

CLASS 347, INCREMENTAL PRINTING OF SYMBOLIC INFORMATION

SECTION I - CLASS DEFINITION

This class provides for processes and apparatus for conveying information by selectively creating on a medium a visibly distinguishable symbol* or mark* composed of a plurality of portions*. The symbol* or mark* is created portion* by portion* as, for example, by pixels or dots. The symbol* or mark* may be an alphanumeric character or an image.

SCOPE OF THIS CLASS (347)

- (1) Note. The symbol* or mark* is created portion* by portion*. A symbol* or mark* which is not created portion* by portion* is found elsewhere. For example, printing type, typewriters, stencils, and hand stamps create a whole mark* rather than a mark* portion* by portion*. (See References to Other Classes, below, for these latter classes).
- (2) Note. The symbol or mark which is created using a character supporting electrode stylus by which an electrostatic charge is deposited onto or discharged from a medium is, however, classified in this class (347).
- (3) Note. The symbol* or mark* conveys information. Information is the communication of knowledge or intelligence. For example, an alphanumeric character and an image are marks* which convey information. A code (e.g., a bar code) is a mark* which conveys information.
- (4) Note. A visibly distinguishable mark* created portion* by portion* for a purpose other than conveying information is found elsewhere. For an example of a coating formed in this manner, see References to Other Classes below.
- (5) Note. Some portion* by portion* marks* in a specific situation are found elsewhere. For a portion* by portion* mark in the production of a printing plate see References to Other Classes, below.

(6) Note. The marking* can be combined* for a special purpose. Special purpose devices are found elsewhere; e.g., facsimile devices, electrophotographic copiers, labelers, and recorders. (See References to Other Classes, below.)

(7) Note. The marking* device is made up of several portions*: a combined* portion, a controller portion, a head* portion, a marking* portion, a medium portion, and a housing portion. The combined* portion is the combination of a marking* device and an external means which functions as a special information marking* system. The controller portion contains the means to direct the operation of the marking* device or any of its component parts. The head* portion contains the means which provides the marking*. The marking* portion contains the specifics of the marking* (e.g., the fluid, the impact, the heat, the electricity, and the radiation). The mechanism portion contains the medium, its handling, and its processing. The housing portion* contains an outer enclosure for the marking* device.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

This class (347) provides for "stand-alone" incremental printers such as ink jet, laser, thermal, dot-matrix, or electrostatic printers. These devices, for the most part, are now classified in Class 346, Recorders, and Class 400, Typewriting Machines.

Other types of informational marking* are found elsewhere. See References to Other Classes, below.

Subcombinations of this subject matter can be found in various areas. For example, media and media handling means are found elsewhere (see References to Other Classes, below).

As these arts are reclassified, appropriate subject matter will be transferred to this class (347). See Other Classification Systems, below, for the appropriate IPC subclass for the art of this class (347).

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

- 101, Printing, appropriate subclasses for means adopted to produce characters or designs on a surface by impression of types or die or by applying coating matter thereto through openings of previous portions* of a pattern sheet, as in stenciling, or by impression from planographic or intaglio surfaces. (see Class definition, Scope of the Class, (1) Note, (5) Note; also see Lines With Other Classes, above, re informational marking other than a Class 347 type).
- 118, Coating Apparatus, appropriate subclasses for devices for applying or obtaining a surface coating on a base and/or impregnating base materials.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, for labelers. (See Class definition, Scope of the Class, (6) Note).
- 216, Etching a Substrate: Processes, especially subclass 27 for methods of making a thermal ink jet device.
- 226, Advancing Material of Indeterminate Length, appropriate subclasses for processes or apparatus for moving, sensing, threading, and constraining indeterminate material. (Also see Lines With Other Classes above re media handling subcombinations).
- 242, Winding, Tensioning, or Guiding, appropriate subclasses for winding or unwinding flexible material from a reel. (See Lines With Other Classes above re media handling subcombinations).
- 271, Sheet Feeding or Delivering, appropriate subclasses for means for removing individual sheets from a stock or for positioning individual sheets with respect to some mechanism for operating on them or for placing them after they have been operated upon. (Also see Lines With Other Classes, above re media handling subcombinations).
- 346, Recorders, appropriate subclasses for apparatus and corresponding processes for making a record of the movement of machines or instruments or of any phenomenon capable of being detected. (See Class definition, Scope of the Class, (6) Note).
- 355, Photocopying, appropriate subclasses for photos:graphically copying information from an original or carrier. (Also see Lines With Other Classes, above, re informational marking other than a Class 347 type).
- 358, Facsimile and Static Presentation Processing, subclasses 1.1 through 1.18 for data processing for static presentation on fixed medium (e.g., for printer), subclasses 500-540 for natural color facsimile, and subclasses 400-309 for black and white facsimile. (See Class definition, Scope of the Class, (6) Note; also see Lines With Other Classes, above, for informational marking other than a Class 347 type).
- 365, Static Information Storage and Retrieval, appropriate subclasses for apparatus or processes for static storage and retrieval of information.
- 369, Dynamic Information Storage or Retrieval, appropriate subclasses for processes of and apparatus for the storage or retrieval of arbitrary variable information.
- 396, Photography, appropriate subclasses for devices for photographically recording an image of an object upon actuation.
- 399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclasses 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development, subclasses 297+ for transfer, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling. (See Class definition, Scope of the Class, (6) Note).
- 400, Typewriting Machines, appropriate subclasses for devices causing an intelligible character to be imprinted on a record medium by a type member. (See Class definition, Scope of the Class, (1) Note).
- 427, Coating Processes, appropriate subclasses for applying or obtaining a coating on a surface. (See Class definition, Scope of the Class, (4) Note).
- 428, Stock Material or Miscellaneous Articles, appropriate subclasses for stock material composites in general; for a transfer medium (e.g., ink ribbon) per se, see subclasses 195+ and 984+; for a record receiver, per se, see subclasses 195+. (Also see Lines With Other Classes above re media handling subcombinations).
- 430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, appropriate subclasses for forming the likeness of an object, or an instrumented or discernable phenomenon, in a chemically defined receiver or in a receiver wherein radiation produces a chemical reaction, by use of radiation.

503, Record Receiver Having Plural Leaves or a Colorless Color Former, Method of Use, or Developer Therefor, subclasses 200 through 226 for imaging with colorless color formers and developers therefor; subclass 227 for non-textile sublimation thermal dye transfer medium or record receiver, per se, or for processes of transfer wherein the medium or the receiver is substantial to the transfer.

SECTION IV - REFERENCES TO OTHER CLASSIFICATION SYSTEMS

B41J, of the International Patent Classification (IPC), for the art in this class (347).

SECTION V - GLOSSARY

The following terms have been defined for purposes of classification in this class. In the class and subclass definition of this class, terms used in a sense defined below are indicated by an asterisk(*).

COMBINED

Means connected with the marking* device for adapting the device to a particular marking* purpose.

CONTROL

Means to regulate the operation of the head*, the medium, and the other parts of the marking* device so that the device will operate in the intended manner.

EJECTOR

The mechanism which projects the fluid* onto the medium*.

FLUID

The flowable substance which is projected from the ejector* mechanism or which is used to enhance the transport or generation of charged particles.

HEAD (MARKER)

The section of the marking device which produces the visibly distinguishable or latent symbol or mark on the medium in accordance with an information signal.

MARK

A discrete area on the medium which contains the plurality of portions*. Unless otherwise indicated, “mark” and “symbol” are used synonymously in the subclass definitions of this class.

MARKING

The specific manner by which the mark* is formed; e.g., ink jet, impact, thermal, electric (e.g., toner applied to a latent image), or radiation.

MEDIUM

A substrate on which the visibly distinguishable or latent symbol or mark is formed.

PORTIONS

Elemental sections of a symbol* or mark*. An elemental section is not, itself, a symbol* or mark* as, for example, is an alphanumeric typeface used to create a picture or an image.

SYMBOL

A mark* which conveys intelligent information. Unless otherwise indicated, “mark” and “symbol” are used synonymously in the subclass definitions of this class.

TRANSDUCER

The part of the head* which converts an input signal into the force for producing the mark*.

SUBCLASSES

1 INK JET:

This subclass is indented under the class definition. Subject matter wherein the symbol* or mark* is created by a projection of fluid onto a medium in a controlled manner. The fluid is projected by an ejector which does not contact the medium.

- (1) Note. An ink jet generally includes a fluid*, an ejector*, a medium* for receiving the projected fluid*, and a controller. The projected fluid* on the medium* forms the marking* which represents a visualization of the information.

- (2) Note. The fluid* can be any substance that flows. Generally, it is an ink, but it can be other substances such as powder, gas, etc., or a combination of these substances. Generally, the fluid*, per se, is classified with the fluid* except where a specific interconnection with the ink jet is claimed. For example, an ink for use in an ink jet would still be classified in Class 106. When other factors such as printing density or droplet volume are recited, classification in subclasses 84+ of this class (347) could be appropriate. Ink jet fluids* are classified in this class (347). Ink with a nominal recitation of ink jet is classified in Class 106, especially with ink jet composition or process. Also, ink compositions containing synthetic resins are classified elsewhere. Fluid* handling is classified in this class (347). Fluid* handling details such as pumps, valves, and filters with a nominal recitation of ink jet are classified in the classes appropriate to the details.
- (3) Note. The medium* can be any substrate which accepts fluids*. Mediums are a stock material which is classified in Class 428. When specifics such as ink compositions and medium handling are recited especially adapting the medium to the ink jet, classification could be appropriate in this class (347). A distinction within this class (Class 347) is made between an object and a medium. An object is a specialized medium. For example, wire, containers, envelopes, and checks are considered objects. The ink jet informational marking* of objects is classified in this class (347). Means especially adapted to handle and/or process ink jet mediums can be found in this class (347). Medium handling means, in general, are classified elsewhere. See the search notes below.
- (4) Note. Ink jet marking* is considered to be the visualization of information. Other terms such as printing, recording, and imaging can also be used to describe this marking*. The use of ink jet techniques for other purposes, such as parti-

cle sorting, is not considered marking* and therefore not appropriately classified in this class. The projection of fluid* which is not ink jet is provided in other classes. The contact projection of fluid* onto a medium* for informational marking* is classified elsewhere. See the Se

- (5) Note. Ink jet combined* with a nominal recitation of some other apparatus is classified in this class (347). Nominal ink jet combined* with a significant apparatus is classified with that apparatus and cross-referenced into this class (347). See the Search This Class, Subclass notes below.
- (6) Note. The control* is an element which regulates all or some part of the ink jet. For example, a central processing unit (CPU) in the ink jet would be a control*, not a combined*.
- (7) Note. A computer which regulates all or some part of the ink jet would be classified in this class (347). A computer, per se, would be appropriately classified elsewhere. An interface unit for an ink jet would be appropriate elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 2+, for ink jet combined* with a nominal recitation of some other apparatus, including ink jet informational marking* of objects. Nominal ink jet combined* with a significant apparatus is classified with that apparatus and cross-referenced into subclasses 2+ of this class (Class 347).(see (3) Note, and (5) Note above).
- 5+, for a computer which regulates all or some part of the ink jet (see (7) Note).
- 84+, for fluid* handling.
- 95+, for ink jet fluids* (see (2) Note above)
- 104+, for means especially adapted to handle and/or process ink jet mediums. (see (3) Note above).
- 105, where specifics such as ink compositions and medium handling are recited especially adapting the medium to the ink jet. (see (3) Note above).

