (1) Note. If not otherwise specified, this frame of reference is fixed to the earth.
- SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclass 328 for attitude indicators.
- 968 Wind shear:**
This subclass is indented under subclass 963. Subject matter having an alarm when the vertical gradient of the horizontal wind exceeds flight limits for a particular altitude or airspeed.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 178 for navigation landing monitors.
- 969 Speed:**
This subclass is indented under subclass 963. Subject matter having an alarm responsive to the velocity of the aircraft relative to air.
- SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclass 304 for speed responsive control system.
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 121 for speed control of aircraft.

- 702, Data Processing: Measuring, Calibrating, or Testing, subclass 96 for calibration of a speed measurement system, subclasses 142+ for data processing in a generic speed measurement system, particularly subclass 144 for air speed.
- 970 Altitude:**
This subclass is indented under subclass 963. Subject matter having an alarm responsive to the distance from the aircraft to ground or sea level.
- 971 Nonalarm flight indicator:**
This subclass is indented under subclass 945. Subject matter having means on-board the aircraft to indicate to the pilot information concerning a flight condition.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
963, for similar systems with a flight condition alarm.
- 972 Runway presentation:**
This subclass is indented under subclass 971. Subject matter having an indicator on board the aircraft indicating to the pilot a representation of the landing field and the position of the aircraft with respect to it.
- (1) Note. Indicators showing the position of the aircraft with respect to the desired flight path position and not having a runway representation are in subclasses 973-979 below.
- 973 Indicator of at least four flight parameters (altitude, speed, etc.):**
This subclass is indented under subclass 971. Subject matter having combined in a single indicator element means to indicate the value of at least four different flight parameters.
- 974 Attitude:**
This subclass is indented under subclass 971. Subject matter having a changeable indicator responsive to the position of the aircraft by the inclination of its axes to a frame of reference.
- (1) Note. If not otherwise specified, this frame of reference is fixed to the earth.
- SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclass 328 for attitude indicators.
- 975 Roll or pitch:**
This subclass is indented under subclass 974. Subject matter having the indicator representing the angle between the longitudinal axis of the aircraft and the relative wind or the angle the aircraft must be rotated about its longitudinal axis in order to bring its lateral axis into a horizontal plane.
- 976 Glide slope or path:**
This subclass is indented under subclass 974. Subject matter having the indicator representing the summation of the angle between the chord of the airfoil and its direction of motion relative to the air and the angle of pitch.
- 977 Altitude:**
This subclass is indented under subclass 971. Subject matter having an indicator representing the distance from the aircraft to ground or sea level.
- 978 Speed:**
This subclass is indented under subclass 971. Subject matter having an indicator representing the velocity of the aircraft relative to the surrounding air or to ground.
- 979 Heading (includes deviation from desired course):**
This subclass is indented under subclass 971. Subject matter having an indicator representing the position or direction of the aircraft with respect to a desired course or course direction.
- 980 Indicator visible in pilot's line-of-sight through windscreen:**
This subclass is indented under subclass 971. Subject matter wherein the pilot can observe the indicator while his line-of-sight is through the windscreen or windshield.
- 981 Aircraft beacons:**
This subclass is indented under subclass 945. Subject matter having beacons on-board the aircraft perceptible by an observer remote from the aircraft.

- SEE OR SEARCH CLASS:
362, Illumination, subclasses 470+ for aircraft light structure.
- 982 Lights communicate (e.g., direction, altitude, reference position to observer):**
This subclass is indented under subclass 981. Subject matter wherein the beacons are visual signals which indicate to the observer information concerning the flight path or position of the aircraft.
- (1) Note. For example, this information may be the direction, altitude, reference position etc., of the aircraft to the observer.
- 983 Obstruction beacon:**
This subclass is indented under subclass 945. Subject matter having a beacon at the location of an object to warn aircraft of the presence of that object.
- 984 WATERCRAFT ALARM OR INDICATING SYSTEMS:**
This subclass is indented under the class definition. Subject matter having alarms or indicators particular to boats or other aquatic type vehicles.
- SEE OR SEARCH CLASS:
114, Ships, for related subject matter.
- 985 Navigation guides (e.g., channel lights):**
This subclass is indented under subclass 984. Subject matter having means to direct a watercraft to a particular location.
- (1) Note. Included are channel or harbor lights when used for guidance.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
947, for similar systems when used to guide aircraft.
- 986 Anchor movement:**
This subclass is indented under subclass 984. Subject matter having an alarm actuated upon movement of a device which holds the watercraft in place.
- 987 Rudder position indicator:**
This subclass is indented under subclass 984. Subject matter having an indicator showing the position of the movable element hinged at the stern of the boat and used for steering.
- 988 VEHICLE POSITION INDICATION:**
This subclass is indented under the class definition. Subject matter having means to indicate the position or location of a vehicle.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
901, for electrical condition vehicle-mounted indicator or alarm.
933, for vehicle detectors.
- 989 At remote location:**
This subclass is indented under subclass 988. Subject matter wherein the indication is developed at a location remote from the vehicle.
- 990 With map display:**
This subclass is indented under subclass 989. Subject matter wherein the remote location includes a map with the location of the vehicle indicated on the map.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
286.01, for nonvehicle map display.
995.1 through 995.28, for map located on the vehicle.
- 991 Position indications transmitted by vehicle after receipt of information from local station:**
This subclass is indented under subclass 989. Subject matter wherein the vehicle receives its location indication from a local station in its vicinity, then transmits that location indication to a remote station.
- 992 Position indication transmitted at periodic intervals (e.g., distance travelled):**
This subclass is indented under subclass 989. Subject matter wherein the position indication is transmitted to the remote station periodically (e.g., the distance travelled by the vehicle defining the periodic interval).

