

CLASS 720, DYNAMIC OPTICAL INFORMATION STORAGE OR RETRIEVAL

SECTION I - CLASS DEFINITION

GENERAL STATEMENT OF THE CLASS SUBJECT MATTER

This is the specific class for apparatus and corresponding processes for the storage and retrieval of variable optical or magneto-optical information based on relative movement between an optical storage carrier or medium and a transducer along a continuous path.

This class also includes apparatus and corresponding processes for making copies or editing of optical records falling within the above definition.

This class also includes the record carrier or medium, per se, having particular information storage structure.

SCOPE OF THE CLASS

- (1) Note. This class is an integral part of class 369, Dynamic Information Storage or Retrieval, following subclass 18 and after Class 360.
- (2) Note. An optical record carrier or medium within the meaning of this class is an element which consists a material which can be sensed optically or is comprised of series of mechanical or thermally induced markings which is intended for the storage of more than a single bit of information.
- (3) Note. The record carrier or medium must have continuous physical extent over the path of movement and be able to store a time-varying information signal. Static or discrete storage devices are classified elsewhere. See the SEE OR SEARCH CLASS notes below.
- (4) Note. The optical record carrier or medium may include other elements for storing dynamic information, such as a magnetic material.
- (5) Note. Storage elements which include discrete optical, magnetic areas, inserts or spots, each intended for the storage of single bits of information, whether or not relative motion is used in transducing that information, are classified elsewhere. See the SEE OR SEARCH CLASS notes below.
- (6) Note. This class includes elements forming subcombinations specific to apparatus within the class definition such as record carriers, transducers, actuators, supports for the media carrier or the transducer.
- (7) Note. Electrical circuits not specific to optical or magneto-optical recording or reproducing which may constitute subcombinations of such apparatus are classified in the class appropriate for such circuits unless specifically excluded therefrom.
- (8) Note. Mechanisms forming subcombinations of apparatus are classified in the appropriate mechanical class providing for such subject matter unless claimed in significant combination with specifics of a dynamic optical storage or retrieval device.
- (9) Note. Significantly claimed apparatus external to this class, claimed in combination with apparatus under the class definition, which records or reproduces some quality or quantity related to such external apparatus or its function, is classified in the class appropriate to the external apparatus.
- (10) Note. Nominally claimed apparatus external to this class, claimed in combination with apparatus under the class definition, is classified in this class unless provided for in the appropriate external class.
- (11) Note. Because of the placement of this class into the Class 369 schedule, this class is no longer exhaustive of dynamic optical storage or retrieval, appropriate subclasses in Class 369 should also be considered.
- (12) Note. This class is differentiated from Class 206 in that in order to record or reproduce information, the optical recording medium element must first be removed from its container for Class 206, while this class allows the optical recording medium element to be maintained within its holder or protector for recording and reproducing.

- (13) Note. The combination of an audio signal producing device with the subject matter of this class is classified in this class, except for the combination with telephone signal devices which are classified in the Telephone class. For such excluded subject matter see the SEE OR SEARCH CLASS notes below.

ORGANIZATION OF THIS CLASS:

For the organization of this class, refer to Subclass References to the Current Class, below.

SECTION II - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 600 through 657, Special Purpose Devices: for devices designed for use with or control of diverse type devices, or particular structure associated with mechanism for housing, ejecting and/or inserting an optical recording medium element within an enclosure, of the enclosure for such media.
- 658 through 717, Dynamic Mechanism Optical Subsystems: for mechanism subcombinations peculiar to storage or retrieval absent more than nominal information handling structure.
- 718 through 746, Structure of Optical Storage Medium: for structure of the optical storage medium element having significant structure for carrying information.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

- 181, Acoustics, appropriate subclasses for nonelectrical sound wave handling systems and components.
- 206, Special Receptacles and Packages, subclasses 307 through 387.15 for holding a machine readable recording medium, particularly subclass 308.1 for receptacles holding an optical disc.
- 235, Registers, subclasses 435 through 486 for coded record sensors and subclasses 487-495 for records.

- 242, Winding, Tensioning, or Guiding, subclasses 324.2, 326-326.4, 335-348.4 for a machine convertible information carrier on or within a housing typically termed cartridge, cassette, or magazine, and subclass 601 for a spool provided with a cover.
- 310, Electrical Generator or Motor Structure, subclasses 67R and 90 for inbuilt and turntable bearing support structure.
- 312, Supports: Cabinet Structure, subclasses 9.1 through 9.64 for phonograph cabinets without storage or retrieval structure.
- 346, Recorders, appropriate subclasses for variation producing only a directly perceptible indication (e.g., a graph).
- 352, Optics: Motion Pictures, appropriate subclasses for subject matter of this class combined with motion picture recording or projection, particularly subclasses 92, 102-103, and 232-241 for structure of storage medium structure limited to motion pictures.
- 353, Optics: Image Projectors, subclasses 15 through 19 for image projectors with sound accompaniment.
- 355, Photocopying, subclasses 31 and 98 for copying optical sound records.
- 359, Optical: Systems and Elements, subclasses 642 through 830 and 719 for particular lens structure; particularly subclasses 811-830 for particular lens support or mountings.
- 360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for exclusive magnetic storage or retrieval.
- 365, Static Information Storage and Retrieval, appropriate subclasses for structure of static or discrete storage or retrieval systems.
- 379, Telephonic Communications, subclasses 67.1 through 88.28 for audio message storage, retrieval or synthesis in a telephone communication system.
- 381, Electrical Audio Signal Processing and Systems and Devices, appropriate subclasses for electrical audio signal handling in general.
- 386, Motion Video Signal Processing for Recording or Reproducing, appropriate subclasses for video recording or reproduction.
- 399, Electrophotography, subclass 10 for storage of data on the operation of an electrophotographic device (i.e., log report) and subclass 83 for job mode selection with memory.
- 428, Stock Material or Miscellaneous Articles, particularly subclasses 64.1 through 66.7 for articles usable as optical record medium or carrier.