SEE OR SEARCH CLASS:

- 29, Metal Working, particularly subclass 890.1 for making some types of ink jet devices.
- 73, Measuring and Testing, appropriate subclasses for processes and apparatus for making a measurement or test, especially subclasses 861+ for liquid volume or rate of flow, subclasses 290+ for liquid level, and subclass 700 for fluid* pressure measurements.
- 101, Printing, for contact projection of fluid* onto a medium* for informational marking (see (4) Note above).
- 106, Compositions: Coating or Plastic, appropriate subclasses for inks to be used for producing characters by means of writing, printing, or marking*, especially subclass 20 for ink jet compositions; subclasses 31.13+, for ink with a nominal recitation of ink jet, especially subclass 31.51 with ink jet composition or process. (See (2) Note above).
- 118, Coating Apparatus, appropriate subclasses for apparatus for applying a surface coating on a base, especially subclasses 663+ for controls and subclasses 300+ for projection or spray types. (See (4) Note above).
- 205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, especially subclass 75 for electroforming orifices.
- 210, Liquid Purification or Separation, especially subclasses 348+ for filters. (See (2) Note above).
- 216, Etching a Substrate: Processes, subclass 27 for methods of making a thermal ink jet device involving a step of chemical etching a substrate.
- 222, Dispensing, appropriate subclasses for processes and apparatus for dispensing material. (See (4) Note above).
- 226, Advancing Material of Indeterminate Length, appropriate subclasses for processes or apparatus for advancing material to or from a reel. (See (3) Note above).
- 239, Fluid Sprinkling, Spraying, and Diffusing, (see (4) Note above).
- 242, Winding, Tensioning, or Guiding, appropriate subclasses for winding or unwinding flexible material from holders. (See (3) Note above).
- 250, Radiant Energy, appropriate subclasses for methods and apparatus for using, generating, controlling, or directing radiant energy, especially subclasses 200+ for photocells and their circuits.
- 251, Valves and Valve Actuation, appropriate subclasses for regulating the flow of a fluid through a passage either by closing the passage or restricting it. (See (2) Note above).
- 257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), appropriate subclasses for active solid-state electronic devices such as diodes, transistors, thyristors, etc.
- 271, Sheet Feeding or Delivering, for medium handling means (see (3) Note above).
- 324, Electricity: Measuring and Testing, appropriate subclasses for measuring, testing, or sensing electric properties in general.
- 338, Electrical Resistors, for resistor structure, appropriate subclasses for electrical resistors in general.
- 346, Recorders, especially subclasses 134+ for mediums, subclass 140.1 for recording pens, and subclass 145 for housings.
- 356, Optics: Measuring and Testing, appropriate subclasses for optical measuring and testing devices.
- 358, Facsimile and Static Presentation Processing, subclasses 1.1 through 1.18 for data processing for static presentation on fixed medium (e.g., printer), subclasses 500-540 for natural color facsimile, subclasses 400-498 for facsimile, and subclasses 296-304 for recording apparatus in facsimile.
- 374, Thermal Measuring and Testing, especially subclasses 141+ for combined* with other devices.
- 400, Typewriting Machines, especially subclasses 56+ for printing plane spacing, subclasses 283+ for carriage details, subclasses 578+ for media handling, and subclasses 691+ for housings.

- 401, Coating Implements With Material Supply, subclasses 221+ for hand-held pens. (See (4) Note above).
- 417, Pumps, appropriate subclasses for devices for pumping fluids*. (See (2) Note above).
- 427, Coating Processes, (see (4) Note above).
- 428, Stock Material or Miscellaneous Articles, subclasses 411.1+ for nonstructural laminate materials.
- 438, Semiconductor Device Manufacturing: Process, subclass 21 for methods of making an electrical device controlled printhead utilizing a semiconductor substrate.
- 439, Electrical Connectors, appropriate subclasses for interconnection of electrical connectors.
- 523, Synthetic Resins or Natural Rubbers, appropriate subclasses for ink compositions containing synthetic resins.
- 524, Synthetic Resins or Natural Rubbers, appropriate subclasses for ink compositions containing synthetic resins.
- 700, Data Processing: Generic Control Systems or Specific Applications, appropriate subclasses for a computer used as a controller.
- D18, Printing and Office Machinery, especially subclass 55 for housings and subclass 56 for ink cartridges.
- 2 Combined:**
This subclass is indented under subclass 1. Subject matter wherein the ink jet is combined* with an external means which will enable the ink jet to function as a specialized information marking* system. For example, the ink jet may function to mark* an object such as wire or a container. For example, a specialized system would be a copier or a facsimile device.
- (1) Note. Nominal ink jet combined* with a significant external means is classified with such means.
- 3 Reproduction (e.g., facsimile, copier, etc.):**
This subclass is indented under subclass 2. Subject matter wherein the external means enables the ink jet to copy an image, and the combination functions as a copier, facsimile, or other reproduction device.
- 4 With conveyed object:**
This subclass is indented under subclass 2. Subject matter wherein the external means includes a conveyor for moving an object such as an envelope, container, article, etc.
- SEE OR SEARCH CLASS:**
- 358, Facsimile and Static Presentation Processing, subclasses 1.1 through 1.18 for data processing for static presentation on fixed medium (e.g., for printer) (black and white) subclasses 500-540 (color) for facsimile circuits for an ink jet, and subclasses 296-304 for facsimile recording apparatus.
- 399, Electrophotography, for electrostatic photocopying.
- 5 Controller:**
This subclass is indented under subclass 1. Subject matter wherein means or steps are provided to direct the operation of the ink jet or any of its component parts or functions.
- SEE OR SEARCH CLASS:**
- 198, Conveyors: Power-Driven, appropriate subclasses for power-driven conveyors.
- 209, Classifying, Separating, and Assorting Solids, subclass 3.3 for marking* items for classifying, separating, and assorting solids.
- 6 Of fluid (e.g., ink flow rate, viscosity, etc.):**
This subclass is indented under subclass 5. Subject matter in which the component or element under control* is the fluid* (e.g., ink) which is jetted onto the medium*.
- SEE OR SEARCH CLASS:**
- 73, Measuring and Testing, appropriate subclasses for fluid measuring and testing, especially subclasses 861+ for volume or rate of flow measurement, subclasses 700+ for fluid pressure measurement, and subclass 290 for liquid level measurement.

- 7 Fluid content (e.g., moisture or solvent content, ink refilling, liquid level):**
This subclass is indented under subclass 6. Subject matter wherein the control* means contains means to alter the content of the fluid* (e.g., its moisture content or solvent content).
- 8 Of spacing between fluid ejector and receiving medium:**
This subclass is indented under subclass 5. Subject matter wherein the control* means contains means to alter the spacing between the means (ejector*) to jet fluid* onto the receiving medium* and the receiving medium* itself.
- SEE OR SEARCH CLASS:
400, Typewriting Machines, subclasses 55+ for adjustment of the printing plane in a typewriter.
- 9 Of ejector:**
This subclass is indented under subclass 5. Subject matter wherein the means under control* is the mechanism which projects the fluid* onto the medium*.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
20, for ejector* mechanism, per se.
- 10 Drive waveform:**
This subclass is indented under subclass 9. Subject matter wherein the control* is an electrical signal in the form of a specific waveform for operating the ejector*.
- 11 Plural pulses:**
This subclass is indented under subclass 10. Subject matter wherein the waveform contains a plural pulse sequence.
- 12 Array:**
This subclass is indented under subclass 9. Subject matter wherein the ejector* means contains a plurality of ejectors* generally termed an array.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
40+, for ejector* arrays, per se.
- 13 Full-line array:**
This subclass is indented under subclass 12. Subject matter wherein the plurality of ejectors* are fixedly arranged widthwise of the record medium* and generally termed full-line or page-width.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
42, for full-line ejector* arrays, per se.
- 14 Responsive to condition:**
This subclass is indented under subclass 9. Subject matter wherein the control* of the ejector* is in response to a specific condition such as temperature, pressure, type of medium*, etc.
- 15 Creating plural tones:**
This subclass is indented under subclass 9. Subject matter wherein the ejector* means is controlled to perform a graduated density of marking*.
- (1) Note. Other terms used to describe this type of control* include gray scale, half-tone, density control*, etc.
- SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclasses 3.06 through 3.2 for creating half tones in facsimile recording.
- 16 Of medium:**
This subclass is indented under subclass 5. Subject matter wherein the control* means includes means to control* some parameter such as speed, position, moisture content, etc., of the medium* on which fluid* is to be jetted.
- 17 Of temperature or pressure of device or component thereof:**
This subclass is indented under subclass 5. Subject matter wherein the control* means includes means to control* the temperature of the ink jet or a component thereof.
- 18 With particular cooling means:**
This subclass is indented under subclass 17. Subject matter wherein the control* means includes a means for cooling the ink jet (i.e., fan, heat sink, etc.).

19 Measuring and testing (e.g., diagnostics):
This subclass is indented under subclass 5. Subject matter wherein means are provided for diagnosing, calibrating, testing, and measuring elements or parameters of, or affecting, the ink jet or its elements.

- (1) Note. Control* systems, above, inherently include measuring and testing. The subject matter in this subclass concerns situations where the control* means of the above subclasses are not involved.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

78+, for correction systems for continuous ink jet.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, appropriate subclasses for mechanical measuring and testing.
324, Electricity: Measuring and Testing, appropriate subclasses for electrical measuring and testing.
356, Optics: Measuring and Testing, appropriate subclasses for optical measuring and testing.

20 Ejector mechanism (i.e., print head):
This subclass is indented under subclass 1. Subject matter wherein means are provided to eject or project a fluid* from a fluid* supply means to a receiving medium*.

- (1) Note. This means generally includes a transducer* which converts the input signal into a force for aiding the ejection of the fluid*.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

9, for control* of the ejector*.

21 With additional fluid:
This subclass is indented under subclass 20. Subject matter including means to provide another fluid* in addition to the marking* fluid* to assist the marking* process; for example, to direct the marking* fluid to a particular spot on the medium*.

22 With cleaning or protector:
This subclass is indented under subclass 20. Subject matter wherein means are provided to keep the ejector* mechanism clean.

- (1) Note. This may involve means to purge clogged nozzles or means to keep an ejector* element from becoming clogged or coated with dried ink, etc.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, appropriate subclasses for brushing, scrubbing, and general cleaning.

400, Typewriting Machines, subclass 701 for typeface cleaning in a typewriter.

23 Responsive to condition:
This subclass is indented under subclass 22. Subject matter wherein the cleaning means is responsive to a condition such as temperature, time, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

14, for ejectors* responsive to condition.

24 For color:
This subclass is indented under subclass 22. Subject matter wherein the cleaning means is specifically adapted to handle plural color fluids*.

25 Gas:
This subclass is indented under subclass 22. Subject matter wherein the cleaning means is a gas such as air.

26 Heat:
This subclass is indented under subclass 22. Subject matter wherein the cleaning means removes clogs or debris by thermal action.

27 Vibration:
This subclass is indented under subclass 22. Subject matter wherein the cleaning means removes clogs or debris by vibration.

