

CLASS 191, ELECTRICITY: TRANSMISSION TO VEHICLES**SECTION I - CLASS DEFINITION**

Means for transmitting electrical energy between relatively moving objects. Generally involves the problem of transmitting electrical energy from fixed points to vehicles or other moving objects, or vice versa.

- (1) Note. Includes the combination of generation and transmission to and from the vehicle, but does not include specific means for applying the electrical energy to any specific purpose, which are classified according to the application.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

This class does not include mere slip rings and brushes, which are classified in Class 310, Electrical Generator or Motor Structure, subclass 232; rail bonds which are classified in Class 238, Railways: Surface Track, subclasses 14.1+; nor means peculiarly adapted for transmitting electrical energy momentarily to a vehicle for the purpose of operating a signal, switch, etc., which are classifiable in Class 246, Railway Switches and Signals, and will be found in the various subclasses containing the words "Intermittent contact" in the title.

SECTION III - REFERENCES TO OTHER CLASSES**SEE OR SEARCH CLASS:**

- 174, Electricity: Conductors and Insulators, for conductor, conductor cable and insulator structure, conduits and housings for conductor and insulator structures and conduits and housings for other electrical equipment where the characteristics of the electrical equipment are not claimed.
- 307, Electrical Transmission or Interconnection Systems, subclass 145 for miscellaneous electrical systems involving current collection or transfer.
- 314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 129 for consumable electrode discharge devices (arc lamps, et cetera) provided with means to transfer the electric current from a lead wire to a moving electrode.

- 324, Electricity: Measuring and Testing, subclasses 323+ for geophysical exploration systems having means to pass current from a moving electrode into the earth.
- 439, Electrical Connectors, for electrical connector structure, especially subclasses 1+ for a pair of relatively movable mating connectors; and subclasses 110+ for a continuous outlet receptacle.
- 439, Electrical Connectors, for electrical connector structure, especially subclasses 1+, for interrelated connectors relatively movable during use, and subclasses 110+ for an uninterrupted support rail or uninterrupted contact type electrical connector.

SUBCLASSES**1 MISCELLANEOUS:**

This subclass is indented under the class definition. Means not otherwise classifiable.

SEE OR SEARCH CLASS:

- 246, Railway Switches and Signals, particularly subclasses in the title of which "cab signal or train control" occur.
- 343, Communications: Radio Wave Antennas, subclasses 754, 757+, 869, and 882 for movable or rotatable antennas including means to transmit electrical energy to the antenna.

2 SYSTEMS OF DISTRIBUTION:

This subclass is indented under the class definition. Means for supplying electric energy to or from vehicles and involving processes or more than the mere physical structure.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 9.1+ for vehicle mounted electrical systems, and subclass 145 for electrical systems which include current collecting or transferring means.
- 310, Electrical Generator or Motor Structure, subclass 71 for dynamoelectric devices having circuit supply connections therefor.
- 333, Wave Transmission Lines and Networks, subclasses 24+ for coupling networks including significant reactive structure for effecting a transfer

of oscillatory energy from one circuit to another circuit and having attenuation and/or delay characteristics over a frequency range for attenuating and/or delaying in a predetermined manner wave energy passing there-through, and/or providing an impedance match between the network and at least one of the circuits, and subclasses 1+ for such coupling networks in plural channel systems.

- 3 Convertible, multiple current source:**
This subclass is indented under subclass 2. Systems distributing a plurality of currents of different characteristics to or from the vehicle.

(1) Note. The currents may be supplied simultaneously or successively, and the conversion may be automatic or at will.

- 4 Internal and external:**
This subclass is indented under subclass 3. Systems of distribution of the convertible multiple current source type wherein one source is on the vehicle and another exterior thereto, the vehicle source obtaining its power primarily from an external source.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclasses 9.1+ for electrical systems mounted on vehicles.

- 5 Alternating direct:**
This subclass is indented under subclass 3. Systems of distribution of the convertible multiple current source type wherein one of the currents supplied to or from the vehicle is alternating and another direct.

- 6 Sectional:**
This subclass is indented under subclass 2. Systems of distribution comprising a sectional contact conductor.

(1) Note. The physical structure of the sectional conductor is classified in subclass 14, and indented subclasses in this class.