- 430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, particularly subclasses 270.1 through 289.1 for radiation imagery chemistry process, composition, or product used as a storage medium.
- 434, Education and Demonstration, appropriate subclasses for recording or reproducing means combined with significant education apparatus.
- 505, Superconductor Technology: Apparatus, Material, Process, subclasses 150 through 239 for high temperature superconducting material, particularly subclasses 170-171 for dynamic information storage or retrieval.
- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 200 through 504 for speech signal processing involving data processing.
- 709, Electrical Computers and Digital Data Processing Systems: Multiple Computer or Process Coordinating, subclasses 200 through 253 for data transferring among multiple computer and digital processing systems.
- 711, Electrical Computers and Digital Processing Systems: Memory, subclass 4 for addressing dynamic storage devices including address formation or manipulation and subclasses 111-114 for data accessing and control techniques for dynamic storage devices in digital data processing systems.
- 714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for generic error checking systems.

SEE OR SEARCH CLASS:

- 850, Scanning-Probe Techniques or Apparatus; Applications of Scanning-Probe Techniques, e.g., Scanning-Probe Microscopy [SPM], subclass 62 for information storage or retrieval using scanning probe microscope.

SUBCLASSES

- 600 PARTICULAR CABINET STRUCTURE FOR OPTICAL MEDIA:**
This subclass is indented under the class definition. Subject matter including structural details of an enclosure surrounding the components of the optical dynamic information storage or retrieval system or associated internal structure.

- 601 Tray or drawer loading or ejecting:**
This subclass is indented under subclass 600. Subject matter including a power driven mechanical arrangement for moving an optical storage medium or carrier inward or outward from the enclosure.
- 602 Controlling acceleration, deceleration or speed:**
This subclass is indented under subclass 601. Subject matter including means for controlling acceleration, deceleration or speed of the outwardly movable tray in a variable or invariable manner.
- 603 Tray recess:**
This subclass is indented under subclass 601. Subject matter including details of at least one recess in the tray for supporting the optical storage medium.
- 604 Clamping or chucking media structure:**
This subclass is indented under subclass 601. Subject matter including details of a clamping mechanism or securing the optical storage medium to a turntable in association with tray movement.
- 605 Pivotal chassis mounted turntable or pickup:**
This subclass is indented under subclass 604. Subject matter including a turntable or transducer that is mounted to a swingable chassis that pivots.
- 606 Sensing tray position or media loading:**
This subclass is indented under subclass 601. Subject matter including a sensing means for monitoring the position of a tray or the optical storage medium mounted to the tray.
- 607 Rack or pinion:**
This subclass is indented under subclass 601. Subject matter wherein the mechanism for moving the tray inward or outward from the enclosure includes a rack or pinion element.
- 608 Single multi-purpose driving source:**
This subclass is indented under subclass 601. Subject matter including a single driving source for driving the tray and at least one other subsystem.

- (1) Note. Example of such driving includes driving of a tray and clamper mechanism or transducer assembly.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
661, for a single motor for driving an optical transducer and at least one other subsystem.
- 609 Manual tray ejector:**
This subclass is indented under subclass 601. Subject matter including details of structure for causing the tray supporting the optical storage medium to be manually ejected outward from the enclosure.
- 610 Tray locking:**
This subclass is indented under subclass 601. Subject matter including means for locking the tray at a prescribed position for preventing movement of the tray relative to the enclosure.
- 611 Damped tray:**
This subclass is indented under subclass 601. Subject matter including means for minimizing undesired oscillations or vibrations of the tray.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
679, for rail damping or resonance suppression.
684, for dampening or resonance suppression of objective lens.
687, for utilizing circular leaf springs for dampening or resonance suppression of objective lens.
688, for reducing vibrations of the transducer carriage or actuator.
692, for suppressing vibration or resonance of chassis base supporting the transducer carriage or actuator.
- SEE OR SEARCH CLASS:
369, Dynamic Information Storage or Retrieval, subclass 247.1 for suppression of undesired mechanical energy incident upon a tone arm.
- 612 Pivotal tray or tray holder:**
This subclass is indented under subclass 601. Subject matter wherein the mechanical arrangement capable of supporting the optical storage medium is pivotable with respect to the insertion opening of the tray.
- 613 Particular tray guide:**
This subclass is indented under subclass 601. Subject matter including details of structure for guiding or supporting at least a portion of a tray's movement during insertion or ejection from an enclosure.
- 614 Multiple trays:**
This subclass is indented under subclass 601. Subject matter including a plurality of trays each capable of independently supporting at least one optical storage medium.
- 615 Multiple media loading:**
This subclass is indented under subclass 601. Subject matter including means for inserting a plurality of optical storage media into the enclosure either simultaneously or sequentially.
- 616 Of diverse media type (e.g., disc and cartridge):**
This subclass is indented under subclass 615. Subject matter wherein the plurality of optical storage media are non-identical in terms of physical characteristics.
- (1) Note. Examples of physical characteristics include at least one of format, shape, size, protected vs. unprotected, etc.
- 617 Capable of only accepting unprotected insertable single optical medium:**
This subclass is indented under subclass 600. Subject matter wherein an optical storage medium is inserted into a recording or reproducing device without a cartridge, casing or covering.
- 618 Optical card:**
This subclass is indented under subclass 617. Subject matter wherein the optical storage medium is non-circular and typically takes the form of a playing card, greeting card or postcard.
- 619 Loading of optical medium:**
This subclass is indented under subclass 617. Subject matter including means for moving the optical storage medium inward or outward from the recording or reproducing device.