- 28 Solvent:**
This subclass is indented under subclass 22. Subject matter wherein the cleaning means removes clogs or debris by the dissolving action of another fluid.
- 29 Nozzle cap, cover, or protection:**
This subclass is indented under subclass 22. Subject matter wherein the cleaning means is in the form of a cap, cover, or other protection which engages the ejector* face.
- 30 Suction:**
This subclass is indented under subclass 29. Subject matter wherein the cap, cover, or other protective means is provided with suction to remove fluid* from the ejector*.
- 31 Absorber:**
This subclass is indented under subclass 29. Subject matter wherein the cap, cover, or other protective means contains an absorber for containing or absorbing the fluid* used in the cleaning process.
- 32 Movement:**
This subclass is indented under subclass 29. Subject matter wherein means are provided to move the cap, cover, or other protection into and out of engagement with the ejector* means.
- 33 Wiping:**
This subclass is indented under subclass 22. Subject matter wherein a means is provided to wipe the ejector* mechanism to remove fluids.
- 34 Mist or dust removal:**
This subclass is indented under subclass 22. Subject matter wherein a means is provided to remove a mist or dust of ejected particles which would otherwise stain the record medium*.
- 35 Purging without a cap:**
This subclass is indented under subclass 22. Subject matter wherein the ejector* is cleaned by an ejection of fluid* in a non-marking* location.
- (1) Note. A cap is not used during the ejection of fluid*.
- 36 Waste storage:**
This subclass is indented under subclass 22. Subject matter wherein a container is provided for the storage of the waste from cleaning.
- 37 With means to scan fluid ejector relative to the receiving medium:**
This subclass is indented under subclass 20. Subject matter including means to change the relative positions of the ejector* mechanism and the medium*.
- SEE OR SEARCH CLASS:
400, Typewriting Machines, subclasses
283+ for a carriage moving mechanism in a typewriter.
- 38 With rotary motion:**
This subclass is indented under subclass 37. Subject matter wherein the scan is a rotary motion.
- 39 With oscillatory motion:**
This subclass is indented under subclass 37. Subject matter wherein the scan is a rhythmic repetitive motion.
- 40 Array of ejectors:**
This subclass is indented under subclass 20. Subject matter wherein the ejector* mechanism includes a plurality of individual ejector* elements with a predetermined spacing extending along one or more directions.
- 41 Interlace:**
This subclass is indented under subclass 40. Subject matter wherein the ejector* elements are arrayed or driven so that drops forming adjacent dots or lines are not deposited during the same scan.
- 42 Full-line type:**
This subclass is indented under subclass 40. Subject matter wherein the plurality of ejector* elements are fixedly arranged to extend across the width of the recording medium*.
- (1) Note. Another term used to describe full-line-type devices is page-width.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
13, for control* of a full-line head*.

43 Color type:

This subclass is indented under subclass 40. Subject matter wherein the ejector* elements are structured or arranged to form a chromatic marking* on a receiving medium*.

SEE OR SEARCH CLASS:

- 346, Recorders, subclasses 46 and 159 for color in recording devices.
 358, Facsimile and Static Presentation Processing, subclasses 500 through 540 for natural color facsimile.
 399, Electrophotography, for color electrostatic photocopying.

44 Discharge means:

This subclass is indented under subclass 20. Subject matter including means specific for the ejection of the fluid* from the ejector* mechanism.

45 Surface treated:

This subclass is indented under subclass 44. Subject matter wherein the discharge means has a coated surface to enhance its operation.

SEE OR SEARCH CLASS:

- 118, Coating Apparatus, appropriate subclasses for applying or obtaining a surface coating on a base and/or impregnating base materials.
 427, Coating Processes, appropriate subclasses for applying or obtaining a coating on a surface.

46 Free surface:

This subclass is indented under subclass 44. Subject matter wherein the fluid* is discharged from the surface of a fluid* pool.

- (1) Note. This type of discharge means is also termed nozzleless or acoustic.

47 Nozzles:

This subclass is indented under subclass 44. Subject matter wherein the discharge means includes a structural element through which the fluid* passes to form the ejected fluid*(e.g., orifice, nozzle, aperture).

SEE OR SEARCH CLASS:

- 65, Glass Manufacturing, appropriate subclasses for glass nozzles.

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclass 75 for electroforming perforated articles.

216, Etching a Substrate: Processes, especially subclass 27 for methods of making a thermal ink jet device.

219, Electric Heating, subclasses 121.7 and 121.71 for hole punching by a laser.

239, Fluid Sprinkling, Spraying, and Diffusion, subclass 601 for orifice shapes in sprinkling, spraying, and diffusing devices.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 154+ for making a hole or aperture in a plastic article.

48 With plural transducers:

This subclass is indented under subclass 20. Subject matter wherein each ejector* element has more than one transducer* to eject the fluid*.

49 Modular:

This subclass is indented under subclass 20. Subject matter wherein the ejector* mechanism or its components are assembled for replacement.

50 Electrical connector means:

This subclass is indented under subclass 20. Subject matter further including means for interconnecting an ejector* mechanism to a signal means or to interconnect ejector* elements or components (e.g., transducers*) to a signal source.

SEE OR SEARCH CLASS:

- 439, Electrical Connectors, appropriate subclasses for electrical connectors in general.

51 Optical energy acting on fluid:

This subclass is indented under subclass 20. Subject matter wherein the ejector* mechanism includes a transducer* which enables optical energy to interact with a marking* fluid* in the ejection process.

52 Electron beam acting on fluid:

This subclass is indented under subclass 20. Subject matter wherein the ejector* mechanism includes a transducer* which enables a beam of electrons to interact with the fluid* in the ejection process.

53 Magnetic:

This subclass is indented under subclass 20. Subject matter wherein the ejector* mechanism includes a transducer* which enables a magnetic field to interact with a magnetic fluid* in the ejection process.

54 Drop-on-demand:

This subclass is indented under subclass 20. Subject matter wherein the ejection mechanism is intermittently energized to eject the fluid* onto a receiving medium* on a noncontinuous basis.

55 With applied electric field ejection (applied to fluid):

This subclass is indented under subclass 54. Subject matter wherein the source of intermittent energization is an electric field.

- (1) Note. In this subclass the electric field is applied to the fluid*. The fluid* may contain ions or electrons. For application of an electric field to an ion or electron beam, see Class 346, subclasses 159 or 158 respectively. The simultaneous development of a modulated ion or electron beam formation is found in Class 346, subclasses 159 or 158.

SEE OR SEARCH CLASS:

399, Electrophotography, subclass 135 for modulation of ions or charged particles.

56 With thermal force ejection:

This subclass is indented under subclass 54. Subject matter wherein the source of intermittent energization is thermal energy (e.g., heat).

- (1) Note. Bubble ink jets are included in this subclass.

57 Drive signal application:

This subclass is indented under subclass 56. Subject matter wherein at least a drive signal to the ejector* means and/or its application are specified.

58 Wiring:

This subclass is indented under subclass 57. Subject matter wherein the drive signal is supplied to the transducer* by wiring.

59 Integrated:

This subclass is indented under subclass 58. Subject matter wherein the wiring is mounted on a single substrate.

SEE OR SEARCH CLASS:

257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), appropriate subclasses for active electric components which are solid, especially subclasses 734+ combined* with an electrical contact or lead.
438, Semiconductor Device Manufacturing: Process, subclass 21 for methods of making an electrical device controlled printhead utilizing a semiconductor substrate.

60 Preheat:

This subclass is indented under subclass 56. Subject matter wherein the ejector* is heated prior to discharge.

61 Thermal force generators:

This subclass is indented under subclass 56. Subject matter wherein the thermal force is created by a particular thermal generator.

62 Resistor specifics:

This subclass is indented under subclass 61. Subject matter wherein the thermal force generator is a resistive means, and details (e.g. form, composition, etc.) of the resistive means are specified.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 610.1+ for resistor making.

- 338, Electrical Resistors, appropriate subclasses for electrical resistors, especially subclasses 306+ for resistors on a base and subclass 333 for resistor configurations and/or dimensions.
- 63 Composite ejector:**
This subclass is indented under subclass 56. Subject matter wherein the ejector* mechanism is formed by a plurality of layers.
- 64 Protective:**
This subclass is indented under subclass 63. Subject matter wherein one of the layers is provided as a protection against the corrosive nature of the fluid*.
- 65 Flow path:**
This subclass is indented under subclass 63. Subject matter wherein one of the layers is provided to define a passage for the fluid*.
- 66 Head separate from fluid supply:**
This subclass is indented under subclass 56. Subject matter wherein the fluid* supply means is distinct from the ejector* mechanism.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
91, for fluid* recirculation by means of a carrier.
- 67 With additional feature:**
This subclass is indented under subclass 56. Subject matter wherein the ejector* mechanism is provided with a supplementary feature such as a sensor.
- 68 With piezoelectric force ejection:**
This subclass is indented under subclass 54. Subject matter wherein the source of intermittent energization is a piezoelectric element.
- SEE OR SEARCH CLASS:
310, Electrical Generator or Motor Structure, subclasses 311+ for piezoelectric elements and devices.
- 69 Shear mode:**
This subclass is indented under subclass 68. Subject matter in which the piezoelectric element is displaced or deformed to change the volume of ink chamber to eject ink due to shearing strains.
- SEE OR SEARCH CLASS:
310, Electrical Generator or Motor Structure, subclass 333 for shear-mode-type piezoelectric elements.
- 70 With vibratory plate:**
This subclass is indented under subclass 68. Subject matter wherein the piezoelectric element contracts to deform a vibration plate attached directly to the piezoelectric element to expel ink droplets.
- 71 Layers, plates:**
This subclass is indented under subclass 68. Subject matter wherein the ejector* mechanism is an assembly which comprises a plurality of plates.
- 72 Plural piezoelectric laminate:**
This subclass is indented under subclass 71. Subject matter wherein a plurality of piezoelectric ceramic layers and a plurality of electrode layers are alternately laminated on each other to form the piezoelectric element.
- 73 Continuous stream (includes dispersion):**
This subclass is indented under subclass 20. Subject matter wherein the ejector* mechanism continuously ejects the fluid* (i.e., in the form of a stream).
- 74 With individual drop generation and/or control:**
This subclass is indented under subclass 73. Subject matter further including means to form drops from the continuously ejected fluid* stream and direct their movement relative to the record medium*.
- 75 Drop generation means:**
This subclass is indented under subclass 74. Subject matter wherein the drop formation means includes a specific structure for creating or controlling drop formation.
- SEE OR SEARCH CLASS:
239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 4 and 102.1 for vibratory discharge of fluid*.