- 7 Alternating-alternating:**
This subclass is indented under subclass 2. Systems of distribution wherein the current source is alternating and is converted to an alternating current of different characteristics before reaching the point of use.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclass 151 for miscellaneous conversion systems.
310, Electrical Generator or Motor Structure, subclass 160 for dynamoelectric frequency converters.
363, Electric Power Conversion Systems, appropriate subclasses for electric power conversion systems, but particularly subclasses 148+ for phase conversion, and subclasses 157+ for frequency conversion.

- 8 Safety cut-out:**
This subclass is indented under subclass 2. Systems of distribution to vehicles combined with means under the control of the persons on the vehicle for de-energizing the systems at will.

- 9 DRAWBRIDGE AND TRANSFER TABLE:**
This subclass is indented under the class definition. A conventional drawbridge, turn-table, or other transfer table, with means for maintaining the bridge or table or a vehicle thereon in electrical connection with a relatively fixed point exterior to the bridge or table.

SEE OR SEARCH CLASS:

14, Bridges, subclass 31, and indented subclasses.
104, Railways, subclasses 19, 35, 48, and 172.1 through 172.5.

- 10 MAGNETIC INDUCTION:**
This subclass is indented under the class definition. Subject matter comprising a vehicle, its pathway, and a static transformer whose primary is mounted on the pathway and its secondary on the vehicle, or vice versa, whereby electrical energy is transferred between the vehicle and its pathway.

SEE OR SEARCH CLASS:

- 124, Mechanical Guns and Projectors, subclass 3.
- 310, Electrical Generator or Motor Structure, subclasses 12+ for linear dynamoelectric machines, but particularly subclass 13, where both the fixed and movable elements of the machine are provided with electrical windings.
- 336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.

11 VEHICLE IN SERIES:

This subclass is indented under the class definition. Vehicles having, a single current source, and means for causing the same current to pass to each vehicle in series.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 36+ for serially connected load circuits.

12 FLEXIBLE EXTENSIONS:

This subclass is indented under the class definition. Devices having a relatively fixed current source, a movable vehicle or other object and a flexible conductor connecting the two.

SEE OR SEARCH CLASS:

- 24, Buckles, Buttons, Clasps, etc., subclass 115, and indented subclasses, for cord and rope holders providing a take-up-function. Many of these devices are disclosed for flexible conductors but are not limited to that use.
- 174, Electricity: Conductors and Insulators, subclass 69, for extensible electric conduit, cable or conductor structures.
- 248, Supports, subclasses 51, 52, 329, and 330.1, for supports having conductor take-ups.
- 267, Spring Devices, particularly subclass 69 and indented subclasses for elastic extension devices operable as take-ups for flexible conductors or other flexible strands but not limited to electrical use.
- 362, Illumination, especially subclass 198.

12.2 Reels:

This subclass is indented under subclass 12. Reel Structures.

- (1) Note. Combinations of reel structures with the vehicle or object in or upon which the reel is mounted are in this class, subclass 12.
- (2) Note. The electrical translator to which energy is supplied may be included in the claims, if no characteristics thereof other than are necessary to define the reel structure are set forth.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, particularly subclass 253.1 for switches controlled by operation of a reel.
- 242, Winding, Tensioning, or Guiding, subclasses 370+ particularly 390.8+, 391+, and 400+ for a reeling device that may include an electrical source.
- 248, Supports, subclass 317, and indented subclasses, particularly subclasses 329 and 330.1 for suspended supports having reels, even though limited to use with electrical conductors.
- 343, Communications: Radio Wave Antennas, subclass 707 for trailing type antennas which may have a reel for the antenna wire; and subclass 877 for antennas with a reel for the antenna.
- 439, Electrical Connectors, subclasses 1+ for an electrical connector having contacts relatively movable during use.

12.4 With connector plug or receptacle:

This subclass is indented under subclass 12.2. Reels having secured thereto an electric connector plug or plug receptacle permitting interconnection of the conductor on the reel and a complementary connector part. The complementary connector part may constitute the connector element of an electrical translator.

SEE OR SEARCH CLASS:

- 439, Electrical Connectors, appropriate subclasses for an electrical connector of general utility.

13 PLATE CONDUCTOR:

This subclass is indented under the class definition. Devices wherein means involving conductors having two-dimension contact-surfaces for the purpose of serving collectors mounted on vehicles which are not confined to a fixed path.