- 620 Edge loading:**
This subclass is indented under subclass 619. Subject matter wherein the optical storage medium is inserted into the recording or reproducing device utilizing the outer circumferential periphery of the optical storage medium.
- 621 Roller mechanism:**
This subclass is indented under subclass 620. Subject matter wherein the edge loading means include a roller mechanism for contacting the outer peripheral edge of the optical storage medium.
- 622 Guide mechanism:**
This subclass is indented under subclass 620. Subject matter including details of structure for guiding or supporting the movement of the optical storage medium in or out of the recording or reproducing device.
- 623 Movable guide:**
This subclass is indented under subclass 622. Subject matter wherein the guiding mechanism is not stationary.
- 624 Surface loading (e.g., rollers):**
This subclass is indented under subclass 619. Subject matter wherein the optical storage medium is inserted into a recording or reproducing device utilizing the planar surface area of the optical storage medium.
- 625 Having non-cylindrical roller:**
This subclass is indented under subclass 624. Subject matter including a non-cylindrical roller for moving the optical storage medium in or out of the recording or reproducing device.
- 626 Detecting physical characteristic or location of optical medium:**
This subclass is indented under subclass 617. Subject matter including a sensor for determining the physical characteristics or location of the optical storage medium within the recording or reproducing device.
- (1) Note. Examples of physical characteristics are size, single sided, double sided, capacity, etc.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
616, for loading or ejecting diverse media types.
- 627 Capable of alternatively accepting protected or unprotected insertable single optical medium:**
This subclass is indented under subclass 600. Subject matter wherein the optical recording or reproducing device is capable of receiving an optical storage medium with or without a cartridge, casing or covering.
- 628 Inserted through single slot:**
This subclass is indented under subclass 627. Subject matter wherein the optical storage medium is inserted through the same slot of the recording or reproducing device
- 629 Unprotected medium inserted protected:**
This subclass is indented under subclass 627. Subject matter wherein an uncovered optical storage medium is placed into cartridge, casing or covering before the optical storage medium is inserted into the recording or reproducing device.
- 630 Capable of only accepting protected insertable single optical medium:**
This subclass is indented under subclass 600. Subject matter wherein the optical storage medium is inserted into a recording or reproducing device with a cartridge, casing or covering.
- 631 Misinsertion mechanism or sensor:**
This subclass is indented under subclass 630. Subject matter includes a device to determine whether or not the optical storage medium is properly positioned within the recording or reproducing device.
- 632 Transferring mechanism:**
This subclass is indented under subclass 630. Subject matter including means for moving the optical storage medium inward or outward of the recording or reproducing device.
- 633 Horizontal transference during insertion:**
This subclass is indented under subclass 632. Subject matter including means for moving the optical storage medium into the recording or

- reproducing device in a direction parallel to the insertion direction of the optical storage medium.
- 634 Vertical transference into the play position:**
This subclass is indented under subclass 632. Subject matter including means for moving the optical storage medium into the play position within the recording or reproducing device in a direction perpendicular to the insertion direction of the optical storage medium.
- 635 Having cam:**
This subclass is indented under subclass 634. Subject matter wherein the means for moving the optical storage medium into the play position within the recording or reproducing device utilizes a cam.
- 636 Ejection mechanism:**
This subclass is indented under subclass 630. Subject matter including means for expelling the optical storage medium from a recording or reproducing device.
- 637 Having locking mechanism:**
This subclass is indented under subclass 636. Subject matter wherein the means for expelling the optical storage medium from the recording or reproducing device utilizes a detent or locking mechanism.
- 638 Having ejection arm:**
This subclass is indented under subclass 636. Subject matter wherein the means for removing the optical storage medium from the recording or reproducing device utilizes an elongated bar or rod that engages the optical storage medium.
- 639 Locking mechanism:**
This subclass is indented under subclass 630. Subject matter including a means for locking optical storage medium within the recording or reproducing device.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
637, for utilizing a locking mechanism for an ejector of a recording or reproducing device.
- 640 Pivotal cartridge holder:**
This subclass is indented under subclass 630. Subject matter having a mechanism to retain
- the optical storage medium that rotates about an axis.
- 641 Guide mechanism:**
This subclass is indented under subclass 630. Subject matter including means for guiding the optical storage medium inward or outward of the recording or reproducing device.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
622, for utilizing a guiding mechanism for edge loading of an unprotected optical storage medium.
- 642 Surface loading (e.g., rollers):**
This subclass is indented under subclass 630. Subject matter wherein the optical storage medium is inserted into a recording or reproducing device utilizing the planar surface area of the optical storage medium.
- (1) Note. Edge or surface loading of protected optical medium is classified herein.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
624, for surface loading of an unprotected optical medium.
- 643 Shutter opening mechanism:**
This subclass is indented under subclass 630. Subject matter comprising means for uncovering a shutter which covers an opening in the cartridge, casing or covering.
- 644 Sliding mechanism:**
This subclass is indented under subclass 643. Subject matter including means for moving or sliding of the shutter covering in the cartridge, casing or covering.
- 645 Detecting physical characteristics and location of optical medium:**
This subclass is indented under subclass 600. Subject matter including means for sensing a physical characteristic or location of the optical recording medium within the recording or reproducing device.
- (1) Note. Examples of characteristic include disk discrimination or sizing identifica-

tion, or capacity, single sided or double sided.