- 993 Position indication transmitted by local station to remote location:**
This subclass is indented under subclass 989. Subject matter wherein a local station in the vicinity of the vehicle detects the vehicle and transmits the position indication of the vehicle to a remote station.
- 994 Vehicle's arrival or expected arrival at remote location along route indicated at that remote location (e.g., bus arrival systems):**
This subclass is indented under subclass 989. Subject matter wherein an indicator at a remote location indicates when a vehicle is expected to arrive at that remote location.
- 995.1 Map display:**
This subclass is indented under subclass 988. Subject matter including a map with the location of the vehicle indicated on the map.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
539.2, for a map in a central station of a condition responsive indicating system which utilizes a radio link.
- SEE OR SEARCH CLASS:
701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 409 through 464 for navigation having significant data processing and which may include a map display.
- 995.11 Having plural maps:**
This subclass is indented under subclass 995.1. Subject matter including multiple maps.
- 995.12 Transmission of map data to vehicle:**
This subclass is indented under subclass 995.1. Subject matter wherein map information regarding vehicle location is sent to the vehicle.
- 995.13 Traffic information:**
This subclass is indented under subclass 995.12. Subject matter wherein the information describes the traffic information in the vicinity of the vehicle.
- 995.14 Manipulation of map display or data:**
This subclass is indented under subclass 995.1. Subject matter wherein map data or how it is presented is modified.
- 995.15 Having adjustable map (e.g., scalable, etc.):**
This subclass is indented under subclass 995.14. Subject matter wherein there is some map parameter which is modifiable.
- SEE OR SEARCH CLASS:
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 455 for navigation data processing including variable map scale.
- 995.16 Input device:**
This subclass is indented under subclass 995.15. Subject matter wherein the display can be modified by a particular input device.
- SEE OR SEARCH CLASS:
715, Data Processing: Presentation Processing of Document, Operator Interface Processing, and Screen Saver Display Processing, subclasses 700 through 866 for a graphical user interface.
- 995.17 Display change based on vehicle position:**
This subclass is indented under subclass 995.15. Subject matter wherein the display is modified in response to the location of the vehicle.
- 995.18 Particular data storage:**
This subclass is indented under subclass 995.14. Subject matter including details of how map data is stored or retrieved.
- SEE OR SEARCH CLASS:
360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for dynamic magnetic information storage or retrieval.
365, Static Information Storage and Retrieval, appropriate subclasses for static information storage or retrieval.
369, Dynamic Information Storage or Retrieval, appropriate subclasses for dynamic information storage or retrieval, in general.

995.19 Route determination and display on map:
This subclass is indented under subclass 995.1. Subject matter including determining the desired path of the vehicle with subsequent map display.

995.2 Intersection turn guidance:
This subclass is indented under subclass 995.19. Subject matter wherein upcoming required vehicle turns at intersecting roads are displayed.

995.21 Off course, route re-search:
This subclass is indented under subclass 995.2. Subject matter wherein determination is made that a vehicle is off course and there is further determination of correction needed to restore proper course.

995.22 Pattern matching:
This subclass is indented under subclass 995.21. Subject matter wherein comparison of pattern information is used in the rerouting operation.

995.23 Specifying particular start/destination:
This subclass is indented under subclass 995.21. Subject matter wherein a particular beginning or ending location is specified.

SEE OR SEARCH CLASS:

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 455 for navigation data processing including variable map scale.

995.24 Including landmark information:
This subclass is indented under subclass 995.1. Subject matter wherein a noteworthy geographic feature or other significant object or structure is included in the map display.

995.25 Including vehicle position correction:
This subclass is indented under subclass 995.1. Subject matter wherein spatial location of a vehicle is rectified.