- (1) Note. The device generally comprises two parallel spaced plane conductors, the lower one forming the vehicle path.

14 SECTIONAL CONDUCTOR:

This subclass is indented under the class definition. Devices having means involving an uninterrupted feeder and plurality of separated conductor sections exposed to the collector and means connecting the feeder to the section.

15 Normally live section:

This subclass is indented under subclass 14. Means of the sectional conductor type wherein the sections are normally connected to the feeder and normally energized therefrom. The section exposed to the collector is generally much shorter than the interval between sections and the collector used generally is long enough to bridge from section to section.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
47,

SEE OR SEARCH CLASS:
246, Railway Switches and Signals, subclasses 34, 41 and 58, and indented subclasses.

Sectional conductor, Normally dead section:

This subclass is indented under subclass 15. Means of the sectional conductor type in which the sections are normally deenergized and a given section is connected to the feeder only while the collector is in contact therewith.

16 Magnetomechanical circuit controller:

This subclass is indented under the unnumbered subclass, Normally dead section. Means of the normally dead section type wherein the sections are energized by magnetic means and deenergized by mechanical means or vice versa.

17 Magnetic circuit controller:

This subclass is indented under the unnumbered subclass, Normally dead section. Means of the normally dead section type wherein the mechanism for energizing and deenergizing the sections is operated magnetically.

- (1) Note. Most of the devices in this subclass involve an electromagnetically operated current controller whose magnet obtains current from the feeder when its section is energized by the collector bridging from the adjacent live section.

18 Magnet on vehicle:

This subclass is indented under subclass 17. Means of the normally dead section magnetic circuit controlled type wherein the magnetically operated mechanism for energizing the sections is carried by the vehicle path and operated by a magnet carried by the vehicle.

19 Traveling controller:

This subclass is indented under subclass 18. Means of the normally dead section type in which the feeder and portions of the sections are disposed in parallelism in a closed conduit, which also carries a magnetic traveling bridging piece for successively placing the sections in contact with the feeder, the bridging piece being propelled by the magnet carried by the vehicle.

20 Mechanical circuit controller:

This subclass is indented under the unnumbered subclass, Normally dead section. Means of the normally dead section type in which the mechanisms for energizing and deenergizing the sections are mechanically operated by means of the collector or other operator carried by the vehicle.

SEE OR SEARCH CLASS:

246, Railway Switches and Signals, subclasses 161 and 246 for trolley and car-actuated circuit closers, and 31.

21 Deformable conductor:

This subclass is indented under subclass 20. Means of the normally dead section mechanical circuit controlled type wherein the conductor element is composed of a series of insulated contact sections and a continuous feeder united

by a flexible or deformable casing, so that the collector or other operator resting on the sections may force them into contact with the feeder, thus energizing them.

22 CONDUCTORS:

This subclass is indented under the class definition. Electrical conductors arranged adjacent the vehicle or object path and presenting a substantially continuous exposed surface for contact with a collector carried by the vehicle or object. The electrical energy may be transmitted in either direction.

SEE OR SEARCH CLASS:

246, Railway Switches and Signals, subclasses 9, 65, 67, and 69, and indented subclasses.

23 Conduit:

This subclass is indented under subclass 22. Conductors placed within a conduit which is provided with a continuous aperture or slot for entry of the collector of the vehicle or object and combinations thereof with the collector. The conductor element presents a substantially continuous exposed surface for contact with the collector.

- (1) Note. The conductor may possess inherent rigidity or inherent flexibility. In the former case the conductor element, free from conduit structure, will be classified as a third rail; in the latter case as a trolley conductor.

SEE OR SEARCH CLASS:

104, Railways, subclasses 165+.
439, Electrical Connectors, subclasses 110+ for an electrical connector comprising an uninterrupted support rail or uninterrupted contact.

24 Asymmetric:

This subclass is indented under subclass 23. Conductors of the conduit type in which the slot or other place of entry of the collector into the conduit is not symmetrical with reference to the running rails or other vehicle path.

- (1) Note. The collector opening is generally placed in the flange-way of one of the running rails.

SEE OR SEARCH CLASS:

104, Railways, subclass 165, and indented subclasses.

25 Closing:

This subclass is indented under subclass 23. Conductors of the conduit type in which the place of entry of the collector into the conduit is normally obstructed by a movable closer, which is withdrawn as the collector passes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

31,

SEE OR SEARCH CLASS:

104, Railways, subclass 194.