SEE OR SEARCH THIS CLASS, SUBCLASS:

626, for detection of physical characteristics and location of an unprotected optical medium.

646 Details of exterior front face:

This subclass is indented under subclass 600. Subject matter including the details of the enclosure face on which side an optical storage medium is inserted or introduced into the enclosure.

647 Door mechanism:

This subclass is indented under subclass 646. Subject matter including a movable structure for closing off an entrance location of the optical medium into the recording or reproducing device.

(1) Note. Example of door mechanism is snap fit.

648 Environmental control:

This subclass is indented under subclass 600. Subject matter including means for controlling an ambient condition within the enclosure.

649 Cooling:

This subclass is indented under subclass 648. Subject matter including means for controlling the internal environment temperature of the enclosure.

650 EMI shielding or electrical grounding:

This subclass is indented under subclass 648. Subject matter wherein the internal enclosure is shielded from extraneous electrostatic or electromagnetic fields or is electrically grounded.

(1) Note. Electrical grounding includes grounding of components within the internal enclosure.

651 Vibration suppression:

This subclass is indented under subclass 648. Subject matter including means for minimizing undesired vibrations or oscillations of the enclosure or internal components mounted to the enclosure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

611, for minimizing undesired oscillations or vibrations of loading or ejection tray.

679, for rail damping or resonance suppression.

684, for dampening or resonance suppression of objective lens.

687, for utilizing circular leaf springs for dampening or resonance suppression of objective lens.

688, for reducing vibrations of the transducer carriage or actuator.

692, for reducing vibrations to the base supporting the optical transducer carriage or actuator.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 247.1, for suppression of undesired mechanical energy incident upon a tone arm.

652 Arrangement of internal or external components (e.g., space optimization):

This subclass is indented under subclass 600. Subject matter including particular details of the disposition of internal components within the enclosure or details of the arrangement of external components or supporting structure immediately adjacent to the enclosure.

(1) Note. Example of optimization includes particular placement of printed circuit board within the enclosure.

653 Internal component conveyed outside housing:

This subclass is indented under subclass 600. Subject matter wherein mechanical arrangements normally inside the enclosure are capable of movement to the enclosure exterior.

(1) Note. Example of internal components movable to the exterior of the enclosure is the optical transducer or turntable.

654 Modular mounting:

This subclass is indented under subclass 600. Subject matter including details of a subunit or subunits housing an optical recording device or optical storage medium carrier are mounted

within an enclosure for easy assembly, disassembly, repair or flexible arrangement.

655 Particular cover or lid for enclosing media:
This subclass is indented under subclass 600. Subject matter including the details of a protective lid or covering placed directly over the optical storage medium seated within the enclosure.

656 Reproducing diverse-type media (e.g., cartridge and disc):
This subclass is indented under subclass 600. Subject matter wherein the optical storage or retrieval system is capable of playing different types of optical storage medium which are non-identical in terms of at least one format, shape, size, protected vs. unprotected or etc.

657 Locking or latching of cabinet or components within cabinet:
This subclass is indented under subclass 600. Subject matter including particular details of locking or latching internal components within the enclosure and/or details of the locking or latching of the enclosure as a whole to supporting structure immediately adjacent to the enclosure.

658 DYNAMIC MECHANISM OPTICAL SUB-SYSTEM:
This subclass is indented under the class definition. Subject matter under the ... including specifics of separate substructures of optical transducer assembly of recording or reproducing system.

659 Having power driven optical transducer assembly:
This subclass is indented under subclass 658. Subject matter wherein the optical transducer assembly of the optical recording or reproducing system is driven in order to access tracks of an optical storage medium.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 215.1, for power driven transducer assembly in a non-optical dynamic information storage or retrieval device.

660 Sensor detecting position of optical transducer:

This subclass is indented under subclass 659. Subject matter including specifics of a sensing device for determining the specific spatial location of the optical transducer assembly inside the optical recording or reproducing system.

661 Single motor drives optical transducer and at least one other component:

This subclass is indented under subclass 659. Subject matter wherein a single drive motor moves the optical transducer assembly for accessing tracks of the optical storage medium and also drives at least one other subsystem.

(1) Note. Example of composite driving include tray loader assembly and turntable rotation assembly.

662 Arcuate transducer assembly movement:

This subclass is indented under subclass 659. Subject matter wherein the movement of the optical transducer assembly traces the path of an arc during recording or reproducing of the optical storage medium.

663 Linear transducer assembly movement:

This subclass is indented under subclass 659. Subject matter wherein the movement of the optical transducer assembly is restricted to a straight path during recording or reproducing of the optical storage medium.

664 Rack gear:

This subclass is indented under subclass 663. Subject matter wherein a rack gear in conjunction with a drive motor moves the optical transducer assembly in a straight path during recording or reproducing of the optical storage medium.

665 Backlash prevention:

This subclass is indented under subclass 664. Subject matter including means for preventing loose connections between the gears resulting in sudden backlash or jamming of the gears during movement of the optical transducer, thereby permitting smooth engagement of the gears.