SEE OR SEARCH CLASS:

701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 411 through 419 for navigation with significant data processing including route correction.

995.26 Including particular display structure (e.g., detachable, rolling map sheet, etc.):
This subclass is indented under subclass 995.1. Subject matter including a specific structural detail of the display.

995.27 Including particular display feature (e.g., indication of direction, mileage, road type, etc.):
This subclass is indented under subclass 995.1. Subject matter wherein information supplemental to the vehicle route is provided.

995.28 Including particular position/direction sensor:
This subclass is indented under subclass 995.1. Subject matter including details of a device that provides vehicle location or heading.

996 Prerecorded message describes position:
This subclass is indented under subclass 988. Subject matter wherein the indication includes a prerecorded message describing the position of the vehicle.

SEE OR SEARCH CLASS:

360, Dynamic Magnetic Information Storage or Retrieval, subclass 12 for magnetic recording or reproducing for automatic announcing.

999 MISCELLANEOUS
This subclass is indented under the class definition. Subject matter not provided for above.

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 Door or window movement:
Foreign art collections including subject matter responsive to movement of a temporary room closure.

FOR 101 Article placement or removal:
Foreign art collections including subject matter responsive to the removal from, or placement in, a protected area, of an object.

FOR 102 Detectable device on protected article:

Foreign art collections including subject matter where there is a device (e.g., a magnet) on the protected article to which the system is responsive.

FOR 103 Human or animal:

Foreign art collections including subject matter responsive to the condition of a human being or an animal.

FOR 104 Position responsive:

Foreign art collections including subject matter responsive to the position of one object relative to another.

FOR 105 Specified indicator structure:

Foreign art collections including subject matter wherein the means translating electrical signals into humanly perceptible signals are particularly described.

FOR 106 Specified power supply or housing:

Foreign art collections including subject matter wherein either some portion of the structure of the housing or of the energizing supply, or a function of the energizing supply additional to energization is particularly described.

FOR 107 Loop:

Foreign Art Collection having a plurality of controlled devices connected by a communication line in a closed series configuration.

FOR 108 Interrogation response:

Foreign art collection having an information-containing device, an information source control device for interrogating the information-containing device, and a device for presenting the perceptible form.

FOR 109 Printout (e.g., logging) or display:

Foreign art collection wherein the information presenting device includes a printing device forming a permanent or semipermanent record of the information.

FOR 110 Intelligence comparison (340/825.3):

Foreign art collection under the subclass definition 825 which compares an information bearing item or signal with an informa-

tion reference, and performing a control function in accordance with the comparison.

FOR 111 Authorization control (e.g., entry into an area) (340/825.31):

Foreign art collection under collection FOR 110 wherein the comparison determines the operation of a controlled device to permit an individual to perform some action.

FOR 112 With alarm or indication of improper access (340/825.32):

Foreign art collection under collection FOR 111 which additionally produces a humanly perceptible signal indicative of an access attempt by other than the correct signal.

FOR 113 Credit (340/825.33):

Foreign art collection under collection FOR 111 wherein a comparison is made with the balance in an individual's account so as to permit or deny immediate receipt of a desired value of goods or money for future payment.

FOR 114 Authentication (e.g., identity)(340/825.34):

Foreign art collection under collection FOR 110 which compares characteristics or data to determine if an object or document is valid, or the identify of an individual.

FOR 115 Commodity (e.g., vending) (340/825.35):

Foreign art collection under collection FOR 110 Subject matter under subclass 825.3 providing for the receipt, dispensing, or counting of an item.

FOR 203 Channel selection (340/825.03)

Foreign art collection under subclass definition 825 having a plurality of alternative communication lines and selection of less than the total number of lines for signal transmission.

FOR 204 Code or pulse responsive (340/825.04)

Foreign art collection under collection FOR 203 wherein the channel selection is performed in response to a specified pulse pattern or pulse.

FOR 206 Monitoring and control (e.g., supervisory):

Foreign art collection under subclass 825 wherein a signal representative of the actual status of the controlled device, with respect to an intended controlled function, is transmitted back to the selective signal source.

FOR 207 Having addressing:

Foreign art collection under collection FOR 206 with a plurality of controlled devices, each of which is responsive to a unique signal so as to permit individual control.

FOR 208 Polling or roll call:

Foreign art collection under collection FOR 207 wherein all of the controlled devices are caused to transmit a representative signal in response to a particular signal.

FOR 209 Quiescent:

Foreign art collection under collection FOR 206 wherein the representative signal is transmitted solely in response to a change in condition.

FOR 210 Scanning:

Foreign art collection under collection FOR 206 having plural controlled devices with successive transmission of representative signals from each of the controlled devices.