26 Draining:

This subclass is indented under subclass 23. Conductors of the conduit type combined with conduit draining means.

SEE OR SEARCH CLASS:

104, Railways, subclass 165, and indented subclasses.

27 Heated:

This subclass is indented under subclass 23. Conductors of the conduit type combined with heating means for various purposes, as for keeping the conductor dry or for melting ice therefrom. The heater may be built within the conductor element itself.

SEE OR SEARCH CLASS:

104, Railways, subclass 165, and indented subclasses.

28 Special modifications:

This subclass is indented under subclass 23. Conductors of the conduit type modified to meet special local conditions, such as crossings, switches, plow removal pits, etc.

SEE OR SEARCH CLASS:

104, Railways, subclasses 165, 185 and 195.

29 Third rail:

This subclass is indented under subclass 22. Conductors of the rigid rail type, which are placed above the ground or other vehicle path-

way, but so near such way as not to clear persons and other ordinary objects on the ground, and which present a substantially continuous exposed surface for contact with the collector.

SEE OR SEARCH CLASS:

238, Railways: Surface Track, for pertinent subclass(es) as determined by schedule review.

246, Railway Switches and Signals, subclasses 9, 65, 67 and 69, and indented subclasses.

30 Protected:

This subclass is indented under subclass 29. Third rail conductors provided with a more or less complete casing, guard, or shield for preventing accidental contact with the exposed conductor element.

SEE OR SEARCH CLASS:

238, Railways: Surface Track, subclass 379.

31 Closing:

This subclass is indented under subclass 30. Third rail conductors of the protected type wherein the place of entry of the collector into the protecting casing is normally obstructed by a movable closer, which is withdrawn as the collector passes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
25,

SEE OR SEARCH CLASS:

104, Railways, subclass 194.

32 Supports:

This subclass is indented under subclass 29. Means for holding the third rail conductor in operative position. It generally involves an insulator.

SEE OR SEARCH THIS CLASS, SUBCLASS:
25,

SEE OR SEARCH CLASS:

104, Railways, subclass 194.

33 Trolley:

This subclass is indented under subclass 22. Conductors placed adjacent the vehicle path at such a height as to clear persons and ordinary objects on the ground and presenting a substantially continuous exposed surface for contact with the collector.

(1) Note. The conductor element per se is generally inherently flexible and is tensioned to present a rigid contact surface.

SEE OR SEARCH CLASS:

104, Railways, subclass 124.

246, Railway Switches and Signals, subclasses 9, 65, 67 and 69, and indented subclasses.

34 Nonunderrunning:

This subclass is indented under subclass 33. Trolley conductors wherein the collector contacts on some portion other than or in addition to the under surface.

SEE OR SEARCH CLASS:

104, Railways, subclass 124.

35 Guarded:

This subclass is indented under subclass 33. Trolley conductors provided with means such as cages, shields, etc. for preventing the collector from leaving the conductor or for replacing the collector if derailed or protecting the conductor from deposits of ice, dust, etc.

36 Special intersections:

This subclass is indented under subclass 33. Means at the point of meeting of the trolley conductor with other structures which allow the latter to function without interfering with the operation of the conductor. Generally involves the intersection of trolley conductors with structures such as railway safety gates, doors, bridges, roads, etc.

37 Crossings:

This subclass is indented under subclass 33. Structures at the intersection of a plurality of separate trolley conductors for guiding each conductor's collector across the intersection and preventing it from being diverted to another conductor.