- 76 Drop charge means:**
This subclass is indented under subclass 74. Subject matter wherein the drop formation or direction means includes means for providing an electric charge on a drop.
- 77 Drop deflection means:**
This subclass is indented under subclass 74. Subject matter wherein the means to direct the drop movement includes means to change the direction of a drop relative to the stream.
- 78 Drop correction:**
This subclass is indented under subclass 74. Subject matter wherein means are provided for corrective action on the drop formation and/or direction process.
- 79 Charge compensation:**
This subclass is indented under subclass 78. Subject matter wherein the corrective action is in the drop charging process.
- 80 Synchronization of drop separation and charge time:**
This subclass is indented under subclass 78. Subject matter wherein the corrective action is in drop separation-charge timing relationship.
- 81 Drop sensors:**
This subclass is indented under subclass 78. Subject matter wherein specific detection means are provided for the corrective action.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
6, for other fluid* sensors.
- 82 With stream deflection:**
This subclass is indented under subclass 73. Subject matter further including means to change the direction of the continuously ejected fluid*.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
77, for drop deflection means.
- 83 With aerosol formation:**
This subclass is indented under subclass 73. Subject matter wherein the continuous ejected fluid* is a colloidal dispersion of fluid* drops in ambient atmosphere or a supplied gas.
- 84 Fluid or fluid source handling means:**
This subclass is indented under subclass 1. Subject matter wherein means are provided for controlling, treating, supplying, or otherwise manipulating the ejection fluid*.
- SEE OR SEARCH CLASS:
118, Coating Apparatus, subclasses 300+ for projection or spray type coating apparatus.
222, Dispensing, appropriate subclasses for fluid* handling in dispensing material.
251, Valves and Valve Actuation, appropriate subclasses for fluid valves in general.
417, Pumps, appropriate subclasses for fluid* pumps in general.
- 85 Fluid supply system:**
This subclass is indented under subclass 84. Subject matter including means to supply the fluid* to or from the ejector* mechanism.
- 86 Cartridge:**
This subclass is indented under subclass 85. Subject matter wherein all or part of the fluid* supply means is a removable assembly.
- 87 With integral ejector:**
This subclass is indented under subclass 86. Subject matter wherein the removable assembly includes an ejector* housing.
- 88 For hot-melt fluid (e.g., phase-change):**
This subclass is indented under subclass 85. Subject matter wherein the fluid* source is in a solid form and is changed to a liquid form prior to or during ejection.
- 89 With recirculation:**
This subclass is indented under subclass 85. Subject matter including means to supply the fluid* to the ejector* mechanism and return fluid* back to the fluid* supply means (e.g., reservoir).
- 90 Collector's or catcher's specifics:**
This subclass is indented under subclass 89. Subject matter wherein the recirculation means includes means to collect or catch the ejected fluid* which is not used in the marking* process.

- 91 With carrier:**
This subclass is indented under subclass 89. Subject matter wherein the recirculation is performed by a means such as an endless band or drum to carry the fluid* from the source to the ejector* and back.
- 92 With means to remove and/or accommodate bubbles in the fluid:**
This subclass is indented under subclass 84. Subject matter including means to remove or otherwise handle gas bubbles in the fluid*.
- 93 With fluid treatment (e.g., filtering):**
This subclass is indented under subclass 84. Subject matter including means to treat the fluid* (e.g., by filtering impurities from it).

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, subclasses 348+ for filters for liquid purification or separation.
- 94 With means to reduce vibrations in the fluid (damping):**
This subclass is indented under subclass 84. Subject matter including means to lessen or modify vibrations in the fluid*.
- 95 Fluid (e.g., fluid specifics):**
This subclass is indented under subclass 84. Subject matter wherein the ejected fluid* has specified characteristics.

(1) Note. The fluid* can be a liquid, powder, gas, etc.

SEE OR SEARCH CLASS:
346, Recorders, subclass 158 for a modulated flow of electrons and subclass 159 for a modulated flow of ions.
- 96 Reactive:**
This subclass is indented under subclass 95. Subject matter wherein the ejected fluid* characteristic is an ability to chemically react.

(1) Note. For example, a reaction could be formed by a component in the fluid* with another component in the medium*.
- 97 Gas:**
This subclass is indented under subclass 95. Subject matter wherein the ejected fluid* is a gas.

SEE OR SEARCH CLASS:
346, Recorders, subclass 76 for a heated gas which marks* a medium.
- 98 Colorless:**
This subclass is indented under subclass 95. Subject matter wherein the ejected fluid* characteristic is that it is achromatic (colorless).
- 99 Hot-melt (e.g., phase-change):**
This subclass is indented under subclass 95. Subject matter wherein the ejected fluid* is one which changes its physical state within the ink jet.
- 100 Ink:**
This subclass is indented under subclass 95. Subject matter wherein the ejected fluid* has a substance such as a dye or pigment for visualizing the marking*.

SEE OR SEARCH CLASS:
106, Compositions: Coating or Plastic, appropriate subclasses for inks with natural resins and subclass 31.13 for ink jet compositions.
523, Synthetic Resins or Natural Rubbers, appropriate subclasses for ink composition with synthetic resins.
524, Synthetic Resins or Natural Rubbers, appropriate subclasses for ink composition with synthetic resins.
- 101 Medium and processing means:**
This subclass is indented under subclass 1. Subject matter including means specific to the medium* and its processing.
- 102 Drying or curing:**
This subclass is indented under subclass 101. Subject matter including means for drying or otherwise heat treating a receiving medium*.

SEE OR SEARCH CLASS:
34, Drying and Gas or Vapor Contact With Solids, appropriate subclasses for drying in general.

- 101, Printing, subclass 488 for printing with heating or cooling of the print medium*.
- 219, Electric Heating, subclass 216 for heating devices in printing or reproduction devices.
- 346, Recorders, subclass 25 for a recorder combined* with a dryer.
- 399, Electrophotography, subclasses 320+ for heat fixation in electrophotography.
- 103 Transfer of fluid* to another record medium*:**
This subclass is indented under subclass 101. Subject matter including means to transfer fluid* from one receiving medium* to another.
- 104 Physical handling:**
This subclass is indented under subclass 101. Subject matter including means to physically handle (e.g., feed, sort, cut, align, collect, or stack) a receiving medium*.
- SEE OR SEARCH CLASS:
- 226, Advancing Material of Indeterminate Length, appropriate subclasses for advancing material of indeterminate length.
- 242, Winding, Tensioning, or Guiding, appropriate subclasses for winding and reeling.
- 271, Sheet Feeding or Delivering, appropriate subclasses for sheet feeding or delivering.
- 346, Recorders, subclasses 134+ for driving for a record receiver in a recorder.
- 399, Electrophotography, subclasses 361+ for document handling in electrophotography.
- 400, Typewriting Machines, subclasses 578+ for sheet or web feeding in a typewriter.
- 105 Receiving medium:**
This subclass is indented under subclass 101. Subject matter wherein the receiving medium* has a special characteristic such as fluid* receiving layer. Included herein are medium* type detectors.
- SEE OR SEARCH CLASS:
- 346, Recorders, subclass 135.1 for laminated, impregnated, or coated base record receivers.
- 428, Stock Material or Miscellaneous Articles, appropriate subclasses for stock material in general.
- 430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, appropriate subclasses for receivers subject to radiation imagery.
- 106 Physical characteristics:**
This subclass is indented under subclass 105. Subject matter wherein the special property is a physical characteristic (such as a size or shape).
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 4, for conveyed object.
- 107 With unique pattern:**
This subclass is indented under subclass 101. Subject matter wherein the ejected drop forms a special pattern on the receiving medium*. For example, the pattern could be a coded record such as a bar code.
- 108 Housing:**
This subclass is indented under subclass 1. Subject matter wherein an outer enclosure is provided for the ink jet.
- SEE OR SEARCH CLASS:
- 346, Recorders, subclass 145 for instrument support in a recorder.
- 400, Typewriting Machines, subclasses 691+ for frame casing or support in a typewriter.
- 109 Hand-held:**
This subclass is indented under subclass 108. Subject matter wherein the enclosure is sized and structured to be held in or manipulated by a human hand.
- SEE OR SEARCH CLASS:
- 346, Recorders, subclass 143 for hand-driven recorders.
- 400, Typewriting Machines, subclass 88 for pocket typewriters.

110 MARKING DEVICES:

This subclass is indented under the class definition. Subject matter wherein a marking* device is provided to produce the portion* by portion* symbol* or mark* in a particular manner.

111 ELECTRIC MARKING APPARATUS OR PROCESSES:

This subclass is indented under the class definition. Subject matter comprising means for applying electricity to a medium for recording an image.

SEE OR SEARCH CLASS:

346, Recorders, subclasses 150.1+ for phenomenal electric recording.

112 Electrostatic:

This subclass is indented under subclass 111. Subject matter wherein an electrostatic charge is deposited onto, or discharged from, the medium to directly or indirectly form a visible image thereon in accordance with an electrical information signal representing the image.

- (1) Note. The medium includes an intermediate substrate (belt or drum) for receiving a latent or a visible image; or a permanent substrate for receiving a transferred visible image.

SEE OR SEARCH THIS CLASS, SUBCLASS:

159, for an electric recorder wherein an image is formed by an electrical discharge from a head onto the medium.

SEE OR SEARCH CLASS:

118, Coating Apparatus, especially subclasses 620+ for a coating device including means to apply electrical or radiant energy to work material or coating material.

250, Radiant Energy, subclass 324 for corona discharging of objects in general.

324, Electricity: Measuring and Testing, subclass 327 for electrostatic measuring and testing.

346, Recorders, subclasses 74.2+ for the creation of visible images by magnetic means and methods.

358, Facsimile and Static Presentation Processing, subclasses 906 through 908 for recorder combined with a television system and subclasses 400-309 for a facsimile apparatus.

360, Dynamic Magnetic Information Storage or Retrieval, for the magnetic recording of nonvisible information; e.g., audio, video, and digital information.

369, Dynamic Information Storage or Retrieval, for the recording of nonvisible information; e.g., audio, video, and digital information.

399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclasses 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development, subclasses 297+ for transfer, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.

427, Coating Processes, especially subclasses 457+ for methods of development of the latent image.

428, Stock Material or Miscellaneous Articles, appropriate subclasses for a layered dielectric recording sheet.

430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, subclasses 31+ and 900+ for the chemical process and material (e.g., layered photoconductive recording sheet) of electroimagery and magnetoimagery.

113 Thermoplastic:

This subclass is indented under subclass 112. Subject matter wherein the latent image is made visible by applying heat to cause plastic deformation of a charged medium.

- (1) Note. Electrostatic recorders using a thermal marker merely to charge or discharge the medium is classified in subclass 114.

SEE OR SEARCH CLASS:

346, Recorders, subclass 77 for a nonelectrostatic recorder which uses heat to cause a plastic deformation of the medium.

365, Static Information Storage and Retrieval, subclass 47 for thermoplastic analog storage and retrieval systems, and subclass 126 for information masking systems which use a thermoplastic material.

369, Dynamic Information Storage and Retrieval, subclasses 100+ for recording on an optical medium to create a nonvisible deformation on the medium.

114 **Electrothermographic:**

This subclass is indented under subclass 112. Subject matter wherein a thermal marker is used to either charge, or discharge, the medium in imagewise configuration in accordance with the information signal representing the image.

- (1) Note. This subclass is distinguished from subclasses 171+ due to an electrostatic latent image formed by the marker.
- (2) Note. The use of heat to create visible image by plastic deformation of a charged medium is classified in subclass 113.

SEE OR SEARCH THIS CLASS, SUBCLASS:
200+, for details of a thermal head used in thermal marking apparatus.

115 **Multicolor:**

This subclass is indented under subclass 112. Subject matter comprising means for forming a composite image having different colors.

SEE OR SEARCH THIS CLASS, SUBCLASS:
172+, for multicolor thermal marking.
232+, for multicolor radiation marking.

SEE OR SEARCH CLASS:

- 346, Recorders, subclass 74.7 for multicolor magnetic recording.
- 355, Photocopying, subclass 88 for multicolor photographic copies.
- 358, Facsimile and Static Presentation Processing, subclasses 500 through 540 for a color facsimile apparatus.
- 399, Electrophotography, subclass 28 for analyzing a malfunction or potential malfunction of color reproduction,

subclasses 39+ for balance control of color, subclass 54 for color selection control, subclass 112 for modular or displaceable color process cartridge unit, subclasses 178+ for formation of color separation images, subclass 184 for color image editing a selectable area, subclasses 223+ for development (e.g., applicators) of a color image, subclasses 298+ for transfer of a color image, subclass 326 for fixing or fusing of a color image, and subclass 321 for cleaning an imaging surface with color.

116 **Registration:**

This subclass is indented under subclass 115. Subject matter comprising means for aligning multiple subimages of different colors on the medium with respect to each other when forming the composite color image.