FOR 211 Continuous:

Foreign art collection under collection FOR 210 wherein the scanning is automatically restarted at its conclusion.

FOR 212 Interrupted:

Foreign art collection under collection FOR 210 having structure to interrupt the normal scanning sequence.

FOR 213 Automatic:

Foreign art collection under collection FOR 212 wherein the interruption is in response to a predetermined representative signal.

FOR 214 Synchronization:

Foreign art collection under collection FOR 206 including a reference timing function for operating plural system components.

FOR 215 Having storage or recording:

Foreign art collection under collection FOR 206 combined with the production of a per-

manent or semipermanent record of a control or representative signal.

FOR 216 Fault condition:

Foreign art collection under collection FOR 206 which produces a representative signal in response to a malfunction of the selective device.

FOR 217 Having indicator:

Foreign art collection under collection FOR 206 having an element which produces a humanly perceptible signal.

FOR 218 Relay:

Foreign art collection under collection FOR 206 having an electromagnetic relay.

FOR 244 Code responsive (e.g., paging) (340/825.44):

Foreign art collection under subclass definition 825.36 wherein the indication is controlled or actuated in accordance with a predetermined control signal.

FOR 245 Distress signal alarm (340/825.45):

Foreign art collection under collection FOR 244 responsive to the receipt of signals having standardized characteristics from any transmitter.

FOR 246 Vibratory (tactual) alarm (340/825.46):

Foreign art collection under collection FOR 244 wherein the indicating element produces a shaking vibration which is felt rather than heard.

FOR 247 Group call (340/825.47):

Foreign art collection under collection FOR 244 including plural indicating devices each actuated by a signal unique thereto, and each also responsive to a signal actuating a plurality of such indicating devices.

FOR 248 Tone code (340/825.48):

Foreign art collection under collection FOR 244 wherein the control signal is a predetermined pattern of successive audio frequency modulated signals.

FOR 279 Matrix (340/825.79):

Foreign art collection under subclass definition 825 drawn to a two or more dimensional array of electrical elements in a

receiver for distinguishing different control signals, and not elsewhere classifiable.

FOR 280 Plural stage (340/825.8):

Foreign art collection under collection FOR 279 wherein each element of the matrix is itself a matrix.

FOR 281 Electroluminescent elements (340/825.81):

Foreign art collection under collection FOR 279 wherein each element of the matrix includes an element which emits light when excited by electrical energy.

FOR 282 Light-emitting diode (340/825.82):

Foreign art collection under collection FOR 281 wherein a light-emitting element is a semiconductor device having a barrier layer and two terminals.

FOR 283 Programmable (340/825.83):

Foreign art collection under collection FOR 279 wherein the array or an element thereof has a settable signal response in accordance with a programmed or other setting by an operator.

FOR 284 Having fusible element (340/825.84):

Foreign art collection under collection FOR 283 wherein a matrix element or link thereto has current fusible conductor which modifies the characteristics of the array when fused.

FOR 285 Semiconductor crosspoint (340/825.85):

Foreign art collection under collection FOR 279 wherein a matrix element has an electrical conductivity intermediate that of conductors and that of insulators.

FOR 286 Integrated circuit (340/825.86):

Foreign art collection under collection FOR 285 wherein a matrix element includes plural circuit elements inseparably mounted upon a continuous substrate.

FOR 287 Logic (340/825.87):

Foreign art collection under collection FOR 285 wherein the matrix processes the control signal to form a nonarithmetic digital output.

FOR 288 Bistable (340/825.88):

Foreign art collection under collection FOR 285 wherein the semiconductor element has, or is part of, a circuit having two stable operating states, one of which is set by a control signal.

FOR 289 Switching element (340/825.89):

Foreign art collection under collection FOR 285 wherein the semiconductor changes between two distinct conductive states in accordance with the value of an applied signal.

FOR 290 Transistor (340/825.9):

Foreign art collection under collection FOR 285 wherein the semiconductor element has three or more electrodes and a potential barrier in or on the semiconductor material.

FOR 291 Field effect transistor (340/825.91):

Foreign art collection under collection FOR 290 wherein the resistance between two terminals of the transistor is controlled by the field produced by the voltage applied to a third terminal.

FOR 292 Four or more electrodes (340/825.92):

Foreign art collection under collection FOR 290 wherein the transistor has more than three electrodes contacting the semiconductor material.

FOR 293 Plural (340/825.93):

Foreign art collection under collection FOR 290 wherein a semiconductor matrix element includes a circuit having two or more transistors.

FOR 294 Diode (340/825.94):

Foreign art collection under collection FOR 285 wherein the semiconductor element has a potential barrier and two electrodes.