- SEE OR SEARCH CLASS:
246, Railway Switches and Signals, subclass 454, and indented subclasses.
- 38 Switches:**
This subclass is indented under subclass 33. Trolley conductor having modifications at the point of branching for directing the collector to the selected branch. Includes the combination of the track switch with the trolley switch.
- SEE OR SEARCH CLASS:
186, Merchandising, subclass 19, and indented subclasses.
246, Railway Switches and Signals, subclass 415 and indented subclasses.
- 39 Section insulators:**
This subclass is indented under subclass 33. Means for interrupting the electrical continuity of the trolley conductor while maintaining the uninterrupted mechanical path of the collector.
- SEE OR SEARCH CLASS:
238, Railways: Surface Track, subclass 152.
- 40 Supports:**
This subclass is indented under subclass 33. Means for securing the trolley conductor in operative position.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
39,
- SEE OR SEARCH CLASS:
104, Railways, subclasses 124 and 165, and indented subclasses.
105, Railway Rolling Stock, subclass 141, and indented subclasses and 148.
174, Electricity: Conductors and Insulators, subclass 168 and indented subclasses for insulators with conductor holding means.
200, Electricity: Circuit Makers and Breakers, subclass 79.
248, Supports, subclass 61 for means supported by, and maintaining relative spacing between, longitudinal runs of an endless, load-moving cable.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 388 for means supported by, and maintaining relative spacing between, longitudinal runs of an endless, load-moving cable.
- 440, Marine Propulsion, subclasses 33+.
- 41 Catenary:**
This subclass is indented under subclass 40. Means for supporting the trolley conductor in a more or less straight line, comprising a superposed supporting or "Messenger" strand connected to the conductor by hangers. Includes hangers, per se, modified for this use.
- SEE OR SEARCH CLASS:
14, Bridges, subclass 18, and indented subclasses.
104, Railways, subclass 124.
- 42 Combined ears and insulator:**
This subclass is indented under subclass 40. Means connecting the trolley conductor to the supporting insulator and presenting an uninterrupted path to the collector, combined with the supporting insulator.
- SEE OR SEARCH CLASS:
174, Electricity: Conductors and Insulators, subclass 168, and indented subclasses, for insulators with conductor holding means.
- 43 Ears:**
This subclass is indented under subclass 40. Means connecting the trolley conductor to the support and presenting an uninterrupted path to the collector.
- SEE OR SEARCH CLASS:
104, Railways, subclass 165, and indented subclasses.
174, Electricity: Conductors and Insulators, subclass 168, and indented subclasses, for insulators with conductor holding means.
- 44 Splices:**
This subclass is indented under subclass 43. Trolley conductor having supporting ears adapted to join trolley conductors meeting at the ear.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
39,
- SEE OR SEARCH CLASS:
104, Railways, subclasses 165+
439, Electrical Connectors, appropriate subclasses for an electrical connector, generally.
- 44.1 Splicers:**
This subclass is indented under subclass 33. Splicers or couplings for alined ends of electric trolley-wires.
- (1) Note. See Class 403, Joints and Connections, subclasses 300+ for distinct end couplers not restricted to electrical conductors.
- 45 COLLECTORS:**
This subclass is indented under the class definition. Subject matter having the portion of the current communicating means carried by the vehicle or body that moves, as distinguished from that portion which is fixed in relation to the track or pathway of the moving member.
- SEE OR SEARCH CLASS:
75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, subclass 229 for a composition having a continuous phase of free metal made by consolidating metal particles and which contains a flake or fibrous constituent or has a fibrous grain structure.
200, Electricity: Circuit Makers and Breakers, generally.
246, Railway Switches and Signals, subclasses 9, 65, 67, and 69+.
310, Electrical Generator or Motor Structure, subclasses 219+ for slip rings, commutators and other current collectors for dynamoelectric devices.
- 46 Convertible:**
This subclass is indented under subclass 45. Collectors cooperating alternatively with a plurality of conductor systems, such as trolley, third rail, conduit, etc.
- (1) Note. Convertible collectors are unitary devices. Systems are classified in this class, subclass 3.
- 47 Bar:**
This subclass is indented under subclass 45. Collectors having longitudinally extensive contact surfaces to cooperate with conductors which do not have a continuous contact surface, but which present a series of separated contacts spaced at less distance than the length of the collector contact surfaces.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
15,
- 48 Conduit plow:**
This subclass is indented under subclass 45. Collectors for cooperating with conductors placed beneath the surface of the ground.
- SEE OR SEARCH CLASS:
104, Railways, subclass 202, and indented subclasses.
- 49 Third-rail shoe:**
This subclass is indented under subclass 45. Collectors for cooperating with conductors placed substantially at the surface of the ground.
- SEE OR SEARCH CLASS:
104, Railways, subclass 202, and indented subclasses, and 279, and indented subclasses.
- 50 Trolley:**
This subclass is indented under subclass 45. Collectors for cooperating with conductors placed at a substantial distance above the ground.
- SEE OR SEARCH CLASS:
246, Railway Switches and Signals, subclasses 9, 65, 67, and 69, and indented subclasses.
- 51 Common wire passing:**
This subclass is indented under subclass 50. Trolley collectors capable of passing one another on the same conductor either by being