117 **Plural heads:**

This subclass is indented under subclass 115. Subject matter wherein means for forming the composite image includes two or more markers.

- (1) Note. The markers are used to either charge or discharge the medium to form the latent image.

118 **Using light as exposure means:**

This subclass is indented under subclass 117. Subject matter wherein the markers are light emitting devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
121+, for an electrostatic recorder using a CRT as an exposure means.
129+, for photoscanning electrostatic recording.

119 **Single head using light as exposure means:**

This subclass is indented under subclass 115. Subject matter wherein the means for forming the composite image includes a light emitting device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
121+, for an electrostatic recorder using a CRT as an exposure means.

- 129+, for photoscanning electrostatic recording.
- 120 By information carrying flow of invisible charged particles:**
This subclass is indented under subclass 112. Subject matter wherein a flow of nonvisible charged particles (e.g., ions, electrons) is modulated to place the electrostatic charge on the medium in imagewise form in accordance with the information signal to form the image.
- (1) Note. This subclass is distinguished from ink jets, subclass 55 by the lack of direct modulation of the visible charged particles. Only the nonvisible charged particles are being directly modulated in imagewise form.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
55, for an ink jet printer that modulates a flow of visible particles (e.g., ink droplets, toner particles, etc.) by electric or magnetic fields to place a visible image directly on a recording medium.
124, for the subject matter of this subclass including simultaneous development wherein an unmodulated flow of toner is directly applied to, or attracted to, the recording medium by the modulated flow of nonvisible charged particles.
- SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, appropriate subclasses for a general ion source.
399, Electrophotography, subclasses 168+ for charging, particularly subclasses 170+ for corona.
- 121 Electron beam generator with air tight envelope:**
This subclass is indented under subclass 120. Subject matter comprising means for modulating a beam of electrons in a vacuum (e.g., CRT) onto a faceplate, or the medium, to either directly, or indirectly, charge, or discharge, the medium in an imagewise manner.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
226+, for a radiation marking apparatus using a CRT.
- SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 364+ for a CRT, per se.
- 122 Including latent image generation using luminescent material:**
This subclass is indented under subclass 121. Subject matter comprising means for converting the electrons to photons wherein the photons produce the latent image by charging, or discharging, the medium.
- 123 Specific ionos:graphic head:**
This subclass is indented under subclass 120. Subject matter including details of a marker for modulating a uniform flow of the nonvisible charged particles.
- 124 Including simultaneous development:**
This subclass is indented under subclass 123. Subject matter wherein the modulated flow of nonvisible charged particles either attracts, or applies, visible toner or ink to the medium.
- (1) Note. This subclass includes the modulated flow of nonvisible charged particles being passed through an ink mist toner cloud to cause development of the medium.
- 125 Fluid assisted charged particle flow or generation:**
This subclass is indented under subclass 123. Subject matter wherein a liquid or pressurized gas enhances the transport or generation of the charged particles.
- SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 231.01+ for fluent material supplied to a general ion source.
- 126 Modified or specific fluid (e.g., heated, dehumidified,specified gas):**
This subclass is indented under subclass 125. Subject matter wherein the liquid or the gas is treated, or a fluid with specified properties is

used (e.g., heated, dehumidified, electronegative gas, etc.).

127 Laminated head including charged particle generation layer:

This subclass is indented under subclass 123. Subject matter wherein the means for modulating the uniform flow of nonvisible charged particles is a multilayered structure including one or more electrode layers which produces the charged particles.

128 Including driving circuitry:

This subclass is indented under subclass 120. Subject matter comprising electrical means, for operating a charged particle modulator, or an ion generator.

SEE OR SEARCH CLASS:

315, Electric Lamp and Discharge Devices: Systems, subclass 111.81 for an electrical system for a general ion source.

129 Photo scanning:

This subclass is indented under subclass 112. Subject matter wherein at least one writing beam is progressed line by line or point by point (e.g., LEDs) to either charge, or discharge, the medium in imagewise configuration in accordance with the information signal representing the image.

(1) Note. This subclass is distinguished from Class 399, Electrophotography, due to the electrical information signal modulating the writing beam (i.e., exposure).

SEE OR SEARCH THIS CLASS, SUBCLASS:

121+, for an electrostatic recorder using a CRT as an exposure means for the photoconductor.

225+, for a general radiation marking apparatus using light to scan a record receiver.

SEE OR SEARCH CLASS:

399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclasses 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development,

subclasses 297+ for transfer, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.

130 Light emitting diodes:

This subclass is indented under subclass 129. Subject matter wherein the writing beam is emitted from a light-emitting semiconductor device.

131 Dot density or dot size control (e.g., halftone):

This subclass is indented under subclass 129. Subject matter comprising means for selecting recording resolution or grey level.

SEE OR SEARCH THIS CLASS, SUBCLASS:

188+, for density control in a thermal marking apparatus.

240+, for tone marking in a plural beam recorder.

251+, for tone marking in a singular beam recorder.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, appropriate subclasses for related subject matter.

132 Beam generator driving means:

This subclass is indented under subclass 129. Subject matter comprising operating means for controlling an activation of a light beam generator to emit the writing beam.

SEE OR SEARCH THIS CLASS, SUBCLASS:

247, for driving circuitry in a singular beam recorder.

237, for driving circuitry in a plural beam recorder.

133 Having feedback or environmental control:

This subclass is indented under subclass 132. Subject matter wherein either an output of the writing beam or an ambient condition signal is detected and converted to an electrical signal which controls the activation of the light beam generator.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 235, for scan synchronization in a plural beam recorder.
- 236, for feedback of light for intensity control in a plural beam recorder.
- 246, for feedback of light for intensity control in a singular beam recorder.
- 250, for scan synchronization in a singular beam recorder.
- 134 Optical elements interposed between record receiver and beam generator:**
This subclass is indented under subclass 129. Subject matter comprising light beam modifying means located between the medium and a light beam generator for affecting the formation of the image.
- (1) Note. The light beam modifying means includes, for example, light guides, lens, light modulator, deformable mirror device, rotating polygon, mirrors, etc.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 241+, for optical elements in a plural beam recorder.
- 256+, for optical elements in a singular beam recorder.
- 135 Light intensity modulation means:**
This subclass is indented under subclass 134. Subject matter wherein a recording energy of at least one writing beam is varied by an electrically variable optically transmission element, located between the medium and the light beam generator, in accordance with the information signal thereby creating at least one modulated writing beam.
- (1) Note. The electrically variable optically transmission element may be acousto-optic, electro-optic, Bragg-cell, light valve, spatial light modulator, TIR device (total internal reflection device), or magneto-optic.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 239, for a specific light modular in a plural beam recorder.
- 255, for a specific light modular in a singular beam recorder.
- 136 Shutter device:**
This subclass is indented under subclass 135. Subject matter wherein the electrically variable optically transmission element either passes or blocks the light beam in a binary manner.
- 137 Lens:**
This subclass is indented under subclass 134. Subject matter wherein the light beam modifying means includes a transparent optical device for converging, or diverging, the writing beam.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 244, for a specific lens in a plural beam recorder.
- 258, for a specific lens in a singular beam recorder.
- 138 Housing or mounting:**
This subclass is indented under subclass 129. Subject matter comprising means for enclosing or supporting the recording apparatus.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 152, for housing or mounting in a generic electrostatic recorder.
- 170, for housing or mounting in an electrolytic recorder.
- 222, for housing or mounting in a thermal recorder.
- 245, for housing or mounting in a plural beam recorder.
- 263, for housing or mounting in a singular beam recorder.
- 139 Record receiver or conveyor means therefor:**
This subclass is indented under subclass 129. Subject matter comprising: (a) a recording medium onto which a permanent image is formed, or (b) means for feeding, or transporting, the recording medium.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 262, for record handling in a scanning beam optical recorder.
- 264, for record handling in a generic optical recorder.

- SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering, appropriate subclasses for related subject matter.
399, Electrophotography, subclasses 297+ for transfer, subclasses 320+ for fixing, and subclasses 361+ for document handling.
- 140 Developer or charger mechanism:**
Subject matter under 129 including means for delivering, containing, or affecting distribution of the charge or visible particles to develop the latent images (i.e., toner).
- SEE OR SEARCH THIS CLASS, SUBCLASS:
158, for a developer means in a generic electrostatic apparatus.
- SEE OR SEARCH CLASS:
399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclasses 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development, subclasses 297+ for transfer, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.
- 141 Specific electrostatic head:**
This subclass is indented under subclass 112. Subject matter comprising details of a marker having electrode styli by which the electrostatic charge is deposited onto, or discharged from, the medium.
- 142 Signal switching:**
This subclass is indented under subclass 141. Subject matter comprising a circuit interrupter for selectively energizing a plurality of electrodes in accordance with the image signal.
- 143 Amplitude modulation:**
This subclass is indented under subclass 142. Subject matter wherein at least the intensity of the energized pulses is changed.
- 144 Time based modulation (e.g., pulse width, duty cycle, rise time):**
This subclass is indented under subclass 142. Subject matter comprising means for changing a duration or a transition time of energized pulses (e.g., pulse width, duty cycle, rise time).
- 145 Block driving:**
This subclass is indented under subclass 142. Subject matter wherein the electrodes are divided into groups capable of being selectively energized.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
180+, for block driving in a thermal recorder.
- 146 Character wheel:**
This subclass is indented under subclass 141. Subject matter wherein at least one electrode stylus is a character-supporting movable member (e.g., a disc or cylinder with characters formed on its periphery).
- (1) Note. Electrostatic recorders having characters raised on an electrode surface are classified herein and not in Class 101 since in these devices a mere electrostatic latent image is produced, not yielding a visible impression or coating as required by the Class 101 definition.
- 147 Specific head tip:**
This subclass is indented under subclass 141. Subject matter comprising details of the writing end of the marker.
- 148 Printed circuit or wiring:**
This subclass is indented under subclass 141. Subject matter including fabricated or etched conductive stripes, or details of connections for the electrodes on the marker.
- 149 Spacing or pressure:**
This subclass is indented under subclass 141. Subject matter including means for controlling contact, or distance between, the marker and the medium.

150 Composition:

This subclass is indented under subclass 141. Subject matter including a specified material that makes up the marker.

151 Using recording head to selectively charge toner:

This subclass is indented under subclass 141. wherein an electrostatic stylus is used to selectively charge a previously applied uniform coating of unmodulated visible particles on the medium in imagewise form.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 55, for an Ink jet printer that modulates a flow of visible particles (e.g., ink droplets, toner particles, etc.) by electric or magnetic fields to place a visible image directly on a recording medium.
- 124, when an ionographic head is used for attracting or depositing toner onto a recording medium.
- 141+, for specific details of an electrostatic head.

152 Housing or mounting:

This subclass is indented under subclass 112. Subject matter comprising means for enclosing or supporting the marking device.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 152, for housing or mounting in a photo scanning electrostatic recorder.
- 170, for housing or mounting in an electrolytic recorder.
- 222, for housing or mounting in a thermal recorder.
- 245, for housing or mounting in a plural beam recorder.
- 263, for housing or mounting in a singular beam recorder.

153 With medium for receiving an image or feeding means therefor:

This subclass is indented under subclass 112. Subject matter comprising a recording medium for receiving an image, or a means for driving the recording medium.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 164, for record handling in an electrochemical recorder.
- 218, for record handling in a thermal recorder.
- 262, for record handling in a scanning beam recorder.
- 264, for record handling in a generic radiation recorder.