FOR 295 Charge storage (340/825.95):

Foreign art collection under collection FOR 294 wherein a diode is, or is connected to, an element which stores electrostatic energy.

FOR 296 Plural diodes at crosspoint (340/825.96):

Foreign art collection under collection 294 wherein a semiconductor matrix element includes more than one diode.

FOR 301 Paging (340/311.1):

Foreign art collection under subclass definition 286.01 wherein there is a humanly perceptible signal which is used to summon an individual.

FOR 311 SYSTEM WITH RECEIVER SELECTION (455/31.1):

Foreign art collection under the class definition wherein an operator at a transmitter may selectively communicate with a selected one of a plurality of receivers or wherein an operator at the transmitter or any one of the receivers may signal any one or all of the remainder of the transmitters or receivers that a given condition of the system exists.

FOR 312 Control of selectively responsive paging arrangement over telephone line (379/FOR 102):

Foreign art collection under FOR 311 which telephone equipment is used to transmit a signal to selectively operate or control equipment to produce a perceptible notification signal over an electromagnetic link.

FOR 321 Receiver scans for address signal (455/32.1):

Foreign art collection under collection FOR 311 wherein a transmitter transmits an address signal which uniquely identifies a particular receiver or group of receivers and wherein the receiver scans a plurality of different frequencies until its own address signal is detected.

FOR 326 Plural stage matrix system (e.g., path finding) (340/826):

Foreign art collection under collection FOR 203 having plural serial switch arrays.

FOR 327 Alternate routing (340/827):

Foreign art collection under collection FOR 326 wherein the path through the plural stage matrix system may be modified upon failure of connection between the desired input and output line.

FOR 381 Coded sequence (455/38.1):

Foreign art collection under collection FOR 311 wherein a series of encoded pulses is used, for example, to identify a device or an information signal.

FOR 382 Having actuation (e.g., turn on/off or alarm indication, etc) (455/38.2):

Foreign art collection under collection FOR 381 wherein an operating condition of a device at a remote receiver is actuated from a distance in response to a sequence of encoded pulses which is sent over an intervening wired or a radio modulated carrier wave circuit.

FOR 383 Power control or battery saving (455/38.3):

Foreign art collection under collection FOR 382 wherein a power supply at a remote station is turned on or off upon receiving the encoded pulses.

FOR 384 Visual indication (455/38.4):

Foreign art collection under collection FOR 382 including a device to generate signals perceptible by the human eye in response to a sequence of encoded pulses.

FOR 385 Tone sequence (455/38.5):

Foreign art collection under collection FOR 382 including a series of encoded pulses of audio frequencies.

FOR 400 Map display (340/995):

Foreign art collection under subclass definition 988 which includes a map with the location of the vehicle indicated on the map.

FOR 401 Of burglary or unauthorized use (340/426):

Foreign art collection under subclass definition 425.5 wherein an alarm or indicator is activated in response to an attempt at unauthorized entry or use of the vehicle.

FOR 402 Radio (340/539):

Foreign art collection under subclass definition 531 wherein the condition responsive indicating system includes a communication link by radio waves (i.e., other than light, X or gamma rays, etc.).

FOR 403 Battery (340/636):

Foreign art collection under subclass definition 635 wherein the indicating system is responsive to the condition of the battery.

FOR 404 Timer controlled (340/309.15):

Foreign art collection under subclass definition 286.01 wherein the system includes means whereby the communication is brought about after a predetermined time lapse or is continued for a predetermined time following initiation.

FOR 405 Signal over power line:

Foreign art collection wherein communication signals are sent from one point to another in a system by means of an existing power line in the system.

FOR 406 Modulation technique:

Foreign art collection including details of technique for impressing a signal onto a carrier waveform for transmission over a power line.

- (1) Note. The carrier can be a direct current or an alternating current.

FOR 407 Noise reduction (e.g., filtering):

Foreign art collection wherein a circuit is provided to compensate for signal defects.

FOR 408 Zero crossing:

Foreign art collection including means to extract information from its carrier wave at a region close to the zero crossing point of the carrier wave.

FOR 409 Impedance matching (e.g., Y-match or delta match):

Foreign art collection wherein a circuit is provided to make the impedance of a line terminal equal to the impedance of a circuit to which it is connected in order to achieve optimum signal transfer.

FOR 410 Bidirectional (e.g., with transceiver):

Foreign art collection including at least two communicating terminals which can both transmit and receive signals.

FOR 411 With inductive coupling (e.g., transformer or torroid):

Foreign art collection wherein information on the power line is transferred to or from a terminal through a mutual or common inductance.

FOR 412 With coupling plug:

Foreign art collection wherein information on the power line is transferred to or from a terminal through a connector.