- 666 Voice coil:**
This subclass is indented under subclass 663. Subject matter wherein a voice coil provides motive power for the linearly moving optical transducer assembly during track changing.
- 667 Turntable moves linearly and simultaneously with the optical assembly:**
This subclass is indented under subclass 659. Subject matter wherein the turntable that supports the optical storage medium moves along a restricted linear path concurrent with linear movement of the optical transducer assembly during recording or reproducing of the optical storage medium.
- 668 Single optical transducer plays both sides of disc record:**
This subclass is indented under subclass 659. Subject matter comprising a single optical transducer assembly capable of accessing both sides of an optical storage medium so as to enable both sides of the optical storage medium to be recorded on or reproduced by the single optical transducer.
- 669 Plural transducers for a single disc side:**
This subclass is indented under subclass 659. Subject matter comprising two or more optical transducer assemblies placed on the same side of the optical storage medium for accessing to the same side of the optical storage medium during recording or reproducing.
- 670 Independent movable transducers:**
This subclass is indented under subclass 669. Subject matter wherein each optical transducer assembly moves independently from each other for accessing the optical storage medium free from the influence of the other transducer assemblies.
- 671 Protecting optical transducer:**
This subclass is indented under subclass 658. Subject matter including means for protecting the optical transducer assembly from environmental hazards.

(1) Note. Examples of environmental hazard include dust intrusion, sudden impacts or etc.
- 672 Transducer carriage or actuator:**
This subclass is indented under subclass 658. Subject matter including details of the carriage assembly or actuator assembly that supports the optical transducer assembly.
- 673 Locking of transducer carriage:**
This subclass is indented under subclass 672. Subject matter including means for holding securely the optical transducer carriage in place during non- recording or non-reproducing states.
- 674 Adjusting transducer carriage:**
This subclass is indented under subclass 672. Subject matter comprising means for permitting adjustment of the optical transducer carriage in one or more directions so as to adjust tilt angle or skew angle of the optical transducer relative to the optical storage medium.
- 675 By guide rail or rod:**
This subclass is indented under subclass 674. Subject matter comprising an adjustable guide rail or rod for correcting the tilt angle or skew angle of the optical transducer relative to the optical storage medium.
- 676 Supported by linear guide rail or rod:**
This subclass is indented under subclass 672. Subject matter comprising rail or rod for defining linear movement path for the optical transducer carriage or actuator assembly.
- 677 Rail attachment to base:**
This subclass is indented under subclass 676. Subject matter comprising means for securing the rail or rod to the base of the optical recording or reproducing device.
- 678 Specific rail material:**
This subclass is indented under subclass 676. Subject matter wherein the rail or rod is composed of a particular material.

(1) Note. Examples of particular material include magnetic material, stainless steel or viscoelastic material.
- 679 Rail dampening or resonance suppression:**
This subclass is indented under subclass 676. Subject matter comprising means for prevent-

ing vibrations of the rail or rod of the optical transducer assembly.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

611, for minimizing undesired oscillations or vibrations of loading or ejection tray.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 247.1, for suppression of undesired mechanical energy incident upon a tone arm.

680 Transducer carriage supported by roller bearings:

This subclass is indented under subclass 676. Subject matter comprising roller bearings that interact with the rail or rod for translation of the optical transducer carriage along the rail or rod.

681 Adjustable objective lens support:

This subclass is indented under subclass 672. Subject matter including details of the assembly that directly supports the objective lens of the optical transducer, thereby permitting adjustment of the objective lens independent from the remainder of the optical transducer assembly.

682 Linear leaf springs:

This subclass is indented under subclass 681. Subject matter including specific details of springs that support the objective lens so as to permit movement of the objective lens wherein the springs are long, thin and linearly shaped.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

686, for use of circular leaf springs for supporting the objective lens.

683 Coil or magnet:

This subclass is indented under subclass 682. Subject matter including specifics of coil or magnet assembly that permit adjustment of the objective lens held by the linear leaf springs.

684 Dampening or resonance suppression:

This subclass is indented under subclass 682. Subject matter including means for reducing the vibration and resonance of the objective

lens held by the linear leaf springs so as to prevent unnecessary translation of the vibrations to the objective lens.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

611, for minimizing undesired oscillations or vibrations of loading or ejection tray.

679, for rail dampening or resonance suppression.

684, for dampening or resonance suppression of objective lens.

687, for utilizing circular leaf springs for dampening or resonance suppression of objective lens.

688, for reducing vibrations of the transducer carriage or actuator.

692, for reducing vibrations to the base supporting the optical transducer carriage or actuator.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 247.1, for suppression of undesired mechanical energy incident upon a tone arm.

685 Electrical connection detail:

This subclass is indented under subclass 682. Subject matter including specifics of the electrical connections of the objective lens support.

(1) Note. For example, linear leaf springs act as electrical conductors.

686 Circular leaf spring:

This subclass is indented under subclass 681. Subject matter including specific details of spring that support the objective lens so as to permit movement of the objective lens wherein the spring is thin and circularly shaped.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

682, for use of linear leaf springs for supporting the objective lens.

687 Dampening or resonance suppression:

This subclass is indented under subclass 686. Subject matter comprising means for reducing the vibration and resonance of the objective lens held by the circular leaf springs so as to

prevent unnecessary translation of the vibrations to the objective lens.

SEE OR SEARCH THIS CLASS, SUBCLASS:

611, for minimizing undesired oscillations or vibrations of loading or ejection tray.