SEE OR SEARCH CLASS:

- 271, Sheet Feeding or Delivering, appropriate subclasses for related subject matter.
- 399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclasses 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development, subclasses 297+ for transfer, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.

154 Endless web or belt for the latent image:

This subclass is indented under subclass 153. Subject matter wherein the medium comprises a movable loop having a photoconductive, or dielectric, receiving surface onto which the electrostatic charge is deposited.

155 Pre or post treatment:

This subclass is indented under subclass 153. Subject matter comprising means for applying a substance, energy, or pressure upon a permanent record receiver before, or after, the image is formed thereon to enhance the quality of the image.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 212, for pre or post image recording treatment in a thermal recorder.

156 Fixing or fusing:

This subclass is indented under subclass 155. Subject matter comprising means for applying the substance, energy, or pressure upon the permanent record receiver after the image is formed thereon.

SEE OR SEARCH CLASS:

399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.

157 Including cutter means:

This subclass is indented under subclass 153. Subject matter comprising means for severing the recording medium into segments.

158 Including toner delivery means:

Subject matter under 153 comprising means for depositing onto the recording medium, or delivering to the recording medium, visible particles to develop the latent image.

SEE OR SEARCH THIS CLASS, SUBCLASS:

140, for a developer means in a scanning apparatus.

SEE OR SEARCH CLASS:

399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, and subclasses 222+ for development.

159 By electrical discharge (e.g., spark):

This subclass is indented under subclass 111. Subject matter wherein an image is formed by dielectric breakdown.

- (1) Note. The dielectric breakdown may cause an electrical discharge from a head onto a medium by direct contact or across an airgap.

SEE OR SEARCH THIS CLASS, SUBCLASS:

33, for a generic spark recorder combined with an external means for recording the functioning of the external means.
112, for an electrostatic recorder wherein an image is formed on a medium by electrostatic charge deposited onto or discharged from the medium.
199, for thermal marking devices having resistive layer formed on the transfer material or the recording material to

conduct and generate heat for marking purposes.

SEE OR SEARCH CLASS:

219, Electric Heating, subclass 384 for perforating by an electric spark.
346, Recorders, subclass 150.2 for phenomenal electrical discharge recording.

160 Rotary head support:

This subclass is indented under subclass 159. Subject matter including a rotating means for engaging, or holding, a recording head.

161 Electrical discharge burning (e.g., oxidation or electroerosion):

This subclass is indented under subclass 159. Subject matter wherein the medium is oxidized or eroded by the dielectric breakdown.

162 Including driving circuitry:

This subclass is indented under subclass 159. Subject matter including means for controlling a current applied to the recording head or marker.

163 By electrochemical:

This subclass is indented under subclass 111. Subject matter wherein an image is produced by reaction of a chemical (e.g., electrolyte) to an electrical potential applied by a head.

- (1) Note. This subclass is distinguished from subclasses 171+ by the lack of heat transfer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

171+, for thermal recording apparatus.

SEE OR SEARCH CLASS:

178, Telegraphy, subclass 62 for chemical and electrolytic telegraphic recorders.
205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, appropriate subclasses for related subject matter.
346, Recorders, subclass 150.3 for phenomenal electrochemical recording.

- 164 With record receiver or handling means therefor:**
This subclass is indented under subclass 163. Subject matter comprising a medium onto which the produced image is recorded, or driving or supporting means therefor.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
164, for record handling in a generic electrostatic recorder.
218, for record handling in a thermal recorder.
262, for record handling in a scanning beam recorder.
264, for record handling in a generic radiation recorder.
- SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering, appropriate subclasses for related subject matter.
399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclasses 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development, subclasses 297+ for transfer, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.
- 165 Including treating means:**
This subclass is indented under subclass 164. Subject matter comprising means for depositing onto the medium, or immersing the medium into, a liquid substance.
- 166 Specific head:**
This subclass is indented under subclass 163. Subject matter comprising details of a maker.
- 167 Including motor for driving head:**
This subclass is indented under subclass 166. Subject matter comprising means for converting electrical energy to mechanical energy for effecting motion of the marker.
- 168 Including driving circuitry:**
This subclass is indented under subclass 166. Subject matter comprising electrical means for applying the potential to the marker in accordance with an information signal.
- 169 Helix drum:**
This subclass is indented under subclass 166. Subject matter wherein a raised conductor on a rotatable drum in the form of a spiral is used as a backing electrode to effect scanning of the recording medium when the drum is rotated.
- 170 Housing or mounting:**
This subclass is indented under subclass 163. Subject matter comprising means for enclosing, or supporting, the marking device.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
152, for housing or mounting in a photo scanning electrostatic recorder.
170, for housing or mounting in a generic electrostatic recorder.
222, for housing or mounting in a thermal recorder.
245, for housing or mounting in a plural beam recorder.
263, for housing or mounting in a singular beam recorder.
- 171 THERMAL MARKING APPARATUS OR PROCESSES:**
This subclass is indented under the class definition. Subject matter wherein a recording means (e.g., thermal head) is heated or transmits an electrical heating current to a conductive record receiver or transfer material to produce a symbol or mark upon a record receiver by the reason of the receiver becoming scorched, burned, marked, or otherwise thermochemically changed.
- (1) Note. The use of an optical radiation energy beam to record on a heat sensitive or photosensitive paper is excluded from this subclass.
- (2) Note. Thermal print head having heating elements used as heaters for printing incremental information is classified in this class, subclasses 200+; and not in Class 219, Electric Heating, subclasses

120 and 543. Class 219 is provided for generic electric heaters, per se, or for significant structural details of a generic electric heater in combination with a printing or reproducing device.

- (3) Note. Related subject matter involved the use of heat for causing an intelligible character to be imprinted on a record medium by a type-member is classified in Class 400, Typewriting Machines.
- (4) Note. The record may be produced by bringing the heated recording means in contact with the record receiver either directly or indirectly through an ink transfer medium.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 113, for an electrostatic recorder wherein heat is applied to a charged medium to cause plastic deformation of the medium.
- 163, for electrochemical recording.
- 224+, for the use of a radiation energy beam to record on a heat sensitive or photo-sensitive medium.

SEE OR SEARCH CLASS:

- 101, Printing, appropriate subclasses for related subject matter, particularly subclass 288 for web and subclasses 483+ for processes.
- 118, Coating Apparatus, appropriate subclasses for applying a coating surface on a base.
- 219, Electric Heating, subclass 216 for printing or reproduction device.
- 271, Sheet Feeding or Delivering, appropriate subclasses for generic sheet feeding or delivering apparatus.
- 346, Recorders, subclass 76.1 for phenomenal thermal recorders.
- 358, Facsimile and Static Presentation Processing, subclasses 296 through 304 for recording apparatus in a facsimile.
- 399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclass 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development, subclasses 297+ for transfer, subclasses

320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.

- 400, Typewriting Machines, appropriate subclasses, particularly subclass 120.01 for thermal or hot-stamp typing.
- 427, Coating Processes, appropriate subclasses coating a base.
- 428, Stock Material or Miscellaneous Articles, appropriate subclasses for web or sheet, per se.

172 Multicolor:

This subclass is indented under subclass 171. Subject matter wherein the symbol or mark is produced in a plurality of colors.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 74.7, for multiple color magnetos:graphic recording.
- 115+, for multicolor electrostatic recording.
- 232+, for multicolor recording by light beam scanning across record medium.

SEE OR SEARCH CLASS:

- 358, Facsimile and Static Presentation Processing, subclasses 500 through 540 for natural color facsimile and subclasses 3.06-3.2 for half tone recording apparatus in a facsimile.
- 400, Typewriting Machines, subclasses 120.01+ for multicolor typing.

173 Single pass:

This subclass is indented under subclass 172. Subject matter wherein the multicolor symbol or mark is produced by a marking apparatus comprising at least two thermal heads and a record receiver passed through the heads in one direction.

174 Single-head type (e.g., multipass):

This subclass is indented under subclass 172. Subject matter wherein the multicolor symbol or mark is produced by a marking apparatus comprising a transfer material and a single thermal head operatively connected to transfer ink colors at different energy levels or to perform consecutive cycles of printing operations.

175 Having multilayers colored transfer material:

This subclass is indented under subclass 174. Subject matter wherein the transfer material is a longitudinal strip having overlap layers of different ink colors.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 237+ for ribbon, per se.

176 Having single-layer colored transfer material:

This subclass is indented under subclass 174. Subject matter wherein the transfer material is a single layer strip having sections of different ink colors arranged thereon.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 237+ and 240+ for ribbon, per se, and ribbon having differently pigmented fields.

177 Including sensor means:

This subclass is indented under subclass 176. Subject matter comprising a device responsive to a physical stimulus (e.g., light, motion) for producing a signal indicating status of the record receiver or the transfer material.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 247+ for ribbon sensors.

178 For detecting color:

This subclass is indented under subclass 177. Subject matter wherein the signal indicates ink color on the transfer material.

179 With correction or erasing means:

This subclass is indented under subclass 171. Subject matter comprising means for repairing an erroneous recorded symbol or mark or for removing at least a portion of thermal fusible material left on a used transfer material.

- (1) Note. Means for repairing includes, for example, means for applying a correction ink onto the erroneous recorded symbol or mark or means for lifting of the erroneous recorded image data com-

posed of thermal fusible material from the record receiver.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 695+ for typewriting machines including means for correcting typing errors.

180 Block driving:

This subclass is indented under subclass 171. Subject matter wherein the recording means comprises recording elements grouped into sections capable of being selectively energized.

SEE OR SEARCH THIS CLASS, SUBCLASS:

145, for block driving in an electrostatic recorder.

181 Simultaneously:

This subclass is indented under subclass 180. Subject matter in which at least two of the sections are energized at the same time.

182 Sequentially:

This subclass is indented under subclass 180. Subject matter in which at least two of the sections are energized alternately.

183 Gradational recording:

This subclass is indented under subclass 171. Subject matter wherein brightness of the produced symbol or mark varies from a very light color to a very dark color.

SEE OR SEARCH THIS CLASS, SUBCLASS:

131, for halftone recording in an electrostatic recorder.
240, for tone marking using a plurality of scanning beams.
251+, for tone marking using a single scanning beam.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclasses 3.06 through 3.2 for half tone recording in a facsimile.