FOR 413 Lockout or priority (programmed or variable):

Foreign art collection having an arrangement to permit transmission from only one of plural transmitters from which a control signal may originate.

- (1) Note. The permitted transmission may be from the first actuated transmitter, or from a transmitter given priority in accordance with a program, a condition, or time.

FOR 414 Designated priority:

Foreign art collection wherein the transmitter permitted to transmit is determined by preset priority.

FOR 415 SELECTIVE (340/825):

This foreign art collection is indented under the class definition. Foreign art collection for controlling one or more devices to obtain a plurality of results by transmission of a designated one of plural distinctive control signals over a smaller number of communication lines or channels than the total number of possible distinct results.

- (1) Note. As used hereinafter, the term "transmitter" refers to the source of signals, and the term "receiver" refers to circuitry responsive to such signals.
- (2) Note. This foreign art collection differs from simple switching in providing more than one result per channel in accordance with the signal content, as, for example, addressing one of a plurality of devices over a single channel.
- (3) Note. Systems containing receivers, receivers and receiver subsystems, are classified in this and indented foreign art collections.
- (4) Note. Transmission of signals providing for messages of arbitrary content is not classified herein.

- (5) Note. Combinations with a specific art end element are usually classified therewith.

This foreign art collection is indented under FOR 415. Foreign art collection producing each of a plurality of different results in a time sequential manner.

FOR 416 Spare channel (340/825.01):

This foreign art collection is indented under FOR 415. Foreign art collection having one or more communication channels additional to those in normal use, which additional channels are used solely in the event of a fault in, or failure of, a normally used communication channel.

- (1) Note. The term “time sequential manner” is intended to denote control of the order in which the different results are performed.

FOR 422 Machine tool (340/825.23):

This foreign art collection is indented under FOR 421. Foreign art collection for control of a work-contacting element which causes a physical alteration in the work (e.g., chipping, boring).

FOR 417 Tree or cascade (340/825.02):

This foreign art collection is indented under FOR 415. Foreign art collection having alternatively operable circuitry branches which are selectively operable, each of said branches further exercising selective control upon succeeding circuitry, and there being no connection between the separate branch circuits.

FOR 423 Of audio systems (340/825.24):

This foreign art collection is indented under FOR 421. Foreign art collection in which the results are intended to control various aspects of an audible signal producing system.

FOR 418 Communication or control for the handicapped (340/825.19):

This foreign art collection is indented under FOR 415. Foreign art collection which performs a function normally performed directly by an individual and particularly adapted for control by physically impaired individual.

- (1) Note. Included herein is selection of distinct audio messages.

FOR 424 Audio system (e.g., by pulse signal) (340/825.25):

This foreign art collection is indented under FOR 415. Foreign art collection wherein the controlled device is a nominally recited, audible signal reproducing system.

FOR 419 Synchronizing (340/825.2):

This foreign art collection is indented under FOR 415. Foreign art collection including a reference timing function with respect to which different control functions are performed.

- (1) Note. A selectively controlled audio system with details thereof is classified with such an audio system.

FOR 420 With addressing (340/825.21):

This foreign art collection is indented under FOR 419. Foreign art collection having plural controlled devices, each one of which is actuated by a signal having a unique characteristic corresponding to the respective one of the controlled devices.

FOR 425 Stock quotation (340/825.26):

This foreign art collection is indented under FOR 415. Foreign art collection wherein the controlled device is particularly designed for display of stock prices and is geographically separated from the information source of such prices.

- (1) Note. The term “unique characteristics” refers to a parameter, the content, or the relative time of occurrence of the signal.

- (1) Note. The device may include control circuitry for inquiring about a designated stock.

FOR 421 Program control (340/825.22):

FOR 426 With information storage (340/825.27):

This foreign art collection is indented under FOR 425. Foreign art collection having an

arrangement to store the stock price information.

- (1) Note. Detailed structure of the storage arrangement is classified in an appropriate information storage class.

FOR 427 Space allocation (e.g., vehicle seat, hotel reservation) (340/825.28):

This foreign art collection is indented under FOR 415. Foreign art collection including a display for indicating the availability of spaces which may be reserved, and a control for modifying such availability by making or cancelling reservations for the spaces.

FOR 428 Remote terminal (340/825.29):

This foreign art collection is indented under FOR 427. Foreign art collection having an information storage device in which the space availability is stored at a geographically spaced location from the display and control.

FOR 429 Having indication or alarm (e.g., location indication) (340/825.36):

This foreign art collection is indented under FOR 415. Foreign art collection controlling an element which provides a humanly perceptible indication of the selective system operation or of an operator initiated condition.

FOR 430 Additional to other selective control (340/825.37):

This foreign art collection is indented under FOR 429. Foreign art collection wherein another control function is performed in addition to the alarm or indication.