679, for rail damping or resonance suppression.

684, for dampening or resonance suppression of objective lens.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 247.1, for suppression of undesired mechanical energy incident upon a tone arm.

688 Vibration or resonance suppression:

This subclass is indented under subclass 672. Subject matter comprising means for reducing undesired mechanical energy of the optical transducer carriage or actuator during translation of the carriage or actuator so as to prevent unnecessary translation of the vibrations or resonance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

611, for minimizing undesired oscillations or vibrations of loading or ejection tray.

679, for rail damping or resonance suppression.

684, for dampening or resonance suppression of objective lens.

687, for utilizing circular leaf springs for dampening or resonance suppression of objective lens.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 247.1, for suppression of undesired mechanical energy incident upon a tone arm.

689 Chassis base supporting transducer carriage:

This subclass is indented under subclass 658. Subject matter wherein each substructure includes a base for mounting an optical transducer carriage or actuator.

690 Pivotal into reproducing or recording position:

This subclass is indented under subclass 689.

Subject matter wherein the base pivots with respect to an optical storage medium so as to place the optical transducer carriage or actuator in the proper position to record or reproduce to or from the optical storage medium.

691 Adjustment of chassis base:

This subclass is indented under subclass 689.

Subject matter comprising means for correcting the chassis base.

692 Vibration or resonance suppression:

This subclass is indented under subclass 689.

Subject matter comprising means for reducing undesired mechanical energy from effecting the base that supports the optical transducer carriage or actuator so as to prevent unnecessary translation of vibrations to the carriage or actuator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

611, for minimizing undesired oscillations or vibrations of loading or ejection tray.

679, for rail damping or resonance suppression.

684, for dampening or resonance suppression of objective lens.

687, for utilizing circular leaf springs for dampening or resonance suppression of objective lens.

688, for reducing vibrations of the transducer carriage or actuator.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 247.1 for suppression of undesired mechanical energy incident upon a tone arm.

693 Grommet and coil spring:

This subclass is indented under subclass 692.

Subject matter wherein the vibration resonance suppression means includes a combined grommet and coil spring in one assembly for prevention of vibrations.

- 694 Viscoelastic material:**
This subclass is indented under subclass 692. Subject matter wherein a rubber-like, resilient, viscoelastic substance is placed on the base so as to absorb vibrations and resonances.
- 695 Optical storage medium support (e.g., turntable, spindle motor):**
This subclass is indented under subclass 658. Subject matter wherein each substructure includes a turntable or media motion apparatus that supports an optical storage medium.
- (1) Note. Example of media motion production is spindle motor.
- 696 Spindle motor exterior structure:**
This subclass is indented under subclass 695. Subject matter including specific details of the exterior structure of a spindle motor.
- 697 Mounting detail:**
This subclass is indented under subclass 696. Subject matter including the specific arrangement of elements for mounting of the spindle motor.
- 698 Dampening:**
This subclass is indented under subclass 696. Subject matter comprising means for reducing vibrations of the spindle motor.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 611, for minimizing undesired oscillations or vibrations of loading or ejection tray.
- 651, for vibration suppression of enclosure or internal components mounted to the enclosure.
- 679, for rail damping or resonance suppression.
- 684, for dampening or resonance suppression of objective lens.
- 687, for utilizing circular leaf springs for dampening or resonance suppression of objective lens.
- 688, for reducing vibrations of the transducer carriage or actuator.
- 692, for reducing vibrations to the base supporting the optical transducer carriage or actuator.
- 699 Multiple disks on one spindle:**
This subclass is indented under subclass 696. Subject matter wherein the spindle is capable of receiving multiple optical storage media on one spindle at the same time.
- 700 Turntable adjustment:**
This subclass is indented under subclass 695. Subject matter comprising means for adjusting the turntable.
- 701 Having balancer:**
This subclass is indented under subclass 695. Subject matter comprising means for compensating eccentricities of the optical medium support structure.
- 702 Having balls:**
This subclass is indented under subclass 701. Subject matter wherein the balancer includes spherical members.
- (1) Note. Example of spherical member is ball bearings.
- 703 Optical storage disc holding structure:**
This subclass is indented under subclass 695. Subject matter comprising means for holding and clamping of an optical storage medium to the optical medium support structure.
- 704 Having centering:**
This subclass is indented under subclass 703. Subject matter comprising means for centering the optical storage medium relative to the holding structure.
- 705 Using balls:**
This subclass is indented under subclass 704. Subject matter wherein the centering means includes spherical members.
- (1) Note. Example of spherical members is ball bearings.
- SEE OR SEARCH CLASS:
369, Dynamic Information Storage or Retrieval, subclass 247.1, for suppression of undesired mechanical energy incident upon a tone arm.

706 Details of clamping:

This subclass is indented under subclass 703. Subject matter wherein the specific arrangements of the clamper mechanism which holds the optical storage medium securely is specified.

707 Radially extending members:

This subclass is indented under subclass 706. Subject matter wherein the clamper mechanism includes members which move in a radial direction with respect to the medium to facilitate clamping thereof.

- (1) Note. Example of radially extending members is elastic fingers.

708 Using balls:

This subclass is indented under subclass 707. Subject matter wherein the members which move in a radial direction include spherical members.

- (1) Note. Example of spherical members is ball bearings.

SEE OR SEARCH THIS CLASS, SUBCLASS:

705, for use of ball bearings for centering the optical storage medium.

709 Having groove or channel:

This subclass is indented under subclass 707. Subject matter including groove or channel for facilitating movement of the radially extending members.