- 184 Look up table:**
This subclass is indented under subclass 183. Subject matter of ... comprising a storage means for storing data related to the brightness of the produced symbol or mark.
- 185 Preheating:**
This subclass is indented under subclass 171. Recorders of the type wherein a warming up process is performed before marking is commenced.
- SEE OR SEARCH CLASS:
219, Electric Heating, subclass 216 for printing or reproducing devices.
- 186 Recording means:**
This subclass is indented under subclass 185. Subject matter in which the recording means is being preheated.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
60, for preheating of an ejector in an ink jet recorder.
- 187 Transfer material or recording medium:**
This subclass is indented under subclass 185. Subject matter in which the record receiver or an ink carrier strip for transferring ink onto the record receiver is being preheated.
- 188 Density control:**
This subclass is indented under subclass 171. Subject matter comprising a regulating means for controlling amount of heating energy supplied to the recording means to maintain a uniform output on the produced symbol or mark.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
131, for dot density or dot size control in an electrostatic recorder using scanning light beam.
251+, for tone marking using singular scanning light beam.
- 189 In accordance with ambient temperature:**
This subclass is indented under subclass 188. Subject matter wherein the regulating means responds to variations in temperature surrounding the apparatus for controlling the amount of heating energy.
- 190 By number of heated recording elements:**
This subclass is indented under subclass 188. Subject matter wherein the regulating means controls the amount of heating energy supplied to selected recording elements of the recording means based on a number of recording elements being simultaneously energized.
- 191 In accordance with thermal output characteristic of the recording means:**
This subclass is indented under subclass 188. Subject matter wherein regulating means responds to variations in resistance values of heat radiating resistor elements constituting recording elements of the recording means for controlling the amount of heating energy.
- 192 By variation in power supply:**
This subclass is indented under subclass 188. Subject matter wherein the regulating means responds to changes in magnitude of the voltage supplied to the recording means for controlling the amount of heating energy.
- 193 By transfer material or record receiver:**
This subclass is indented under subclass 188. Subject matter wherein the regulating means controls the amount of heating energy in accordance with the type of transfer material or record receiver being used or in response to a status associated with the transfer material or record receiver.
- (1) Note. A status associated with the transfer material or record receiver includes, for example, size of paper, distance traveled by paper or ribbon, length of ribbon to record data, pressure of ribbon cassette, etc.
- 194 In accordance with temperature of the recording means:**
This subclass is indented under subclass 188. Subject matter wherein the regulating means responds to variations in temperature of the recording means for controlling the amount of heating energy.
- 195 By history of recording elements:**
This subclass is indented under subclass 188. Subject matter wherein the regulating means controls the amount of heating energy supplied to a particular recording element of the record-

ing means based on data reflecting quantity of energy supplied to the particular recording element or to its adjacent recording elements during previous, present, or future recording cycles.

196 Using pulse width modulation:

This subclass is indented under subclass 195. Subject matter wherein the amount of heating energy supplied to the particular recording element is controlled by varying time duration of activated pulses.

197 Recording means engaging or holding means:

This subclass is indented under subclass 171. Subject matter comprising a mechanism for supporting or moving the recording means from an operative position in which the recording means is pressed against the record receiver to an inoperative position in which the recording means is released from pressing engagement with the record receiver.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 120.01+ for thermal or hot-stamp typing, subclass 175 for detachable type head, subclasses 319+ for carriage-feed mechanism.

198 Adjustable:

This subclass is indented under subclass 197. Subject matter comprising means for varying the force for pressing the recording means against the record receiver.

199 Electro-conductive recording means:

This subclass is indented under subclass 171. Subject matter wherein a recording means (e.g., thermal head) conducts current through a resistive layer of the record receiver or an ink carrier for generating heat to produce a mark or symbol upon the record receiver by the reason of the receiver becoming scorched, burned, marked, or otherwise thermochemically changed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

159+, for electrical discharge recording (e.g., spark).

163+, for electrochemical recording.

SEE OR SEARCH CLASS:

346, Recorders, subclasses 150.1 and 150.2 for phenomenal electrical discharge recording and phenomenal electrochemical recording respectively.

200 Specific resistance recording element type:

This subclass is indented under subclass 171. Subject matter comprising details of the recording means having a head substrate and a plurality of overlap layers in which one of the layers generates heat to produce the symbol or mark on the record receiver.

SEE OR SEARCH THIS CLASS, SUBCLASS:

20+, for print head in an ink jet recorder.

SEE OR SEARCH CLASS:

346, Recorders, subclass 139 for markers in phenomenal recorders.

430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, appropriate subclasses for chemical composition in thermos:graphic process.

201 Edge or end face type:

This subclass is indented under subclass 200. Subject matter wherein the heat generating layer consists of at least a resistive heating element disposed on the border of a top surface or on a side surface of the head substrate.

202 Glazed layer:

This subclass is indented under subclass 200. Subject matter comprising chemical composition or configuration details of a layer disposed between the head substrate and the heat generating layer for accumulating the generated heat.

203 Protective layer:

This subclass is indented under subclass 200. Subject matter comprising chemical composition or configuration details of a wear proof layer disposed above the heat generating layer for preventing oxidation or wear of resistive heating elements constituting the heat generating layer.

- 204 Heat resistance layer:**
This subclass is indented under subclass 200. Subject matter comprising chemical composition of the heat generating layer.
- 205 Head substrate:**
This subclass is indented under subclass 200. Subject matter comprising chemical composition or configuration details of a base layer.
- 206 Heating resistive elements:**
This subclass is indented under subclass 200. Subject matter comprising at least a structural limitation of resistive heating elements constituting the heat generating layer.
- (1) Note. The at least mechanical structural limitation includes, for example, thickness, size, shape, etc.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
204, for chemical composition of the resistive heating elements.
- 207 Having auxiliary means for conducting heat:**
This subclass is indented under subclass 200. Subject matter comprising a layer for affecting heat transfer from the heat generating layer to the record receiver.
- 208 Specific conductor means (e.g., electrode, conducting pattern, etc.):**
This subclass is indented under subclass 200. Subject matter comprising means for establishing a current path (e.g., electrode, conducting pattern, etc.) through resistive heating elements constituting the recording means.
- 209 With means for driving or supplying current to the resistive heating elements:**
This subclass is indented under subclass 208. Subject matter comprising a power supply or a means for selectively energizing or controlling electrical energy delivered to the resistive heating elements.
- 210 Including switching means:**
This subclass is indented under subclass 209. Subject matter comprising an electrical interrupter.
- 211 Having driving circuitry for recording means:**
This subclass is indented under subclass 171. Subject matter comprising circuitry for generating driving signals to operate the recording means.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
9+, for print head controller in an ink jet recorder.
- 212 Pre or post image recording treatment:**
This subclass is indented under subclass 171. Subject matter comprising a fixing or fusing means for applying a substance or energy or pressure upon the record receiver before or after the symbol or mark is formed thereon.
- (1) Note. Preheating of the record receiver is excluded from this subclass.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
155, for pre or post treatment in an electrostatic recorder.
185+, for preheating of transfer material or recording medium.
- SEE OR SEARCH CLASS:
430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, subclasses 349 and 350 for heat applied before and after imaging.
- 213 Having an intermediate medium for transferring ink:**
This subclass is indented under subclass 171. Subject matter wherein the symbol or mark is transferred from a transfer medium to an intermediate transfer medium before it is recorded on the record receiver.
- 214 Ink cassette or cartridge:**
This subclass is indented under subclass 171. Subject matter comprising a case having at least a mechanism contained therein or mounted thereon for containing transfer material.
- (1) Note. The mechanism contained therein or mounted thereon includes, for example, supplying or taking up means (e.g.,

spools or reels), rollers, cores, or winding members, etc.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 207+ for ribbon cartridge in a typewriter.

215 Record receiver and transfer medium feeding or driving means:

This subclass is indented under subclass 171. Subject matter comprising means for sending or transporting the record receiver and an ink carrier sheet in a direction toward the recording means for producing the symbol or mark.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 223+ for ribbon-feeding mechanism; subclasses 578+ for record receiver feeding mechanism.

216 Including separating means:

This subclass is indented under subclass 215. Subject matter comprising means for setting the record receiver apart the ink sheet after a thermal transfer marking process is performed.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclass 248 for ribbon guides which control/adjust separation.

217 With transfer medium or driving means therefor:

This subclass is indented under subclass 171. Subject matter comprising a sheet or ribbon for carrying a pigment such as ink which may be transferred to the record receiver or mechanism for sending or transporting the sheet or ribbon.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclass 225 for electrically powered drive means for feeding ribbon, subclasses 241+ for particular ribbon material.

218 Record receiver driving means:

This subclass is indented under subclass 171. Subject matter comprising a mechanism for sending or transporting the record receiver in a direction toward the recording means for producing the symbol or mark.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 578+ for record receiver feeding means.

219 Including tensioning means:

This subclass is indented under subclass 218. Subject matter comprising means for eliminating sagging of the record receiver.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclass 618 for tensioning a record receiver in a typewriter.

220 Platen or engaging means therefor:

This subclass is indented under subclass 171. Subject matter comprising a body for supporting the record receiver or an ink carrier, or means adapted to bring the body into contact with the recording means with at least the record receiver or the ink carrier interposing therebetween.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclasses 648+ for platens and platen movement.

221 With recording medium:

This subclass is indented under subclass 171. Subject matter comprising a composition or characteristic of the record receiver.

222 Housing or mounting:

This subclass is indented under subclass 171. Subject matter comprising means for enclosing or supporting the marking device.

SEE OR SEARCH CLASS:

346, Recorders, subclass 145 for support of instrument or part of instrument.
400, Typewriting Machines, subclasses 691+ for housing.

223 Including cooling device:

This subclass is indented under subclass 171. Recorders of the type comprising means for reducing temperature of the apparatus.

224 LIGHT OR BEAM MARKING APPARATUS OR PROCESSES:

This subclass is indented under the class definition. Subject matter wherein the record receiver is marked by the action of light or a stream of electrons representing an electrical information signal.

- (1) Note. The light can be generated by an ambient or an artificial light source.
- (2) Note. This subclass is distinguished from Class 399, Electrophotography, due to the electrical information signal modulating the writing beam (i.e., exposure).
- (3) Note. This subclass includes recording which may occur from heat generated by the light or beam.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 112+, where the record is made by selectively depositing or removing electrostatic charge from a medium.
- 171+, where the record is made by a thermal head brought in contact with a medium under a heated or conducted condition.

SEE OR SEARCH CLASS:

- 101, Printing, appropriate subclasses using radiant energy.
- 178, Telegraphy, subclass 15 for photographic recorders for automatic systems and subclass 90 for miscellaneous photographic telegraph records.
- 250, Radiant Energy, subclasses 580+ for a recording detector generally responsive to invisible radiation.
- 352, Optics: Motion Pictures, for motion picture recording apparatus employing photosensitive recording material.
- 359, Optical: Systems and Elements, for optical elements used in recorders.
- 378, X-Ray or Gamma Ray Systems or Devices, subclasses 167+ for X-ray devices using photographic detectors.

386, Motion Video Signal Processing for Recording or Reproducing, subclass 342 for recording television or video signal by utilizing cathode-ray tube beam.

396, Photography, for photographic apparatus for recording images, particularly subclasses 429+ for photographic apparatus combined with diverse subject matter, subclasses 540+ for phototype composing, and subclasses 549+ for electric photography.

399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, subclass 130+ for image formation, subclasses 168+ for charging, subclasses 177+ for exposure, subclasses 222+ for development, subclasses 297+ for transfer, subclasses 320+ for fixing, subclasses 343+ for cleaning, and subclasses 361+ for document handling.

430, Radiation Imagery, Chemistry: Process, Composition, or Product Thereof, subclass 19 for erasable imaging, subclasses 31+ and 48+ for electrophotography, subclass 292 for visible image formation, subclasses 333 and 346+ for visible imaging using radiation.

225 Scan of light:

This subclass is indented under subclass 224. Subject matter wherein at least one writing beam (e.g., light, electrons) whose energy varies in magnitude, or duration, or frequency in accordance with the electrical information signal, is progressed point by point or line by line (e.g., LEDs) across the record receiver to produce scan lines constituting a record of the signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

129+, for photo scanning in an electrostatic recorder.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclasses 296 through 304 and 400-309 for facsimile recording.