- outside each other's clearance line or by riding one over the other.
- SEE OR SEARCH CLASS:
104, Railways, subclass 53.
- 52 Detachable:**
This subclass is indented under subclass 50. Trolley collectors readily removable from the vehicle or other movable body.
- 53 Nonunderrunning:**
This subclass is indented under subclass 50. Trolley collectors contacting on some portion of the conductor other than its under side or on some portion in addition to the under side.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
34,
- 54 Indefinite path:**
This subclass is indented under subclass 50. Under-running trolley collectors presenting an extended contact substantially at right angles to the conductor and not guided laterally by the conductor.
- 55 Bow:**
This subclass is indented under subclass 54. Indefinite path trolley collectors wherein the contact element slides on the conductor. The contact may be a whip, bow, slide, etc.
- 56 Roller:**
This subclass is indented under subclass 54. Indefinite path trolley collectors wherein the contact element is of the roller type.
- SEE OR SEARCH CLASS:
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.
- 57 Multiple contact:**
This subclass is indented under subclass 50. Trolley collectors having a plurality of contact elements.
- SEE OR SEARCH CLASS:
246, Railway Switches and Signals, subclass 65, and indented subclass, 73 and 254.
- 58 Tandem:**
This subclass is indented under subclass 57. Multiple contact trolley collectors wherein the contact elements are arranged to travel one in advance of the other on the same conductor.
- 59 Heads:**
This subclass is indented under subclass 50. That portion of the collector of the ordinary under-running type that includes the contact element, its mounting, and the securing means between the contact mounting and the pole or other supporting means.
- (1) Note. Wheel mounts adapted for general application although designed as mounts for trolley wheels, are classified in Class 384, Bearings, subclasses 252+ and 429+ for bearing supports, e.g., mount for trolley wheel.
- 59.1 Sliding contact:**
This subclass is indented under subclass 59. Devices wherein the engaging part slides along the supply conductor.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
50, 55, 62, and 65.
- SEE OR SEARCH CLASS:
75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, subclass 229 for a composition having a continuous phase of free metal made by consolidating metal particles and which contains a flake or fibrous constituent or has a fibrous grain structure.
- 60 Swivel:**
This subclass is indented under subclass 59. Trolley heads comprising a swivel, so that the contact element may follow lateral curves of the conductor.
- (1) Note. Compare Class 384, Bearings, subclasses 429+ for bearing supports, or mounts.

- 60.1 Center bias:**
This subclass is indented under subclass 60. Gravity, spring, or electric devices constantly tending to maintain the swiveled heads in normal or central position and to restore them to such position if swung to either side.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
60.2,
- 60.2 Lateral swing:**
This subclass is indented under subclass 59. Devices wherein the head or harp is pivotally or flexibly connected to the trolley-pole to permit the head to swing transversely relatively to the car and trolley-wire.
- 60.3 Vertical swing:**
This subclass is indented under subclass 59. Devices wherein the head or harp is pivotally or flexibly connected to the trolley to permit the head to swing vertically toward or from the trolley-wire.
- 60.4 Axial slide:**
This subclass is indented under subclass 59. Devices wherein the shank of the head or harp has an axially slidable connection with the trolley-pole, usually against spring-pressure.
- 60.5 Pole couplings:**
This subclass is indented under subclass 59. Releasable and permanent fixtures for securing the head or harp to the trolley-pole, not including yielding or pivotal connections, which are found in this class, subclasses 60, 60.1, 60.2, 60.3, and 60.4.
- 61 Wheel to head contactor:**
This subclass is indented under subclass 59. Trolley heads involving means for maintaining the electrical connection between the wheel and its mounting, thus bridging possible resistance in the bearings.
- 62 Ice clearers or preventers:**
This subclass is indented under subclass 59. Means associated with or modifications of the trolley head for the removal of ice, sleet, or other accumulations on the conductor or for the prevention of the formation of such accumulations thereon.
- (1) Note. Compare Classes 15, Brushing, Scrubbing, and General Cleaning, subclass 3, and indented subclasses; 104, Railways, subclass 279, and indented subclass, and 184, Lubrication, subclasses 3.1+.
- SEE OR SEARCH CLASS:
343, Communications: Radio Wave Antennas, subclass 704 for antennas with an ice clearer or preventer.
- 63 Wheels:**
This subclass is indented under subclass 59. Elements of trolley heads making a rolling contact with the conductor and providing a definite path for the conductor.
- (1) Note. For similar wheel devices intended for general use as pulleys, see Class 474, Endless Belt Power Transmission Systems or Components, subclass 166 and indented subclasses.
- 63.1 Quick release:**
This subclass is indented under subclass 63. Articulated sectional trolley-harps to permit the quick release of a trolley-wheel.
- 63.2 Lateral slide:**
This subclass is indented under subclass 63. The trolley-wheel is mounted on an elongated pin or shaft to permit the wheel to slide laterally while running on the trolley-wire.
- 63.3 Universal mount:**
This subclass is indented under subclass 63. The trolley-wheel is mounted in the harp or on a pin, so as to permit free universal movement of the wheel.
- 63.4 Slidable pins:**
This subclass is indented under subclass 63. The supporting-pins for the trolley-harps are mounted so as to permit up and down or rear and forward movement of the pins in the harps.
- 63.5 Pin fasteners:**
This subclass is indented under subclass 63. Devices for fastening trolley-wheel pins or axles in the trolley-harps.