FOR 431 Party line (340/825.38):

This foreign art collection is indented under FOR 429. Foreign art collection intended for a telephone or telegraph system, where an indicator at a particular telephone or telegraph instrument is selectively actuated.

- (1) Note. Foreign art collection including handling of an information signal is classified in Class 178, as appropriate.

FOR 432 Selection by means of frequency (340/825.39):

This foreign art collection is indented under FOR 431. Foreign art collection where the indicator is actuated by means of a cyclic current of a frequency peculiar to the selected indicator.

FOR 433 Selector or indicator, per se (340/825.4):

This foreign art collection is indented under FOR 431. Foreign art collection limited, in extent, to the station selector or indicating mechanism for a party-line system.

FOR 434 Step-by-step impulse (340/825.41):

This foreign art collection is indented under FOR 431. Foreign art collection where the selected indicator is actuated in accordance with the number of transmitted impulses.

FOR 435 Polarity controlled (340/825.42):

This foreign art collection is indented under FOR 434. Foreign art collection where selection is based on whether the pulses are of positive or negative amplitude with respect to ground.

FOR 436 Amplitude or polarity controlled (340/825.43):

This foreign art collection is indented under FOR 431. Foreign art collection where the indicator is selected by means of the amplitude or polarity of a current.

FOR 437 Location indication (340/825.49):

This foreign art collection is indented under FOR 429. Foreign art collection which produces a signal indicative of the location of a signal transmitting or receiving station.

FOR 438 Addressing (340/825.52):

This foreign art collection is indented under FOR 415. Foreign art collection having plural controlled devices at distinct locations, each one of the devices being controlled by one or more unique signals whereby the individual devices may be controlled over a common communication channel.

- (1) Note. This foreign art collection includes control of groups of devices by a group control signal.

FOR 439 Plural part (e.g., digit) or repetitions (340/825.53):

This foreign art collection is indented under FOR 438. Foreign art collection wherein the unique actuating signal either (a) has plural successively transmitted components, or (b) is repetitively transmitted for comparison of the repeated transmissions.

FOR 440 With multidigit encoder (340/825.56):

This foreign art collection is indented under FOR 415. Foreign art collection including an encoder to produce a control signal which includes plural signals, each corresponding to a digit.

- (1) Note. Examples are encoders producing plural dial pulses or tone code signals.

FOR 441 Pulse responsive actuation (340/825.57):

This foreign art collection is indented under FOR 415. Foreign art collection wherein the control signal is an abrupt variation in a voltage or current.

FOR 442 Phase or frequency shift keying (340/825.58):

This foreign art collection is indented under FOR 441. Foreign art collection wherein the control signal variation is a shift in the instantaneous frequency thereof.

FOR 443 Polarity (340/825.59):

This foreign art collection is indented under FOR 441. Foreign art collection wherein the variation is either one of plural potentials separated by a reference potential, or a change in direction of current flow.

FOR 444 Pulse pairs (340/825.6):

This foreign art collection is indented under FOR 441. Foreign art collection wherein the signal is transmitted by pairs of pulses, a composite, or differential parameter of which performs the control function.

- (1) Note. The term "composite or differential parameter" denotes a parameter involving both pulses, e.g., time or amplitude difference.

FOR 445 Having delay line (340/825.61):

This foreign art collection is indented under FOR 441. Foreign art collection including an element which retards the progress of a pulse.

FOR 446 Serial (340/825.62):

This foreign art collection is indented under FOR 441. Foreign art collection wherein the control signal includes a group of consecutive or successive distinct pulses.

FOR 447 Pulse width (340/825.63):

This foreign art collection is indented under FOR 446. Foreign art collection wherein the control is performed in accordance with the duration of the pulse.

FOR 448 Pulse spacing (e.g., pulse repetition rate) (340/825.64):

This foreign art collection is indented under FOR 446. Foreign art collection wherein the control is performed in accordance with the interval between pulses.

FOR 449 Counting (340/825.65):

This foreign art collection is indented under FOR 446. Foreign art collection wherein the control is performed in accordance with the number of pulses in the group.

FOR 450 Relay (340/825.66):

This foreign art collection is indented under FOR 449. Foreign art collection where a series of relays are used to count the number of pulses in a group.

FOR 451 Counting chain (340/825.67):

This foreign art collection is indented under FOR 449. Foreign art collection having plural successively connected counting stages.

FOR 452 Shift register (340/825.68):

This foreign art collection is indented under FOR 446. Foreign art collection having a storage register with a series of stages in which the stored information may be shifted by pulses.