- 359, Optical: Systems and Elements, subclasses 196.1 through 226.3 for periodically moving an element which scans a beam by optically reflecting, refracting, or diffracting at least a portion of a beam.
- 399, Electrophotography, subclasses 177+ for exposure, particularly subclasses 206+ for slit exposure.
- 430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, subclass 363 for laser exposure for color imaging.
- 226 Cathode ray device:**
This subclass is indented under subclass 225. Subject matter wherein the writing beam is formed by a stream of electrons emitted from a cathode of an evacuated envelope.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
121+, for cathode-ray tube used in an electrostatic recorder
- SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 364+ for cathode ray tube, per se.
358, Facsimile and Static Presentation Processing, subclass 485 for CRT image generation.
378, X-Ray or Gamma Ray Systems or Devices, subclasses 145+ for beam control.
396, Photography, subclasses 546+ for exposing multicolor cathode-ray tube targets.
430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, subclass 296 for electron beam imaging.
- 227 With record receiver in an evacuated enclosure:**
This subclass is indented under subclass 226. Subject matter wherein the record receiver travels within an vacuum environment.
- 228 Having developing means:**
This subclass is indented under subclass 226. Subject matter including means for converting a latent image into a visible record.
- (1) Note. This subclass includes, for example, conductive backed record receiver or circuitry for supplying current to the conductive record receiver.
- SEE OR SEARCH CLASS:
399, Electrophotography, subclasses 9+ for diagnostics, subclasses 38+ for controls, and subclasses 222+ for development.
430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, subclasses 97+ for post image processing.
- 229 Synchronization of light with record receiver:**
This subclass is indented under subclass 226. Subject matter wherein movement of the writing beam is coordinated with the record receiver.
- 230 Having optical means interposed between the screen of the cathode ray device and the record receiver:**
This subclass is indented under subclass 226. Subject matter comprising light modifying means located between the record receiver and the faceplate of a cathode ray device for focusing or projecting an image on the screen of the cathode ray device onto the record receiver.
- (1) Note. The light modifying means includes, for example, lens, mirror, etc.
- 231 Having deflecting means:**
This subclass is indented under subclass 226. Subject matter means for directing the writing beam to adjust image position on the faceplate of the cathode ray device.
- 232 Multicolor:**
This subclass is indented under subclass 225. Subject matter wherein the at least one writing beam varies in frequency to produce image having different colors on the record receiver.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
115+, for multicolor electrostatic recording.
172+, for multicolor thermal recording.

233 Plural beam scan:

This subclass is indented under subclass 225. Subject matter wherein more than one writing beams are progressed line by line or point by point across the record receiver.

- (1) Note. The more than one writing beams may incident the record receiver as separate beams or as a composite beam made of several separately controlled beams.

SEE OR SEARCH CLASS:

- 358, Facsimile and Static Presentation Processing, subclass 408 for facsimile plural beam scanning.
359, Optical: Systems and Elements, subclasses 201.1 through 204.5 for plural moving scanning elements.

234 Synchronization of light with medium:

This subclass is indented under subclass 233. Subject matter wherein relative movement between the record receiver and at least one writing beam is controlled such that the beam is incident on the record receiver at desired location.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 248, for synchronization of light with photosensitive medium in a singular beam scanner.

SEE OR SEARCH CLASS:

- 358, Facsimile and Static Presentation Processing, subclass 409 for synchronization, subclass 411 for facsimile carrier as synchronization signal.

235 Scan synchronization (e.g., start-of-scan, end-of-scan):

This subclass is indented under subclass 233. Subject matter wherein scan lines produced by movement of at least one writing beam as it is incident on the record receiver are coordinated with each other using a discrete reference point (e.g., start-of-scan, end-of-scan, diffraction grating).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 250, for scan synchronization in a singular beam scanner.

SEE OR SEARCH CLASS:

- 358, Facsimile and Static Presentation Processing, subclasses 409 through 424 for synchronization.

236 Feed back of light for intensity control:

This subclass is indented under subclass 233. Subject matter having a photo detector for detecting quantity of light of at least one writing beam emitted from a light source to control intensity of the light source.

237 Driving circuitry:

This subclass is indented under subclass 233. Subject matter comprising circuitry for generating a drive signal to control the energization or activation of at least one light source for emission of the plurality of light beams.

SEE OR SEARCH CLASS:

- 358, Facsimile and Static Presentation Processing, subclasses 474 through 498 for picture signal generation for a scanner.

238 Specific light source (e.g., LEDs assembly):

This subclass is indented under subclass 233. Subject matter comprising structural details of a means for emitting the writing beams.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, appropriate subclasses for radiant energy sources.
372, Coherent Light Generators, appropriate subclass for coherent light sources.
438, Semiconductor Device Manufacturing: Process, subclasses 22+ for methods of making a light emissive semiconductor device.

239 Specific light modulator:

This subclass is indented under subclass 233. Subject matter wherein individual recording energy of the writing beams is varied due to an actuation of a transducer in accordance with the electrical information signal thereby creating modulated writing beams.

- (1) Note. The transducer may be acousto-optic, electro-optic, Bragg-cell, light valve, spatial light modulator, TIR

device (total internal reflection device), magneto-optic, deformable mirror.

SEE OR SEARCH CLASS:

359, Optical: Systems and Elements, subclasses 237+ for particular optical modulator structure.

240 Tone marking:

This subclass is indented under subclass 233. Subject matter comprising means for producing a halftone or grey scale image on the record receiver by controlling the amount of light irradiating a given location on the record receiver.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclasses 3.01 through 3.23 for grey level and half tone processing.

241 Specific optical structure:

This subclass is indented under subclass 233. Subject matter comprising light modifying means for converging, diverging, filtering, masking the writing beams or for guiding direction or path thereof.

(1) Note. The light modifying means includes, for example, lens, filter, mirror, prism, optical fibers, etc.

SEE OR SEARCH CLASS:

359, Optical: Systems and Elements, appropriate subclasses for individual optical elements.

242 Having mounting or supporting means:

This subclass is indented under subclass 241. Subject matter including means for holding or mounting the light modifying means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

139, for general mounting structure related to a driven recording head.

257, for optical structure supporting means in a singular beam recorder.

243 Including deflector:

This subclass is indented under subclass 241. Subject matter wherein the light modifying means includes a reflective element which is

periodically moved thereby progressing the writing beams across the record receiver.

SEE OR SEARCH CLASS:

359, Optical: Systems and Elements, subclasses 17+ for holographic deflectors, subclasses 196.1 through 226.3 for moving element deflectors.

244 Specific lens:

This subclass is indented under subclass 241. Subject matter comprising details of a lens or lens system.

(1) Note. This subclass includes, for example, position, arrangement, characteristic or type of lens or lens system (e.g., refractive index, dimension).

SEE OR SEARCH CLASS:

359, Optical: Systems and Elements, subclasses 642+ for lens structure and appropriate subclasses for other optical elements.

245 Housing or mounting:

This subclass is indented under subclass 233. Subject matter comprising means for enclosing or supporting at least a component of the marking device.

(1) Note. The at least a component includes, for example, LED array, record receiver, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

139, for general mounting structure related to a driven recording head.

242, for supports of optical components in plural beam recorder.

257, for supports of optical components in singular beam recorder.

263, for housing or mounting of singular beam recorder.

SEE OR SEARCH CLASS:

361, Electricity: Electrical Systems and Devices, appropriate subclasses for housing structure which includes electrical components.

246 Feedback of light for intensity control:

This subclass is indented under subclass 225. Subject matter having a photo detector for detecting quantity of light of writing beam emitted from a light source to control the intensity of the light source.

247 Driving circuitry:

This subclass is indented under subclass 225. Subject matter comprising circuitry for generating a drive signal to control the energization or activation of a light source for emission of the writing beam.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for specific power supply elements.

248 Synchronization of light with medium:

This subclass is indented under subclass 225. Subject matter wherein relative movement between the record receiver and the at least one writing beam is controlled such that the beam is incident on the record receiver at desired location.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclasses 409 through 424 for synchronization of scanning.

249 By clock deviation:

This subclass is indented under subclass 248. Subject matter wherein the relative movement between the record receiver and at least one writing beam is controlled by altering or changing the timing of a control clock.

250 Scan synchronization (e.g., start-of-scan, end-of-scan):

This subclass is indented under subclass 225. Subject matter wherein scan lines produced by movement of the at least one writing beam as it is incident on the record receiver are coordinated with each other using a discrete reference point (e.g., start-of-scan, end-of-scan, diffraction grating).

251 Tone marking:

This subclass is indented under subclass 225. Subject matter comprising means for producing a halftone or grey scale image on the record

receiver by controlling the amount of light irradiating a given location on the record receiver.

252 By adjusting pulse width of light beam:

This subclass is indented under subclass 251. Subject matter wherein means for producing a halftone or grey scale image includes means for adjusting time duration of activated light pulses.

253 By varying intensity of light beam:

This subclass is indented under subclass 251. Subject matter wherein means for providing a halftone or grey scale image includes means for modulating power level of the writing beam.

254 By varying dotting density:

This subclass is indented under subclass 251. Subject matter wherein means for providing a halftone or grey scale image includes means for changing number of pixels per unit length in the image to be formed on the record receiver.

255 Specific light modulator:

This subclass is indented under subclass 225. Subject matter wherein the recording energy of at least one writing beam is varied due to an actuation of a transducer in accordance with the electrical information signal thereby creating modulated writing beam.

(1) Note. The transducer may be acousto-optic, electro-optic, Bragg-cell, light valve, spatial light modulator, TIR device (total internal reflection device), magneto-optic, deformable mirror.

256 Specific optical structure:

This subclass is indented under subclass 225. Subject matter comprising light modifying means for converging, diverging, filtering, masking at least one writing beam or for guiding direction or path thereof.

(1) Note. The light modifying means includes, for example, lens, filter, mirror, prism, optical fibers, etc.

257 Having mounting or supporting means:

This subclass is indented under subclass 256. Subject matter including means for holding or mounting the specific optical structure.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
242, for optical structure supporting means in a plural beam recorder.
- 258 Having lens:**
This subclass is indented under subclass 256. Subject matter comprising details of a lens or lens system.
- (1) Note. This subclass includes, for example, position, arrangement, characteristic or type of lens or lens system (e.g., refractive index, dimension).
- 259 Including deflector:**
This subclass is indented under subclass 258. Subject matter including a reflective element which is periodically moved thereby progressing at least one writing beam across the record receiver.
- 260 Having deflector:**
This subclass is indented under subclass 256. Subject matter wherein the light modifying means includes a reflective element which is periodically moved thereby progressing at least one writing beam across the record receiver.
- 261 Polygon:**
This subclass is indented under subclass 260. Subject matter wherein the reflective element has three or more reflective surfaces arranged symmetrically about an axis and is periodically rotated about the axis thereby progressing the writing beam across the record receiver.
- 262 With record receiver or handling means therefor:**
This subclass is indented under subclass 225. Subject matter comprising characteristic of the record receiver or means for feeding or transporting the record receiver along a predetermined path.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
264, for record handling in a generic optical recorder.
- 263 Housing or mounting:**
This subclass is indented under subclass 225. Subject matter comprising means for enclosing or supporting at least a component of the marking device.
- (1) Note. The component includes at least, for example, light source, record receiver, etc.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
242, for supports of optical components in plural beam recorder.
245, for housing or mounting of plural beam recorder.
257, for supports of optical components in singular beam recorder.
- 264 With record receiver or handling means therefor:**
This subclass is indented under subclass 224. Subject matter comprising characteristic of the record receiver or means for feeding or transporting the record receiver along a predetermined path.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
262, for record handling in a scan of light recorder type.
- CROSS-REFERENCE ART COLLECTIONS
- 900 DATA PROCESSING FOR ELECTROSTATIC RECORDING:**
Cross-reference art collection under subclasses 112+ comprising computing means for manipulating data used in the electrostatic marking apparatus or processes.
- END