- 64 Poles:**
This subclass is indented under subclass 50. That portion of the trolley connecting the head to the stand or erecting means.
- 65 Frames:**
This subclass is indented under subclass 64. Trolley poles constituting a framed structure, generally a plurality of simple poles braced together. Includes the "pantagraph" trolley.
- 66 Stands:**
This subclass is indented under subclass 50. That part of the trolley which connects the pole with the vehicle. Generally includes means for allowing the pole to swing laterally or swivel and means for erecting the pole or forcing it upward toward the conductor.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
85, and 86, and indented subclasses.
- 67 Fluid pressure erector:**
This subclass is indented under subclass 66. Trolley stands wherein the erecting or operating force is due to fluid pressure.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
87, and 90.
- 68 Spring erector:**
This subclass is indented under subclass 66. Trolley stands wherein the erecting or operating means is of the mechanical spring type.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
85, and 86, and indented subclasses.
- 69 Torsion:**
This subclass is indented under subclass 68. Trolley stands of the spring type wherein the operating spring is of the torsion type.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
85+, for operating springs of the torsion type.
- 70 Tension or compression:**
This subclass is indented under subclass 68. Trolley stands of the spring type wherein the operating spring is of the tension or compression type.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
85+, for trolley retrievers with torsion type operating springs.
- 71 Rope protectors:**
This subclass is indented under subclass 50. Devices for preventing moisture, rain, grease, etc., from flowing down the operating rope of the trolley.
- 72 Guards and finders:**
This subclass is indented under subclass 50. Means on the vehicle associated or integral with the trolley and cooperating with the conductor to prevent the trolley leaving the conductor or to aid in its replacement.
- (1) Note. The retaining means are not intended to aid directly in the conduction of current.
- (2) Note. Compare subclass 53, of this class.
- 73 Constantly operative:**
This subclass is indented under subclass 72. Guards and finders which are always operative. They have no inoperative position.
- 74 Fixed:**
This subclass is indented under subclass 73. Trolley guards and finders of the constantly operative type having but one position. They are fixed or immovable in reference to the trolley.
- 75 Spiral cam replacer:**
This subclass is indented under subclass 73. Trolley guards and finders of the constantly operative type consisting of conical members placed at the side of the regular trolley wheel