710 Magnetic:

This subclass is indented under subclass 706. Subject matter wherein the clamper mechanism includes magnetic material for securing the optical storage medium.

711 Clamp for different types of disk:

This subclass is indented under subclass 706. Subject matter including specific structure to enable clamping of multiple types of optical storage media either simultaneously or separately.

- (1) Note. Example includes a disk in a cartridge and a disk without a cartridge.

712 Particular shape:

This subclass is indented under subclass 706. Subject matter including details of the shape of the clamper or corresponding structure of the clamper which allows for proper positioning of the optical storage medium within the clamper mechanism.

713 Pivoting mechanism:

This subclass is indented under subclass 706. Subject matter including means which enables the clamper or corresponding structure to pivot along an axis with respect to the base plate of the apparatus.

714 Linear movement:

This subclass is indented under subclass 706. Subject matter including means which enables the clamper and/or corresponding structure to move along a plane parallel and/or perpendicular with respect to the surface of the optical storage medium.

- (1) Note. This subclass does not include rotational movement of clamping mechanism. For such excluded subject matter see the SEE OR SEARCH THIS CLASS, SUBCLASS note below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

713, for rotational movement of clamping mechanism.

715 Optical storage disc contact structure on turntable surface:

This subclass is indented under subclass 703. Subject matter including specifics of the turntable surface which contacts and supports the optical storage medium.

716 Having dampening:

This subclass is indented under subclass 715. Subject matter including means for reducing shocks or vibrations between the optical storage medium and turntable surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:

611, for minimizing undesired oscillations or vibrations of loading or ejection tray.

- 651, for vibration suppression of enclosure or internal components mounted to the enclosure.
- 679, for rail damping or resonance suppression.
- 684, for dampening or resonance suppression of objective lens.
- 687, for utilizing circular leaf springs for dampening or resonance suppression of objective lens.
- 688, for reducing vibrations of the transducer carriage or actuator.
- 692, for reducing vibrations to the base supporting the optical transducer carriage or actuator.

SEE OR SEARCH CLASS:

- 369, Dynamic Information Storage or Retrieval, subclass 247.1, for suppression of undesired mechanical energy incident upon a tone arm.

717 Reducing eccentricity:

This subclass is indented under subclass 715. Subject matter including means for compensating for optical storage medium or turntable irregularities.

718 OPTICAL STORAGE MEDIUM STRUCTURE:

This subclass is indented under the class definition. Subject matter including the specific structure of the optical information bearing storage medium.

- (1) Note. A blank or starting piece not limited to storage or retrieval is classified elsewhere, appropriate to the actual blank. See the SEE OR SEARCH CLASS notes below.
- (2) Note. Mention of intended use such as in the preamble of the claim is not enough for classification in this subclass.

SEE OR SEARCH CLASS:

- 206, Special Receptacle or Package, subclasses 307 through 387.15 for holding a machine readable recording medium, particularly subclass 308.1 for receptacles holding an optical disc.
- 252, Compositions, appropriate subclasses for surface lubricants.

- 346, Recorders, appropriate subclasses for a perceptible record blank without grooves.
- 352, Optics: Motion Pictures, subclasses 92, 102-103 and 232-241 for structure of storage medium structure limited to motion pictures.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 131 through 136 for structure of record medium limited to magnetic storage.
- 369, Dynamic Information Storage or Retrieval, subclass 272.1 for storage medium structure in a non-optical dynamic storage or retrieval device.
- 428, Stock Material or Miscellaneous Articles, subclasses 64.1 through 66.7 for articles usable as optical record carrier or medium.

719 Disk protection:

This subclass is indented under subclass 718. Subject matter comprising means for guarding the surface of the optical storage medium from undesired effect.

- (1) Note. Examples include a protective cover or structure to prevent scratches, a protective layer to prevent undesired thermal effect or chemical reaction or unwanted optical or recording effects, or an adhesive layer to prevent peeling.
- (2) Note. Optical media protection including optical track structure is classified elsewhere.

SEE OR SEARCH CLASS:

- 369, Dynamic Information Storage or Retrieval, subclass 275.5 for optical media structure including optical track structure.

720 Disk adapter:

This subclass is indented under subclass 718. Subject matter comprising means which permits the optical storage medium to be configurable into different media formats.

- (1) Note. Examples include a "naked" disc which is a disc not enclosed in a cartridge, accompanied in an "adaptor" to play or record in an apparatus which does not normally accept "naked" discs.