FOR 453 Radio link (340/825.69):

This foreign art collection is indented under FOR 446. Foreign art collection in which the communication line includes transmission and reception of an electromagnetic wave.

FOR 454 Phase responsive actuation (340/825.7):

This foreign art collection is indented under FOR 415. Foreign art collection wherein the

control signal includes a phase variation in an alternating current.

FOR 455 Frequency responsive actuation (340/825.71):

This foreign art collection is indented under FOR 415. Foreign art collection wherein the control signal is a frequency variation in an alternating current.

FOR 456 Wireless link (340/825.72):

This foreign art collection is indented under FOR 455. Foreign art collection wherein the communication line includes transmission and receipt of a radio wave or near field.

- (1) Note. The term "near field" refers to capacitive or inductive coupling, rather than an electromagnetic wave.

FOR 457 Plural frequencies (340/825.73):

This foreign art collection is indented under FOR 455. Foreign art collection transmitting plural control signals, each having a different frequency.

FOR 458 Simultaneous (340/825.74):

This foreign art collection is indented under FOR 457. Foreign art collection wherein several of the control signals are transmitted at the same time.

FOR 459 Permutation (340/825.75):

This foreign art collection is indented under FOR 457. Foreign art collection wherein control is performed in accordance with the sequence of control signal frequencies transmitted.

FOR 460 Corresponding to distinct functions (340/825.76):

This foreign art collection is indented under FOR 457. Foreign art collection wherein each of the different control signal frequencies causes a different operation of the controlled device.

FOR 461 Amplitude responsive actuation (340/825.77):

This foreign art collection is indented under FOR 415. Foreign art collection wherein the control signal includes an amplitude variation in an electric current.

FOR 462 Divided resistor (340/825.78):

This foreign art collection is indented under FOR 461. Foreign art collection including a connection between plural resistance elements connected across a potential source.

- (1) Note. The plural resistance elements may be portions of a variable resistor.

FOR 463 Having electron beam device (340/825.97):

This foreign art collection is indented under FOR 415. Foreign art collection including an element within which a narrow stream of electrons is moved in the same direction by an electric or magnetic field.

- (1) Note. The electron beam is generally used as an electric current connection.

FOR 464 System having rectifier (340/825.98):

This foreign art collection is indented under FOR 415. Foreign art collection including an asymmetrically conducting element.

FOR 465 REMOTE CONTROL OVER POWER LINE (340/310.11):

This foreign art collection is indented under the class definition. Foreign art collection wherein control communication signals are sent from one point to another in a system by means of an existing power line in the system to control various devices connecting to the power line.

- (1) Note. The system may be an electric street light system wherein control signals are sent over its conductors.
- (2) Note. The information signal may be an address or a code signal.
- (3) Note. Existing power line in this foreign art collection comprises AC power supply (e.g., residential power of 110-240 volts) or DC power supply (e.g., power supply in the vehicle or sprinkler system, etc.).
- (4) Note. Various devices in this foreign art collection may comprise various appliances (e.g., TV tuner, radio tuner, toaster, lighting or printer, etc.).

FOR 466 Modulation technique (340/310.12):

This foreign art collection is indented under FOR 465. Foreign art collection including details of technique for impressing a signal onto a carrier waveform for transmission over a power line.

- (1) Note. The carrier can be a direct current or an alternating current.

FOR 467 Noise reduction (e.g., filtering) (340/310.13):

This foreign art collection is indented under FOR 465. Foreign art collection wherein a circuit is provided to compensate for signal defects.

FOR 468 Zero crossing (340/310.14):

This foreign art collection is indented under FOR 467. Foreign art collection including means to extract information from its carrier wave at a region close to the zero crossing point of the carrier wave.

FOR 468 Zero crossing (340/310.14):

This foreign art collection is indented under FOR 467. Foreign art collection including means to extract information from its carrier wave at a region close to the zero crossing point of the carrier wave.

FOR 469 Impedance matching (e.g., Y-match or delta match) (340/310.15):

This foreign art collection is indented under FOR 465. Foreign art collection wherein a circuit is provided to make the impedance of a line terminal equal to the impedance of a circuit to which it is connected in order to achieve optimum signal transfer.

FOR 470 Bi-directional (e.g., with transceiver) (340/310.16):

This foreign art collection is indented under FOR 465. Foreign art collection including a communicating terminal which can transmit and receive signals.

FOR 471 With inductive coupling (e.g., transformer or torroid) (340/310.17):

This foreign art collection is indented under FOR 465. Foreign art collection wherein information on the power line is transferred

to or from a terminal through a mutual or common inductance.

FOR 472 With coupling plug (340/310.18):

This foreign art collection is indented under FOR 465. Foreign art collection wherein information on the power line is transferred to or from a terminal through a connector.

END