- and coaxial therewith. The surfaces of these cones are provided with spiral grooves leading toward the regular wheel, so that the displaced wire falling upon the conical member will be carried back onto the wheel.
- 76 Star wheel:**
This subclass is indented under subclass 73. Trolley guards and finders of the constantly operative type consisting of star or rimless spoked wheels at the side of or forming part of the regular trolley contactor, so that one arm or spoke of the guard wheel is always in operative position.
- 77 Normally operative:**
This subclass is indented under subclass 72. Trolley guards and finders normally held in operative position but capable of being moved into an inoperative position.
- 78 Automatic:**
This subclass is indented under subclass 77. Trolley guards and finders of the normally operative type capable of being automatically forced to the inoperative position by obstructions.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
79+,
- 79 Rope-retracted:**
This subclass is indented under subclass 77. Trolley guards and finders of the normally operative type capable of being moved to the inoperative position by pulling on the trolley rope or an auxiliary rope.
- 80 Lateral swing:**
This subclass is indented under subclass 77. Trolley guards and finders of the normally operative rope retracted type wherein the guard or finder elements swing in planes substantially transverse or normal to the conductor.
- 81 Longitudinal swing:**
This subclass is indented under subclass 79. Guards and finders of the normally operative rope retracted type wherein the guard or finder elements swing in planes substantially parallel to the conductor.
- 82 Normally inoperative:**
This subclass is indented under subclass 72. Trolley guards and finders held in an inoperative position or out of the way when the trolley occupies its normal position on the conductor.
- 83 Automatic:**
This subclass is indented under subclass 82. Trolley guards and finders of the normally inoperative type which are automatically moved into the guarding or fishing position when the trolley leaves the conductor. Includes guards that are operated by undue pressure upon the trolley contact.
- 84 Rope-actuated:**
This subclass is indented under subclass 82. Trolley guards and finders of the normally inoperative type which are moved into operative position by pulling on the trolley rope or an auxiliary rope.
- 85 Trolley retrievers:**
This subclass is indented under subclass 45. Trolley modifications or attachments for trolleys for causing the trolley to move downward, so as to avoid fouling the conductor system when the trolley leaves the conductor.
- 86 Erector release:**
This subclass is indented under subclass 85. Trolley retrievers wherein the erecting force is released when the trolley leaves the conductor, thus allowing the trolley to drop.
- 87 Fluid pressure erector:**
This subclass is indented under subclass 86. Trolley retrievers of the erector release type wherein the erecting force of the trolley is fluid pressure, which pressure is released when the trolley leaves the conductor, thus allowing the trolley to drop.
- 88 Spring erector:**
This subclass is indented under subclass 86. Trolley retrievers of the erector release type wherein the normally tensioned erecting spring is rendered ineffective by a shortening of its lever arm or is released when the trolley leaves the conductor, thus allowing the trolley to drop.

89 Toggle:
This subclass is indented under subclass 88. Trolley retrievers of the erector spring release type wherein the erecting spring is normally tensioned by a toggle, which toggle is broken when the trolley leaves the conductor, thus allowing the trolley to drop.

90 Fluid pressure-retracted:
This subclass is indented under subclass 85. Trolley retrievers wherein there is a fluid pressure motor which overcomes the erecting motor and retracts the trolley when it leaves the conductor. The erecting motor may be of any type--spring, weight, fluid, etc.

91 Spring-retracted:
This subclass is indented under subclass 85. Trolley retrievers wherein there is a spring motor which overcomes the erecting motor and retracts the trolley, the holding or restraining means of the retracting motor being tripped or set in operation when the trolley leaves the conductor.

92 Rope-actuated:
This subclass is indented under subclass 91. Trolley retrievers of the spring retracted type wherein the spring motor operates through the medium of the trolley rope and is set in operation by the sudden acceleration of the latter upon the trolley leaving the conductor.

93 Slack take-up:
This subclass is indented under subclass 92. Trolley retrievers of the spring retracted rope actuated type wherein the trolley rope is kept taut, but allowed to follow the undulations of the conductor, and wherein the retracting spring motor is set in immediate operation by the sudden acceleration of the trolley rope upon the trolley leaving the wire.

- (1) Note. This means automatically cuts short the upward spring of the trolley when it leaves the wire and rapidly draws it downward to a position below the conductor.

94 Weight-retracted:
This subclass is indented under subclass 85. Trolley retrievers wherein the retracting motor comprises a suspended weight whose restrain-

ing means is tripped or set in operation upon the collector leaving the conductor. Includes the means with or without slack take-up mechanism.

95 Nonretracting trolley stops:
This subclass is indented under subclass 45. Collectors of the trolley type provided with automatic mechanism operating to stop the rise of the collector upon its leaving the conductor. The trolley is merely prevented from rising; it is not retracted. When the device acts through the agency of the trolley-rope, it is generally provided with a slack take-up.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

93,

SEE OR SEARCH CLASS:

160, Flexible or Portable Closure, Partition, or Panel, subclass 291 and indented subclasses.

END