- (2) Note. Cartridge adaptors which convert a small sized optical media cartridge into a larger sized cartridge may be classified here.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
725 through 744, for specific details of an optical disk cartridge.
- 721 Disk hub:**
This subclass is indented under subclass 718. Subject matter including details of the structure which encircles the central opening of the optical storage medium.
- SEE OR SEARCH CLASS:
369, Dynamic Information Storage or Retrieval, subclass 290.1 for details of central area of a disk in a non-optical dynamic storage or retrieval device.
- 722 Hub material or composition:**
This subclass is indented under subclass 721. Subject matter wherein a particular material is specified for the hub structure or a part thereof.
- 723 Including clamping plate:**
This subclass is indented under subclass 721. Subject matter including specific details of the clamping plate and its structural cooperation with the hub.
- (1) Note. The clamping plate as classified here is an element formed of a magnetically attracted material, for example, metal, which contributes clamping assistance to a disc and its accompanying hub structure.
- 724 Providing a centering protrusion or projection:**
This subclass is indented under subclass 721. Subject matter wherein the structure includes extension(s) outside of the surface plane of the main hub structure assisting in centering the hub onto the optical storage medium.
- 725 Disk cartridge:**
This subclass is indented under subclass 718. Subject matter comprising a container or housing encasing the optical storage medium.
- SEE OR SEARCH CLASS:
369, Dynamic Information Storage or Retrieval, subclass 291.1 for protectors in a non-optical dynamic storage or retrieval device.
- 726 Disk cartridge material:**
This subclass is indented under subclass 725. Subject matter wherein the disk cartridge is made of a particular material.
- 727 Having reinforcement member:**
This subclass is indented under subclass 725. Subject matter comprising means for increasing rigidity and strength of the housing structure of the cartridge.
- 728 Disc cartridge case or jacket:**
This subclass is indented under subclass 725. Subject matter comprising specific details of the exterior of the container or housing.
- 729 Having disc identification (e.g., write protect hole or tab):**
Subject matter under subclass 728 comprising means for visibly indicating information about the optical storage medium within the container or housing.
- (1) Note. Examples include: write protect holes, tabs which are typically slidable within an aperture.
- 730 Preventing cartridge misinsertion:**
This subclass is indented under subclass 728. Subject matter comprising means on the exterior of the cartridge for preventing incorrect orientated insertion of the cartridge into optical recording or reproducing device.
- 731 Including misinsertion groove:**
This subclass is indented under subclass 730. Subject matter wherein the structure to prevent incorrect orientated insertion includes channel or slot on the container or housing of the cartridge.
- 732 Movable cartridge case or jacket piece:**
Subject matter housing can move so as to expose the optical storage medium within the container or housing.

- 733 In a linear direction:**
This subclass is indented under subclass 732. Subject matter wherein the movable exterior portion moves relative to the container or housing in a direction which is substantially in a straight line.
- 734 In a rotated direction:**
This subclass is indented under subclass 732. Subject matter wherein the movable exterior portion moves relative to the container or housing in a direction which is substantially pivoting on an axis.
- (1) Note. The term “substantially” as utilized in this subclass definition will encompass arcuate movement as well as axial pivoting.
- 735 Including a case or jacket piece locking member:**
This subclass is indented under subclass 734. Subject matter wherein the movable exterior portion includes means to cooperate with the non-movable portion of the container or housing to securely hold it in place in the closed position.
- 736 Sealed cartridge:**
This subclass is indented under subclass 728. Subject matter including means for preventing intrusion of outside contaminants into the cartridge.
- (1) Note. Example of cartridge sealing include dust or light from entering the interior of the container or housing.
- 737 Movement prevention or static reduction (e.g., antirattle, protective sheets):**
Subject matter under 725 including means within the container or housing to prevent movement of the optical storage medium in the axial and/or longitudinal directions while the optical storage medium is not in an operating position or including means interposed between the optical storage medium and inner housing structure to prevent direct physical contact of the optical storage medium and the housing structure so as to reduce static buildup.
- (1) Note. The “operating position” as set forth in this subclass defines when the medium is in a recording or reproducing device and is rotating or ready to be rotated.
- 738 Shutter member:**
This subclass is indented under subclass 725. Subject matter comprising means for uncovering or covering the aperture in the housing or container which allows a read or write transducer access to the optical storage medium.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
643, for details of a shutter opening mechanism for insertion of an optical disk cartridge.
- 739 Having guide slots or projections for movement of shutter:**
This subclass is indented under subclass 738. Subject matter wherein the shutter member includes grooves or projections for facilitating the movement of the shutter member for covering or uncovering the aperture.
- (1) Note. This subclass may also contain subject matter which includes structure on the housing itself which is in direct cooperation with the structure on the shutter member.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
644, for details of a sliding shutter opening mechanism for insertion of an optical disk cartridge.
- 740 Having shutter locking member:**
This subclass is indented under subclass 738. Subject matter including means on the shutter member to cooperate with a portion of the container or housing to securely hold the shutter member in place in the closed position.
- 741 Shutter within disk container:**
This subclass is indented under subclass 738. Subject matter wherein the shutter member is located internal to the housing structure.
- 742 Shutter movement is gear driven:**
This subclass is indented under subclass 738. Subject matter wherein the shutter member includes a rack or gear to facilitate the covering or uncovering of the aperture.

743 Shutter spring mechanism for opening or closing:

This subclass is indented under subclass 738. Subject matter including a flexible device which biases the shutter member into an open or uncovered position.

744 Shutter material:

This subclass is indented under subclass 738. Subject matter wherein the shutter member is made of a particular material.

- (1) Note. Subject matter herein would encompass forming the shutter entirely from particular material such as metal or made of composite material or other topical surface treatments for the shutter.

745 Optical card record:

This subclass is indented under subclass 718. Subject matter wherein the optical medium is non-circular and typically takes the form of a flat usually rectangular rigid substrate.

- (1) Note. Examples of optical card record include playing card, greeting card or postcard shaped.

746 Optical tape record:

This subclass is indented under subclass 718. Subject matter wherein the optical medium is in the form of a flat, flexible web-like substrate.

SEE OR SEARCH CLASS:

- 242, Winding, Tensioning, or Guiding, subclasses 324.2, 326-326.4, 335-348.4 for a machine convertible information carrier on or within a housing optically termed cartridge, cassette, or magazine, and subclass 601 for a spool provided with a cover.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 132 and 134, for details of a magnetic tape media.

END